

# CRS Report for Congress

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## Naval Transformation: Background and Issues for Congress

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### Summary

The Department of the Navy (DON) has several efforts underway to transform U.S. naval forces to prepare them for future military challenges. The Navy has organized these efforts under a conceptual framework called Sea Power 21. Key elements of naval transformation include a focus on operating in littoral waters, network-centric operations, use of unmanned vehicles, reducing personnel requirements, directly launching and supporting expeditionary operations ashore from sea bases, new kinds of naval formations, new ship-deployment approaches, and streamlined and reformed business practices. Naval transformation poses several potential issues for the 2<sup>nd</sup> session of the 109<sup>th</sup> Congress. This report will be updated as events warrant.

### Background

This report focuses on the transformation of U.S. naval forces — the Navy and the Marine Corps, which are both contained in the Department of the Navy (DON). For an overview of defense transformation in general, as well as references to CRS products on other specific aspects of defense transformation, see CRS Report RL32238, *Defense Transformation: Background and Oversight Issues for Congress*, by Ronald O'Rourke.

**What Is Defense Transformation?** Defense transformation can be defined as large-scale, discontinuous, and possibly disruptive changes in military weapons, organization, and concepts of operations (i.e., approaches to warfighting) that are prompted by significant changes in technology or the emergence of new and different international security challenges. In contrast to incremental or evolutionary military change brought about by normal modernization efforts, defense transformation is more likely to feature discontinuous or disruptive forms of change. Some military analysts believe that defense transformation is made possible by new technologies, such as advanced information technologies (IT) for networked operations, distributed sensors, unmanned vehicles, and precision-guided munitions. They also believe that defense transformation is necessary if U.S. military forces are to be adequately prepared for 21<sup>st</sup>-Century military challenges, particularly so-called asymmetric challenges, in which adversaries avoid competing head-on against current U.S. military strengths.

One key asymmetric challenge, analysts believe, is the need to counter so-called anti-access or area-denial capabilities — capabilities intended to prevent U.S. forces from gaining access to the ports, airfields, bases, staging areas, and littoral (near-shore) sea areas that the United States now depends on to mount military operations in distant military theaters. Systems for countering U.S. naval forces in littoral areas could include submarines, mines, anti-ship cruise missiles, and air-defense systems. Another key asymmetric challenge, analysts believe, is the need to counter terrorism and weapons of mass destruction.

**Navy Sea Power 21 Framework.** DON has organized its transformation efforts under its overall vision for the future, called Sea Power 21, which is built around three main components:

- **Sea Strike**, which refers to the ability of naval forces to project precise and persistent offensive power from the sea;
- **Sea Shield**, which refers to the ability of naval forces to not only defend themselves at sea, but to contribute to homeland defense, project an overland defensive shield to help protect overseas U.S. allies and friends, and provide a sea-based theater and strategic defense against ballistic missiles; and
- **Sea Basing**, which refers to the ability of naval forces to operate at sea, as sovereign entities, free from concerns of access and political constraints associated with using land bases in other countries.

These three components are to be supported and bound together by **ForceNet**, the Navy's overarching concept for combining the various computer networks that U.S. naval forces are now fielding into a master computer network for tying together U.S. naval personnel, ships, aircraft, and installations. An additional part of Sea Power 21 is a **Global Concept of Operations** under which various types of naval formations are to be used for forward presence, crisis response, and warfighting operations.<sup>1</sup>

**DON Transformation Centers, Exercises, and Experiments.** Many DON transformation activities efforts take place at the Navy Warfare Development Command (NWDC), which is located at the Naval War College at Newport, RI, and the Marine Corps Warfighting Laboratory (MCWL), which is located at the Marine Corps Base at Quantico, VA. These two organizations generate ideas for naval transformation and act as clearinghouses and evaluators of transformation ideas generated in other parts of DON. NWDC and MCWL oversee major exercises, known as Fleet Battle Experiments (FBEs) and Advanced Warfighting Experiments (AWEs), that are intended to explore new naval concepts of operation. The Navy and Marine Corps also participate with the Army and Air Force in joint exercises aimed at testing transformation ideas.

**Key Features of Naval Transformation.** Table 1 below summarizes several key features of U.S. naval transformation.

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<sup>1</sup> For a description of the Sea Power 21 framework, see Vern Clark, "Sea Power 21, Projecting Decisive Joint Capabilities," *U.S. Naval Institute Proceedings*, Oct. 2002, pp. 32-41.

**Table 1. Key Features of U.S. Naval Transformation**

| Previous U.S. naval forces                                                     | Transformed U.S. naval forces                                                                                                               |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Plan for stand-alone, mid-ocean operations against Soviet naval forces         | Plan for joint operations in littoral waters against regional adversaries                                                                   |
| Platform-centric operations                                                    | Network-centric operations                                                                                                                  |
| Manned platforms only                                                          | Significant use of unmanned vehicles                                                                                                        |
| Intermediate land bases established to support expeditionary operations ashore | Sea basing concept for staging forces at sea and conducting expeditionary operations ashore with little or no reliance on nearby land bases |
| Primary formations are carrier battle groups and amphibious ready groups       | Use of new naval formations, such as expeditionary strike groups                                                                            |
| Traditional ship-deployment approaches                                         | New approaches, such as the Fleet Response Plan (FRP) and Sea Swap                                                                          |
| Manpower-intensive ships and shore operations; people treated as a “free good” | Ships and shore operations with fewer people; cost of personnel fully recognized                                                            |
| Traditional business practices                                                 | Streamlined, reformed practices                                                                                                             |

**Focus on Littoral Operations.** In late 1992, with the publication of a Navy document entitled *...From the Sea*, the Navy formally shifted the focus of its planning away from the Cold War scenario of countering Soviet naval forces in mid-ocean waters and toward the post-Cold War scenario of operating in littoral (near-shore) waters to counter the land- and sea-based forces of potential regional aggressors.

This shift in planning focus has led to numerous changes for the Navy in concepts of operation, training, and equipment over the last 12 years. Among other things, it moved the focus of Navy planning from a geographic environment where it could expect to operate primarily by itself to one where it would need to be able to operate effectively in a joint manner, alongside other U.S. forces. It also led to an increased emphasis on amphibious warfare, mine warfare, and defense against diesel-electric submarines and small surface craft. The Littoral Combat Ship (LCS) program is a key current Navy effort intended to improve the Navy’s ability to operate in heavily defended littoral waters.<sup>2</sup>

**Network-Centric Operations.** The concept of network-centric operations, also called network-centric warfare (NCW), is a key feature of transformation for all U.S. military services. The concept, which emerged in the late 1990s, involves using computer networking technology to tie together personnel, ships, aircraft, and installations in a series of local and wide-area networks capable of rapidly transmitting critical information.

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<sup>2</sup> For more on the LCS program, see CRS Report RS21305, *Navy Littoral Combat Ship (LCS): Background and Issues for Congress*, by Ronald O’Rourke and CRS Report RL32109, *Navy DD(X), CG(X), and LCS Ship Acquisition Programs: Oversight Issues and Options for Congress*, by Ronald O’Rourke.

Many in DON believe that NCW will lead to changes in naval concepts of operation and significantly increase U.S. naval capabilities and operational efficiency. Key NCW efforts include the Navy's Cooperative Engagement Capability (CEC) network, the Naval Fires Network (NFN), the IT-21 investment strategy, and the above-mentioned ForceNet concept. A related program is the Navy/Marine Corps Intranet (NMCI).<sup>3</sup>

**Unmanned Vehicles.** Many analysts believe that unmanned vehicles (UVs) will be another central feature of U.S. military transformation. Perhaps uniquely among the military departments, DON in coming years will likely acquire UVs of every major kind — air, surface, underwater, and ground. Widespread use of UVs could lead to significant changes in the numbers and types of crewed ships and piloted aircraft that the Navy procures in the future, in naval concepts of operation, and in measurements of naval power. The LCS is to deploy various kinds of UVs as a principal means of defeating enemy anti-access/area-denial systems in heavily defended littoral waters. Unmanned air vehicles (UAVs) and unmanned combat air vehicles, or UCAVs (which are armed UAVs), if implemented widely, could change the shape naval aviation. Unmanned underwater vehicles (UUVs) and UAVs could significantly expand the capabilities of Navy submarines.<sup>4</sup>

**Sea Basing For Expeditionary Operations.** Separate from its use as the name of one of the three main components of the Sea Power 21 conceptual framework, DON is using the term sea basing in a second and somewhat more specific way, to refer to a new operational concept under which force would be staged at sea and expeditionary operations ashore would be conducted with little or no reliance on a nearby base ashore. Under the sea basing concept, functions previously conducted from the nearby land base, including command and control, fire support, and logistics support, would be relocated to the sea base, which is to be formed by a combination of amphibious and sealift-type ships.

The sea basing concept responds to a central concern of transformation advocates — that fixed overseas land bases in the future will become increasingly vulnerable to enemy anti-access/area-denial weapons such as cruise missiles and theater-range ballistic missiles. Although the sea basing concept originated with the Navy and Marine Corps, the concept can be applied to joint operations involving the Army and Air Force.

To implement the sea basing concept, the Navy wants to procure a 14-ship squadron, called the Maritime Prepositioning Force (Future), or MPF(F) squadron, that would include 3 new-construction large-deck amphibious ships, 9 new-construction sealift-type ships, and 2 existing sealift-type ships. Additional “connector” ships would be used to move equipment to the MPF(F) ships, and from the MPF(F) ships to the operational area ashore. Current areas of uncertainty include the design of some of the MPF(F) ships, and

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<sup>3</sup> For a discussion of NCW, CEC, NFN, IT-21, ForceNet, and NMCI, see CRS Report RS20557, *Navy Network-Centric Warfare Concept: Key Programs and Issues for Congress*, by Ronald O'Rourke.

<sup>4</sup> For more on naval unmanned vehicle programs, see CRS Report RS21294, *Unmanned Vehicles for U.S. Naval Forces: Background and Issues for Congress*, by Ronald O'Rourke.

the number and design of the connector ships. Some analysts have questioned the potential affordability and cost effectiveness of the sea basing concept.<sup>5</sup>

**New Kinds of Naval Formations.** The Navy in the past has relied on carrier battle groups (CVBGs) and amphibious ready groups (ARGs) as its standard ship formations. As mentioned earlier, as part of its new Global Concept of Operations, the Navy plans to begin using new kinds of naval formations — such as expeditionary strike groups, or ESGs (i.e., amphibious ships combined with surface combatants, attack submarines, and land-based P-3 maritime patrol aircraft), surface strike groups (SSGs), and modified Trident SSGN submarines carrying cruise missiles and special operations forces<sup>6</sup> — for forward presence, crisis response, and warfighting operations. A key Navy objective in moving to these new formation is to significantly increase the number of independently deployable, strike-capable naval formations. ESGs, for example, are considered to be formations of this kind, while ARGs generally were not.

**New Ship-Deployment Approaches.** The Navy is implementing or experimenting with new ship-deployment approaches that are intended to improve the Navy's ability to respond to emergencies and increase the amount of time that ships spend on station in forward deployment areas. Key efforts in this area include the Fleet Response Plan (FRP) for emergency surge deployments and the Sea Swap concept for long-duration forward deployments with crew rotation. The FRP, Navy officials say, permits the Navy to deploy up to 6 of its 12 CSGs within 30 days, and an additional 2 CSGs within another 60 days after that. Navy officials believe Sea Swap can reduce the stationkeeping multiplier — the number of ships of a given kind needed to maintain one ship of that kind on continuously station in an overseas operating area — by 20% or more. Widespread application of the Sea Swap concept could significantly reduce required numbers of Navy ships.<sup>7</sup>

**Reduced Personnel Requirements.** The Navy is implementing a variety of steps to substantially reduce the number of uniformed Navy personnel required to carry out functions both at sea and ashore. DON officials state that these actions are aimed at moving the Navy away from an outdated “conscript mentality,” under which Navy personnel were treated as a free good, and toward a more up-to-date approach under which the high and rising costs of personnel are fully recognized. Under the DOD's proposed FY2006 budget and FY2006-FY2011 Future Years Defense Plan (FYDP), active Navy end strength is to decline from 373,197 in FY2004 to 345,300 by FY2007. Reductions in personnel requirements ashore are to be accomplished through organizational streamlining and reforms, and the transfer of jobs from uniformed personnel to civilian DON employees. Reductions in personnel requirements at sea are

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<sup>5</sup> For more on the seabasing concept, see CRS Report RL32513, *Navy-Marine Corps Amphibious and Maritime Prepositioning Ship Programs: Background and Oversight Issues for Congress*, by Ronald O'Rourke.

<sup>6</sup> For more on the modified Trident submarines, see CRS Report RS21007, *Navy Trident Submarine Conversion (SSGN) Program: Background and Issues for Congress*, by Ronald O'Rourke.

<sup>7</sup> For more on new naval formations and new ship-deployment approaches, see CRS Report RS21338, *Navy Ship Deployments: New Approaches — Background and Issues for Congress*, by Ronald O'Rourke.

to be accomplished by retiring older, crew-intensive ships and by introducing new classes of ships designed to be operated by crews substantially smaller than those required by today's designs. New ship designs are to take particular advantage of new technologies for automated ship operation and damage control. Since personnel-related costs are a major contributor to total ship life-cycle cost, designing and procuring ships with so-called "lean" or optimal crewing could lead to significant savings over time. Acquiring ships with significantly smaller crews could lead to significant changes in Navy practices for recruiting, training, and otherwise managing its personnel. Current ship-acquisition programs related to this goal include the LCS, the DD(X) destroyer,<sup>8</sup> and the CVN-21 aircraft carrier.<sup>9</sup>

**Improved Business Practices.** DON is pursuing a variety of initiatives to improve its processes and business practices so as to generate savings that can be used to help finance Navy transformation. Under the Sea Power 21 framework, these efforts are referred to collectively as Sea Enterprise.

## Issues for Congress

In assessing current DON transformation efforts, potential questions for the 2<sup>nd</sup> session of the 109<sup>th</sup> Congress include the following:

- Are current DON transformation efforts inadequate, excessive, or about right?
- Is DON's roadmap for guiding the implementation of its transformation plans adequate?
- Is DON placing too much or too little emphasis on certain components of transformation? Is DON, for example, striking the proper balance between transformation initiatives for participating in the global war on terrorism (GWOT) and those for preparing for a potential challenge from improved Chinese maritime military forces?<sup>10</sup>
- Is DON achieving a proper balance between transformation and potentially competing program goals, such as maintaining near-term readiness and near-term equipment procurement?
- How might naval transformation affect Navy force-structure requirements?<sup>11</sup>
- Are DON transformation efforts adequately coordinated with those of the Army and Air Force?

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<sup>8</sup> For more on the DD(X) destroyer, see CRS Report RS21059, *Navy DD(X) Future Surface Combatant Program: Background and Issues for Congress*, by Ronald O'Rourke and CRS Report RL32109, op. cit.

<sup>9</sup> For more on the CVN-21, see CRS Report RS20643, *Navy CVN-21 Aircraft Carrier Program: Background and Issues for Congress*, by Ronald O'Rourke.

<sup>10</sup> For a discussion, see CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities — Background and Issues for Congress*, by Ronald O'Rourke.

<sup>11</sup> For more on Navy force-structure planning, see CRS Report RL32665, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, by Ronald O'Rourke.