

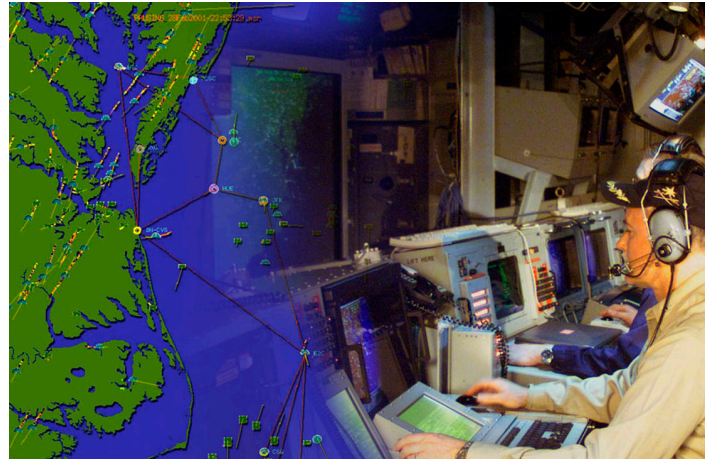
Cooperative Engagement Capability (CEC)

Executive Summary

- The Navy Commander, Operational Test and Evaluation Force (OPTEVFOR) continued FOT&E of the Cooperative Engagement Capability (CEC) AN/USG-3B. Preliminary test results indicate that the AN/USG-3B CEC, as integrated with the E-2D Advanced Hawkeye, may have improved suitability compared to previously tested versions and that some previously reported deficiencies have been corrected.
- DOT&E will provide assessments of the CEC AN/USG-3B operational effectiveness and suitability in FY20.
- The Navy developed requirements for the future CEC Increment II and should submit a Test and Evaluation Master Plan (TEMP) for DOT&E approval.

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 AN/USG-2/2A is installed on select Aegis cruisers and destroyers, *San Antonio* (LPD 17)-class and LHD amphibious ships, and *Nimitz* (CVN 68)-class aircraft carriers.
 - The AN/USG-2B, an improved version of the AN/USG-2/2A, is installed or planned to be installed on 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 AN/USG-3 is installed on the E-2C Hawkeye 2000 aircraft.
 - The AN/USG-3B is installed on the E-2D Advanced Hawkeye aircraft.
- The two major hardware components are the Cooperative Engagement Processor, which collects and fuses sensor data; and the Data Distribution System, which exchanges data between participating CEC units.



- CEC increases Naval Air Defense capabilities by integrating sensors and weapon assets into a single, 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 employ platforms 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 AN/USG-3B in June 2019.
- Not all the testing listed in the DOT&E-approved test plan was completed, and there is no scheduled test period to complete the testing.
- The Navy does not have a plan to conduct cyber survivability testing for the AN/USG-3B.
- In FY19, the Assistant Deputy Chief of Naval Operations for Information Warfare developed a Capability Development

Document (CDD) for CEC Increment II. The CDD identifies the required capabilities for future Increment II versions of CEC and reflects both increased threshold requirements and the introduction of new capabilities relative to CEC Increment I.

Assessment

- Preliminary test results indicate the USG-3B AN/CEC, as integrated with the E-2D, may have improved suitability

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compared to previously tested versions and that some previously reported deficiencies have been corrected.

- DOT&E will provide assessments of the CEC AN/USG-3B operational effectiveness and suitability in FY20.

Recommendations

The Navy should:

1. Conduct the DOT&E-approved testing not completed during FOT&E.

2. Plan and conduct cyber survivability testing on the CEC AN/USG-3B.
3. Submit to DOT&E, for approval, a revised CEC TEMP that describes the test strategy for CEC Increment II.