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A Preliminary Investigation of

Ship Acquisition Options for Joint Forcible Entry Operations

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Summary

Introduction

The current strategy for U.S. naval power is embodied in "Sea Power 21,"[1] which would integrate naval forces for global joint operations against regional and transnational threats. Three fundamental concepts underlie Sea Power 21: Sea Strike, which increases the ability to project precise and persistent offensive power from the sea; Sea Shield, which extends naval defensive firepower beyond the task force; and Sea Basing, which enhances operational independence and support for the joint force by placing at sea (to a greater extent than ever before) capabilities that are critical to joint and coalition operational success.

Sea Power 21 will be enabled by FORCEnet[2] and will be implemented by the Navy-Marine Corps Global Concept of Operations (Global CONOPS), which in turn will provide widely dispersed combat power by creating additional independent operational groups capable of responding simultaneously around the world. Naval capability packages will be readily assembled from forward-deployed forces. These forces will be tailored to meet the mission needs of the

[1] Sea Power 21 is a vision statement issued by the Chief of Naval Operations in 2002 for guidance. For more information, see Clark, Admiral Vern, "Sea Power 21 Series, Part I: Projecting Decisive Joint Capabilities," *Proceedings,* Annapolis, Md.: U.S. Naval Institute October 2002, (http://www.usni.org/Proceedings/Articles02/proCNO10.htm; last accessed November 2004).

[2] FORCEnet is an overarching effort to integrate warriors, sensors, command and control, platforms, and weapons. See Chapter One for more information.

Joint Force Commander, complementing other available joint assets, and will be sized to the magnitude of the task at hand. In meeting the capability packages required under the Global CONOPS, the Navy relies on its program of record, as defined by the 30-year Shipbuilding and Conversion, Navy (SCN) plan. The sea base will be composed of distributed forces of many types, including carrier strike groups (CSGs), expeditionary strike groups (ESGs), combat logistics force ships, Maritime Pre-Positioning Force (MPF) platforms, and, in the years ahead, high-speed support vessels. Under the Global CONOPS, no other force package will be expected to approach the CSG's combat survivability because ESGs "will prosecute Sea Strike missions in lesser-threat environments."[3] This raises questions about how well the Navy's shipbuilding program of record, as defined by the SCN, will meet the needs of Sea Power 21 and whether the program of record should be modified, in particular by directly substituting so-called black-hulled ships (or "black hulls," ships built to commercial standards) for so-called gray-hulled ships (or "gray hulls," ships built to military specifications).

In January 2003, Deputy Secretary of Defense Paul Wolfowitz asked for a thorough review of JFEOs. As part of his tasking, he asked the Joint Chiefs of Staff (JCS) to define and explore sea basing concepts and force capability packages. In particular, he asked the Department of the Navy (DoN) to outline the Joint Operations Concept for "operations from the sea" and the potential effect of those concepts on the Navy's out-year shipbuilding.

In response to this request, the DoN asked the RAND National Security Research Division to support the Navy by conducting an evaluation that would enable decisionmakers to examine the potential substitution of Maritime Pre-Positioning Force (Future) (MPF(F)) black-hulled ships for gray-hulled amphibious ships, particularly the LPD-17 and the LHA(R).

To meet this objective, RAND (1) assessed the future global security environment, (2) developed findings that argue for the imple-

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[3] Clark, 2002.

mentation of sea basing, (3) created a series of scenarios based on the review of the global security environment, and (4) developed two models and used them to examine alternatives to substituting black-hulled ships for gray-hulled ships.

The Importance of Sea Basing in the Future Global Security Environment

In the coming decades, the United States will face a bifurcated set of security challenges. Day to day, the operational driving force will continue to be related to the Global War on Terrorism (GWOT) and the issues arising from the focus on the GWOT. At the same time, the United States will be forced to confront growing challenges to its power-projection capabilities from regional states armed with increasingly potent weapons.

In this security environment, U.S. forces will be called upon to perform an extraordinarily wide range of missions, including conducting long-term training and advisory missions, developing intelligence on localized terrorist groups and global networks, protecting allies from ballistic-missile and cruise-missile attacks, and countering nation states that brandish nuclear weapons.

Within this environment, the emerging concept of sea basing[4] will be an important addition to the naval forces' ability to project—and sustain—forces ashore. With sea basing, Marine Corps combat power can build up more quickly in littoral areas, and the need to move considerable amounts of supplies ashore will be minimized. As such, the concept of sea basing clearly has important uses during joint forcible entry operations (JFEOs), which U.S. forces may confront in the future. But sea basing has value beyond its use in forcible-entry operations (which are likely to be the exception rather than the norm). In particular, the United States may have to conduct missions in the "zone of instability" extending from West Africa to Indonesia

[4] Loosely speaking, *sea basing* is the ability to assemble, equip, and support forces from sea platforms without relying on land bases.

or in Latin America, where a large U.S. military presence ashore is not politically acceptable. With such missions, considerable advantage can be gained by leaving as many functions as possible offshore at the sea base.

While the Navy and Marine Corps are currently thinking of sea basing in terms of enhancing their own capabilities, the concept of sea basing has further use beyond naval/marine forcible-entry operations or sustainment of Marine Corps operations ashore in areas where granting forces access is not politically acceptable. Sea basing might also prove to be a valuable part of joint operations involving the Army and Air Force.

Identifying Favorable Mixes of Gray Hulls and Black Hulls for JFEOS

Our analysis for this study focuses on identifying favorable mixes of gray-hulled and black-hulled ships for future JFEOs. In conducting this evaluation, we arrived at some analytic and programmatic conclusions.

Analytic Conclusions

We arrived at two main analytic conclusions from this study:

- Further concept development is needed for Maritime Pre-Positioning Ship Squadron (Future) (MPSRON(F)), MPF(F), and Landing Craft Air Cushion (LCAC) alternatives. Concepts of employment changed the course of our analysis. Specifically, the observation that one MPF(F) ship can be substituted operationally for more than one L-class ship redefined the substitution trade space, as did the finding that it may be possible to take up MPF(F) ships from MPSRONs temporarily with acceptable outcomes. *This new Concept of Employment functionally reduces MPF(F) ship cost by a factor of two or more*. Recognizing that LCACs will be decommissioned, even with a successful LCAC Service-Life Extension Program (SLEP), led us to further

examination of Concepts of Employment and the identification of additional means to improve force-closure performance—*with possible MPF(F) cost savings*.

- **Significant quantitative analysis is possible at this stage of operational concept development.** Our analysis identified various areas of uncertainty and managed them using filtering (to bypass unmanageable uncertainties); sensitivity analysis (to incorporate uncertainty); cost bounding (in place of equal cost analysis); and exploratory analysis (to understand problem sensitivities).

Programmatic Conclusions

Program of Record. Initial conclusions on the Navy's shipbuilding program of record are as follows:

- The program of record will not achieve the stated Marine Corps programming goal of 2.5 Marine Expeditionary Brigade Assault Echelons (MEB(AE)) lift capacity. Increasing demand for vertical take-off and landing (VTOL) and LCAC lift is outpacing the program of record in providing lift.
- MPF(F) ships may not be affordable. Eighteen MPF(F) ships—costing $1.75 billion each—would collectively cost $31.5 billion.[5] The goal of increasing the Navy force level from 292 ships in fiscal year (FY) 2004 to 375 ships under the Global CONOPS may heighten competition for funds and may make MPF(F) ships even less affordable.
- The 2025 program of record force, with MPF(F) ships, will be able to close a 2015 MEB in half the time required by a 2003 force. MPF(F) was the key difference between the 2003 force and the 2025 force under the program of record. In other words, *this transformational improvement in capability depends on acquiring some form of MPF(F) ships.*
- The time that is required for the same 2025 force to begin the assault phase of a sustained MEB-level amphibious operation is

[5] All dollar figures cited in this Summary are in fiscal year (FY) 2003 dollars.

expected to be halved relative to the time required for the 2003 force.
- The 2025 force will be more efficient than the 2003 force. Six ESGs would be required for a one-MEB(AE) lift capacity using the 2003 force. The 2025 force could achieve the same lift with five ESGs.
- A summary conclusion is that *MEB requirements have historically changed more quickly than has the amphibious force.* This points to a potential advantage of flexibility (ability to change without modification) and adaptability (ease of modification) in future ships.

Substituting Black Hulls for Gray Hulls. In considering the substitution of MPF(F) black-hulled ships for L-class gray-hulled amphibious ships under the Global CONOPS, we reached the following conclusions:

- MPF(F) ships could perform the mission assigned to LPD-17s. However, a better definition of the MPF(F) is required to address substitution of MPF(F) ships for LHA(R). Risk and cost are still issues. The level of risk to the MPF(F) in substituting MPF(F) ships for L-class ships depends on how the MPF(F) ships will be used (i.e., their concept of employment). Concept development is needed to perform risk evaluation. This study produced MPF(F) cost bounds to evaluate possible cost-saving substitutions. Final cost figures for MPF(F) ships will determine whether MPF(F) falls within those bounds. Cost savings are not expected with one-for-one substitutions of an LPD-17 or LHA(R). However, because operation-tempo restrictions applying to L-class ships do not apply to MPF(F) ships, which are crewed by civilians, a single MPF(F) ship can be substituted for two or more L-class ships. A one-for-two substitution of LPD-17s would allow the substituting MPF(F) ship to work up and deploy with ESGs, would maintain operational flexibility of

ESGs, and would lead to an amphibious lift capacity of 2.5 MEB(AE) with modest room for growth.
- A one-for-four substitution scheme would also be possible, but it would not allow the substituting MPF(F) to work up with ESGs, would not maintain operational flexibility, and would lead to an amphibious lift capacity of 2.5 MEB(AE) with only minimal room for growth. Then again, this substitution scheme would clearly offer more opportunities for cost reduction.
- Substitutions could involve additional, dedicated ships or MPF(F) ships taken up from a Maritime Pre-Positioning Ship Squadron Future (MPSRON(F)). Additional MPF(F) ships could be equipped with features to make them more capable or to reduce the risk to them, without the need to build such features into all 18 MPSRON(F) ships.
- There is little difference in choice, in terms of closure time or asset requirements, among the above substitution schemes.

Alternative Assault Landing Craft. Replacing LCAC in kind with Heavy Lift LCAC (HLCAC) would work within existing concepts of operation and employment. A replacement such as this offers improved maneuver performance, but conclusions on any such improvement are outside the scope of this analysis. Possible LCAC replacement alternatives other than HLCAC offer potential new operational concepts and, therefore, the possibility of further improvement in closure times.

- HLCAC alternatives may be able to deploy with ESGs and, thus, reduce the time required for force closure.[6]
- Alternatively, HLCAC alternatives may be forward deployed from bases such as Diego Garcia and Guam—again reducing time for force closure.

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[6] *Force closure* is the point in time when a supported joint force commander determines that sufficient personnel and equipment are in an operational area to carry out assigned tasks (Department of Defense, *Department of Defense Dictionary of Military and Associated Terms,* Joint Publication 1-02, 2003).

- Both concepts of employment (deploying with ESGs and forward deployment) would shift the driving "fingerprint" for force closure from LCAC spots to VTOL spots (see Chapter One). A positive result of this shift would be a reduced need for ample well decks on MPF(F) ships. In turn, reducing the size of expensive well decks could lead to MPF(F) cost reduction and increased capacity.
- VTOL closure time also needs to be addressed in the same way that troop closure time was addressed in this analysis.