

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

### Executive Summary

- The Navy took delivery of T-AKE 2 (*Sacagawea*) and T-AKE-3 (*Alan Shepard*) in 2007. The Navy plans to build 11 ships for the Combat Logistics Force and expects to build three slightly modified ships for the Maritime Prepositioning Force (Future). Nine ships are now under contract and a contract modification for long lead time material for the tenth ship has been awarded.
- IOT&E, integrated with developmental testing, began in August 2006 with T-AKE 1 as the test ship and ended in February 2007 without conduct of the planned Information Assurance testing. The Navy declared Initial Operational Capability in May 2007 and the ship deployed in July 2007. DOT&E issued a combined Operational/Live Fire Test and Evaluation Report in October 2007.

### System

T-AKE *Lewis & Clark* is a class of non-combatant ships designed to carry dry cargo, ammunition, and fuel (in limited amounts) for naval combat forces at sea. Three ships of the class have been delivered to the Navy, and six are under construction or contracted. Eleven ships are planned for the Combat Logistics Force, and options for three additional ships for the Maritime Prepositioning Force (Future) have been negotiated. The T-AKE is:

- Constructed to commercial standards (American Bureau of Shipping) with some additional features to increase its survivability in hostile environments
- Operated by civilian mariners from the Military Sealift Command and a small U.S Navy military detachment
- Propelled with a single shaft and propeller; the shaft will be turned with electric motors powered by diesel generators like many modern commercial cargo ships



- Designed to employ a computerized cargo inventory management system for both ordnance and non-ordnance cargo

### Mission

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

- Re-supply other ships while connected underway using Standard Tensioned Replenishment Alongside Method rigs and embarked helicopters
- Serve as a shuttle ship to 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)

### Activity

- LFT&E test activity concluded in November 2006 with the completion of the Total Ship Survivability Trial. The Probability of Kill given a Hit study is nearing completion and the final Vulnerability Assessment Report was completed and signed in October 2007.
- Commander, Operational Test and Evaluation Force (COMOPTEVFOR) began IOT&E in August 2006 using a DOT&E-approved test plan and declared testing complete in February 2007 although the planned Information Assurance testing was not conducted. The lead ship, U.S. Naval Ship *Lewis and Clark*, deployed in July 2007.

### Assessment

- COMOPTEVFOR conducted the IOT&E through observation of at-sea operations and 15 event phases, eight of which coincided with Post Delivery Test and Trials events. Testing was time and cost efficient, as there was minimal duplication of major events. Test planning was adequate. Test execution was not adequate because the planned Information Assurance testing was not conducted.
- The ship exceeded the threshold minimum cargo transfer rate requirement during testing. The ship also exceeded the minimum threshold requirement for fuel transfer.

# NAVY PROGRAMS

- The ship exceeded speed requirements during testing. The calculated range capability exceeded the requirement.
  - COMOPTEVFOR's testing of the torpedo decoy system could not be conducted due to a system design problem.
  - The infrastructure is not in place to conduct full testing and calibration of the Advanced Degaussing System that is intended to reduce the ship's magnetic signature and susceptibility to mines. The facilities in San Diego, California, and Norfolk, Virginia, needed to complete testing will not be available until FY09.
  - The automated cargo management system (Shipboard Warehouse Management System) was not available for testing during IOT&E.
  - The T-AKE is being constructed to commercial American Bureau of Shipping standards, using commercial construction materials and processes that are not as robust as those used in constructing combatant ships. The Navy has incorporated some additional survivability features, such as emergency power and communications that exceed the American Bureau of Shipping standards.
  - The T-AKE is survivable when operating in benign conditions but needs to operate in the company of other naval forces that can provide protection against hostile forces.
- Recommendations**
- Status of Previous Recommendations. The FY06 recommendations for testing the acoustic decoy, cargo management system, and degaussing system were not accomplished during the FY07 testing and must be included in future scheduled tests.
  - FY07 Recommendations. The Navy should:
    1. Promptly conduct Follow-on Operational Test and Evaluation (FOT&E) to complete the test events required to evaluate Information Assurance and Survivability as contained in the DOT&E-approved IOT&E test plan. In particular, COMOPTEVFOR should operationally test and evaluate the Information Assurance controls for providing capabilities to protect, detect, react, and restore the Information Technology systems in the event of attempted or actual intrusion. An Information Assurance Red Team assessment should be conducted in a realistic operational environment.
    2. Conduct FOT&E to demonstrate correction of deficiencies found during the IOT&E. For Survivability, the ability of the AN/SLQ-25A to reduce the ship's susceptibility to threat torpedoes should be tested and evaluated.
    3. Conduct FOT&E to demonstrate effectiveness and suitability of the Shipboard Warehouse Management System.
    4. Promptly complete the infrastructure upgrade necessary for Advanced Degaussing System testing so COMOPTEVFOR can conduct the deferred phase of that testing.
    5. In collaboration with DOT&E, identify and implement the changes in scheduling and policy required to ensure that required operational testing is completed before ships are made available for deployment.
    6. Incorporate lessons learned from the T-AKE program into appropriate future ship designs such as the Maritime Prepositioning Force (Future) squadron.