

Mobile Landing Platform (MLP) Core Capability Set (CCS) (Expeditionary Transfer Dock) and Afloat Forward Staging Base (AFSB) (Expeditionary Mobile Base)

Executive Summary

- From August 25 through November 3, 2014, the Navy conducted the MLP (CCS) IOT&E.
- On July 6, 2015, DOT&E published a classified, combined IOT&E and LFT&E report and assessed that MLP (CCS):
 - Is capable of transiting the required 9,500 nautical miles at 15 knots unrefueled.
 - Can land and launch Landing Craft Air Cushion (LCAC) vehicles through Sea State 3.
 - Is operationally effective, achieving the primary timed requirement of enabling the transfer ashore of a reinforced rifle company's equipment within 12 hours from 25 nautical miles out to sea.
 - Can operate skin-to-skin, to include vehicle transfer through Sea State 3, with both the USNS *Bob Hope* (*Bob Hope* class) and USNS *Dahl* (*Watson* class) Large Medium Speed Roll-on roll-off (LMSR) ships.
 - Is not operationally effective in its interoperability with the Joint High Speed Vessel (JHSV) since it is only feasible when done in Sea State less than 1 (JHSV's ramp is limited to significant wave height of no more than 0.1 meters) conditions, which are normally only found in protected harbors. However, when tested in a more operationally relevant open-ocean environment, the JHSV ramp suffered a casualty.
 - Has satisfactory cybersecurity with no significant vulnerabilities. Even if a cyber-adversary gained access, overall ship's mission disruption would be minimal.
- The MLP program did not conduct any major live fire test events during FY15. The Navy plans to conduct the Total Ship Survivability Trial to obtain data for recoverability analysis on the MLP Afloat Forward Staging Base (AFSB) variant in FY16. The Navy plans to issue the final Survivability Assessment Report in FY17.

System

- The MLP (CCS) is now called the Expeditionary Transfer Dock, and the MLP (AFSB) is now called Expeditionary Mobile Base.
- The MLP is a modified heavy-lift ship based on the British Petroleum Alaska class oil tanker, procured by the Navy to use float-on/float-off technology.
- The Navy developed the MLP to host multiple mission sets, operate from international waters, and persist for extended periods providing a capability unencumbered by geo-political constraints to meet strategic goals.



Core Capability Set (CCS)



Afloat Forward Staging Base (AFSB)

- The MLP (CCS) requires 34 Military Sealift Command (MSC)-contracted mariners to operate and maintain the vessels. MLP AFSB requires 34 MSC civilian mariners and 101 permanent military crew to operate and maintain the vessels. MSC will serve as MLP Life Cycle Managers.
- The Navy delivered two MLPs with the CCS mission capabilities (hulls 1 and 2), and plans to deliver three MLPs with AFSB mission capability (hulls 3, 4, and 5).
- The MLP (CCS):
 - Supports Mobile Prepositioning Force operations by facilitating at-sea transfer and delivery of pre-positioned assets to units ashore.
 - Consists of a vehicle-staging area (raised vehicle deck), vehicle transfer ramp (VTR), large mooring fenders, an emergency-only commercial helicopter operating spot, and

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three LCACs lanes/operating spots with barriers, catwalk, lighting, wash down, and fueling services.

- Is equipped with a crane and work boat for placing of fenders used for skin-to-skin operations with an LMSR or JHSV.
- Interfaces with the LMSR ships and LCACs and intends to interface with the follow-on Ship-to-Shore Connectors to permit off-load and transfer ashore of military vehicles ranging from High Mobility Multi-purpose Wheeled Vehicles to battle tanks (M1A2).
- Is classified as a non-combatant with a limited self-protection capability.
- The MLP (AFSB):
 - Includes a two-spot flight deck, hangar facility, helicopter fueling capability, ordnance storage, operation planning and work spaces, and berthing for 101 permanent military crew and 149 personnel of an embarked military detachment.
 - Has a mission deck below the flight deck with a crane for storing and deploying the various mine-hunting and clearing equipment used with the MH-53E helicopters; explosive ordnance demolition boats and equipment may also be stored and handled on the mission deck.
 - Is classified as a non-combatant with a limited self-protection capability.
 - Is built to commercial standards with the ship structure remaining relatively the same as MLP (CCS). However, the aviation facilitates; forward house Command, Control, Communications, Computers and Intelligence suite;

fueling at-sea station; and ordnance stowage and handling components are built to U.S. Navy standards.

- Will be exposed to a larger number of threats than the MLP (CCS) variant; therefore, it will be dependent on other vessels to provide defense for more traditional anti-ship weapons encountered by naval vessels.

Mission

- Combatant Commanders will use the MLP (CCS) as a surface interface between other Mobile Prepositioning Force (future) squadron ships (such as LMSRs, and JHSVs), connectors (LCACs and Ship-to-Shore Connectors) and sea base to transfer personnel and equipment to facilitate delivery ashore of forces from the sea.
- Combatant Commanders will use the MLP (AFSB):
 - To support Airborne Mine Countermeasure operations including hosting a squadron of four legacy MH-53E helicopters
 - Provide storage and deploying capabilities of the various mine-detecting and clearing equipment, which are used with the helicopters
 - To support explosive ordnance demolition boats

Major Contractors

- MLP base ship and MLP AFSB: General Dynamic's National Steel and Shipbuilding Company (NASSCO) – San Diego, California
- CCS arrangement: Vigor Marine (Limited Liability Company) Shipbuilding – Portland, Oregon

Activity

- The Navy conducted the MLP (CCS) IOT&E from August 25 through November 3, 2014.
- DOT&E's FY14 Annual Report listed test activity through September 2014. This report outlines the last IOT&E events the Navy conducted from October through November 2014. The following test events were conducted at-sea, primarily in the vicinity of Camp Pendleton, California:
 - In October 2014, the Navy's Commander, Operational Test and Evaluation Force (COTF) conducted a 24-hour, 15-knot fuel economy trial as MLP 1 transited from the Seattle, Washington, area to Southern California waters.
 - In October 2014, COTF and the Marine Corps Operational Test and Evaluation Activity (MCOTEA) successfully conducted skin-to-skin operations through Sea State 3 with both the USNS *Bob Hope* (*Bob Hope* class) and the USNS *Dahl* (*Watson* class) LMSRs, to include vehicle transfer and LCAC operations in various tests.
 - On October 14, 2014, COTF and MCOTEA successfully completed the reinforced rifle company vehicle transfers via LCAC in a timed event. Although MLP 1 was not positioned 25 nautical miles from shore, the LCACs transited a route of 25 nautical miles both to shore and then back to MLP 1 for the next load to support the timed transfer requirement.
- On October 29, 2014, COTF and MCOTEA attempted the open-ocean, day and night, interface test mooring of the JHSV to the MLP (CCS) vessel. USNS *Millinocket* (JHSV 3) moored skin-to-skin with USNS *Montford Point* (MLP 1 CCS) and a Marine Corps vehicle transited back and forth during daylight. An earlier mooring line problem, which occurred during a previous test (June 2014), was resolved but a JHSV ramp casualty precluded completion of the planned test.
- In October 2014, COTF conducted a Critical System Maintenance Review with the ship's company to assist in evaluating suitability of both maintenance and logistics for the ship class.
- On November 3, 2014, COTF and MCOTEA conducted a limited self-defense drill (no targets engaged) and a Structural Test Fire event that verified fields-of-fire and the 0.50 caliber machine gun mount structure suitability.
- USNS *Lewis B. Puller* (MLP 3 AFSB) launched in November 2014; completed builder trials in April 2015 and acceptance trials in May 2015; delivered in June 2015;

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and conducted transit from San Diego, California, to Norfolk, Virginia, from August to October 2015.

- The MLP program did not conduct any major LFT&E events during FY15. The Navy plans to conduct the Total Ship Survivability Trial to obtain data for recoverability analysis of the MLP AFSB in FY16. The Navy plans to issue the final Survivability Assessment Report in FY17.
- In July 2015, DOT&E published a classified, combined IOT&E and LFT&E report on the MLP (CCS).
- The Navy conducted all testing in accordance with the DOT&E-approved Test and Evaluation Maser Plan and test plan.

Assessment

- Vehicle transfer at-sea with JHSV moored skin-to-skin with MLP (CCS) is not advised (mooring with JHSV is a secondary mission for MLP). The 0.1 meter significant wave height (Sea State 1) limitation of the JHSV ramp precludes operationally relevant at-sea vehicle transfers with MLP (CCS). Initial in-harbor testing was successful for vehicle transfers; however, while JHSV was moored skin-to-skin in calm seas with MLP (CCS), several mooring lines parted, precluding completion of the test event. During the second test event at-sea, the mooring line issue was resolved, but the JHSV ramp suffered a casualty and vehicle transfer had to be stopped. Sea state for the at-sea test was Sea State 3 (significant wave height up to 1.25 meters) although MLP (CCS) created a lee, effectively reducing the seas to just above Sea State 1 for the skin-to-skin mooring with JHSV.
- The MLP (CCS) is operationally effective provided that operations are conducted in a safe, well-guarded area with Sea State 3 conditions (equates to significant wave height up to 1.25 meters). When the MLP was positioned 25 nautical miles from the LCAC shore landing site, it met its timed transfer requirement, enabling Marine Corps equipment for a reinforced rifle company to be moved to shore in less than 12 hours.
- For operational scenarios that include Amphibious Assault Vehicles (AAVs) independently moving to shore, the MLP (CCS) demonstrated it could launch AAVs from within 5 nautical miles of the shore; launching AAVs that close to the shore is unlikely to be feasible in major combat. However, in that particular case, DOT&E estimates the transfer of a full reinforced rifle company's equipment set would span 52 hours and 49 minutes, owing to the time needed to move MLP (CCS) from 25 nautical miles to within 5 nautical miles from shore.
- Based on a 24-hour fuel economy trial, DOT&E estimates MLP (CCS) to have an un-refueled range of greater than 12,000 nautical miles, exceeding the 9,500-nautical mile requirement.
- The Navy demonstrated skin-to-skin operations and vehicle transfer through Sea State 3 with both the USNS *Bob Hope* (*Bob Hope* class) and USNS *Dahl* (*Watson* class) LMSRs.
- While conducting vehicle transfers between MLP (CCS) and LMSRs, the mild side-to-side rolling of the ships while moored skin-to-skin caused twisting of the VTR that must be monitored. Devices for monitoring the VTR twist were temporarily installed for testing. The sensitivity of the VTR to twisting warrants a permanent system.
- Accelerated wear of the Main Diesel Generators is expected due to prolonged electrical under-loading.
- Ship service electric power suffered from power spikes due to inadequate electronic grooming.
- The local cybersecurity test demonstrated that the network's host-based security system stopped most of COTF's cyber-attacks against unclassified and classified networks. As the ship's networks are not connected to the ship's critical systems, the loss of either unclassified or classified networks during operations would be an inconvenience, but would not hinder the ship's ability to conduct its mission since it has communication backups, including radios and standalone satellite phones.
- During the remote reconnaissance and cyber-attack evaluation, COTF was unable to gain a foothold on the MLP 1 networks with the toolset used for these assessments. However, the test did not explore the vulnerability of the ship to very advanced cyber threats due to security restrictions in place during the time of the test.
- MLP (CCS) is survivable only if used in benign and/or permissible environments.
 - MLP (CCS) is designed and built to commercial standards that do not include hull and equipment hardening or personnel protection features necessary to survive major weapon effects.
 - MLP (CCS) has no active or passive systems to reduce susceptibility to enemy weapons.
 - The design has only limited system redundancy and separation to improve vulnerability and recoverability.
- The effectiveness of area defense provisions was not assessed as part of this test and evaluation program.
 - Although the Embarked Security Teams, which consist of 12 members, are manned with well-trained individuals equipped with 0.50-caliber weapons, they can only support a 24-hour day manning of four stations. There are little test data to suggest they provide effective force protection.
 - For close-in self-defense, the security teams embark with their own weapons and ammunition.

Recommendations

- Status of Previous Recommendations. The Navy still needs to address the FY14 recommendation to re-evaluate the need for at-sea skin-to-skin operations between MLP (CCS) and JHSV.
- FY15 Recommendations. The Navy should:
 1. Install permanent VTR twist sensors and provide a display monitor on the MLP (CCS) ships to assist the MLP (CCS) Master during skin-to-skin operations.
 2. Install a separate Ship Service Diesel Generator to minimize periods of under-loading of the Main Diesel Generators.
 3. Install additional ship service electrical grooming equipment to alleviate ship service power spikes and minimize damage to sensitive electronic equipment.

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4. Address the cybersecurity and live fire issues identified in the classified annex to the July 2015 DOT&E combined IOT&E and LFT&E report.
5. Conduct a robust, self-defense test utilizing live ammunition and realistic targets in support of the MLP (AFSB) IOT&E.