

Alternatives for the Maritime Prepositioning Force (Future)

Navy and Marine Corps concepts for Sea Basing have envisioned the development of capabilities that will allow the rapid deployment, assembly, command, projection, reconstitution, and re-employment of expeditionary forces from the sea. Sea Basing can provide operational flexibility for maximizing the effects of a forward presence for executing a full range of military operations.

To support Sea Basing, the Marine Corps has considered a Maritime Prepositioning Force (Future), or MPF(F), 14-ship squadron comprising

- 2 modified LHA Replacement, or LHA(R), large-deck amphibious assault ships equipped with Marine Expeditionary Brigade (MEB) command and control facilities
- 1 modified LHD large-deck amphibious ship
- 3 modified Lewis and Clark-class (T-AKE) cargo ships
- 3 modified Large, Medium-Speed, Roll-on/Roll-off (LMSR) sealift ships
- 3 Mobile Landing Platform (MLP) ships
- 2 legacy “dense-pack” MPF ships taken from existing squadrons.

LHA(R) and LHD ships have large flight and hangar decks for embarking and operating helicopters and tilt-rotor aircraft. They also provide medical capabilities; LHDs will have the greatest medical capability of any amphibious ship in operation. Each MLP would operate six Landing Craft Air Cushion (LCAC) surface connectors.

The cost of this proposed squadron, and how it would affect the ability of the Navy to purchase other ships for its needs, has become a concern. Accordingly, the Office of Cost Analysis and Program Evaluation (formerly known as the Office of Program Analysis and Evaluation) of the Office of the Secretary of Defense asked the RAND Corporation to assess alternatives to the proposed MPF(F) squadron and how these changes would affect abilities to support a MEB in operations ranging from counterinsurgency to special operations to major combat operations.

Abstract

Sea Basing can provide operational flexibility but at a cost that has become a concern. RAND researchers assessed cost-saving options to alter the Maritime Prepositioning Force (Future), or MPF(F), squadron without degrading its effectiveness for key missions. They found degradation to logistics throughput resulting from eliminating large-deck ships from the MPF(F) could be offset by substituting CH-53K helicopters for MV-22s. They also found that the MPF(F) could provide a useful base for special operations forces.

Most of the variations RAND researchers considered entail removing large-deck ships, the LHA(R) and the LHD, from the squadron. Removing these ships from the squadron could reduce acquisition costs by \$5 billion. Researchers also considered adding a fourth MLP with six additional LCACs to examine a situation where only surface connectors, and no aircraft, could be used for supporting a MEB. Researchers considered the need for both logistics support and casualty evacuation and care in assessing MPF(F) capabilities.

Among the researchers’ key findings were the following on reducing the number of ships in the squadron, the use of connectors, and support of scenarios besides major combat operations.

Eliminating Ships

The degradation to logistics throughput resulting from the elimination of one LHA(R) ship from the MPF(F) squadron could be offset by substituting CH-53K helicopters for MV-22 tilt-rotor aircraft in the squadron. CH-53K helicopters have about three times the payload of the MV-22 and, in the scenarios considered, are just as fast as MV-22 helicopters on ingress. The MV-22 does have an advantage in casualty evacuations where time is critical and external loads do not limit its speed.

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The degradation to logistics throughput resulting from the elimination of both LHA(R) ships cannot be offset by substituting CH-53K helicopters for MV-22 tilt-rotor aircraft; too few aircraft then remain in the MPF(F) squadron. Nevertheless, air connectors from the remaining LHD as well as the LCACs from other ships provide adequate throughput capacity.

Eliminating both LHA(R) ships and the LHD from the MPF(F) squadron and providing sustainment entirely using LCACs leaves a marginal capacity to sustain a single MEB with three or four MLPs. This option, however, both eliminates the major medical capabilities of the MPF(F) and relies on slower aircraft for casualty evacuation.

Using Connectors

Most of the ship-to-shore capacity of the MPF(F) is in its use of LCACs. In fact, the requirement that the MPF(F) be able to insert the ground-maneuver elements of a MEB in an eight-to-ten hour period of night results in theoretical overcapacity of the squadron to support a MEB through LCACs.

Supplies to the shore by LCACs must be moved forward to forces that will consume them. This will require trucks or aircraft, as well as a reasonably secure area for the trucks or aircraft to operate. Whether these conditions will prevail will vary by situation.

One potential limit to logistics support by the MPF(F) is the lack of a direct interface between T-AKE ships and MLPs with LCACs. Without such interface, supply from the T-AKE ships is available only from vertical-lift connectors. This reduces the number of CH-53K and MV-22 sorties available to joint force commanders for purposes other than sustainment. In order to better use the potential offered by the LCACs, the Navy and Marine Corps should investigate ways that the T-AKE ships could interface more closely with the LCACs, whether by directly offloading into them or by transloading supplies from a T-AKE to a MLP and then to an LCAC. Nevertheless, air-only sustainment from the T-AKE ships would not affect the feasibility of eliminating one or both LHA(R) ships from the MPF(F), even without substituting CH-53K helicopters for the MV-22 aircraft.

The number of LCACs on ships in the MPF(F) is, as noted, sufficient to help ground-maneuver elements of a MEB move ashore in one night, and results in overcapacity for sustainment afterwards. If the Marine Corps cannot

make full use of this subsequent sustainment overcapacity, the joint force commander should consider ways to use the LCACs for movement ashore and sustainment of other forces. For example, if the MEB does not need or cannot use the throughput potential of the LCACs, then perhaps Army LMSR vessels could offload personnel, supplies, and equipment onto the LMPs of the Marine Corps for movement ashore by LCAC.

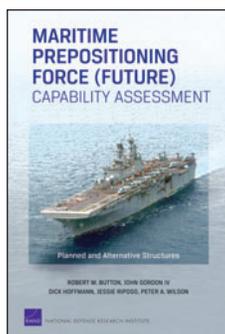
Support for Counterinsurgency and Special Operations

The MPF(F), or portions of it, could provide important capabilities to support counterinsurgency operations. Daily tonnage requirements of a MEB engaged in counterinsurgency operations will vary by situation, but they would be lower than the consumption rates, especially for ammunition, envisioned for major combat operations, which the MPF(F) can, as noted, support. Given that the United States hopes that local forces would have a leading role in counterinsurgency operations, the MPF(F) might be used to support foreign forces. Counterinsurgency operations might not require all ships of the MPF(F), though exact requirements will depend on the duration and size of the mission.

The MPF(F) could also provide a useful base for special operations. Such operations may require an even smaller portion of the MPF(F) squadron than counterinsurgencies would. For example, a single MLP or a MLP plus a large flight-deck ship from the MPF(F) might suffice to meet the needs of a special operation, even over a protracted period of time.

Conclusions and Implications

Altogether, the research found that eliminating two large-deck amphibious ships from the proposed squadron at, as noted, an acquisition savings of \$5 billion, would have little or no adverse impact on logistics capability. CH-53K helicopters can replace much of the capability of MV-22 helicopters in the squadron, with air connectors from other ships also helping provide adequate throughput capacity. Although this would also eliminate major medical capabilities, the squadron would otherwise retain the ability to provide logistics support for a full range of major combat, counterinsurgency, and special operations. Key to this finding is the capacity the squadron would have to insert an expeditionary force within an eight-to-ten hour period of darkness, yielding theoretical overcapacity for subsequent support of the force. ■



This research brief describes work done for the RAND National Defense Research Institute documented in *Maritime Prepositioning Force (Future) Capability Assessment: Planned and Alternative Structures*, by Robert W. Button, John Gordon IV, Dick Hoffmann, Jessie Riposo, and Peter A. Wilson, MG-943-OSD (available at <http://www.rand.org/pubs/monographs/MG943/>), 2010, 102 pp., \$28, ISBN: 978-0-8330-4950-6. This research brief was written by Clifford Grammich. The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. RAND® is a registered trademark.

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