Distributed Common Ground System – Navy (DCGS-N)

The Program Office for Battlespace Awareness and Information Operations (PMW 120) and the Navy's Operational Test and Evaluation Force (OPTEVFOR) are using the level of test determination process to conduct testing of Distributed Common Ground System – Navy (DCGS-N) enhancements. OPTEVFOR is providing timely information to PMW 120, and the program has made acquisition and deployment decisions consistent with OPTEVFOR's evaluations. DOT&E agrees with this approach as documented in the DOT&E-approved Test and Evaluation Master Plan (TEMP).

SYSTEM DESCRIPTION

DCGS-N is the Navy Service component of the DoD DCGS family of systems, which provides multi-Service integration of intelligence, surveillance, reconnaissance, and targeting capabilities. DCGS-N Increment 1 is fielded to the Force-level ships and shore sites. The Navy is updating DCGS-N by incrementally adding mature commercial and government applications.

Current upgrades include the addition of the Fusion Analysis and Development Effort (FADE) desktop application and Track Management Display System (TMDS). FADE is a government off-the-shelf application from National Reconnaissance Office. It is accessible via both a website and the new desktop application, which allows users to download the data so that they can continue to use the FADE application when the network is disconnected. TMDS is an enhancement to a deployed application.

MISSION

Operational commanders use DCGS-N to participate in the joint task force-level targeting and planning processes and to share and provide Navy-organic intelligence, reconnaissance, surveillance, and targeting data to joint forces.

Units equipped with DCGS-N will:

- Identify, locate, and confirm targets through multi-source intelligence feeds.
- Update enemy track locations and provide situational awareness to the joint force maritime component commander by processing data drawn from available sensors.

PROGRAM

The Assistant Secretary of the Navy for Research, Development, and Acquisition approved transition of DCGS-N Increment 2 to the DoD Instruction 5000.02's adaptive acquisition framework, software acquisition pathway in January 2021. DCGS-N Increment 2 brings in incremental upgrades, using commercial and government applications whenever possible. DOT&E approved the updated TEMP for the software acquisition pathway approach in August 2022. The TEMP describes a process for tailoring test and evaluation in accordance with the potential risks associated with the upcoming incremental changes. OPTEVFOR conducts level of test determinations in cooperation with the program office and submits a recommendation to DOT&E for approval. The level of test ranges from observing developmental tests (DTs) to conducting a full scoped operational test.

» MAJOR CONTRACTOR

- CACI International, Inc. – Denver, Colorado

TEST ADEQUACY

In accordance with the DOT&E-approved TEMP, the program office conducts Application Integration System Integration Tests (AI SITs) for each new release to evaluate whether the new or enhanced applications and services work with other interfacing systems. OPTEVFOR observes AI SITs to gain knowledge about the updates and uses that knowledge, along with information on the scope of the new release, to conduct a level of test determination.

Based on the level of test determination results, OPTEVFOR observed DTs for two versions of DCGS-N in FY23.

- V4.0.2/4.5.2: OPTEVFOR observed AI SIT 22-2 conducted by PMW 120 in March 2023.
- V4.0.1.0/4.5.1.1: The main upgrade for this version was addition of the FADE desktop application and TMDS. OPTEVFOR observed the DT conducted by PMW 120 aboard USS *Theodore Roosevelt* (CVN 71) in May 2023 based on the level of test approval after the AI SIT 22-1. OPTEVFOR published a Letter of Observation in July 2023.

Both DT events accomplished their objectives. The program office coordinated closely with DOT&E and OPTEVFOR in their DT planning, conduct, and reporting process to provide input for the risk assessment leading to a determination of appropriate

level of test. The program office invites DOT&E and OPTEVFOR for engineering review boards where shortfalls identified during the test are scored, and mitigation measured are discussed. The resulting deployment decisions have been consistent with the evaluation results. The program office only deployed applications or services that were tested and evaluated to be effective and suitable by OPTEVFOR.

The Naval Sea Systems Command Red Team conducted penetration testing in a laboratory setting to evaluate the cyber survivability posture of DCGS-N in March 2023. The assessment was conducted using an insider threat/assumed compromise methodology. It was part of a series of cyber survivability test events to get ready for the future cooperative vulnerability and penetration assessment and the adversarial assessment. The location and timing of these cyber assessments are under discussion.

PERFORMANCE

There is not enough data available for DOT&E to make an operational effectiveness, suitability, or survivability determination. The following is provided based on testing observed by OPTEVFOR.

» EFFECTIVENESS

The testing involving FADE showed that users receive the same information on the desktop as the website.

The test also demonstrated that intelligence analysts can use TDMS to add, modify, and delete track information, and pass information between common intelligence picture from DCGS-N and common operational picture on Global Command and Control System – Maritime.

» SUITABILITY

PMW 120 is developing a formal training guide. The training for FADE was only provided to the cryptology technicians and not for the intelligence specialists. Users expressed satisfaction with the training they received for the TMDS. OPTEVFOR will continue to monitor the FADE training in future iterations.

» SURVIVABILITY

During the laboratory-based developmental testing in preparation for the eventual operational test, testers with unauthenticated and user-level access to the environment found several vulnerabilities specific to DCGS-N and made general security posture recommendations.

RECOMMENDATIONS

None.