The Amphibious Fleet Of Tomorrow

AUTHOR LCDR Pat G. McCartney, USN

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The Amphibious Fleet of Tomorrow

We need to revolutionize the way we design and build our ships to produce the next generation of warships. With the amphibious fleet next in line for modernization, we need to give this group of ships improved warfighting capabilities.

Currently our amphibious ships rely on escorts from the Carrier Battlegroups to protect them on the high seas in route to the Amphibious Objective Area and during the amphibious assault. Additionally, these ships have no land attack, anti-air warfare or anti-surface warfare capabilities.

With the size of our fleet shrinking due to budget reductions and the Soviet threat dwindling, we should build a new class of amphibious ship which is equipped with guns, cruise missiles, surface-to-air missiles, electronic suites, and organic assault aircraft. This would allow Marine Amphibious Readiness Groups (MARGs) to conduct independent operations without relying on a CVBG for protection. Response time would be reduced and forcible entry capabilities enhanced.

Standardization of hull design would reduce production and maintenance costs. Additional cost savings would be realized by reduced escort requirements, thereby reducing operating costs. These ships will be able to defend themselves from all anticipated threats except antisubmarine warfare.

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Outline

We need a revolutionary new design concept in shipbuilding so that the amphibious fleet of the future will be operationally effective against a wide spectrum of new missions including offensive operations and self defense.

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THE AMPHIBIOUS FLEET OF TOMORROW

LCDR P.G. MCCARTNEY CG-8

Events of the past year have proven the benefits and necessity of a strong amphibious capability. Our amphibious forces afloat in the Persian Gulf (4th and 5th MEB) were expected by the Iraqis to be the main effort of a ground offensive. Consequently, the presence of these amphibious ships, protected by several CVBGs, tied down 50,000 Iraqi troops defending the coast of Kuwait against the impending invasion. These forces also caused the expenditure of considerable resources in constructing a stronghold to defend against invasion from the sea.

During the war with Iraq, amphibious ships were dispatched to conduct non-combatant evacuation operations from the embassy of Somalia and marines were employed from ships on station off

the coast of Liberia to evacuate Americans from Monrovia during a civil war and coup. Humanitarian aid was also provided to several thousand Liberians suffering from an outbreak of cholera, food shortages and contaminated drinking water. These and other anticipated events are indicative of the requirements the Navy can expect to encounter in the future. Although our Naval forces must still be prepared to fight the Soviet navy on the high seas, there is less and less likelihood of that happening. Arms reductions and the failing Soviet economy has the potential to significantly reduce this threat.

Changing Missions.

What is emerging now is the need for more emphasis on capable amphibious ships and less requirement for the Carrier Battle Group. Our national defense strategy calls for wide-ranging capabilities that often require amphibious ships and Carrier Battle Groups simultaneously to accomplish the mission. Will the Navy be capable of carrying out these types of missions in the future in light of our planned force reductions? Will our amphibious fleet be sufficient to maintain forward deployed marines with the necessary ground and air assets to seize objectives ashore?

The answers to these questions are "no!"--unless the Navy abandons its capital ship concept built solely around the large deck Aircraft Carrier Battle Group and the World War II war-at-sea mentality. What is needed is a revolutionary new design concept in shipbuilding so that the amphibious fleet of the future will be operationally effective against a wide spectrum of new missions including offensive operations and self

protection.

The Navy needs to give its amphibious fleet a boost up the priority list. We currently build amphibious ships that are practically defenseless and then spend billions of dollars building other ships to protect them and the aircraft carriers. It is time to build amphibious ships that have the ability to fight and put marines ashore.

Following his retirement in 1987, Vice Admiral Joseph Metcalf III wrote an article for Proceedings entitled "Revolution At Sea." In this article, he discussed the effect that new technology is having on the design of surface ships. The proposed product of this Revolution At Sea was depicted in an artist's rendition of a future "Strike Cruiser," designed to maximize ordinance on target. The platform features smooth topside surfaces with all available internal volume dedicated to weapons in vertical launch cells.

In order to determine the future operational requirements which dictate the design and construction of Navy ships, two Revolution At Sea studies were conducted: the Surface Combatant Force Requirements Study and Ships Operational Characteristics Study (SOCS). A three-star led work/study group, called Group Mike, was organized by the Chief of Naval Operations (CNO) with a charter to improve the reliability, maintainability, and survivability of surface combatants of the 21st century. (6:37)

The SOCS "Operational Report" spelled out 12 imperative characteristics for future ships, within four priorities:

Priority A: Cooperative engagement in all mission areas; integrated machinery systems; survivability and the ability to

"fight hurt."

Priority B: Embedded readiness assessment, mission planning, and training; condition-based maintenance; torpedo self-defense.

Priority C: co-location of ship control and combat information center; access control and security; alternative (peacetime/ wartime) use of volume.

Priority D: Smooth topsides; new information management; organic aviation and other off-board vehicles. (10:72)

Early efforts at designing the Revolution At Sea ships actually started in January 1988, as engineers at the Navy's David Taylor Naval Ship Research and Development Center in Annapolis and Caderock, Maryland, and the Naval Surface Warfare Center at White Oak, Maryland, started identifying technologies that showed promise for achieving the goal of total weapon systems for the new family of warships. Design work is expected to continue until the mid-1990s, when the Navy will request funds to acquire the ships. (10:70)

According to Admiral Metcalf, if the Revolution At Sea is successful, the warfighting design policy for the U.S. Navy will be to maximize a warship's ability to deliver ordinance on target. Ideally, in such a ship, the internal volume should be all weapons. In a future strike cruiser, for example, this might mean cruise missiles in Vertical Launch System (VLS) cells from stem to stern--a modern-day HMS Dreadnought. (The Dreadnought was the first "big" gun battleship in which the battle space was measured not in yards but in miles. (6:38)

Why, though, does no one ever discuss giving such capabilities to amphibious ships? Perhaps because the threat since the end of

World War II, has been the Soviet Navy, a threat that is now changing.

These studies and Group Mike have started the ball rolling in the direction of Revolution At Sea, but the events which have occurred in the three years since its conception show cause for a reevaluation of Group Mike's recommendations.

Admiral Metcalf, had no way of predicting the extent of change that would take place during the three years following his retirement.

The Navy will replace the Soviet threat with an emerging Third World threat as its primary force rationale. This is a natural alternative for two reasons. First, there is no other in sight; second, it encourages the Navy and the political establishment to think in terms of familiar naval operations. In other words, lets the Navy continue building the fleet it's used to; the fleet it likes.

We must be wary of this thought process. The Third World threat, as Iraq has shown, may not turn out to be the kind of foreign engagement that simply showcases the primacy of naval power. In fact, the challenge in the Third World may demand very different platform concepts than those developed for the post World War II paradigm: nuclear powered submarines and carrier battle groups for assaulting the Soviet Union. (11:64)

Working on the amphibious Navy-Marine Corps team gives us a real insight into, and understanding of, multi-service operations. It is easy for blue suiters to believe that the open-ocean, blue-water environment is the only game in town. If we fall into this trap, we can lose sight of the fact that the blue-water side is but one part

of our national military strategy. It is still true that control of land areas can only be achieved by putting forces ashore. (4:66)

Amphibious Forces as Peace Guardians.

Perhaps the real strength of amphibious forces lies in their flexibility, their ability to provide:

- a forward-deployed presence to add stability and reassure an ally
- a cover force for the evacuation of U.S. or allied citizens
- an assault capability to restore or support a friendly government requesting assistance
- a means of protecting important sea lines of communications (SLOCs) by seizing and controlling land areas at key choke points
- a composite force flexible enough to carry out other tasks, including forcible entry and special operations. (3:63)

During peacetime, the objectives of the U.S. Navy and Marine Corps are to achieve deterrence, meet alliance and treaty commitments, support national diplomatic objectives, and to be ready for rapid crisis response. These global commitments and alliance responsibilities require a substantial degree of forward naval presence to protect our interests. Roughly one third of the fleet with over 110,000 sailors and 30,000 marines is either at sea or forward deployed on an average day. The degree to which our forces can influence events throughout the world is directly proportional to their readiness and combat capabilities. Recent naval operations in Libya, Lebanon, Liberia, Somalia and the Persian Gulf have demonstrated this.

Pressure to reduce defense spending has been a fixture in our

budget debates for some time; however, in the past it has been counterbalanced by the Soviet threat. A decreasing Soviet Threat has added impetus to the budget pressures to reduce the size of our military forces. Smaller naval forces will of necessity affect our deployment posture; however, it need not affect our overall combat capabilities. If we must build and maintain fewer ships, then they need to be more capable ships. (8:96)

One assumption that helps to determine the adequacy of amphibious forces is that Amphibious Readiness Groups (ARGs) will operate under the protective umbrella of a Carrier Battle Group (CVBG). This is a congenial assumption because of the offensive and defensive needs of an ARG. But does the assumption support the way we deploy, train and will most likely fight? In late 1988 the Pacific Fleet's deployed ARG Alpha graphically illustrated this when it was dispatched to Burma for the potential evacuation of American and allied nationals as violence engulfed the capitol city of Rangoon. Fleet staff planners were chagrined to learn that the closest CVBG could not get to Rangoon until days after the ARG's arrival, a time when the operation, had it been carried out, would have been completed. (1:72)

Similar operations carried out in Monrovia, Liberia and Mogadishu, Somalia were conducted without the presence of a CVBG. These countries did not present a major threat to our amphibious ships off the coast, but many countries such as these do have the capabilities to threaten ships at sea. Do we really need to always plan on having a CVBG to protect the MARG? Not if our amphibious ships are capable of independent offensive and defensive operations at sea.

Perhaps the most serious deficiency amphibious forces face involve the weapons available to defend the ARG as it proceeds to the AOA. To conduct over-the-horizon assaults against well-defended beaches, ARGs need:

- OTH air assault vehicles
- OTH armored assault craft
- Early warning and battle management aircraft
- Electronic warfare aircraft with data link
- Stand-off anti-surface and anti-air weapons
- Rudimentary ASW weapons.

The ARG needs at least some AAW, ASUW, EW and ASW capabilities. This cannot be done by adding more weapons to already overstuffed amphibious ships. (1:76)

A new ship class is required. The Amphibious Missile Cruiser, CAG ( )-class, and the Amphibious Assault Carrier, CAV ( )-class. These ships would be designed to incorporate modern weapons systems with state of the art propulsion systems using existing hull plans. The result would be amphibious ships with enhanced warfighting capabilities that could operate without escort protection.

Why shouldn't amphibious ships have multiple warfare task capabilities. Figure 1 illustrates that all fundamental warfare tasks affect the land battle except antisubmarine warfare. It makes good sense to provide the amphibious fleet with multiple warfare capabilities. (4:52)

Warfare Tasks and Functions

Fundamental Warfare Tasks	Basic Functions: Power Projection	Sea Control	Sealift	Land Warfare
Antiair Warfare	2-3	3	1	2-3
Antisubmarine Warfare	1	3	3	
Antisurface Ship Warfare	2-3	3	3	2-3
Strike Warfare	3			3
Amphibious Warfare	3	1-2		3
Mine Warfare			1	1

Key: 3-Most Important
2-Important
1-Least Important
-No Relationship

Figure 1

Amphibious Ships as Total Weapons Systems.

In September 1988, Admiral Carlisle A. H. Trost the Chief of Naval Operations made an unexpected landmark pronouncement at an R&D symposium attended by the government and industry leaders of the ship procurement community when he declared that integrated electric drive, with its associated cluster, of technologies, will be the method of propulsion for the next class of surface battle force combatant. (2:136)

Historically, our amphibious ships have been slower and equipped with outdated propulsion systems. There is no reason that the first integrated electric drive ships should not be amphibious, total weapons systems from the keel up in armament, electronics and propulsion.

William S. Lind, writing about the late 1980s and likely future dimensions of U.S. national security strategy called the Navy's strategy, "an historical artifact, reflecting the world of 40-plus years ago." He characterized the Navy as, "built around a small number of aircraft carrier battle groups, which means that it is admirably suited to defeating the navy of Imperial Japan." (9:85) There is considerable truth to this statement.

The crew of a surface ship today must beware of attacks from more sources and by more means than ever before. The rapid development and global proliferation of sophisticated threats to the Navy's surface ships present formidable problems for future programs and operations. If the Navy is serious about building highly capable and survivable ships for fleet introduction in the first decades of the 21st century--surface combatants that are truly integrated weapons systems--yesterday was not too early to begin. (10:73)

Amphibious Ships for Joint Operations and Rapid Response.

There are additional advantages to expanding cruise missile capabilities to amphibious ships. The additional land attack capabilities will not only serve as a deterrent but will support joint operations on distant fronts. The Army for example, continues to grope for a solution to the "deep fires" problem. One major

challenge is providing fires of sufficient range, volume, and accuracy to disrupt the arrival of Soviet Second-echelon front forces into the European Central Front theater of operations in sufficient strength and in time to influence the outcome of the war. This issue takes on a new perspective when we consider the use of the conventional Tomahawk land-attack missile (TLAM-C), with its 600+ nautical-mile range, 1000-pound warhead, and devastating accuracy. (4:53)

The ground commander has to select his deep target for TLAM-C strikes carefully. Given that a battleship carries only 32 missiles and a Spruance (DD-963)-class destroyer only 37, and since there are thousands of legitimate deep-fires targets, the target selector on the land commander's staff must select the deep strike targets to be assigned to naval systems with great care. (4:54)

If we arm our amphibious ships with TLAMs we will both increase our cruise missile capabilities and decrease dependence on the presence of CVBGs and escorts. Additionally, response time would be reduced and amphibious forced entry capability enhanced.

When a crisis confronts the nation, the first question often asked by policymakers is: "What Naval forces are available and how fast can they be on station?" This requires that we maintain our forces in a high state of readiness, positioned as close to the scene of action as possible. Readiness is a key factor in the equation. Sending units that are poorly trained, undermanned, or inadequately equipped and maintained is an invitation to disaster. Our forces must not only be there, they must also be capable of conducting successful combat operations. (8:98)

Amphibious Ship Design and Acquisition Strategy.

The Navy is a highly integrated system of massive proportions, so shortcomings of a global nature can only be addressed on a broad system level. Today's Navy has significant shortcomings that can be eliminated only by restructuring the battle force. The source of global shortcomings can be traced to both the product and the process by which it is created, developed, used, and maintained. As we envision new products, we should formulate plans to create an efficient process for the production operation and maintenance of them. Global shortcomings will never be adequately addressed with solutions generated from the bottom up and directed at specific component problems. (2:133)

We need to revise the entire ship procurement process from design to commissioning by abandoning the fragmented approach currently in use and adopting a centralized long-range ship-building plan. We should form an organization which incorporates all parties from the builder to the user, with a charter to produce the revolutionary new ship designs that can meet our future global commitments. Combining warfighters and engineers on one team will produce a better ship design.

Both the warfighter and naval engineer recognize that warship design is a compromise between warfighting capability and the other things necessary to make a ship a warship. However, they both understand that the design of a warship starts with weapons and everything else competes with that premise. (6:39)

The Surface Warfare Plan 1989 identifies a new class of amphibious ship designated the (LVX), to replace the Tarawa (LHA-1)-class, beginning in the 2010-15 period. The LVX will evolve from the Wasp (LHD-1)-class. The LVX also will have a VLS

capability for better AAW Self-defense and ASW weapons.

Other elements of the planned future amphibious fleet, according to surface warfare analysts, include an LX as a functional replacement for the 38 ships of the Austin (LPD-4), Raleigh (LPD-1), Anchorage (LSD-36), and Newport (LST-1179)-classes, which reach the ends of their service lives beginning in the 1990s. Beyond the LX and LVX concepts are the carrier of large objects carrier dock amphibious ships (CLO) conceived by David Taylor. In general, these will have a STOVL aircraft deck forward, a hangar superstructure above a well deck aft, integrated electric drive, and anti-air warfare capabilities. (9:90)

But the CLO still does not have real capabilities to protect itself or to conduct offensive operations. The design allows incorporation of the Vertical Launch System but does not include Tomahawk missiles and long range sensors.

Technology and the best human engineering will enable future ships and their crews to respond effectively in large battles matching vast fleets in open-ocean combat, to carry out limited tasks, to demonstrate a determined presence, or to conduct surgical attacks within the confines of restricted rules of engagements. (5:32)

More and more of the cost of our ships and aircraft is absorbed in an endless stream of studies, reports, and briefings produced by support contractors who promote as a virtue the fact that they produce no product. These studies, designed to reduce risk, are in fact simply another opinion, usually not a very informed one, and biased by whoever is paying the bill. These nuisances might be barely tolerable if their cost were not so outrageous, but they

invariably extend and delay the development program and can add as much as one-third to the cost. It will take courage on the part of Navy leaders to reverse this trend and find more technology prototyping, but the long-term gains will likely be the basis for Admiral Metcalf's revolution.

Industry participation in the early conceptual stages of the Revolution At Sea can bring diversity, innovation, and valuable feedback to the ship acquisition process before designs are frozen. The shipbuilding industry's ideas, together with its estimates of cost and experience in production, derived in an environment of competition, are too important to be left as an afterthought of the revolution. (7:76)

We have an opportunity to set a new course into the 21st century. A course which will ensure the U.S. Navy maintains its capability to influence world events and protect national interests while demonstrating foresight and frugality.

We can revolutionize our seagoing arm of the defense force if we start now. Failure to act decisively will result in a continued free fall down the rapids of the acquisition river in a raft loaded with policies that are unable to avoid obstacles until they are upon us.

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