Northrop Grumman

Charting New Seas

Navy-Coast Guard Cooperation

By CHARLES S. HAMILTON II *and* PATRICK M. STILLMAN

The Navy and Coast Guard have a tradition of collaboration that goes back more than two centuries to their origins as sea services. Faced with an unprecedented threat after 9/11, they have made major strides in force recapitalization and transformation. This relationship was forged in the *National Fleet Policy Statement* in 1998. The Chief of Naval Operations, Admiral Vernon Clark, and the Commandant of the Coast Guard, Admiral Thomas Collins, have updated this policy to synchronize multimission platforms, infrastructure, and personnel to gain the highest level of naval and maritime capability.

The Coast Guard postponed decommissioning 13 coastal patrol ships and offered them with crews for homeland security missions in ports, harbors, and coastal areas. The two services also met to align homeland security, defense roles, and other responsibilities. This collaboration has improved global intelligence by the establishment of an all-force maritime tracking operation. For example, working with the Coast Guard, the Navy is developing a global intelligence picture to track ship movements at sea, which Clark believes shows profound results.

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Beyond operational cooperation, both services are seeking greater overall collaboration in the future. They signed a memorandum of understanding in 2002 and established a working group to identify common elements in developing the national security cutter, offshore patrol cutter, and other platforms for the integrated deepwater system (IDS) and the littoral combat ship (LCS).

The Navy contribution to this effort is envisioned as a small, fast, agile, and networked warship optimized for a variety of littoral missions. It is key to next-generation surface combatants that include the multimission destroyer and guided-missile cruiser. The focused-mission littoral combat ship will use a reconfigurable platform or sea frame to deploy modules and warfighting capabilities to meet littoral operational requirements.

The 20-year deepwater program is a $17 billion (in FY98 dollars) integrated effort by the Coast Guard to upgrade surface and air assets while developing more capable platforms, including improved systems for command, control, communications, computers, intelligence, surveillance, and reconnaissance (C^4ISR) and advanced logistic capabilities. When fully implemented, the total integrated deepwater system will consist of three classes of cutters and associated small boats, upgraded fixed-wing aircraft, new and upgraded helicopters, and cutter- and land-based unmanned aerial vehicles (UAVs).

the Navy and Coast Guard have no alternative but to transform in a way that ensures operational excellence

Separate but related ship acquisitions are charting new seas to recapitalize maritime forces and transform their operational capabilities in response to 21st century requirements. The defense acquisition process is also being transformed. This cooperative venture is critical to realizing a totally interoperable fleet.

The New Way of War

Military transformation is proceeding apace. The Navy and Coast Guard—indeed all the services—have no alternative but to transform as they recapitalize by adopting bold new concepts and accelerating the rate of affordable change in a way that ensures continued high levels of operational excellence. One definition of transformation holds that it is the productive integration of technological change. The Chairman argues that transformation involves more than technology; it is a process and mindset entailing intellectual, cultural, and technological dimensions.

In endeavoring to transform the maritime forces, it is useful to consider recent operations. The steady transformation since the Persian Gulf War was apparent during Enduring Freedom and Iraqi Freedom. Both manifested improvements in joint warfighting doctrine, including large-scale special operations, tactical agility, and interservice cooperation; more accurate, lethal, and abundant all-weather precision-guided munitions to enable effects-based targeting; and the development of a netted force with the C^4ISR systems to enable responsive decisionmaking and effective force employment. Transformational developments generate a significant force multiplier for naval and other forces even when legacy platforms are employed—compounding fighting power, flexibility, and speed of response in the battlespace. The Chairman maintains that this trend is redefining the American way of war—a shift from the strategy of annihilation that guided operations during the Civil War and World War II to a new model described as "waging precise and focused war."

Coalition forces in Iraq demonstrated their flexibility by adapting a war plan quickly when confronted with rapidly changing circumstances. This flexibility characterized nearly every aspect of operations—from the insertion of Special Operations Forces inside Iraq to the seaborne deployment and support of ground forces, use of large numbers of precision-guided munitions and long-range cruise missiles delivered by aircraft and launched from surface ships and submarines, and deployment of soldiers and marines fighting dangerous three-block wars during a 350-mile dash from the Kuwaiti coast to Baghdad. Fortunately, network-centric C^4ISR systems linked Coalition forces and provided land, sea, and air commanders with the situational awareness to move quickly inside the decision loop of isolated and fragmented Iraqi commanders, making it impossible for them to keep up with the tempo.

The Coast Guard participated in the operation, deploying two high-endurance cutters, eight patrol boats, a buoy tender, four port-security units, strike-team personnel, and two maintenance support units to the Arabian Gulf and Mediterranean. The presence of white, black, and gray hulls is another reminder of joint warfare today. Speaking to the Navy League, Clark praised the Coast Guard for its role in global port security since 9/11.

Military contingencies over the past decade have demonstrated that the littorals—especially in the Mediterranean, northern Arabian Sea, and western Pacific—loom large in the convergence of national economic and security interests. The likelihood of regional conflict, heightened sensitivity over sovereign rights of other nations, and transnational threats to security suggest that seabasing capabilities will become increasingly vital.

U.S. Coast Guard (Zach Zubricki)

USCGC James Renkin **patrolling Baltimore Harbor.**

This outlook underscores the importance of transforming naval forces to ensure continued and uninterrupted access to the littorals. A national fleet with new cutters, littoral combat ships, and other deepwater assets designed for seamless interoperability will be a force multiplier across a range of missions, including force protection, power projection, and maritime intercept. Littoral combat ships are relevant to future Navy requirements while the Coast Guard seeks to leverage them as part of deepwater recapitalization.

The Transformation Imperative

According to the director of the Office of Force Transformation, Vice Admiral Arthur Cebrowski, USN (Ret.), the United States must not only sustain the current pace of transformation to retain its advantage in future combat operations, but also outpace current and potential enemies: "We must recognize power is moving to a system level while violence migrates downward to the level of individuals." He has emphasized the steps which the Armed Forces must take as:

- creating the future by coevolving technology, organizations, and processes
- reevaluating warfighting attributes based on their ability to access and contribute to larger information networks, shared situational awareness, and speed of command
- networking, including partnerships
- deterring forward—developing high rates of change that an enemy cannot outpace and that require forces oriented around speed of deployment, organization, employment, and sustainment.

"The entry fee for a deter-forward force," as Cebrowski wrote, "is a network-centric structure, organizations, and understanding of the theory of war for the information age."

As Iraqi Freedom was demonstrating combat advantages of the Armed Forces to the world, the Secretary of Defense issued *Transformational Planning Guidance*. In offering a clear vision, he noted that the military must "think differently and develop the kinds of forces and capabilities that can adapt quickly to new challenges and to unexpected circumstances. . . . We must promote an entrepreneurial approach . . . one that encourages people to be proactive, not reactive, and anticipates threats before they emerge."

The littoral combat ship and deepwater system-of-systems force structure will provide the capabilities to ensure that the national fleet is a deter-forward force. Each program is advancing in a way that conforms with defense policy and planning guidance for transformation.

The objectives of the transformational roadmap underpin Navy-Coast Guard collaboration to achieve fully interoperable, compatible, and complementary forces that share the responsibility to meet national maritime security and defense needs in a highly cost-effective way.

A Common Effort

According to the President, transformation will yield a force "defined less by size and more by mobility and swiftness, one that is easier to deploy and sustain, [and also] one that relies more heavily on stealth, precision weaponry, and information technologies." This process is viewed in

Transformation Planning Guidance

- *Transforming how we fight*—developing joint warfighting concepts that include the full range of supporting military capability areas
- *Transforming how we do business*—planning and business practices such as adaptive planning, a more entrepreneurial, future-oriented capabilities-based resource-allocation planning process, accelerated acquisition cycles built on spiral development, output-based management, and a reformed analytic support agenda
- *Transforming how we work with others*—integrating military power with other instruments of national power; working with other departments to share information on transformation programs to help guarantee compatibility and encourage other agencies to follow suit as appropriate—including arrangements for international military cooperation to ensure that rapidly transforming U.S. capabilities can be applied effectively with allied and coalition capabilities. JFQ

[The full text of this planning guidance is found at http://www.oft.osd.mil/.]

Littoral combat ship.

General Dynamics

the transformational planning guidance as shaping "the changing nature of military competition and cooperation through new combinations of concepts, capabilities, people, and organizations . . . to sustain our strategic position." This planning guidance offers a concise approach for transforming by identifying critical elements, assigning roles and responsibilities, describing new organizational structures, and depicting desired outcomes. This effort includes three areas that are directly correlated with Navy and Coast Guard recapitalization programs.

the littoral combat ship will be small, fast, and optimized for shallow water with a maximum draft of 20 feet

The national fleet policy provides specific goals for linking the integrated deepwater system to the littoral combat ship program. Implementation of this guidance will transform collaboration between the two services by stipulating:

- commitment to shared purpose and common effort focused on tailored operational integration of service multimission platforms, infrastructure, and personnel
- full cooperation and integration of nonredundant and complementary capabilities to ensure the highest level of maritime readiness for the Nation
- processes to synchronize research and development, planning, fiscal accountability, procurement, doctrine, training, and execution of operations for the national fleet
- ensuring ships, boats, aircraft, and command and control ashore nodes of the national fleet will be interoperable to provide force depth for peacetime missions, homeland security, crisis response, and wartime tasks.

The Coast Guard contribution to the national fleet includes its statutory authorities (including law enforcement), multimission cutters, boats, aircraft, and C^{4}ISR systems designed for the full range of Coast Guard missions.

In general, LCS design will be optimized to assure access and the ability to exploit littoral waters as maneuver space for naval, joint, and combined expeditionary forces. Each ship will also be configured to focus on countering one of three proliferating, asymmetric threats—mines, diesel submarines, and small, fast surface craft—and will be capable of performing other assignments such as intelligence, surveillance, reconnaissance (ISR), homeland defense, special operations, or logistic support. The primary mission capabilities will be addressed with a mix of manned and unmanned systems (vehicles or sensors) deployed on, above, or under the sea. The littoral combat ship will be unlike previous surface combatants; it will be small, displacing 1,000–4,000 tons; fast, with speeds up to 50 knots; and optimized for shallow water with a maximum draft of 20 feet.

Spiral development and evolutionary upgrades will be achieved by exchanging modular mission payloads or packages that are plugged into an open-systems architecture designed for accessibility and interoperability with other ship and system components. Readily transportable packages will provide sensors and combat systems in each littoral combat ship based on a designated mission as determined by the assigned naval or joint force commander.

Modular, open architecture is a sea change in designing surface combatants, operationally employed, and technologically upgraded. Platforms will act as seaframes (the naval equivalent of airframes) to deliver specific payloads and tailored capabilities for users. Mission packages will be devised independently of the seaframe and accompanied by operations and maintenance personnel trained to accomplish the assigned warfighting mission task and ensure continued performance of mission modules.

The reconfigurable LCS design will allow modules to be removed and replaced without putting ships into dry dock, cutting holes, modifying codes, or running cables and piping through the hull and superstructure. Each mission payload will be engineered for incremental upgrades of pre-installed systems and complete change-out in theater. This modular mission approach to sea combat capability also mitigates risk in adapting to emerging technologies by providing a path for future technology insertion. Developed, tested, and evaluated in a process separate and distinct from the actual LCS hull, the

U.S. Coast Guard (Tom Sperduto)

Coast Guard port security boat, Iraq.

availability and affordability of the ship will not be determined by the success or failure of a single developmental item or capability.

To enhance survivability and operational agility, littoral combat ships will incorporate low-observable technologies and use evasive speed to maneuver quickly in and exploit littoral areas of interest without being detected. By leveraging advances from the next-generation multimission destroyer program, the ships will be designed with integral acoustic quieting, noise monitoring, and controlled magnetic, anti-mine signatures.

Operational Flexibility

Another transformational aspect of the littoral combat ship is its operational flexibility when a new mission capability is required in theater. Conceptually, a new modular mission package and its personnel detachment could be airlifted, transported, or prepositioned for delivery to a deployed ship and exchanged for old personnel and equipment within days.

With the capabilities of unmanned vehicles to both provide real-time intelligence and deliver ordnance on target, littoral combat ships will have flight decks and support facilities for both these vehicles and helicopters. Off-board vehicles will contribute to network-centric and combat support operations, including rapid launch and recovery of small boats or special operations craft. Like the host ships, manned and unmanned vehicles alike will feature integral modular-mission capabilities through interchangeable vehicle payloads.

Littoral combat ships will be manned with most personnel assigned to module detachments and crew size determined by the modular mission. The optimal manning concept will permit ships to remain on station for extended periods with crew rotations in theater. These ships will possess the speed and endurance to transit and operate with either carrier strike or expeditionary strike groups. For sustained operations, they will have both conventional underway and vertical replenishment capability and exploit automated and modular technologies for all at-sea and in-port material handling.

The fully netted disposition of multimission ships is important in the operational construct for littoral combat ships. Additional combat support may be required from platforms with different modular mission packages, ground or sea-based tactical air, or multimission cruisers or destroyers in adjacent waters. Operating independently in LCS squadrons or with other platforms will extend capabilities to counter challenging anti-access littoral threats while enabling larger naval, joint, or coalition task forces to fight and win across the full range of conflict scenarios.

System of Systems

For the Coast Guard, the integrated deepwater system will lead to important changes in operational capabilities and the acquisition process. The award of the contract to Integrated Coast Guard Systems (ICGS) in June 2002, a joint venture between Northrop Grumman and Lockheed Martin, marked a major milestone.

Unlike similar programs of the past, deepwater represents a system-of-systems approach to recapitalization by the Coast Guard that breaks new ground by implementing a performance-based acquisition model of extraordinary scope and complexity. ICGS serves as a full-industry partner for the service. In the years ahead, legacy helicopters, aircraft, and patrol craft will be upgraded as more capable deepwater cutters, aircraft, and UAVs are introduced.

As the lead agency for maritime homeland security, the Coast Guard plays a critical role in providing a layered defense to project U.S. borders out to sea from ports, waterways, and coastal areas. Improving operational capabilities for this security mission is an important element of Coast Guard strategy, and the deepwater program stands at center stage.

The program will provide operational capabilities, capacity, platforms, and systems that can prevent attacks. Emerging requirements, especially those associated with maritime homeland security, are being evaluated for inclusion in the program. In addition, its more capable platforms will also benefit traditional Coast Guard missions, including maritime safety, protection of natural resources, maritime mobility, and national defense.

Eagle Eye unmanned aerial vehicle.

An interoperable deepwater C4ISR system will be a critical enabler for the Coast Guard in developing maritime domain awareness—comprehensive information, intelligence, and knowledge of relevant entities in the maritime domain that can affect the security, economy, and environment of the Nation. This awareness will contribute to improved risk management, more productive use of operational assets, and a common operational picture. More capable platforms and C4ISR will expand surveillance and detection efforts with assets that could also assist other agencies as new joint competencies are forged.

The integrated logistics system will form a solid basis for transformation, driving platform design that will result in higher operational readiness, improved safety, and lower operating costs. This process demands an acquisition strategy of comparable vision and innovation. The deepwater mission calls for interoperable platforms and supporting systems to meet performance-based requirements by maximizing operational effectiveness while minimizing total ownership costs. Its needs statement outlines a systems solution to recapitalization: "The goal of this effort is not to replace ships, aircraft, and sensors with more ships, aircraft, and sensors, but to provide the Coast Guard with the functional capabilities required to achieve mission success safely."

The emphasis is placed on the industrial sector to assess the deepwater system and integrate planning for asset comparability and interoperability while providing operational effectiveness and affordability. Cost is regarded as an independent variable in the acquisition program, which is essential for the Coast Guard to remain within the planned annual expenditure of $500 million (in FY98 dollars) over the life of the program.

ICGS partners in industry were provided the performance specifications needed to achieve system-wide capabilities. This allows industry to both leverage state-of-the-market technology and bring innovation and industrial capacity to bear most effectively. Commercial items will be basic building blocks for deepwater assets and components.

The performance measurement plan, developed with Integrated Coast Guard Systems, will measure and track performance against the basic requirement to maximize operational effectiveness while minimizing total ownership costs. A comprehensive mitigation strategy is in place to address risks associated with the program's cost, schedule, and performance.

Enduring partnerships and joint competencies are another important factor in structuring the deepwater program. This interaction is underscored on all levels—from integrated product teams to relations between the Departments of Defense and Homeland Security as well as other players, including allies and friends around the

U.S. Navy

Signing updated National Fleet Policy Statement.

world. The Navy-Coast Guard partnership associated with the transformational development and acquisition of the selected deepwater assets and the littoral combat ship will be a work in progress for many years.

Transformation Intersections

As the Navy transforms forces, technologies, and operating concepts within the framework of *Sea Power 21,* the Coast Guard integrated deepwater system recapitalization strategy offers a number of transformation intersections where the operational requirements of each service overlap.

the partnership associated with deepwater assets and the littoral combat ship will be a work in progress for many years

With regard to the national fleet, the foundation of *Sea Power 21* rests with the network-centric capability that FORCEnet and systems such as cooperative engagement capability offer commanders—an evolutionary but dramatic transition to a force that can share digital tactical information and sensor data seamlessly among ground, surface, submerged, air, and space platforms that are broadly dispersed across an operational theater.

FORCEnet, an operational construct and architectural framework for naval warfare, will integrate sensors, weapons, networks, and platforms to give commanders more accurate battlespace awareness and information dominance. It will provide the means and context for projecting a real-time, common operational picture to all battle force assets aimed at achieving advantages in tactical engagement speed, accuracy, and range.

A similar vision guides the development of the deepwater plans to upgrade and modernize surface and air platforms and support the C^{4}ISR system for the multiple Coast Guard missions. The latter will be a critical enabler for attaining maritime domain awareness—an essential ingredient of maritime homeland security.

The deepwater C^{4}ISR system will convey data among integrated deepwater system assets and other Federal, state, and local agencies. Just as FORCEnet will transform Navy operational capabilities by enabling decisionmaking and massed warfighting effects, deepwater transformation will result in platforms serving as nodes for shared information with command centers ashore, a potent force multiplier that will contribute directly to maritime domain awareness and a common operational picture.

This network-centric vision translates into a consideration of working together to conduct homeland security and defense missions. Terrorist threats make the coastal region of the maritime domain a geographic zone of immense importance. The transition from a homeland security incident to a homeland defense emergency in littoral waters could take place in minutes, not hours. That said, all responsible Federal agencies and military services must possess seamless interoperability and connectivity. Our services are on the road toward this end.

The agreement the Navy and Coast Guard signed in 2002 established a working group to specify common technologies, systems, and processes critical to the design and development of the deepwater national security cutter, offshore patrol cutter, and patrol boats as well as the littoral combat ship. This group holds regular exchanges on multiple levels to ensure that the services derive mutual benefits through a cooperative technical approach.

The characteristics of the littoral combat ship could lead to a capable deepwater offshore patrol cutter—a hull with double the speed now contemplated. Adding 25 Coast Guard bottoms based on this design would complement Navy shipbuilding. LCS modular mission packages, on deepwater hulls as dictated by operational requirements, would amplify the national fleet multiplier effect. Logistic commonality would allow both services to leverage maintenance and support programs to achieve mutual efficiencies.

One possible outcome is that littoral combat ships could become white-hulled with a Coast Guard stripe; another is that they could be painted gray with platforms configured for specialized systems and modular force packages.

U.S. Coast Guard (Alice Sennott)

USCGC Midgett* alongside *USS Constellation

Moreover, allies could define their own requirements, thus making littoral combat ships international assets. This synergy would support national fleet policy with common technologies, systems, and processes for a network-centric, interoperable force.

Interservice cooperation in replacing obsolete medium- and high-endurance cutters could be extended to future mission systems. In February 2003, Bell Helicopter was awarded a contract to begin concept and preliminary design on the vertical takeoff and landing unmanned aerial vehicle. Eagle Eye will be deployed on board new deepwater offshore patrol and national security cutters as well as *Famous* class medium-endurance legacy cutters. Their projected completion in 2006 will coincide with delivery of the first national security cutter. Up to four vehicles can be deployed on each cutter, or two may deploy jointly when a helicopter is embarked.

Eagle Eye will be able to accept modular mission payloads. With a planned endurance of 6.2 hours and dash airspeed of 220 knots, it will improve detection, surveillance, and monitoring capacity across the fleet. Extending shipboard capabilities will enhance the process of classifying and identifying targets of interest, enabling important contributions to maritime domain awareness. This air asset could be deployed aboard littoral combat ships or other vessels.

In the evolution of naval forces, there has rarely been an opportunity to design future fleets. Acquisition strategies usually consist of progressive system upgrades and class-by-class platform recapitalization. This approach has changed in recent years with the chance to transform in ways that were difficult to envision a generation ago. Advances in materials, technologies, and systems offer unparalleled openings to infuse innovative capabilities in networked and distributed forces. The Navy and Coast Guard are committed not only to a partnership in creating a national fleet, but in reforming the acquisition process. **JFQ**