

T-AKE *Lewis & Clark* Class of Auxiliary Dry Cargo Ships

Executive Summary

- The second FOT&E test series (OT-IIIIB) for the T-AKE *Lewis & Clark* program specifically addressed the ship's Chemical, Biological, and Radiological (CBR) defenses; Information Assurance (IA); and mine susceptibility including magnetic silencing (degaussing).
- While the majority of deficiencies were verified as corrected, a major deficiency involving corrosion in the Countermeasure Water Wash Down (CMWWD) piping system still remains.

System

- T-AKE *Lewis & Clark* is a class of non-combatant ships operated by the Military Sealift Command (MSC) designed to carry dry cargo, ammunition, and fuel (in limited amounts) for naval combat forces at sea. There are 14 ships in the class; 11 ships are under contract for the Combat Logistics Force and 3 additional ships for the Maritime Prepositioning Force (Future).
- The T-AKE is:
 - Constructed to commercial standards (American Bureau of Shipping) with some additional features to increase its survivability in hostile environments such as the Advanced Degaussing System to reduce the ship's magnetic signature against mines, shock resistance in selected equipment, and increased damage control measures in firefighting and stability
 - Operated by civilian mariners from the MSC and a small Navy military detachment
 - Propelled with a single shaft and propeller; driven by electric motors powered by diesel generators

Mission

The Maritime Component Commander can employ the T-AKE *Lewis & Clark* class of ships to:

Activity

- The Navy conducted OT-IIIIB February through May 2012 in accordance with the DOT&E-approved test plan. It focused on final resolution of IA and survivability vulnerabilities. The tests were intended to continue evaluation of T-AKE operational effectiveness and suitability, verify deficiencies identified in IOT&E and an earlier FOT&E were corrected, and complete deferred OT&E.
- The Navy installed a new intruder detection system on T-AKE 12 and integrated the navigation and engineering control system with the ship's network.
- The Navy's Commander, Operational Test and Evaluation Force's (COTF) Blue Team completed an Operational



- Re-supply other ships while connected underway using Standard Tensioned Replenishment Alongside Method rigs and embarked helicopters
- Move cargo and ammunition between a port and a larger consolidating replenishment ship, which stays with the Carrier/Expeditionary Strike Group
- Be part of the hybrid combination of ships of the Maritime Prepositioning Force (Future)

Major Contractor

General Dynamics National Steel and Shipbuilding Company – San Diego, California

- Information Assurance Vulnerability Evaluation on T-AKE 12 while in-port in February 2012. COTF's Red Team completed a penetration test while underway during April and May 2012.
- During the May at-sea period, COTF completed CBR and magnetic mine survivability tests. The Navy installed a new Improved Point Detection System-Lifecycle Replacement (IPDS-LR) on T-AKE 12, which was evaluated during the CBR test.
- The Surface Warfare Center Panama City Division conducted the Advanced Mine Simulation System test series during May 2012.

Assessment

- During the Operational Information Assurance Vulnerability Evaluation, COTF's Blue Team found a number of potential Category I vulnerabilities within the various components of T-AKE 12. During the penetration test, however, none of the exploits the Red Team ran against T-AKE 12 were able to penetrate the ship's premise (outer most) router. However, the Red Team did achieve unauthorized access to the ship's computing system during the penetration test, which ultimately allowed the team to escalate user privileges and gain system access.
- During the CBR test, the ship's crew was able to don the necessary personal and collective equipment to defend themselves against the effects of CBR attacks and hazards. The newly installed IPDS-LR functioned properly and watch officers were able to respond to audible and visual alarms on the bridge. Unlike U.S. Navy ships, however, on MSC ships the IPDS-LR does not automatically activate the ship's general or chemical alarm. The crew must manually activate this alarm, followed by a general announcement that there is a CBR emergency.
- The CMWWD system was adequate. However, COTF conducted an additional test on T-AKE 1 (5 years old) that revealed that the system was severely degraded due to corrosion of the mild carbon steel piping.
- The analysis of test data collected while T-AKE operated near the Advanced Mine Simulation System (AMISS) is ongoing and no preliminary evaluation is available. DOT&E expects to issue a formal test report in 2QFY13.

Recommendations

- Status of Previous Recommendations. The Navy satisfactorily addressed all previous recommendations.
- FY12 Recommendations. The Navy should:
 1. Resolve IA Category I vulnerabilities.
 2. Resolve the CMWWD system's corrosion problem.