Over-the-Horizon Weapon System (OTH-WS)

Executive Summary

- In FY19, the Navy completed a limited Quick Reaction Assessment (QRA) of the Over-The-Horizon Weapons System (OTH-WS). This event was an assessment of the system's operational capabilities to support the early installation of the OTH-WS on the *Independence*-class Littoral Combat Ship (LCS). The QRA did not include a missile launch. The QRA successfully demonstrated the capability to track a target and plan an engagement.
- In FY19, the Navy conducted a structural test firing of the OTH-WS to assess the integrity and safety of the weapon system installation on the launch platform. The test revealed no problems related to the integration of the Missile Launching System with the platform.
- The Navy is planning to conduct IOT&E and LFT&E in FY20-22 and is developing a Test and Evaluation Master Plan (TEMP) and Live Fire Test Strategy to support those test events.

System

- The OTH-WS program is a long-range, surface-to-surface warfare system intended to offensively engage maritime targets both inside and beyond the radar horizon. The system consists of an operator interface console, Naval Strike Missile, and the Missile Launching System.
- The Naval Strike Missile is a bank-to-turn missile with an imaging infrared seeker and employs a semi-armor-piercing warhead optimized for anti-surface warfare.
- The OTH-WS is a stand-alone system requiring minimal integration into the LCS platform. The Navy also intends

to integrate the OTH-WS on the guided-missile frigate, FFG(X). The OTH-WS will receive targeting data via tactical communications from combatant platforms or airborne sensors and requires no guidance after launch.

Mission

- The Joint Force Commander/Strike Group Commander employs OTH-WS-equipped LCS platforms to conduct offensive over-the-horizon and within-the-horizon engagements against maritime targets.
- The addition of the OTH-WS on board the LCS variants and FFG(X) ships will support the Capstone Concept for Joint Operations Version 3.0.

Major Contractor

Raytheon Missile Systems – Tucson, Arizona

Activity

- The Navy began the OTH-WS program in 2016, and DOT&E placed the program on oversight in 2016. This is the first time DOT&E has included this program in its annual report.
- The Navy conducted a QRA to support early deployment on the *Independence*-class LCS. The test, conducted in port at San Diego, California, and underway at the Southern California Operating Area, intended to demonstrate the system's ability to track a target and plan a missile launch. The QRA consisted of a maintenance/logistic support demonstration, in-port and at-sea system operations, and a cyber-survivability table top assessment.
- The Navy conducted a structural test firing to assess the integration, integrity, and safety of firing the OTH-WS on the *Independence*-class LCS.
- The Navy conducted a limited assessment of cybersecurity during a Cyber Table Top assessment from July 16 – 19, 2019,

which examined possible avenues of attack on the system and the resulting mission effects. Because of the Non-Developmental acquisition strategy, the exercise paid special attention to possible supply-side attack methods. The exercise participants, including system operators from LCS Squadron One and cybersecurity penetration testers, based their assessments on system diagrams and subject matter expertise. The Navy plans to conduct cybersecurity testing during IOT&E to validate the findings from the Cyber Table Top assessment.

- The TEMP and LFT&E Strategy are under development. The final scope of the OT/LFT&E programs are contingent upon the adequacy and availability of missile performance data collected by the foreign supplier during the missile's development.

Assessment

- Due to the limited scope of the QRA/operational testing, no assessment of effectiveness or suitability can be made from this test event.
- The QRA demonstrated the OTH-WS's ability to track a simulated target and to successfully plan tactical engagements. Due to the lack of test missiles to support the accelerated test ship deployment schedule, the program did not plan any live end-to-end flight testing for the QRA.
- Analysis of the cyber survivability table top assessment is ongoing and will be reported in the DOT&E classified OTH-WS Early Fielding Report.

- IOT&E and LFT&E, scheduled for the FY20-22 timeframe, will include live fire tests, modeling and simulation runs, and tailored lethality testing. The Navy is prepared to conduct additional live fire testing to characterize the OTH-WS's warhead and fuze if the supplier's previous data are not sufficient.

Recommendations

None.