
# China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress

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# Summary

The question of how the United States should respond to China's military modernization effort, including its naval modernization effort, has emerged as a key issue in U.S. defense planning. The question is of particular importance to the U.S. Navy, because many U.S. military programs for countering improved Chinese military forces would fall within the Navy's budget.

Two DOD strategy and budget documents released in January 2012 state that U.S. military strategy will place a renewed increased emphasis on the Asia-Pacific region, and that as a result, there will be a renewed emphasis on air and naval forces in DOD plans. Administration officials have stated that notwithstanding reductions in planned levels of U.S. defense spending, the U.S. military presence in the Asia-Pacific region will be maintained and strengthened.

Decisions that Congress and the executive branch make regarding U.S. Navy programs for countering improved Chinese maritime military capabilities could affect the likelihood or possible outcome of a potential U.S.-Chinese military conflict in the Pacific over Taiwan or some other issue. Some observers consider such a conflict to be very unlikely, in part because of significant U.S.-Chinese economic linkages and the tremendous damage that such a conflict could cause on both sides. In the absence of such a conflict, however, the U.S.-Chinese military balance in the Pacific could nevertheless influence day-to-day choices made by other Pacific countries, including choices on whether to align their policies more closely with China or the United States. In this sense, decisions that Congress and the executive branch make regarding U.S. Navy programs for countering improved Chinese maritime military forces could influence the political evolution of the Pacific, which in turn could affect the ability of the United States to pursue goals relating to various policy issues, both in the Pacific and elsewhere.

China's naval modernization effort, which began in the 1990s, encompasses a broad array of weapon acquisition programs, including anti-ship ballistic missiles (ASBMs), submarines, and surface ships. China's naval modernization effort also includes reforms and improvements in maintenance and logistics, naval doctrine, personnel quality, education, training, and exercises. Observers believe that the near-term focus of China's military modernization effort has been to develop military options for addressing the situation with Taiwan. Consistent with this goal, observers believe that China wants its military to be capable of acting as a so-called anti-access force—a force that can deter U.S. intervention in a conflict involving Taiwan, or failing that, delay the arrival or reduce the effectiveness of intervening U.S. naval and air forces. Observers believe that China's military modernization effort, including its naval modernization effort, is increasingly oriented toward pursuing additional goals, such as asserting or defending China's territorial claims in the South China Sea and East China Sea; enforcing China's view—a minority but growing view among world nations—that it has the right to regulate foreign military activities in its 200-mile maritime exclusive economic zone (EEZ); protecting China's sea lines of communications; protecting and evacuating Chinese nationals in foreign countries; displacing U.S. influence in the Pacific; and asserting China's status as a major world power.

Potential oversight issues for Congress include the following: whether the U.S. Navy in coming years will be large enough to adequately counter improved Chinese maritime anti-access forces while also adequately performing other missions of interest to U.S. policymakers around the world; the Navy's ability to counter Chinese ASBMs and submarines; and whether the Navy, in response to China's maritime anti-access capabilities, should shift over time to a more distributed fleet architecture.

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# Introduction

## Issue for Congress

The question of how the United States should respond to China's military modernization effort, including its naval modernization effort, has emerged as a key issue in U.S. defense planning. The Department of Defense (DOD) states that "China's rise as a major international actor is likely to stand out as a defining feature of the strategic landscape of the early 21st Century," and that China's military "is now venturing into the global maritime domain, a sphere long dominated by the U.S. Navy."[1] Admiral Michael Mullen, the then-Chairman of the Joints Chiefs of Staff, stated in June 2010 that "I have moved from being curious to being genuinely concerned" about China's military programs.[2]

The question of how the United States should respond to China's military modernization effort is of particular importance to the U.S. Navy, because many U.S. military programs for countering improved Chinese military forces would fall within the Navy's budget. An October 19, 2011, press report stated:

> The US Navy views the Asia-Pacific region as a top strategic priority even as it faces possible budget cuts that could curtail other global missions, the naval chief said Wednesday [October 19].
>
> With China's clout rising and its military might expanding, President Barack Obama's deputies and military commanders increasingly portray Asia as a key to American national security.
>
> The new chief of naval operations, Admiral Jonathan Greenert, echoed that view and suggested growing pressure on the US defense budget would not derail plans to focus on the Pacific region.
>
> "Asia will be clearly a priority and we will adjust our operations accordingly," Greenert told reporters in a teleconference.[3]

Decisions that Congress and the executive branch make regarding U.S. Navy programs for countering improved Chinese maritime military capabilities could affect the likelihood or possible outcome of a potential U.S.-Chinese military conflict in the Pacific over Taiwan or some other issue. Some observers consider such a conflict to be very unlikely, in part because of significant U.S.-Chinese economic linkages and the tremendous damage that such a conflict could cause on both sides. In the absence of such a conflict, however, the U.S.-Chinese military balance in the Pacific could nevertheless influence day-to-day choices made by other Pacific countries, including choices on whether to align their policies more closely with China or the United States.

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[1] U.S. Department of Defense, *Annual Report to Congress [on] Military and Security Developments Involving the People's Republic of China 2011*. Washington, 2011. Executive summary and p. 1.

[2] Viola Gienger, "U.S. Concern Over China's Military Intent Growing, Mullen Says," *Bloomberg.com*, June 10, 2010. See also Daniel Ten Kate, "U.S. Criticism Of China's Military May Overshadow Asian Security Meeting," *Bloomberg.com*, July 15, 2010; and Jon Rabiroff, "Mullen Moves From 'Curious' To 'Concerned' Over China's Military," *Stripes.com*, July 21, 2010.

[3] Dan De Luce, "For US Navy, Asia is crucial priority: admiral," *Agence France-Presse*, October 19, 2011.

In this sense, decisions that Congress and the executive branch make regarding U.S. Navy programs for countering improved Chinese maritime military forces could influence the political evolution of the Pacific, which in turn could affect the ability of the United States to pursue goals relating to various policy issues, both in the Pacific and elsewhere.

## Scope, Sources, and Terminology

This report focuses on the potential implications of China's naval modernization for future required U.S. Navy capabilities. Other CRS reports address separate issues relating to China.

This report is based on unclassified open-source information, such as the annual DOD report to Congress on military and security developments involving China,[4] an August 2009 report on China's navy from the Office of Naval Intelligence (ONI),[5] and published reference sources such as *Jane's Fighting Ships*.

For convenience, this report uses the term China's naval modernization to refer to the modernization not only of China's navy, but also of Chinese military forces outside China's navy that can be used to counter U.S. naval forces operating in the Western Pacific, such as land-based anti-ship ballistic missiles (ASBMs), land-based surface-to-air missiles (SAMs), land-based air force aircraft armed with anti-ship cruise missiles (ASCMs), and land-based long-range radars for detecting and tracking ships at sea.

China's military is formally called the People's Liberation Army, or PLA. Its navy is called the PLA Navy, or PLAN (also abbreviated as PLA[N]), and its air force is called the PLA Air Force, or PLAAF. The PLA Navy includes an air component that is called the PLA Naval Air Force, or PLANAF. China refers to its ballistic missile force as the Second Artillery Corps (SAC).

# Background

## Overview of China's Naval Modernization Effort[6]

### Date of Inception

Observers date the beginning of China's naval modernization effort to various points in the 1990s.[7] Design work on the first of China's newer ship classes appears to have begun in the later

[4] U.S. Department of Defense, *Annual Report to Congress [on] Military and Security Developments Involving the People's Republic of China 2011*. Washington, 2011. Hereafter *2011 DOD CMSD*. The 2009 and earlier editions of the report were known as the China military power report. The 2009 edition is cited as *2009 DOD CMP*, and earlier editions are cited similarly.

[5] Office of Naval Intelligence, *The People's Liberation Army Navy, A Modern Navy with Chinese Characteristics*, Suitland (MD), Office of Naval Intelligence, August 2009. 46 pp. (Hereafter *2009 ONI Report*.)

[6] Unless otherwise indicated, shipbuilding program information in this section is taken from *Jane's Fighting Ships 2011-2012*, and previous editions. Other sources of information on these shipbuilding programs may disagree regarding projected ship commissioning dates or other details, but sources present similar overall pictures regarding PLA Navy shipbuilding.

[7] China ordered its first four Russian-made Kilo-class submarines in 1993, and its four Russian-made Sovremenny-
(continued...)

1980s.[8] Some observers believe that China's naval modernization effort may have been reinforced or accelerated by a 1996 incident in which the United States deployed two aircraft carrier strike groups to waters near Taiwan in response to Chinese missile tests and naval exercises near Taiwan.[9]

## Elements of Modernization Effort

China's naval modernization effort encompasses a broad array of weapon acquisition programs, including programs for anti-ship ballistic missiles (ASBMs), anti-ship cruise missiles (ASCMs), land-attack cruise missiles (LACMs), surface-to-air missiles, mines, manned aircraft, unmanned aircraft, submarines, aircraft carriers, destroyers, frigates, patrol craft, amphibious ships, mine countermeasures (MCM) ships, hospital ships, and supporting C4ISR[10] systems. Some of these acquisition programs have attracted particular interest and are discussed in further detail below. China's naval modernization effort also includes reforms and improvements in maintenance and logistics, naval doctrine, personnel quality, education and training, and exercises.[11]

## Limitations and Weaknesses

Although China's naval modernization effort has substantially improved China's naval capabilities in recent years, observers believe China's navy continues to exhibit limitations or weaknesses in several areas, including capabilities for sustained operations by larger formations in distant waters,[12] joint operations with other parts of China's military,[13] C4ISR systems, anti-air warfare (AAW), antisubmarine warfare (ASW), MCM, a dependence on foreign suppliers for certain key ship components,[14] and a lack of operational experience in combat situations.[15]

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class destroyers in 1996. China laid the keel on its first Song (Type 039) class submarine in 1991, its first Luhu (Type 052) class destroyer in 1990, its Luhai (Type 051B) class destroyer in 1996, and its first Jiangwei I (Type 053 H2G) class frigate in 1990.

[8] First-in-class ships whose keels were laid down in 1990 or 1991 (see previous footnote) likely reflect design work done in the latter 1980s.

[9] DOD, for example, states that "The U.S. response in the 1995-96 Taiwan Strait crisis underscored to Beijing the potential challenge of U.S. military intervention and highlighted the importance of developing a modern navy, capable of conducting A2AD [anti-access/area-denial] operations, or 'counter-intervention operations' in the PLA's lexicon." (*2011 DOD CMSD*, p. 57.)

[10] C4ISR stands for command and control, communications, computers, intelligence, surveillance, and reconnaissance.

[11] For a discussion of improvements in personnel, training, and exercises, see *2009 ONI Report*, pp. 31-40.

[12] DOD states that "By the latter half of the current decade, China will likely be able to project and sustain a modest-sized force, perhaps several battalions of ground forces or a naval flotilla of up to a dozen ships, in low-intensity operations far from China. This evolution will lay the foundation for a force able to accomplish a broader set of regional and global objectives. However, it is unlikely that China will be able to project and sustain large forces in high-intensity combat operations far from China prior to 2020." (*2011 DOD CMSD*, p. 27.)

[13] DOD states that "Despite significant improvements, the PLA continues to face deficiencies in inter-service cooperation and actual experience in joint exercises and combat operations." (*2011 DOD CMSD*, p. 27.)

[14] DOD states, with regard to shipbuilding, that "China continues relying on foreign suppliers for some propulsion units and to a much lesser degree, fire control systems, cruise missiles, surface-to-air missiles, torpedo systems, sensors, and other advanced electronics." (*2011 DOD CMSD*, p. 43.) For an additional discussion, see John Pomfret, "Military Strength Is Eluding China," *Washington Post*, December 25, 2010: 1.

[15] DOD states that "the PLA remains untested in modern combat. This lack of operational experience continues to complicate outside assessment of the progress of China's military transformation." (*2010 DOD CMSD*, p. 22)

The sufficiency of a country's naval capabilities is best assessed against that navy's intended missions. Although China's navy has limitations and weaknesses, it may nevertheless be sufficient for performing certain missions of interest to Chinese leaders. As China's navy reduces its weaknesses and limitations, it may become sufficient to perform a wider array of potential missions.

## Goals of Naval Modernization Effort

### *Capabilities for Taiwan Scenarios, Including Acting as Anti-Access Force*

DOD and other observers believe that the near-term focus of China's military modernization effort, including its naval modernization effort, has been to develop military options for addressing the situation with Taiwan. Consistent with this goal, observers believe that China wants its military to be capable of acting as a so-called anti-access force—a force that can deter U.S. intervention in a conflict involving Taiwan, or failing that, delay the arrival or reduce the effectiveness of intervening U.S. naval and air forces.[16]

ASBMs, attack submarines, and supporting C4ISR systems are viewed as key elements of China's emerging anti-access force, though other force elements—such as ASCMs, LACMs (for attacking U.S. air bases and other facilities in the Western Pacific), and mines—are also of significance.

China's emerging maritime anti-access force can be viewed as broadly analogous to the sea-denial force that the Soviet Union developed during the Cold War to deny U.S. use of the sea or counter U.S. forces participating in a NATO-Warsaw Pact conflict. One potential difference between the Soviet sea-denial force and China's emerging maritime anti-access force is that China's force includes ASBMs capable of hitting moving ships at sea.

### *Additional Goals Not Directly Related to Taiwan*

DOD and other observers also believe that China's military modernization effort, including its naval modernization effort, is increasingly oriented toward pursuing additional goals not directly related to Taiwan, including the following:

- asserting or defending China's territorial claims in the South China Sea and East China Sea—claims that overlap with those of other countries and, in the case of the South China Sea, are somewhat ambiguous but potentially expansive enough to go well beyond what would normally be supported by international legal norms relating to territorial waters;
- enforcing China's view—a minority but growing view among world nations—that it has the legal right to regulate foreign military activities in its 200-mile maritime exclusive economic zone (EEZ);
- protecting China's sea lines of communications, including those running through the Indian Ocean to the Persian Gulf, on which China relies for much of its energy imports;

[16] See, for example, *2011 DOD CMSD*, pp. 15, 29, 47, 49.

- protecting and evacuating Chinese nationals living and working in foreign countries;
- displacing U.S. influence in the Pacific; and
- asserting China's status as a major world power.[17]

### *Potential Significance of Goals Not Directly Related to Taiwan*

The above goals not directly related to Taiwan are potentially significant for at least five reasons:

- First, they imply that if the situation with Taiwan were somehow resolved, China could find continuing reasons to pursue its naval modernization effort.
- Second, they suggest that if China completes its planned buildup of Taiwan-related naval force elements, or if the situation with Taiwan were somehow resolved, the composition of China's naval modernization effort could shift to include a greater emphasis on naval force elements that would be appropriate for supporting additional goals not directly related to Taiwan, such as aircraft carriers, a larger number of nuclear-powered attack submarines, serial production of destroyers, larger amphibious ships, underway replenishment ships, hospital ships, and overseas bases or support facilities. Some observers believe a shift to a greater emphasis on naval force elements of this kind has already occurred.[18]
- Third, they suggest that China's maritime territorial claims have the potential for acting as a continuing cause of friction or tension in U.S.-Chinese relations.
- Fourth, they suggest that China's view that it has the legal right to regulate foreign military activities in its EEZ has the potential for acting as an ongoing source of potential incidents between U.S. and Chinese ships and aircraft in international waters and airspace close to China.

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[17] See, for example, *2011 DOD CMSD*, pp. 22-23, 27, 32, 38. *2011 DOD CMSD* also includes, on pages 57-63, a "special topic" section on China's evolving maritime strategy. Another observer states:

> China's active defense strategy has a maritime component that aligns with the PRC's 1982 naval maritime plan outlined by then-Vice Chairman of the Military Commission, Liu Huaqing. This naval strategy delineated three stages. In the first stage, from 2000 to 2010, China was to establish control of waters within the first island chain that links Okinawa Prefecture, Taiwan and the Philippines. In the second stage, from 2010 to 2020, China would seek to establish control of waters within the second island chain that links the Ogasawara island chain, Guam and Indonesia. The final stage, from 2020 until 2040, China would put an end to U.S. military dominance in the Pacific and Indian Oceans, using aircraft carriers as a key component of their military force.
>
> Recent Chinese military developments, rhetoric, and actions reflect implementation of this maritime strategy, on pace with the projections to seek control of the first island chain.
>
> (Prepared statement by Stacy A. Pedrozo, Capt, JAGC, USN, U.S. Navy Military Fellow, Council on Foreign Relations, Before the U.S.-China Economic & Security Review Commission, January 27, 2011, p. 2.)

[18] One observer states that aside from the PLAN's major naval projects, "I find the launching and possible induction of the No. 88 'life style' ship to be the best indication of PLAN's blue water desires. From all of the pictures I have seen, this ship looks to be a ship where sailors (who have been out in the sea for a long time) can party and release stress. I guess that's PLAN's substitute to having port calls." (Blog entry entitled "Reflecting [on] PLAN in 2011," December 17, 2011, accessed December 23, 2011, at http://www.informationdissemination.net/2011/12/reflecting-plan-in-2011.html.)

- Fifth, they suggest that in the absence of conflict, China's military forces, including in particular its naval forces, will be used on a day-to-day basis to promote China's political position in the Pacific. This would create an essentially political (as opposed to combat-related) reason for the United States or other countries to maintain a competitive presence in the region with naval and other forces that are viewed by observers in the Pacific as capable of effectively countering China's forces. Even if a U.S.-Chinese military conflict in the Pacific over Taiwan or some other issue were never to occur, the U.S.-Chinese military balance in the Pacific could nevertheless influence day-to-day choices made by other Pacific countries, including choices on whether to align their policies more closely with China or the United States. In this sense, decisions that Congress and the executive branch make regarding U.S. Navy programs for countering improved Chinese maritime military forces could influence the political evolution of the Pacific, which in turn could affect the ability of the United States to pursue goals relating to various policy issues, both in the Pacific and elsewhere.

## *China's View Regarding Right to Regulate Foreign Military Activities in EEZ*

China's view that it has the legal right to regulate foreign military activities in its EEZ appears to be at the crux of multiple incidents between Chinese and U.S. ships and aircraft in international waters and airspace in the South China Sea, including incidents in March 2001, March 2009, and May 2009 in which Chinese ships and aircraft confronted and harassed the U.S. naval ships *Bowditch* (TAGS-62), *Impeccable* (TAGOS-23), and *Victorious* (TAGOS-19), as they were conducting survey and ocean surveillance operations in China's EEZ, and an incident on April 1, 2001, in which a U.S. Navy EP-3 electronic surveillance aircraft flying in international airspace about 65 miles southeast of China's Hainan Island in the South China Sea was intercepted by Chinese fighters.[19]

It is important to note, particularly from a U.S. perspective, that China's view that it has the legal right to regulate foreign military activities in its EEZ is related to, but separate from, the issue of disputes between China and neighboring countries over maritime territorial claims in the South China Sea and East China Sea. Even if all territorial disputes in those areas were resolved, China's view that it has the legal right to regulate foreign military activities in its EEZ would continue to act as an ongoing source of potential incidents at sea between Chinese and U.S. ships and aircraft.

It is also important to note, particularly from a U.S. perspective, that if China's view that it has the legal right to regulate foreign military activities in its EEZ were to gain international acceptance, it could establish an international legal precedent that other coastal countries might decide to follow—a development that, if it were to occur, could significantly affect U.S. naval operations in various places around the world.[20]

[19] One of the fighters accidentally collided with and damaged the EP-3, which then made an emergency landing on Hainan Island. For more on this incident, see CRS Report RL30946, *China-U.S. Aircraft Collision Incident of April 2001: Assessments and Policy Implications*, by Shirley A. Kan et al..

[20] For more on this issue, see Peter Dutton, "Three Disputes and Three Objectives," *Naval War College Review*, Autumn 2011: 42-67, and Jonathan G. Odom, "The True 'Lies' of the Impeccable Incident: What Really Happened, Who Disregarded International Law, and Why Every Nation (Outside of China) Should Be Concerned," *Michigan* (continued...)

# Selected Elements of China's Naval Modernization Effort

## Anti-Ship Ballistic Missiles (ASBMs)

China for several years has been developing and testing an anti-ship ballistic missile (ASBM), which is a theater-range ballistic missile[21] equipped with a maneuverable reentry vehicle (MaRV) designed to hit moving ships at sea. The ASBM is referred to as the DF-21D, and is believed to be a new variant of China's existing DF-21 (aka CSS-5) road-mobile medium-range ballistic missile (MRBM). DOD states that the missile has a range exceeding 1,500 km (i.e., about 810 nautical miles), and that it "is intended to provide the PLA the capability to attack large ships, including aircraft carriers, in the western Pacific Ocean.[22] Another observer states that "the DF-21D's warhead apparently uses a combination of radar and optical sensors to find the target and make final guidance updates…. Finally, it uses a high explosive, or a radio frequency or cluster warhead that at a minimum can achieve a mission kill [against the target ship]."[23]

Observers have expressed strong concern about the DF-21D, because such missiles, in combination with broad-area maritime surveillance and targeting systems, would permit China to attack aircraft carriers, other U.S. Navy ships, or ships of allied or partner navies operating in the Western Pacific. The U.S. Navy has not previously faced a threat from highly accurate ballistic missiles capable of hitting moving ships at sea. For this reason, some observers have referred to the DF-21 as a "game-changing" weapon. Due to their ability to change course, the MaRVs on an ASBM would be more difficult to intercept than non-maneuvering ballistic missile reentry vehicles.[24]

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*State Journal of International Law*, May 2010: 1-42.

[21] Depending on their ranges, these theater-range ballistic missiles can be divided into short-, medium-, and intermediate-range ballistic missiles (SRBMs, MRBMs, and IRBMs, respectively).

[22] *2011 DOD CMSD*, p. 3. See also *2009 ONI Report*, pp. 26-27. A July 12, 2011, *China Daily* news report described the DF-21D as a missile with a range of 2,700 kilometers, or about 1,460 nautical miles. (Hu Yinan, Li Xiaokun, and Cui Haipei, "Official Confirms China Building Aircraft Carrier," *China Daily (www.chinadaily.com.cn)*, July 12, 2011, accessed online July 13, 2011, at http://www.chinadaily.com.cn/cndy/2011-07/12/content_12880708.htm.) A subsequent news report, however, states: "Jane's has learnt that the reference to 2,700 km was added by *China Daily* staff and is not corroborated by other Chinese reporting on the DF-21D." (J. Michael Cole, "China Confirms 'Carrier Killer,'" *Jane's Defense Weekly*, July 20, 2011: 6.)

[23] Richard Fisher, Jr., "PLA and U.S. Arms Racing in the Western Pacific," available online at http://www.strategycenter.net/research/pubID.247/pub_detail.asp. A mission kill means that the ship is damaged enough that it cannot perform its intended mission.

[24] For further discussion of China's ASBM-development effort and its potential implications for U.S. naval forces, see Craig Hooper and Christopher Albon, "Get Off the Fainting Couch," *U.S. Naval Institute Proceedings*, April 2010: 42-47; Andrew S. Erickson, "Ballistic Trajectory—China Develops New Anti-Ship Missile," *Jane's Intelligence Review*, January 4, 2010; Michael S. Chase, Andrew S. Erickson and Christopher Yeaw, "Chinese Theater and Strategic Missile Force Modernization and its Implications for the United States," The Journal of Strategic Studies, February 2009: 67-114; Andrew S. Erickson and David D. Yang, "On the Verge of a Game-Changer," *U.S. Naval Institute Proceedings*, May 2009: 26-32; Andrew Erickson, "Facing A New Missile Threat From China, How The U.S. Should Respond To China's Development Of Anti-Ship Ballistic Missile Systems," *CBSNews.com*, May 28, 2009; Andrew S. Erickson, "Chinese ASBM Development: Knowns and Unknowns," *China Brief*, June 24, 2009: 4-8; Andrew S. Erickson and David D. Yang, "Using the Land to Control the Sea? Chinese Analysts Consider the Antiship Ballistic Missile," *Naval War College Review*, Autumn 2009: 53-86; Eric Hagt and Matthew Durnin, "China's Antiship Ballistic Missile, Developments and Missing Links," *Naval War College Review*, Autumn 2009: 87-115; Mark Stokes, "China's Evolving Conventional Strategic Strike Capability, *The Anti-ship Ballistic Missile Challenge to U.S. Maritime Operations in the Western Pacific and Beyond*, Project 2049 Institute, September 14, 2009. 123 pp.

Regarding the operational status of the DF-21D, DOD states that "during 2010, China made strides toward fielding an operational anti-ship ballistic missile...."[25] An August 25, 2011, press report states:

> China has developed a "workable design" of the world's first anti-ship ballistic missile, potentially capable of hitting and disabling a U.S. aircraft carrier, according to Pentagon officials.
>
> China also has satellites in place "that could provide some targeting data on large surface ships in the region, and this expanding infrastructure is augmented by non-space-based sensors and surveillance assets," said Navy Commander Leslie Hull-Ryde, a Pentagon spokeswoman on China, in an e-mail.
>
> "Over the next few years, we expect China will work to refine and integrate many emerging systems, including the DF- 21D" missile, she said....
>
> China at this time "has provided no indication of whether they consider this an operational system," Hull-Ryde said. She declined to say if the Pentagon believes the missile currently poses a threat to U.S. carriers.
>
> Taiwan, which relies on the U.S. military presence, says in its new 2011 National Defense Report that China already has "produced and fielded" the missile "in small numbers," said a translation provided by Andrew Erikson, an associate professor in the Naval War College's Strategic Research Department.[26]

A July 12, 2011, news report from China quotes Chen Bingde, the chief of the PLA general staff, as stating that "the missile is still undergoing experimental testing" and that "it is a high-tech weapon and we face many difficulties in getting funding, advanced technologies and high-quality personnel, which are all underlying reasons why it is hard to develop this."[27] A February 18, 2011, press report from China quoted an unnamed source as saying that the DF-21D "is already deployed in the army."[28] In December 2010 and January 2011, it was reported that DOD believes the missile has achieved the equivalent of what for a U.S. weapon would be called Initial Operational Capability (IOC).[29]

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[25] *2011 DOD CMSD*, p. 13.

[26] Tony Capaccio, "China Has 'Workable' Anti-Ship Missile Design, Pentagon Says," *Bloomberg.com*, August 25, 2011.

[27] Hu Yinan, Li Xiaokun, and Cui Haipei, "Official Confirms China Building Aircraft Carrier," China Daily (www.chinadaily.com.cn), July 12, 2011, accessed online July 13, 2011, at http://www.chinadaily.com.cn/cndy/2011-07/12/content_12880708.htm. See also Bradley Perrett, "Imbalance of Power," *Aviation Week & Space Technology*," July 18/25, 2011: 24-25.

[28] Zhang Han and Huang Jingling, "New Missile 'Ready by 2015," *Global Times (*http://military.globaltimes.cn*)*, February 18, 2011. The new missile referred to in the title of the article is a missile other than the DF-21 that the article said is to have a range of up to 4,000 km, or about 2,160 nm.

[29] See, for example, the transcript of a January 5, 2011, Defense Writers Group roundtable with Vice Admiral David J. Dorsett, Deputy CNO for Information Warfare; Tony Capaccio, "China's Anti-Ship Missiles Aren't Effective Yet, U.S. Navy Says," *Bloomberg.com*, January 3, 2011; "Deputy Chief of Naval Operations for Information Dominance (N2/N6): China Has Space-Based & Non-Space-Based C2 + ISR 'capable of providing the targeting information necessary to employ the DF-21D' Anti-Ship Ballistic Missile (ASBM)," blog entry dated January 4, 2011, accessed by CRS on January 7, 2011, at http://www.andrewerickson.com/; and Yoichi Kato, "U.S. Commander Says China Aims to Be A 'Global Military' Power," *Asahi.com (Asahi Shimbun)*, December 28, 2010. See also Andrew Erickson and Gabe Collins, "China Deploys World's First Long-Range, Land-Based 'Carrier Killer': DF-21D Anti-Ship Ballistic Missile (ASBM) Reaches "Initial Operational Capability" IOC," *China SignPost*, December 26, 2010; Bill Gertz, "China Has (continued...)

## Anti-Ship Cruise Missiles (ASCMs)

Among the most capable of the new ASCMs that have been acquired by China's navy are the Russian-made SS-N-22 Sunburn (carried by China's four Russian-made Sovremenny-class destroyers) and the Russian-made SS-N-27 Sizzler (carried by 8 of China's 12 Russian-made Kilo-class submarines). China's large inventory of ASCMs also includes several indigenous designs. DOD states that "The PLA Navy has or is acquiring nearly a dozen ASCM variants, ranging from the 1950s-era CSS-N-2 to the modern Russian-made SS-N-22 and SS-N-27B. The pace of ASCM research, development, and production within China has accelerated over the past decade,"[30] and that "The SONG, YUAN, SHANG and the still-to-be-deployed Type 095 [class submarines] all will be capable of launching the [new Chinese-made] long-range CH-SS-NX-13 ASCM, once the missile completes development and testing."[31]

## Submarines

China's submarine modernization effort has attracted substantial attention and concern. The August 2009 ONI report states that "since the mid-1990s, the PRC has emphasized the submarine force as one of the primary thrusts of its military modernization effort."[32]

### *Types Acquired in Recent Years*

China since the mid-1990s has acquired 12 Russian-made Kilo-class non-nuclear-powered attack submarines (SSs) and deployed four new classes of indigenously built submarines, including the following:

- a new nuclear-powered ballistic missile submarine (SSBN) design called the Jin class or Type 094;
- a new nuclear-powered attack submarine (SSN) design called the Shang class or Type 093;[33]
- a new SS design called the Yuan class or Type 041 (or Type 039A);[34] and
- another (and also fairly new) SS design called the Song class or Type 039/039G.

(...continued)

Carrier-Killer Missile, U.S. Admiral Says," *Washington Times*, December 28, 2010: 1; Associated Press, "China Moving Toward Deploying Anti-Carrier Missile," *Washington Post*, December 28, 2010; Kathrin Hille, "Chinese Missile Shifts Power In Pacific," *Financial Times*, December 29, 2010: 1.

[30] *2011 DOD CMSD*, p. 30.

[31] *2011 DOD CMSD*, p. 4.

[32] *2009 ONI Report*, p. 20.

[33] Some sources state that a successor to the Shang class SSN design, called the Type 095 SSN design, is in development.

[34] Some observers believe the Yuan class to be a variant of the Song class and refer to the Yuan class as the Type 039A. The August 2009 ONI report states that the Yuan class may be equipped with an air-independent propulsion (AIP) system. (*2009 ONI Report*, p. 23.)

**Figure 1. Jin (Type 094) Class Ballistic Missile Submarine**

**Source:** Photograph provided to CRS by Navy Office of Legislative Affairs, December 2010.

The Kilos and the four new classes of indigenously built submarines are regarded as much more modern and capable than China's aging older-generation submarines. At least some of the new indigenously built designs are believed to have benefitted from Russian submarine technology and design know-how.[35]

DOD and other observers believe the Type 093 SSN design will be succeeded by a newer SSN design called the Type 095. The August 2009 ONI report includes a graph (see **Figure 3**) that shows the Type 095 SSN, along with the date 2015, suggesting that ONI projects that the first Type 095 will enter service that year. DOD states that:

> Two second-generation SHANG-class (Type 093) SSNs are already in service and as many as five third-generation Type 095 SSNs will be added in the coming years. When complete, the Type 095 will incorporate better quieting technology, improving its capability to conduct a range of missions from surveillance to the interdiction of surface vessels with torpedoes and ASCMs.[36]

In September 2010, it was reported that China launched the first of a new kind of SS, possibly as a successor to the Yuan class.[37] Photographs of the submarine published in press reports in June 2011 suggest the design is roughly one-third larger than the Yuan class. The design has a relatively large sail (i.e., "conning tower") that some observers have speculated might be intended, in part, for storing and launching missiles that are too large for the ship's torpedo room and torpedo tubes.[38]

[35] The August 2009 ONI report states that the Yuan class may incorporate quieting technology from the Kilo class, and that it may be equipped with an air-independent propulsion (AIP) system. (*2009 ONI Report*, p. 23.)

[36] *2011 DOD CMSD*, p. 4.

[37] See, for example, Ted Parsons, "China Launches New SSK," *Jane's Defence Weekly*, September 22, 2010: 16. A similar article was published as Ted Parsons, "Launch of Mystery Chinese SSK Fuels Submarine Race in Asia," *Jane's Navy International*, October 2010: 4. See also the blog entry at http://www.informationdissemination.net/2011/04/recent-photos-from-chinese-shipyards.html.

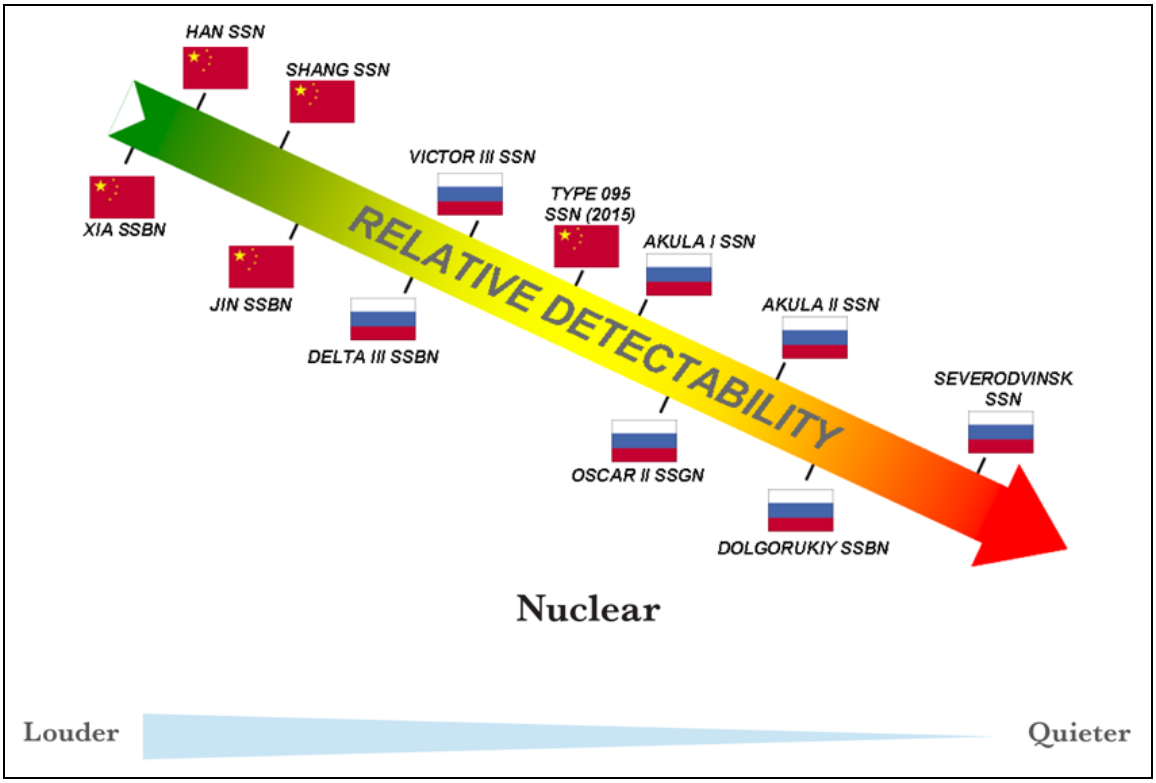
[38] See, for example, Ted Parsons, "Chinese Sub Images Offer Mission Clues," *Jane's Defence Weekly*, June 2011: 14.

**Figure 2. Yuan (Type 041) Class Attack Submarine**

**Source:** Photograph provided to CRS by Navy Office of Legislative Affairs, December 2010.

**Figure 3** and **Figure 4**, which are taken from the August 2009 ONI report, show the acoustic quietness of Chinese nuclear- and non-nuclear-powered submarines, respectively, relative to that of Russian nuclear- and non-nuclear-powered submarines. The downward slope of the arrow in each figure indicates the increasingly lower noise levels (i.e., increasing acoustic quietness) of the submarine designs shown. In general, quieter submarines are more difficult for opposing forces to detect and counter. The green-yellow-red color spectrum on the arrow in each figure might be interpreted as a rough indication of the relative difficulty that a navy with capable antisubmarine warfare forces (such as the U.S. Navy) might have in detecting and countering these submarines: Green might indicate submarines that would be relatively easy for such a navy to detect and counter, yellow might indicate submarines that would be less easy for such a navy to detect and counter, and red might indicate submarines that would be more difficult for such a navy to detect and counter.

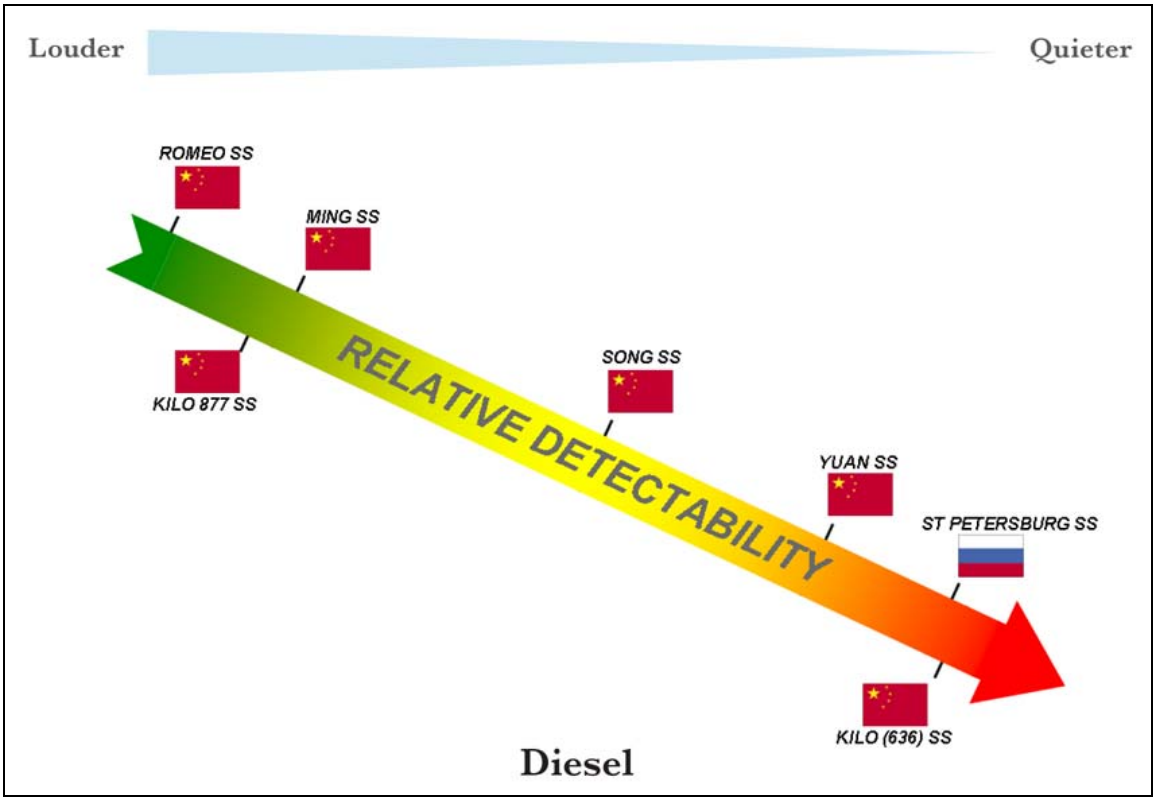
**Figure 3. Acoustic Quietness of Chinese and Russian Nuclear-Powered Submarines**




**Source:** *2009 ONI Report*, p. 22.

**Figure 4. Acoustic Quietness of Chinese and Russian Non-Nuclear-Powered Submarines**

(Non-nuclear-powered submarines are commonly referred to as diesel or diesel-electric submarines)




**Source:** *2009 ONI Report*, p. 22.

China's submarines are armed with one or more of the following: ASCMs, wire-guided and wake-homing torpedoes, and mines. The final eight Kilos purchased from Russia are reportedly armed with the highly capable Russian-made SS-N-27 Sizzler ASCM. In addition to other weapons, Shang-class SSNs may carry LACMs. Although ASCMs are often highlighted as sources of concern, wake-homing torpedoes are also a concern because they can be very difficult for surface ships to counter.

Although China's aging Ming-class (Type 035) submarines are based on old technology and are much less capable than China's newer-design submarines, China may decide that these older boats have continued value as minelayers or as bait or decoy submarines that can be used to draw out enemy submarines (such as U.S. SSNs) that can then be attacked by other Chinese naval forces.

In related areas of activity, China reportedly is developing new unmanned underwater vehicles,[39] and has modernized its substantial inventory of mines.[40]

[39] Lyle Goldstein and Shannon Knight, "Coming Without Shadows, Leaving Without Footprints," *U.S. Naval Institute Proceedings*, April 2010: 30-35.

[40] See, for example, *2009 ONI report*, p. 29.

### *Submarine Acquisition Rate and Potential Submarine Force Size*

**Table 1** shows actual and projected commissionings of Chinese submarines by class since 1995, when China took delivery of its first two Kilo-class boats. The table includes the final nine boats in the Ming class, which is an older and less capable submarine design. As shown in **Table 1**, China by the end of 2010 had a total of 31 relatively modern attack submarines—meaning Shang, Kilo, Yuan, and Song class boats—in commission. As shown in the table, much of the growth in this figure occurred in 2004-2006, when 18 boats (including 8 Kilo-class boats and 8 Song-class boats) were added.

The figures in **Table 1** show that between 1995 and 2010, China placed into service a total of 42 submarines of all kinds, or an average of about 2.6 submarines per year. This average commissioning rate, if sustained indefinitely, would eventually result in a steady-state submarine force of about 53 to 79 boats of all kinds, assuming an average submarine life of 20 to 30 years.

Excluding the 12 Kilos purchased from Russia, the total number of domestically produced submarines placed into service between 1995 and 2007 is 30, or an average of about 1.9 per year. This average rate of domestic production, if sustained indefinitely, would eventually result in a steady-state force of domestically produced submarines of about 38 to 56 boats of all kinds, again assuming an average submarine life of 20 to 30 years.

The August 2009 ONI report states that "Chinese submarine procurement has focused on smaller numbers of modern, high-capability boats," and that "over the next 10 to 15 years, primarily due to the introduction of new diesel-electric and [non-nuclear-powered] air independent power (AIP) submarines, the force is expected to increase incrementally in size to approximately 75 submarines."[41]

[41] *2009 ONI Report*, p. 21. The report states on page 46 that "Because approximately three-quarters of the current submarine force will still be operational in 10-15 years, new submarine construction is expected to add approximately 10 platforms to the force." See also the graph on page 45, which shows the submarine force leveling off in size around 2015.

## Table 1. PLA Navy Submarine Commissionings

Actual (1995-2010) and *Projected (2011-2016)*

| | Jin (Type 094) SSBN | Shang (Type 093) SSN | Kilo SS (Russian-made) | Ming (Type 035) SS[b] | Song (Type 039) SS | Yuan (Type 041) SS[a] | Annual total for all types shown | Cumulative total for all types shown | Cumulative total for modern attack boats[c] |
|---|---|---|---|---|---|---|---|---|---|
| **1995** | | | 2[d] | 1 | | | **3** | **3** | **2** |
| **1996** | | | | 1 | | | **1** | **4** | **2** |
| **1997** | | | | 2 | | | **2** | **6** | **2** |
| **1998** | | | 1[d] | 2 | | | **3** | **9** | **3** |
| **1999** | | | 1[d] | | 1 | | **2** | **11** | **5** |
| **2000** | | | | 1 | | | **1** | **12** | **5** |
| **2001** | | | | 1 | 2 | | **3** | **15** | **7** |
| **2002** | | | | 1 | | | **1** | **16** | **7** |
| **2003** | | | | | 2 | | **2** | **18** | **9** |
| **2004** | | | 1 | | 3 | | **4** | **22** | **13** |
| **2005** | | | 4 | | 3 | | **7** | **29** | **20** |
| **2006** | | 1 | 3 | | 2[e] | 1 | **7** | **36** | **27** |
| **2007** | 1 | 1[f] | | | | | **2** | **38** | **28** |
| **2008** | | | | | | | **0** | **38** | **28** |
| **2009** | | | | | | 2 | **2** | **40** | **30** |
| **2010** | 1 | | | | | 1 | **2** | **42** | **31** |
| ***2011*** | | | | | | *2* | ***2*** | ***44*** | ***33*** |
| ***2012*** | *1* | | | | | *1* | ***2*** | ***46*** | ***34*** |
| ***2013*** | *1* | | | | | *n/a* | *n/a* | *n/a* | *n/a* |
| ***2014*** | *1* | | | | | *n/a* | *n/a* | *n/a* | *n/a* |
| ***2015*** | | | | | | *n/a* | *n/a* | *n/a* | *n/a* |
| ***2016*** | *1*[g] | | | | | *n/a* | *n/a* | *n/a* | *n/a* |

**Source:** *Jane's Fighting Ships 2011-2012*, and previous editions.

**Note:** n/a = data not available.

a. Some observers believe the Yuan class to be a variant of the Song class and refer to the Yuan class as the Type 039A.

b. Figures for Ming-class boats are when the boats were launched (i.e., put into the water for final construction). Actual commissioning dates for these boats may have been later.

c. This total excludes the Jin-class SSBNs and the Ming-class SSs.

d. *Jane's Fighting Ships 2011-2012* lists the commissioning date of the Kilo as December 15, 1994. The first four Kilo-class boats are to be refitted in Russia; upgrades are likely to include installation of SS-N-27 ASCM. *Jane's* reports that the first of the two boats shown in the table as entering service in 1995 was commissioned into service on December 15, 1994, while it was still in Russia, and arrived in China by transporter ship in February 1995.

e. No further units expected after the 12th and 13th shown for 2006.

f. *Jane's Fighting Ships 2011-2012* states that production of the two Shang-class boats shown in the table may be followed by production of a new SSN design possibly known as the Type 095 class. A graph on page 22 of *2009 ONI Report* (reprinted in this CRS report as **Figure 3**) suggests that ONI expects the first Type 095 to enter service in 2015.

g. A total of six Jin-class boats is expected by *Jane's*, with the sixth unit projected to be commissioned in 2016.

### *JL-2 SLBM on Jin-Class SSBN*

Each Jin-class SSBN is expected to be armed with 12 JL-2 nuclear-armed submarine-launched ballistic missiles (SLBMs). DOD estimates that these missiles will have a range of 7,200 kilometers to 7,400 kilometers (about 3,888 nautical miles to 3,996 nautical miles).[42] DOD states that "The first of the new JIN-class (Type 094) SSBN appears ready, but the associated JL-2 SLBM has faced a number of problems and will likely continue flight tests. The date when the JIN-class SSBN/JL-2 SLBM combination will be fully operational is uncertain."[43]

## Aircraft Carriers and Carrier-Based Aircraft

Chinese officials since 2006 have been talking talk openly about eventually operating aircraft carriers.[44] China is completing the ex-Ukrainian aircraft carrier *Varyag* (**Figure 5**), which China purchased as an unfinished ship in 1998, and reportedly has begun building its first indigenous aircraft carrier. DOD states that "During the next decade China is likely to fulfill its carrier ambitions, becoming the last permanent member of the UN Security Council to obtain a carrier capability."[45] The August 2009 ONI report states that "China is undertaking a program to both operationalize [the Varyag] (likely as a training platform) and build an indigenous carrier to join the fleet between 2015 and 2020."[46]

### *Ex-Ukrainian Aircraft Carrier Varyag*

The *Varyag* began conducting sea trials in August 2011. Some press reports have speculated that the ship might be commissioned into service in 2012.[47] The ship's air wing might not be added until some time after the ship becomes fully operational, and observers expect it will then take a substantial amount of time for the ship's crew and air wing to become proficient in operating aircraft from the ship. According to some reports, China has had difficulty purchasing from Russia arresting wire systems that are needed for the ship to be able to support landings by fixed-

[42] *2011 DOD CMSD* lists figures of both 7,200+ kilometers (figure on page 35) and 7,400 kilometers (*page 3). 2010 DOD CMSD* listed only the 7,200+ kilometer figure. Such a range could permit Jin-class SSBNs to attack

- targets in Alaska (except the Alaskan panhandle) from protected bastions close to China;
- targets in Hawaii (as well as targets in Alaska, except the Alaskan panhandle) from locations south of Japan;
- targets in the western half of the 48 contiguous states (as well as Hawaii and Alaska) from mid-ocean locations west of Hawaii; and
- targets in all 50 states from mid-ocean locations east of Hawaii.

[43] *2011 DOD CMSD*, p. 34. The report similarly states on pages 3-4 that "Although DoD initially forecast the JL-2 would reach IOC [initial operational capability] by 2010, the program has faced repeated delays."

[44] The August 2009 ONI report states that "Beginning in early 2006, PRC-owned media has reported statements from high-level officials on China's intent to build aircraft carriers."

[45] *2011 DOD CMSD*, p. 46.

[46] *2009 ONI Report*, p. 17. The report similarly states on page 1 that China "is refurbishing [the Varyag] and plans to build its own [aircraft carrier] within the next five to ten years," and on page 19 that "the PRC will likely have an operational, domestically produced carrier sometime after 2015." The report states on page 19 that the Varyag "is expected to become operational in the 2010 to 2012 timeframe, and will likely be used to develop basic proficiencies in carrier operations."

[47] "China's First Aircraft Carrier to Serve in South China Sea," *People's Daily*, August 16, 2011; "China's Aircraft Carrier to Be Commissioned Next August," *The Chosum Ilbo (english.chosun.com)*, August 17, 2011; "Chinese Aircraft Carrier to Be Commissioned 'Soon,' *Chosun Ilbo (english.chosum.com)*, January 5, 2012.

wing aircraft.[48] At an August 24, 2011, DOD press briefing, a DOD said official that "the aircraft carrier could become operationally available to China's navy by the end of 2012, we assess, but without aircraft. It will take a number of additional years for an air group to achieve the sort of minimal level of combat capability aboard the carrier that will be necessary for them to start to operate from the carrier itself."[49]

**Figure 5. Ex-Ukrainian Carrier Varyag Being Completed at Shipyard in Dalian, China**

**Source:** Photograph provided to CRS by Navy Office of Legislative Affairs, December 2010.

The *Varyag* has an estimated full load displacement of about 65,000 tons, and might accommodate an air wing of 30 to 50 aircraft, including short-takeoff, vertical landing (STOVL) fixed-wing airplanes and some helicopters. By comparison, a U.S. Navy aircraft carrier has a full load displacement of about 100,000 tons and can accommodate an air wing of 65 or more aircraft, including conventional takeoff and landing (CTOL) airplanes (which tend to have a greater range/payload than STVOL airplanes) and some helicopters.[50]

[48] See, for example, "Russia Refuses To Sell Arresters for Chinese Aircraft Carrier," *Free Republic (www.freerepublic.com)*, November 25, 2011; J. Michael Cole, "First Chinese Aircraft Carrier Might Soon Embark On Its Third Trial At Sea," *Taipei Times*, December 21, 2011.

[49] Transcript of DOD press briefing with Michael Schiffer, Deputy Assistant Secretary of Defense for East Asia, accessed at http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4868. See also *2011 DOD CMSD*, pp. 3 and 46.

[50] For more on the Varyag, see Paul M. Barrett, "China's 65,000-Ton Secret," *Bloomberg Businessweek*, January 30, 2012.

## *Indigenous Aircraft Carriers*

DOD states that "In addition to [the Varyag], the PLA Navy will likely build several additional carriers in Chinese shipyards.... Construction of China's first indigenous carrier, which would likely have a similar displacement and design of [the Varyag], could begin as early as 2011. If China commences construction in 2011, the PLA Navy could have its first indigenous carrier achieving operational capability as early as 2015."[51] An August 2, 2011, press report stated:

> China has begun work on its first aircraft carrier and probably will develop two or more, along with outfitting a former Russian carrier that is set to begin sea trials soon, Pentagon officials said.
>
> "We expect China to build at least one indigenous carrier, probably two or more, but they have not revealed how many they intend to build, what the construction schedule will [be] or what their missions will be," said a defense official familiar with intelligence assessments.
>
> A second defense official said China regards aircraft carriers as key symbols of global power projection and is unlikely to build just two.
>
> Other defense officials said assessments about the indigenous carriers are based on intelligence showing construction of the first indigenous carrier at the Changxing Island Shipyard in Shanghai.
>
> The carrier appears in satellite photos to be similar in design to the Varyag, a Soviet-era carrier purchased by China that uses a sky-jump style takeoff ramp at the front of the ship....
>
> "Two aircraft carriers are being built at the Jiangnan Shipyard in Shanghai," a Chinese official with ties to China's Communist Party leadership told Reuters last week.[52]

A July 10, 2011, press report stated:

> China has started construction of its first domestically made aircraft carrier, according to diplomatic and U.S. government sources....
>
> Military sources close to developments in the Chinese Navy said the domestically made carrier is being constructed in a shipyard on Changxing Island in Shanghai.
>
> The sources said the new carrier will likely be midsize, similar to the Varyag, and carry Jian-15 jet fighters, which China has just developed. The fighters will likely take off from a ski jump-style flight deck as is done on the Varyag....
>
> Security around the shipyard on Changxing Island has increased significantly since the start of this year, which military sources attribute to the start of construction of the carrier.[53]

---

[51] *2011 DOD CMSD*, p. 46. The report states similarly on page 3 that "China could begin construction of a fully indigenous carrier in 2011, which could achieve operational capability after 2015. China likely will build multiple aircraft carriers with support ships over the next decade."

[52] Bill Gertz, "China Begins To BUild Its Own Aircraft Carrier," *Washington Times*, August 2, 2011: 1. Material in brackets as in original.

[53] Yomiuri Shimbun, "China Starts Constructing Own Flattop; '2 Carriers Operational Within 10 Yrs'," *Daily Yomiuri Online (www.yomiuri.co.jp)*, July 10, 2011, accessed online July 11, 2011 at http://www.yomiuri.co.jp/dy/world/T110709003274.htm.

A late-2010 article states that

> photographic evidence [suggests] that China has finally laid the building blocks and keel for its first indigenously designed aircraft carrier (CV), at Changxing Island Shipyard, Shanghai..... The new carrier is estimated to likely be from 245 to 265m [i.e., about 804 feet to 869 feet] in length and 65 to 70m [i.e., about 213 feet to 229 feet] in beam (this would make it slightly smaller than the modernised, angled deck former USS "Coral Sea" (CVA-43, for comparative purposes). Construction is likely to take eight to nine years, meaning the ship becomes operational (IOC) [in] 2019-2020.[54]

## *Carrier-Based Aircraft*

China reportedly was engaged in lengthy negotiations with Russia to purchase up to 50 Russian-made carrier-capable Su-33 fighter aircraft. Although the negotiations with Russia reportedly did not lead to a purchase of Su-33s, China reportedly is now developing its own carrier-capable fighter, called the J-15, or Flying Shark, which reportedly is based on the Su-33.[55] Some press reports suggest that China may be developing a short takeoff, vertical landing (STOVL) jet called the J-18 for use on its aircraft carriers, but observers are divided on whether such a program exists and, if so, what its specific aims or current status may be.[56]

## *Potential Roles, Missions, and Strategic Significance*

Although aircraft carriers might have some value for China in Taiwan-related conflict scenarios, they are not considered critical for Chinese operations in such scenarios, because Taiwan is within range of land-based Chinese aircraft. Consequently, most observers believe that China is acquiring carriers primarily for their value in other kinds of operations that are more distant from China's shores, and to symbolize China's status as a major world power. DOD states that "Given the fact that Taiwan can be reached by land-based aviation, China's aircraft carrier program would offer very limited value in a Taiwan scenario and would require additional naval resources for protection. However, it would enable China to extend its naval air capabilities elsewhere."[57]

Chinese aircraft carriers could be used for power-projection operations, particularly in scenarios that do not involve opposing U.S. forces. Chinese aircraft carriers could also be used for humanitarian assistance and disaster relief (HA/DR) operations, maritime security operations

[54] Keith Jacobs, "The Chinese and Japanese Navies Compared," *Naval Forces*, No. VI, 2010: 80-85.

[55] *2011 DOD CMSD*, p. 46. See also David Axe, "The Limits Of China's Fighter," *The Diplomat (the-diplomat.com)*, July 15, 2011; Michael Wines, "Chinese State Media, In A Show Of Openness, Print Jet Photos," *New York Times*, April 26, 2011: 4; David A. Fulghum, "New Chinese Ship-Based Heavy Fighter Readied For Flight Tests," *Aerospace Daily & Defense Report*, April 27, 2011: 1-2; David A. Fulghum, "New Chinese Ship-Based Fighter Progresses," *Aviation Week & Space Technology*, April 28, 2011; Wendell Minnick, "China Confirms J-15 Carrier-Based Fighter; Aircraft Based on Russian-Designed Su-33," *Defense News*, May 2, 2011: 4; Andrew Erickson and Gabe Collins, "'Flying Shark' Gaining Altitude: How might new J-15 strike fighter improve China's maritime air warfare ability*?" China SignPost*, June 7, 2011, 11 pp.; Gabe Collins and Andrew Erickson, "China's J-15 No Game Changer," *The Diplomat (*http://the-diplomat.com*)*, June 23, 2011.

[56] See, for example, Wendell Minnick, "Is China Developing a VSTOL Fighter?" *DefenseNews.com*, April 22, 2011; David Axe, "China's Jump Jet Mystery," The Diplomat (the-diplomat.com), April 25, 2011, accessed online May 19, 2011, at http://the-diplomat.com/flashpoints-blog/2011/04/25/chinas-jump-jet-mystery/; Dave Majumdar, "Analysts Skeptical About China's J-18," *Defense News*, May 2, 2011: 8; Wendell Minnick, "China Confirms J-15 Carrier-Based Fighter; Aircraft Based on Russian-Designed Su-33," *Defense News*, May 2, 2011: 4.

[57] *2011 DOD CMSD*, p. 38.

(such as anti-piracy operations), and non-combatant evacuation operations (NEOs). Politically, aircraft carriers could be particularly valuable to China for projecting an image of China as a major world power, because aircraft carriers are viewed by many as symbols of major world power status. In a combat situation involving opposing U.S. naval and air forces, Chinese aircraft carriers would be highly vulnerable to attack by U.S. ships and aircraft, but conducting such attacks could divert U.S. ships and aircraft from performing other missions in a conflict situation with China.[58]

## Surface Combatants[59]

China since the early 1990s has purchased four Sovremenny-class destroyers from Russia and deployed nine new classes of indigenously built destroyers and frigates (some of which are variations of one another) that demonstrate a significant modernization of PLA Navy surface combatant technology. China reportedly is also reportedly building a new class of corvettes (i.e., light frigates) and has deployed a new kind of missile-armed fast attack craft that uses a stealthy catamaran hull design. The August 2009 ONI report states that "the PLA(N) surface force is one of the largest in the world, and its capabilities are growing at a remarkable rate,"[60] and that "in recent years, the most notable upgrade to the PLA(N) surface force has been its shipboard area-air-defense (AAD) capability."[61] DOD similarly states that "the PLA Navy continues its acquisition of domestically produced surface combatants…. These ships reflect the leadership's priority on an advanced anti-air warfare capability for China's naval forces, which has historically been a weakness of the fleet."[62]

### *Sovremenny-Class Destroyers*

China in 1996 ordered two Sovremenny-class destroyers from Russia; the ships entered service in 1999 and 2001. China in 2002 ordered two additional Sovremenny-class destroyers from Russia; the ships entered service in 2005 and 2006. Sovremenny-class destroyers are equipped with the Russian-made SS-N-22 Sunburn ASCM, a highly capable ASCM.

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[58] For further discussion, see Andrew Erickson and Gabe Collins, "The 'Flying Shark' Prepares to Roam the Seas: pros and cons [for China] of China's aircraft carrier program," *China SignPost*, May 18, 2011, 5 pp.; Aaron Shraberg, "Near-Term Missions for China's Maiden Aircraft Carrier," *China Brief*, June 17, 2011: 4-6; and Andrew S. Erickson, Abraham M. Denmark, and Gabriel Collins, "Beijing's 'Starter Carrier' and Future Steps," *Naval War College Review*, Winter 2012: 15-55.

[59] In addition to the PLAN surface combatants discussed in this section, China operates additional surface ships in eight maritime agencies that are outside the PLAN. These agencies are the State Oceanographic Administration (SOA), the Marine Environmental Forecast Service (MEFS), the Bureau of Fisheries (BOF), the Fisheries Law Enforcement Command (FLEC), the Maritime Border Defense Force (MBDF), China Marine Surveillance (CMS), the China Coast Guard (CCG) and the Maritime Safety Administration (MSA). For an article discussing these agencies, see James C. Bussert, "Parsing China's Fourth Fleet," Signal, November 2011, accessed November 30, 2011, at http://www.afcea.org/signal/articles/templates/SIGNAL_Article_Template.asp?articleid=2774&zoneid=7.

[60] *2009 ONI Report*, p. 16. This comment may relate not solely to China's surface combatants (e.g., destroyers, frigates, and fast attack craft), but to China's entire surface fleet, which includes other types of ships as well, such as aircraft carriers, amphibious ships, and auxiliary and support ships.

[61] *2009 ONI Report*, p. 18.

[62] *2010 DOD CMSD*, p. 3.

### *Five New Indigenously Built Destroyer Classes*

China since the early 1990s has deployed five new classes of indigenously built destroyers, one of which is a variation of another. The classes are called the Luhu (Type 052), Luhai (Type 051B), Luyang I (Type 052B), Luyang II (Type 052C), and Louzhou (Type 051C) designs. Compared to China's 13 remaining older Luda (Type 051) class destroyers, which entered service between 1971 and 1991, these five new indigenously built destroyer classes are substantially more modern in terms of their hull designs, propulsion systems, sensors, weapons, and electronics. The Luyang II-class ships appear to feature a phased-array radar that is outwardly somewhat similar to the SPY-1 radar used in the U.S.-made Aegis combat system.[63] Like the older Luda-class destroyers, these new destroyer classes are armed with ASCMs.

**Figure 6. Luyang II (Type 052C) Class Destroyer**


**Source:** Photograph provided to CRS by Navy Office of Legislative Affairs, December 2010.

As shown in **Table 2**, China between 1994 and 2007 commissioned only one or two ships in each of its five new indigenously built destroyers classes, suggesting that these classes were intended as stepping stones in a plan to modernize the PLA Navy's destroyer technology incrementally before committing to larger-scale series production of destroyers. As also shown in **Table 2**, after commissioning no new destroyers in 2008-2010, construction of new destroyers appears to have resumed with serial production of Luyang II-class ships. *Jane's Fighting Ships* states that a third Luyang II-class ship, built to a modified design, was launched (i.e., put into the water for the final

[63] *2009 ONI Report*, p. 1.

phase of its construction) on November 28, 2010, and is expected to enter service in 2012, and that three further ships are expected.[64] An October 17, 2011, blog entry states that the third Luyang II-class ship started sea trials during the weekend of October 15-16, 2011, and that the fourth, fifth, and perhaps sixth ships in the class are visible in the shipyard.[65] A January 17, 2012, blog entry states that the fifth ship in the class was recently launched, and that what appear to be the sixth and seventh ships are visible in the shipyard.[66]

**Table 2. PLA Navy Destroyer Commissionings**

Actual (1994-2010) and *Projected (2011-2012)*

| | Sovre-menny (Russian-made) | Luhu (Type 052) | Luhai (Type 051B) | Luyang I (Type 052B) | Lyugang II (Type 052C) | Louzhou (Type 051C) | Annual total | Cumulative total |
|---|---|---|---|---|---|---|---|---|
| **1994** | | 1 | | | | | **1** | **1** |
| **1995** | | | | | | | **0** | **1** |
| **1996** | | 1 | | | | | **1** | **2** |
| **1997** | | | | | | | **0** | **2** |
| **1998** | | | | | | | **0** | **2** |
| **1999** | 1 | | 1 | | | | **2** | **4** |
| **2000** | | | | | | | **0** | **4** |
| **2001** | 1 | | | | | | **1** | **5** |
| **2002** | | | | | | | **0** | **5** |
| **2003** | | | | | | | **0** | **5** |
| **2004** | | | | 2 | 1 | | **3** | **8** |
| **2005** | 1 | | | | 1 | | **2** | **10** |
| **2006** | 1 | | | | | 1 | **2** | **12** |
| **2007** | | | | | | 1 | **1** | **13** |
| **2008** | | | | | | | **0** | **13** |
| **2009** | | | | | | | **0** | **13** |
| **2010** | | | | | | | **0** | **13** |
| ***2011*** | | | | | | | ***0*** | ***13*** |
| ***2012*** | | | | | *1*[a] | | ***1*** | ***14*** |

**Source:** *Jane's Fighting Ships 2011-2012*, and previous editions.

a. *Jane's Fighting Ships 2011-2012* states that this ship was launched on November 28, 2010, and is being built to a modified version of the Luyang II design. Jane's expects three further ships in the class.

## *Four New Indigenously Built Frigate Classes*

China since the early 1990s has deployed four new classes of indigenously built frigates, two of which are variations of two others. The classes are called the Jiangwei I (Type 053 H2G),

[64] *Jane's Fighting Ships 2011-2012*, p. 139.

[65] Blog entry entitled "Update From PLAN Land," October 17, 2011, accessed February 8, 2012, at http://www.informationdissemination.net/2011/10/update-from-plan-land.html.

[66] Blog entry entitled "Update From PLAN Land," January 17, 2012, accessed February 8, 2012, at http://www.informationdissemination.net/2012/01/update-from-plan-land.html.

Jiangwei II (Type 053H3), Jiangkai I (Type 054), and Jiangkai II (Type 054A) designs. Compared to China's 28 remaining older Jianghu (Type 053) class frigates, which entered service between the mid-1970s and 1989, the four new frigate classes feature improved hull designs and systems, including improved AAW capabilities. As shown in **Table 3**, production of Jiangkai II-class ships continues, and *Jane's* projects an eventual total of 16.

**Figure 7. Jiangkai II (Type 054A) Class Frigate**


**Source:** Photograph provided to CRS by Navy Office of Legislative Affairs, December 2010.

**Table 3. PLA Navy Frigate Commissionings**

Actual (1991-2010) and *Projected (2011-2013)*

| | Jiangwei I (Type 053 H2G) | Jiangwei II (Type 053H3) | Jiangkai I (Type 054) | Jiangkai II (Type 054A) | Annual total | Cumulative total |
|---|---|---|---|---|---|---|
| **1991** | 1 | | | | **1** | **1** |
| **1992** | 1 | | | | **1** | **2** |
| **1993** | 1 | | | | **1** | **3** |
| **1994** | 1 | | | | **1** | **4** |
| **1995** | | | | | **0** | **4** |
| **1996** | | | | | **0** | **4** |
| **1997** | | | | | **0** | **4** |
| **1998** | | 1 | | | **1** | **5** |
| **1999** | | 4 | | | **4** | **9** |
| **2000** | | 1 | | | **1** | **10** |
| **2001** | | | | | **0** | **10** |
| **2002** | | 2 | | | **2** | **12** |
| **2003** | | | | | **0** | **12** |
| **2004** | | | | | **0** | **12** |
| **2005** | | 2 | 1 | | **3** | **15** |
| **2006** | | | 1 | | **1** | **16** |
| **2007** | | | | | **0** | **16** |
| **2008** | | | | 4 | **4** | **20** |
| **2009** | | | | | **0** | **20** |
| **2010** | | | | 2 | **2** | **22** |
| ***2011*** | | | | *2* | ***2*** | ***25*** |
| ***2012*** | | | | *3* | ***3*** | ***28*** |
| ***2013*** | | | | *1* | ***1*** | ***29*** |

**Source:** *Jane's Fighting Ships 2011-2012*, and previous editions.

## *Type 056 Corvette*

China reporetdly is building new corvette (i.e., light frigate) called the Type 056. A January 2012 blog entry states that at least three such ships are under construction in two shipyards.[67]

[67] Blog entry entitled "Update From PLAN Land," January 17, 2012, accessed February 8, 2012, at http://www.informationdissemination.net/2012/01/update-from-plan-land.html. A December 2011 blog entry states:

> We have been waiting for an OPV [offshore patrol vessel] class to appear [that in size would be] between [the Type] 022 [fast attack craft class] and [the Type] 054A [frigate] class to guard the littoral waters and patrol in South China Sea. For a while, it seemed like all of the newly built cutters will be taking that role, even though they are practically unarmed. Finally, the long rumored [Type] 056 class ships are now under construction in multiple Chinese shipyards. We have already seen 056 hulls forming in HuDong and HuangPu shipyard ... but smaller shipyards around the country are also expected to be building 056 ships.
>
> (Blog entry entitled "Reflecting [on] PLAN in 2011," December 17, 2011, accessed December 23, 2011, at http://www.informationdissemination.net/2011/12/reflecting-plan-in-2011.html.)

### *Houbei (Type 022) Fast Attack Craft*

As an apparent replacement for at least some of its older fast attack craft, or FACs (including some armed with ASCMs), China in 2004 introduced a new type of ASCM-armed fast attack craft, called the Houbei (Type 022) class, that uses a stealthy, wave-piercing, catamaran hull. The Houbei class was being built in at least six shipyards. DOD states that "China has deployed some 60 of its new HOUBEI-class (Type 022) wave-piercing catamaran hull missile patrol boats. Each boat can carry up to eight YJ-83 ASCMs. These ships have increased the PLA Navy's littoral warfare capabilities."[68] According to one source, production of the design slowed in 2009, but a total of as many as 100 might be built.[69] Another observer states: "The 022 class production [activities] have almost stopped completely now. Enough of them have been produced to replace all of the old FACs."[70] The August 2009 ONI report states that "the Houbei's ability to patrol coastal and littoral waters and react at short notice allows the PLA(N)'s larger combatants to focus on offshore defense and out-of-[home]area missions without leaving a security gap along China's coastline."[71]

**Figure 8. Houbei (Type 022) Class Fast Attack Craft**

With an older Luda-class destroyer behind

**Source:** Photograph provided to CRS by Navy Office of Legislative Affairs, December 2010.

[68] *2011 DOD CMSD*, p. 4.

[69] *Jane's Fighting Ships 2011-2012*, p. 151.

[70] Blog entry entitled "Reflecting [on] PLAN in 2011," December 17, 2011, accessed December 23, 2011, at http://www.informationdissemination.net/2011/12/reflecting-plan-in-2011.html.

[71] *2009 ONI Report*, p. 20. For further discussion of the Houbei class, see John Patch, "A Thoroughbred Ship-Killer," *U.S. Naval Institute Proceedings*, April 2010: 48-53.

## Amphibious Ships

### *Yuzhao (Type 071) Amphibious Ship*

China has built and deployed a new class of amphibious ships called the *Yuzhao* or *Type 071 class*. The lead ship in the class entered service in 2008 and was deployed as part of one of China's anti-piracy patrols off Somalia. The second ship in the class was launched (i.e., put into the water for the final phase of its construction) in November 2010, began sea trials around September 2011, and is expected to enter service in 2011.[72] The third and fourth ships in the class reportedly have been launched.[73]

The Type 071 design has an estimated displacement of 17,600 tons, compared with about 15,900 tons to 16,700 tons for the U.S. Navy's Whidbey Island/Harpers Ferry (LSD-41/49) class amphibious ships, which were commissioned into service between 1985 and 1998, and about 25,900 tons for the U.S. Navy's new San Antonio (LPD-17) class amphibious ships, the first of which was commissioned into service in 2006.

**Figure 9. Yuzhao (Type 071) Class Amphibious Ship**

With two Houbei (Type 022) fast attack craft behind


**Source:** Photograph provided to CRS by Navy Office of Legislative Affairs, December 2010.

[72] *Jane's Fighting Ships 2011-2012*, p. 154, and the blog entry dated September 27, 2011 and available online at http://www.informationdissemination.net/2011/09/latest-activity-at-hd-shipyard.html.

[73] Sources: Blog entry dated September 27, 2011, and accessed online at http://www.informationdissemination.net/2011/09/latest-activity-at-hd-shipyard.html; and "Fourth Chinese Navy Type 071 LPD Launched at Shanghai Shipyard," January 28, 2012, accessed online at http://www.navyrecognition.com/index.php?option=com_content&task=view&id=301 (a similar item, also dated January 28, 2012, was accessed online at http://nosint.blogspot.com/2012/01/fourth-chinese-navy-type-071-lpd.html).

### *Reported Potential Type 081 Amphibious Ship*

China reportedly might also begin (or might have already begun) building a larger amphibious ship, called the Type 081 LHD, that might displace about 20,000 tons.[74] Such a ship might have, among other things, a greater aviation capability than the Type 071 design. Some observers believe China may build a total of three or more Type 081s.

### *Potential Roles for Type 071 and Type 081 Ships*

Although larger amphibious ships such as the Type 071 and the Type 081 might have some value for conducting amphibious landings in Taiwan-related conflict scenarios, some observers believe that China is building such ships more for their value in conducting other kinds of operations that are more distant from China's shores. Larger amphibious ships can be used for conducting not only amphibious landings, but humanitarian assistance and disaster relief (HA/DR) operations, maritime security operations (such as anti-piracy operations), and non-combatant evacuation operations (NEOs). Some countries are acquiring larger amphibious ships as much, or more, for these kinds of operations as for conducting amphibious landings. Politically, larger amphibious ships can also be used for naval diplomacy (i.e., port calls and engagement activities).

## Land-Based Aircraft and Unmanned Aerial Vehicles (UAVs)

### *Land-Based Aircraft*

China has introduced modern land-based fighters and strike fighters into the PLA Air Force and PLA Naval Air Force. These include Russian-made Su-27s and Su-30s and indigenously produced J-10s and J-11s. At least some of the strike fighters are or will be armed with modern ASCMs. China's land-based naval aircraft inventory includes, among other things, 24 Russian-made Su-30 MKK 2 Flanker land-based fighters, whose delivery was completed in 2004. The Su-30 is a derivative of the Su-27. Some of the Su-30s might eventually be fitted with the Russian-made AS-17A/B ASCM. (China's air force operates at least 150 Su-27s; these aircraft could be used for fleet-defense operations.) China's navy also operates 100 ASCM-armed JH-7 land-based fighter-bombers that were delivered between 1998 and 2004, and older ASCM-armed land-based maritime bombers. China in January 2011 reportedly began testing a stealthy, land-based, fighter-type aircraft, called the J-20. Some observers believe, based on the aircraft's size and design, that it might be intended as a land-based strike aircraft for attacking ships at sea.[75]

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[74] *Jane's Fighting Ships 2011-2012*, p. 153.

[75] See, Bill Sweetman, "Chinese J-20 Stealth Fighter In Taxi Tests," *AviationWeek.com*, January 3, 2011; Jeremy Page, "A Chinese Stealth Challenge," *Wall Street Journal*, January 5, 2011: 1; Phil Stewart, "U.S. Downplays Chinese Stealth Fighter Status," *Reuters.com*, January 5, 2011; Agence France-Presse, "US Downplays Concern Over Chinese Stealth Fighter," *DefenseNews.com*, January 6, 2011; Tony Capaccio, "China's J-20 Stealth Fighter Meant to Counter F-22, F-35, U.S. Navy Says," *Bloomberg.com*, January 6, 2011; David A. Fulgham, et al, "Stealth Slayer?" *Aviation Week & Space Technology*, January 17, 2011: 20-21, Andrew S. Erickson and Gabriel B. Collins, "China's New Project 718/J-20 Fighter: Development outlook and strategic implications," *China SignPost*, January 17, 2011, 13 pp.; Dave Majumdar, "U.S. Opinions Vary Over China's Stealthy J-20," *Defense News*, January 24, 2011: 16; Stephen Trimble, "J-20: China's Ultimate Aircraft Carrier-Killer?" *The DEW Line (www.flightglobal.com)*, February 9, 2011; Carlo Kopp, "An Initial Assessment of China's J-20 Stealth Fighter," *China Brief*, May 6, 2011: 9-11; David Axe, "Stealth Fighter or Bomber?" *The Diplomat (*http://the-diplomat.com*)*, July 26, 2011; Bill Sweetman, "Chinese J-20 Stealth Fighter Advances," *Aviation Week Defense Technology International*, January 31, 2012.

### *UAVs*

DOD states that "acquisition and development of longer-range UAVs and UCAVs [Unmanned Combat Aerial Vehicles, i.e., armed UAVs] will expand China's options for long-range reconnaissance and strike."[76] The August 2009 ONI report states that "China is developing UAVs that have the potential to bring multimission capabilities to the maritime environment. In recent years, Chinese officials have openly touted the benefits of UAVs, such as low manufacturing costs, lack of personnel casualties, and inherent 'stealth-like' characteristics."[77]

### Nuclear and Electromagnetic Pulse (EMP) Weapons

A July 22, 2011, press report states that "China's military is developing electromagnetic pulse weapons that Beijing plans to use against U.S. aircraft carriers in any future conflict over Taiwan, according to an intelligence report made public on Thursday [July 21]…. The report, produced in 2005 and once labeled "secret," stated that Chinese military writings have discussed building low-yield EMP warheads, but "it is not known whether [the Chinese] have actually done so."[78]

### Maritime Surveillance and Targeting Systems

China reportedly is developing and deploying maritime surveillance and targeting systems that can detect U.S. ships and submarines and provide targeting information for Chinese ASBMs and other Chinese military units. These systems reportedly include land-based over-the-horizon backscatter (OTH-B) radars, land-based over-the-horizon surface wave (OTH-SW) radars, electro-optical satellites, radar satellites, and seabed sonar networks.[79]

## Chinese Naval Operations Away from Home Waters

Chinese navy ships in recent years have begun to conduct operations away from China's home waters. Although many of these operations have been for making diplomatic port calls, some of them have been for other purposes, including in particular anti-piracy operations in waters off Somalia. DOD states that "the PLA Navy has demonstrated the capability to conduct limited deployments of modern surface platforms outside the second island chain, including nine separate deployments to the Gulf of Aden to support sustained counter-piracy operations from 2009 through mid 2011. The PLA Navy also has acquired new classes of ships to support conventional military operations as well as humanitarian assistance and disaster relief missions, including the Type 071 amphibious transport dock and the hospital ship, which the Chinese call the 'Peace

[76] *2011 DOD CMSD*, p. 32.

[77] *2009 ONI Report*, pp. 28-29. See also Wendell Minnick, "China's Silver Hawk UAV Program Advances," *DefenseNews.com*, July 14, 2011; Kenji Minemura, "China Developing Unmanned Aircraft To Counter U.S. Forces," *Asahi Shimbun* (Japan), January 25, 2012.

[78] Bill Gertz, "Beijing Develops Pulse Weapons," *Washington Times*, July 22, 2011: 1. Except for "[July 21]," materials in brackets as in original.

[79] See *2011 DOD CMSD*, pp. 3 and 38; Ben Blanchard, "China Ramps Up Military Use of Space With New Satellites – Report," *Reuters*, July 11, 2011; Andrew Erickson, "Satellites Support Growing PLA Maritime Monitoring and Targeting Capabilities," *China Brief*, February 10, 2011: 13-18; Torbjorg Hemmingsen, "Enter the Dragon: Inside China's New Model Navy," *Jane's Navy International*, May 2011: 14-16, 18, 20, 22, particularly the section on target tracking on pages 15-16; Simon Rabinovitch, "China's Satellites Cast Shadow Over US Pacific Operations," *Financial Times*, July 12, 2011; Andrew S. Erickson, "Eyes in the Sky," *U.S. Naval Institute Proceedings*, April 2010: 36-41.

Ark.'"[80] DOD also states that "outside of foreign 'goodwill cruises,' [China's anti-piracy operation] represents the PLA Navy's only series of operational deployments beyond the immediate western Pacific region."[81]

Some observers believe that China may want to eventually build a series of naval and other military bases in the Indian Ocean—a so-called "string of pearls"—so as to support Chinese naval operations along the sea line of communication linking China to Persian Gulf oil sources.[82] Other observers argue that although China has built or is building commercial port facilities in the Indian Ocean, China to date has not established any naval bases in the Indian Ocean and instead appears to be pursuing what U.S. officials refer to as a "places not bases" strategy (meaning a

[80] *2011 DOD CMSD*, pp. 32-33. See also pp. 17, 65 and 67, and Peter W. Mackenzie*, Red Crosses, Blue Water[:] Hospital Ships and China's Expanding Naval Presence*, CNA, September 2011, 24 pp.

[81] *2011 DOD CMSD*, p. 7. The report similarly states on page 3 that "outside of peacetime counter-piracy missions, for example, China's Navy has little operational experience beyond regional waters." One group of observers, reviewing out-of-area Chinese naval operations, concluded the following:

> The PLAN still has some ways to go before it can operate effectively out of area. At present, it can effectively replenish at sea, conduct intra–task force resupply, perform long-distance navigation, conduct formation-keeping with competent seamanship, and operate in all weather conditions. The PLAN cannot currently conduct a full-scale joint forcible entry operation, maintain maritime superiority out of area, conduct multicarrier or carrier strike group operations, or provide comprehensive protection against threats to an out of area task force (antiaircraft warfare, ASW, and antisurface warfare).
>
> The PLAN appears to be expanding its out of area operations incrementally. This will allow the United States, its allies, and other countries time to work out (with each other and with the Chinese) how to respond to opportunities for greater cooperation and potential challenges posed by a more capable PLAN.
>
> China has an even longer way to go before it can be considered a global military power. In particular, it has no network of facilities and bases to maintain and repair its ships. The possession or absence of such a network may ultimately be the best indication of China's future intentions. If China lacks such a support network, it will have great difficulty engaging in major combat operations (MCOs) far from its shores.
>
> Experience gained through out of area operations will help make the PLAN somewhat more effective (in areas such as navigation and seamanship) in some of its other operations. However, most of the tasks performed and lessons gained from out of area operations are not directly transferrable to either a Taiwan contingency or a notional out of area MCO. This implies that time spent on conducting nontraditional out of area deployments for a PLAN unit is time away from combat training for a Taiwan contingency or preparing for MCOs out of area.
>
> A more capable and active PLAN will present new challenges for U.S. policy. On the one hand, the United States wants China to "become a responsible stake holder" in support of international security objectives, which implies a need for greater naval capability to operate out of area. On the other hand, improved PLAN operational capabilities potentially pose a greater military threat to the United States and its allies, especially Asia. The United States has to reassure its allies that it will remain present in the region as a hedge even as Chinese military capabilities improve.
>
> (Christopher D. Yung et al, *China's Out of Area Naval Operations: Case Studies, Trajectories, Obstacles, and Potential Solutions*, Washington, National Defense University Press, December 2010. [Institute for National Strategic Studies, China Strategic Perspectives, No. 3.] 65 pp.)

[82] Bill Gertz, "China Builds Up Strategic Sea Lanes," *Washington Times*, January 18, 2005, p.1. See also Daniel J. Kostecka, "The Chinese Navy's Emerging Support Network in the Indian Ocean," *China Brief*, July 22, 1010: 3-5; Edward Cody, "China Builds A Smaller, Stronger Military," *Washington Post*, April 12, 2005, p. 1; Indrani Bagchi, "China Eyeing Base in Bay of Bengal?" *Times of India*, August 9, 2008, posted online at http://timesofindia.indiatimes.com/China_eyeing_base_in_Bay_of_Bengal/articleshow/3343799.cms; Eric Ellis, "Pearls for the Orient*," Sydney Morning Herald*, July 9, 2010.

collection of places for Chinese navy ships to occasionally visit for purposes of refueling and restocking supplies, but not bases).[83]

In May 2011, Pakistan's foreign minister reportedly stated that China had agreed to take over operation of Pakistan's port of Gwadar from the Singaporean government firm that has been managing the port, and that Pakistan wants to have China build a naval base at Gwadar for the Pakistani navy.[84] Shortly thereafter, however, a spokeswoman for China's foreign ministry stated that operation of the port Gwadar was neither offered by Pakistan nor accepted by China.[85]

In December 2011, the Seychelles reportedly offered to support Chinese anti-piracy operations in the Indian Ocean by having Chinese navy ships stop at its port facilities for resupply and crew rest. China reportedly stated that it was considering the offer; that the arrangement, if accepted, would not involve basing Chinese navy ships in the Seychelles; and that Chinese navy ships already stop at ports in Yemen, Oman, and Djibouti for resupply and crew rest.[86]

[83] Daniel J. Kostecka, "A Bogus Asian Pearl," *U.S. Naval Institute Proceedings*, April 2011: 48-52; Daniel J. Kostecka, "Places and Bases: The Chinese Navy's Emerging Support Network in the Indian Ocean," *Naval War College Review*, Winter 2011: 59-78; Daniel J. Kostecka, "Hambantota, Chittagong, and the Maldives – Unlikely Pearls for the Chinese Navy," *China Brief*, November 19, 2010: 8-11; Daniel J. Kostecka, "The Chinese Navy's Emerging Support Network in the Indian Ocean," *China Brief*, July 22, 2010: 5.

[84] See, for example, Jeremy Page, "Beijing Agrees To Operate A Key Port, Pakistan Says," *New York Times*, May 23, 2011: 17; Agence France-Presse, "Pakistan Asks China to Build Naval Base in Nation," *DefenseNews.com*, May 22, 2011; Farhan Bokhari and Kathrin Hille, "Pakistan Turns to China for Naval Base," *Financial Times (www.ft.com)*, May 22, 2011.

[85] See, for example, Michael Wines, "Pakistan And China: Two Friends Hit A Bump," *New York Times*, May 27, 2011: 4. DOD states that

> China has invested in several civilian port projects throughout Asia and along the Indian Ocean. Although such investments may improve peacetime logistical support options for the PLA Navy, not to mention enhancing PRC soft power in the region, they are not a substitute for military bases. Without overseas military bases, China will be constrained in its ability to project and sustain power beyond the immediate region. A decision in Beijing to abandon its longstanding and self-imposed policy against overseas basing would signal that China seeks a greater blue water combat capability.
>
> (*2011 DOD CMSD*, p. 33.)

The August 2009 ONI report contains additional discussion of operations away from home waters; see *2009 ONI Report*, p. 40. See also Dean Chang, "The Chinese Navy's Budding Overseas Presence," Heritage Foundation Web Memo, No. 2752, January 11, 2010, 3 pp; and Wendell Minnick, "Chinese Expeditions Boost Naval Expertise," *DefenseNews.com*, January 11, 2010.

[86] Agence France-Presse, "Seychelles Invites China to Set Up Anti-Piracy Base," *DefenseNews.com*, December 2, 2011; Associated Press, "China Says It Is Mulling Offer From Seychelles To Be Naval Resupply and Recreation Base," Washington Post (www.washingtonpost.com), December 12, 2011; Jeremy Page and Tom Wright, "Chinese Military Considers New Indian Ocean Presence," Wall Street Journal, December 14, 2011: 12; Li Xiaokun and Li Lianxing, "Navy Looks at Offer From Seychelles," *China Daily*, December 12, 2011; Ananth Krishman, "No Indian Ocean Military Base: China," *The Hindu*, December 12, 2011; Aude Genet (Agence France-Presse), "China Beefing Up Military Presence In Indian Ocean," *Yahoo.com*, December 20, 2011.

# Numbers of Chinese Ships and Aircraft; Comparisons to U.S. Navy

## Numbers Chinese Navy Ships and Naval Aircraft

### *Numbers Provided by Office of Naval Intelligence (ONI)*

**Table 4** shows Office of Naval Intelligence (ONI) figures on numbers of Chinese navy ships and aircraft from 1990 to 2009, and projected figures for 2015 and 2020. *The figures in the table lump older and less capable ships together with newer and more capable ships discussed above.* The modern attack submarines, destroyers, and frigates shown in **Table 1**, **Table 2**, and **Table 3** for 2009 account for about half of the attack submarines, about half of the destroyers, and about 42% of the frigates shown in **Table 4** for 2009. DOD states that the percentage of modern units within China's submarine force has increased from less than 10% in 2000 and 2004 to 50% in 2008 and about 56% in 2010, and that the percentage of modern units within China's force of surface combatants has increased from less than 10% in 2000 and 2004 to about 25% in 2008 and 26% in 2010.[87]

As can be seen in the table, ONI projects that, between 2009 and 2020, the total number of submarines will increase, a small number of aircraft carriers and major amphibious ships will be added to the fleet, the total number destroyers will remain more or less unchanged, and the total number of frigates will decline slightly. The total number of larger combat ships in China's navy (defined here as submarines, aircraft carriers, destroyers, and frigates) is projected to increase somewhat, mostly because of the projected increase in attack submarines. As these changes take place, the overall capability of China's navy will increase as newer and more capable units replace older and less capable ones. The August 2009 ONI report states that "as newer and more capable platforms replace aging platforms, the PLA(N)'s total order of battle may remain relatively steady, particularly in regard to the surface force."[88]

As can also be seen in the table, ONI projects that that the numbers of land-based maritime strike aircraft, carrier-based fighters, and helicopters, will almost triple between 2009 and 2020, and that most of this increase will occur between 2009 and 2015.

[87] *2011 DOD CMSD*, p. 43 (figure).

[88] *2009 ONI Report*, p. 46.

**Table 4. Numbers of PLA Navy Ships and Aircraft Provided by Office of Naval Intelligence (ONI)**

(Figures include both older and less capable units and newer and more capable units)

| | 1990 | 1995 | 2000 | 2005 | 2009 | Projection for 2015 | Projection for 2020 |
|---|---|---|---|---|---|---|---|
| ***Ships*** | | | | | | | |
| Ballistic missile submarines | 1 | 1 | 1 | 2 | 3 | 4 or 5? | 4 or 5? |
| Attack submarines (SSNs and SSs) | 80 | 82 | 65 | 58 | 59 | ~70 | ~72 |
| *SSNs* | *5* | *5* | *5* | *6* | *6* | *n/a* | *n/a* |
| *SSs* | *75* | *77* | *60* | *52* | *53* | *n/a* | *n/a* |
| Aircraft carriers | 0 | 0 | 0 | 0 | 0 | 1? | 2? |
| Destroyers | 14 | 18 | 21 | 25 | 26 | ~26 | ~26 |
| Frigates | 35 | 35 | 37 | 42 | 48 | ~45 | ~42 |
| ***Subtotal above ships*** | ***130*** | ***136*** | ***124*** | ***127*** | ***136*** | ***~146 or ~147?*** | ***~146 or ~147?*** |
| Missile-armed attack craft | 200 | 165 | 100 | 75 | 80+ | n/a | n/a |
| Amphibious ships | 65 | 70 | 60 | 56 | 58 | n/a | n/a |
| *Large ships (LPDs/LHDs)* | *0* | *0* | *0* | *0* | *1* | *~6?* | *~6?* |
| *Smaller ships* | *65* | *70* | *60* | *56* | *57* | *n/a* | *n/a* |
| Mine warfare ships | n/a | n/a | n/a | n/a | 40 | n/a | n/a |
| Major auxiliary ships | n/a | n/a | n/a | n/a | 50 | n/a | n/a |
| Minor auxiliary ships and support craft | n/a | n/a | n/a | n/a | 250+ | n/a | n/a |
| ***Aircraft*** | | | | | | | |
| Land-based maritime strike aircraft | n/a | n/a | n/a | n/a | ~145 | ~255 | ~258 |
| Carrier-based fighters | 0 | 0 | 0 | 0 | 0 | ~60 | ~90 |
| Helicopters | n/a | n/a | n/a | n/a | ~34 | ~153 | ~157 |
| ***Subtotal above aircraft*** | n/a | n/a | n/a | n/a | ***~179*** | ***~468*** | ***~505*** |

**Source:** Prepared by CRS. Source for 2009, 2015, and 2020: *2009 ONI report*, page 18 (text and table), page 21 (text), and (for figures not available on pages 18 or 21), page 45 (CRS estimates based on visual inspection of ONI graph entitled "Estimated PLA[N] Force Levels"). Source for 1990, 1995, 2000, and 2005: Navy data provided to CRS by Navy Office of Legislative Affairs, July 9, 2010.

**Notes:** n/a is not available. The use of question marks for the projected figures for ballistic missile submarines, aircraft, carriers, and major amphibious ships (LPDs and LHDs) for 2015 and 2020 reflects the difficulty of resolving these numbers visually from the graph on page 45 of the ONI report. The graph shows more major amphibious ships than ballistic missile submarines, and more ballistic missile submarines than aircraft carriers. Figures in this table for aircraft carriers include the ex-Ukrainian carrier Varyag, which is likely to enter service before any new-construction indigenous carrier. The ONI report states on page 19 that China "will likely have an operational, domestically produced carrier sometime after 2015." Such a ship, plus the Varyag, would give China a force of 2 operational carriers sometime after 2015.

The graph on page 45 shows a combined total of amphibious ships and landing craft of about 244 in 2009, about 261 projected for 2015, and about 253 projected for 2015.

Since the graph on page 45 of the ONI report is entitled "Estimated PLA[N] Force Levels," aircraft numbers shown in the table presumably do not include Chinese air force (PLAAF) aircraft that may be capable of attacking ships or conducting other maritime operations.

### *Numbers Presented in Annual DOD Reports to Congress*

DOD states that "The PLA Navy possesses some 75 principal surface combatants, more than 60 submarines, 55 medium and large amphibious ships, and roughly 85 missile-equipped small combatants."[89] **Table 5** shows numbers of Chinese navy ships as presented in annual DOD reports to Congress on military and security developments involving China (previously known as the annual report on China military power). *As with **Table 4**, the figures in **Table 5** lump older and less capable ships together with newer and more capable ships discussed above.* The modern attack submarines, destroyers, and frigates shown in **Table 1**, **Table 2**, and **Table 3** for 2009 account for about half of the attack submarines, about half of the destroyers, and about 42% of the frigates shown in **Table 5** for 2009. As mentioned earlier, DOD states that the percentage of modern units within China's submarine force has increased from less than 10% in 2000 and 2004 to about 47% in 2008 and 50% in 2009, and that the percentage of modern units within China's force of surface combatants has increased from less than 10% in 2000 and 2004 to about 25% in 2008 and 2009.[90]

**Table 5. Numbers of PLA Navy Ships Presented in Annual DOD Reports to Congress**

(Figures include both older and less capable units and newer and more capable units)

| | 2000 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nuclear-powered attack submarines | 5 | 5 | ~ 60 | n/a | 6 | 5 | 5 | 5 | 6 | 6 | 5 |
| Diesel attack submarines | ~60 | ~ 50 | | n/a | 51 | 50 | 53 | 54 | 54 | 54 | 49 |
| Destroyers | ~20 | ~ 60 | > 60 | n/a | 21 | 25 | 25 | 29 | 27 | 25 | 26 |
| Frigates | ~40 | | | n/a | 43 | 45 | 47 | 45 | 48 | 49 | 53 |
| Missile-armed coastal patrol craft | n/a | ~ 50 | ~ 50 | n/a | 51 | 45 | 41 | 45 | 70 | 85 | 86 |
| Amphibious ships: LSTs and LPDs | almost 50 | ~ 40 | > 40 | n/a | 20 | 25 | 25 | 26 | 27 | 27 | 27 |
| Amphibious ships: LSMs | | | | n/a | 23 | 25 | 25 | 28 | 28 | 28 | 28 |

**Source:** Table prepared by CRS based on data in 2002-2011 editions of annual DOD report to Congress on military and security developments involving China (known for 2009 and prior editions as the report on China military power).

**Notes: n/a** means data not available in report. **LST** means tank landing ship; **LPD** means transport dock ship; **LSM** means medium landing ship.

## Comparing U.S. and Chinese Naval Capabilities

U.S. and Chinese naval capabilities are sometimes compared by showing comparative numbers of U.S. and Chinese ships. Although numbers of ships (or aggregate fleet tonnages) can be relatively easy to compile from published reference sources, they are highly problematic as a means of assessing relative U.S. and Chinese naval capabilities, for the following reasons:

- **A fleet's total number of ships (or its aggregate tonnage) is only a partial metric of its capability.** In light of the many other significant contributors to

[89] *2011 DOD CMSD*, p. 3.

[90] *2011 DOD CMSD*, p. 43 (figure).

naval capability,[91] navies with similar numbers of ships or similar aggregate tonnages can have significantly different capabilities, and navy-to-navy comparisons of numbers of ships or aggregate tonnages can provide a highly inaccurate sense of their relative capabilities. In recent years, the warfighting capabilities of navies have derived increasingly from the sophistication of their internal electronics and software. This factor can vary greatly from one navy to the next, and often cannot be easily assessed by outside observation. As the importance of internal electronics and software has grown, the idea of comparing the warfighting capabilities of navies principally on the basis of easily observed factors such as ship numbers and tonnages has become increasingly less valid, and today is highly problematic.

- **Total numbers of ships of a given type (such as submarines, destroyers, or frigates) can obscure potentially significant differences in the capabilities of those ships, both between navies and within one country's navy.**[92] The potential for obscuring differences in the capabilities of ships of a given type is particularly significant in assessing relative U.S. and Chinese capabilities, in part because China's navy includes significant numbers of older, obsolescent ships. Figures on total numbers of Chinese submarines, destroyers, frigates, and coastal patrol craft lump older, obsolescent ships together with more modern and more capable designs.[93] As mentioned earlier, DOD states that the percentage of modern units within China's submarine force has increased from less than 10% in 2000 and 2004 to 50% in 2008 and about 56% in 2010, and that the percentage of modern units within China's force of surface combatants has increased from less than 10% in 2000 and 2004 to about 25% in 2008 and 26% in 2010.[94] This CRS report shows numbers of more modern and more capable submarines, destroyers, and frigates in **Table 1**, **Table 2**, and **Table 3**, respectively.
- **A focus on total ship numbers reinforces the notion that increases in total numbers necessarily translate into increases in aggregate capability, and that decreases in total numbers necessarily translate into decreases in aggregate capability.** For a Navy like China's, which is modernizing in some ship categories by replacing larger numbers of older, obsolescent ships with smaller numbers of more modern and more capable ships, this is not necessarily the case. As shown in **Table 4**, for example, China's submarine force today has fewer boats than it did in the 1990, but has greater aggregate capability than it did in 1990, because larger numbers of older, obsolescent boats have been replaced by smaller numbers of more modern and more capable boats. A similar point might be made about China's force of missile-armed attack craft. DOD states that "Since the 1990s, the PLA Navy has rapidly transformed from a large fleet of

[91] These include types (as opposed to numbers or aggregate tonnage) of ships; types and numbers of aircraft; the sophistication of sensors, weapons, C4ISR systems, and networking capabilities; supporting maintenance and logistics capabilities; doctrine and tactics; the quality, education, and training of personnel; and the realism and complexity of exercises.

[92] Differences in capabilities of ships of a given type can arise from a number of other factors, including sensors, weapons, C4ISR systems, networking capabilities, stealth features, damage-control features, cruising range, maximum speed, and reliability and maintainability (which can affect the amount of time the ship is available for operation).

[93] For an article discussing this issue, see Joseph Carrigan, "Aging Tigers, Mighty Dragons: China's bifurcated Surface Fleet," *China Brief*, September 24, 2010: 2-6.

[94] *2011 DOD CMSD*, p. 43 (figure).

low-capability, single-mission platforms, to a leaner force equipped with more modern, multi-mission platforms."[95] The August 2009 ONI report states that "even if [China's] naval force sizes remain steady or even decrease, overall naval capabilities can be expected to increase as forces gain multimission capabilities."[96] For assessing navies like China's, it can be more useful to track the growth in numbers of more modern and more capable units. This CRS report shows numbers of more modern and more capable submarines, destroyers, and frigates in **Table 1**, **Table 2**, and **Table 3**, respectively.

- **Comparisons of numbers of ships (or aggregate tonnages) do not take into account maritime-relevant military capabilities that countries might have outside their navies,** such as land-based anti-ship ballistic missiles (ASBMs), land-based anti-ship cruise missiles (ASCMs), and land-based air force aircraft armed with ASCMs or other weapons. Given the significant maritime-relevant non-navy forces present in both the U.S. and Chinese militaries, this is a particularly important consideration in comparing U.S. and Chinese military capabilities for influencing events in the Western Pacific. Although a U.S.-China incident at sea might involve only navy units on both sides, a broader U.S.-China military conflict would more likely be a force-on-force engagement involving multiple branches of each country's military.
- **The missions to be performed by one country's navy can differ greatly from the missions to be performed by another country's navy.** Consequently, navies are better measured against their respective missions than against one another. Although Navy A might have less capability than Navy B, Navy A might nevertheless be better able to perform Navy A's intended missions than Navy B is to perform Navy B's intended missions. This is another significant consideration in assessing U.S. and Chinese naval capabilities, because the missions of the two navies are quite different.

# DOD Response to China Naval Modernization

## Renewed DOD Emphasis on Asia-Pacific Region

Two DOD strategy and budget documents—one released on January 5, 2012, the other released on January 26, 2012—state that U.S. military strategy will place a renewed increased emphasis on the Asia-Pacific region, and that as a result, there will be a renewed emphasis on air and naval forces in DOD plans. The release of these two documents followed statements by administration officials beginning in the latter months of 2011 that identified the Asia-Pacific as a high-priority region for DOD in coming years. Administration officials have stated that notwithstanding reductions in planned levels of U.S. defense spending, the U.S. military presence in the Asia-Pacific region will be maintained and strengthened. Although administration officials state that the renewed emphasis on the Asia-Pacific region is not directed at any single country, many observers believe it is in no small part intended as a response to China's military modernization effort and its assertive behavior regarding its maritime territorial claims.

[95] *2011 DOD CMSD*, p. 3.

[96] *2009 ONI Report*, p. 46.

## January 5, 2012, Strategic Guidance Document

On January 5, 2012, the Administration released a strategic guidance document that the Administration said would be used to guide decisions on the allocation of DOD resources in the FY2013 defense budget and future DOD budgets. In a cover letter to the document, President Obama stated that "as we end today's wars, we will focus on a broader range of challenges and opportunities, including the security and prosperity of the Asia Pacific." In another cover letter, Secretary of Defense Panetta stated that the U.S. military "will have global presence emphasizing the Asia-Pacific and the Middle East while still ensuring our ability to maintain our defense commitments to Europe, and strengthening alliances and partnerships across all regions." The document itself states in part:

> U.S. economic and security interests are inextricably linked to developments in the arc extending from the Western Pacific and East Asia into the Indian Ocean region and South Asia, creating a mix of evolving challenges and opportunities. Accordingly, while the U.S. military will continue to contribute to security globally, *we will of necessity rebalance toward the Asia-Pacific region*. Our relationships with Asian allies and key partners are critical to the future stability and growth of the region. We will emphasize our existing alliances, which provide a vital foundation for Asia-Pacific security. We will also expand our networks of cooperation with emerging partners throughout the Asia-Pacific to ensure collective capability and capacity for securing common interests....
>
> The maintenance of peace, stability, the free flow of commerce, and of U.S. influence in this dynamic region will depend in part on an underlying balance of military capability and presence. Over the long term, China's emergence as a regional power will have the potential to affect the U.S. economy and our security in a variety of ways. Our two countries have a strong stake in peace and stability in East Asia and an interest in building a cooperative bilateral relationship. However, the growth of China's military power must be accompanied by greater clarity of its strategic intentions in order to avoid causing friction in the region. The United States will continue to make the necessary investments to ensure that we maintain regional access and the ability to operate freely in keeping with our treaty obligations and with international law. Working closely with our network of allies and partners, we will continue to promote a rules-based international order that ensures underlying stability and encourages the peaceful rise of new powers, economic dynamism, and constructive defense cooperation....
>
> In order to credibly deter potential adversaries and to prevent them from achieving their objectives, the United States must maintain its ability to project power in areas in which our access and freedom to operate are challenged. In these areas, sophisticated adversaries will use asymmetric capabilities, to include electronic and cyber warfare, ballistic and cruise missiles, advanced air defenses, mining, and other methods, to complicate our operational calculus. States such as China and Iran will continue to pursue asymmetric means to counter our power projection capabilities, while the proliferation of sophisticated weapons and technology will extend to non-state actors as well. *Accordingly, the U.S. military will invest as required to ensure its ability to operate effectively in anti-access and area denial (A2/AD) environments.* This will include implementing the Joint Operational Access Concept, sustaining our undersea capabilities, developing a new stealth bomber, improving missile defenses, and continuing efforts to enhance the resiliency and effectiveness of critical space-based capabilities.[97]

[97] Department of Defense, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*, January 2012, cover letters and pp. 2, 4-5. Italics as in original.

## January 26, 2012, Document on Selected FY2013 Program Decisions

On January 26, 2012, DOD released a document outlining selected program decisions that will be included in DOD's proposed FY2013 budget. The January 26 document states that DOD's "leadership and subject matter experts assessed the potential strategic, military and programmatic risks associated with each budget decision in accordance with five major tenets within the President's strategic guidance [document of January 5, 2012]." The first of these five tenets, the document states, is: "Rebalance force structure and investments toward the Asia-Pacific and Middle East regions while sustaining key alliances and partnerships in other regions." The document states that

> The focus on the Asia-Pacific region places a renewed emphasis on air and naval forces while sustaining ground force presence. The Middle East has been dominated by ground force operations over the last decade; however, as we gradually transition security in Afghanistan and reestablish peacetime ground force presence, this region will also become increasingly maritime. Therefore we: ...
>
> - Maintained the aircraft carrier fleet at 11 ships and 10 [carrier] air wings
> - Maintained the big-deck amphibious fleet ... [98]
> - Budgeted to forward station Littoral Combat Ships in Singapore and patrol craft in Bahrain
> - Funded development of a new afloat forward staging base that can be dedicated to support missions in areas where ground-based access is not available, such as counter-mine operations
>
> For these forces to remain capable, we had to invest in capabilities required to maintain our military's continued freedom of action in the face of new technologies designed to frustrate access advantages. Consequently, we increased or protected investment in capabilities that preserve the U.S. military's ability to project power in contested areas and strike quickly from over the horizon, including:...
>
> - Design changes to increase cruise missile capacity of future Virginia-class submarines[99]
> - Design of a conventional prompt strike option from submarines[100]
> - Upgraded radars for tactical aircraft and ships

[98] This is a reference to the Navy's inventory of LHA- and LHD-type amphibious assault ships. These ships, which resemble medium-sized aircraft carriers, are often referred to as big-deck or large-deck amphibious ships because their flight decks are much larger than those of the Navy's smaller (i.e., LPD- and LSD-type) amphibious ships.

[99] This appears to be a reference to a plan to build future Virginia (SSN-774) class attack submarines to a lengthened design that includes an additional mid-body section, called the Virginia Payload Module (VPM) containing four large-diameter vertical launch tubes for firing cruise missiles and other payloads. For more on the VPM, see CRS Report RL32418, *Navy Virginia (SSN-774) Class Attack Submarine Procurement: Background and Issues for Congress*, by Ronald O'Rourke.

[100] This appears to refer to a new, fast-flying weapon that would be launched from submarines.

To ensure sufficient resources to protect these strategic priorities, we will reduce the number of ships by slowing the pace of building new ships and by accelerating the retirement of some existing ships. These include:

- Retiring 7 cruisers early – 6 did not have ballistic missile defense (BMD) capability, and the seventh with BMD capability is in need of costly hull repairs[101]
- Slipping a large deck amphibious ship (LHA) by 1 year[102]
- Slipping 1 new Virginia class submarine outside the FYDP [Five Year Defense Plan]
- Reducing Littoral Combat Ships by 2 ships in the FYDP[103]
- Reducing Joint High Speed Vessels by 8 in the FYDP[104]
- Retiring 2 smaller amphibious ships (LSD) early and moving their replacement outside the FYDP ... [105]

This strategic precept puts a premium on self- and rapidly-deployable forces that can project power and perform multiple mission types. This reinforces the need to maintain existing numbers of aircraft carriers, large-deck amphibious ships, and bombers. Furthermore, as the Marine Corps withdraws from the ground in Afghanistan, it will return to afloat posture, with the capability to rapidly respond to crises as they emerge. These choices are consistent with our strategic emphasis on the Asia-Pacific region and the Middle East, but are applicable anywhere on the globe where U.S. national security or vital interests are threatened....

Our ability to project power is a key component of our strategic guidance. We protected... aircraft carriers, surface combatant modernization.... We also protected capabilities that allow us to project power in denied environments. In addition to those discussed earlier, such as... increasing the cruise missile capacity of future submarines, we protected anti-submarine warfare and counter-mine capabilities....[106]

## September 2011 Press Report About New Defense Planning Guidance

A September 29, 2011, press report stated that a new DOD Defense Planning Guidance (DPG) document[107] dated August 29, 2011, "advocat[es] increased investment in military capabilities designed for high-end war among major powers, according to sources familiar with the

[101] The Navy currently has 22 Ticonderoga (CG-47) class Aegis cruisers; retiring seven early would reduce the inventory of these ships to 15.

[102] Under the FY2012 budget submission, the next LHA-type ship was to be procured in FY2016; the deferral would thus appear to be FY2017.

[103] This may be a deferral of the procurement of two LCSs, but not a reduction in the planned total LCS procurement of 55 ships.

[104] This may reflect a reduction in the JHSV force-level goal from 21 ships to 10.

[105] The Navy currently operates 12 LSD-type amphibious ships; retiring two early would reduce the inventory to 10. The planned replacement for these LSDs is a new ship class called the LSD(X). The Navy had previously announced that the first LSD(X) was to be procured in FY2017; the new announcement here suggests that the procurement date for this ship has been deferred to a later year.

[106] Department of Defense, *Defense Budget: Priorities and Choices*, January 2012, pp. 4, 5, 6, 7, 9.

[107] The DPG is an internal DOD document that guides DOD's preparation of its proposed budget.

document." The report stated that the new DPG "signals a 'new seriousness [in DOD planning] about major-power war,' which could trigger a 'flowering of air and naval power,' said a former service official familiar with the guidance." The report stated that DOD "is planning to reduce capability for conventional military operations and counterinsurgency, shrink the size of the military, maintain counterterrorism capability and invest more in countering high-end threats like long-range weapons being developed by China that could challenge U.S. power projection capabilities in the Western Pacific, said a military official familiar with Panetta's guidance." The report stated that "if the [DOD] budget [for FY2013 and beyond] comes out with the 'one-third, one-third, one-third' ratio intact, the comprehensive review 'should be judged a complete failure,' an administration official said. The Army's [budget] topline will likely be cut harder than other services, the official said."[108]

## Air-Sea Battle (ASB) Concept

DOD has been developing a new Air-Sea Battle (ASB) concept that is intended to increase the joint operating effectiveness U.S. naval and Air Force units, particularly in operations for countering anti-access forces. The ASB development effort was announced in the 2010 Quadrennial Defense Review. DOD has established an Air-Sea Battle Office to guide the implementation of the concept.[109] Although DOD officials state that the ASB concept is not directed at any particular adversary, many observers believe it is focused to a large degree, if not principally, on countering Chinese and Iranian anti-access forces.

Relatively little of an authoritative nature has been published on the ASB concept.[110] On November 9, 2011, the Air-Sea Battle Office released the following statement on the concept, which is printed here in its entirety:

> Throughout the history of warfare, adversaries have endeavored to deny each other freedom of action and access to areas where operations could be mounted that threaten campaign objectives.
>
> This fundamental of warfare was vividly highlighted during Operation DESERT STORM in 1991, when the access granted by allies and partners was exploited by the overwhelming capabilities of the U.S. military to quickly liberate Kuwait from Iraqi occupation. In the aftermath of DESERT STORM, it was apparent to many potential adversaries that it would be inadvisable to oppose the U.S. in a force-on-force conflict, and they explored how to

[108] Christopher J. Castelli, "DOD Aims To Boost Investment In Capabilities For Major-Power War*," Inside the Pentagon*, September 29, 2011. The phrase "one-third, one-third, one-third ratio" is a reference to the division of the DOD "base" budget (i.e., the DOD budget other than the part that funds operations in Afghanistan and Iraq) between the Army, the Navy and Marine Corps, and the Air Force. The current division of the DOD base budget not an exact one-third, one-third, one-third division, but the phrase has come into use as a shorthand way of referring to the current budget division, which has remained relatively unchanged in recent years.

[109] Christopher P. Cavas, "Air-Sea Battle Office Targets DoD Blind Spots," *NavyTimes.com*, November 10, 2011; Gabe Starosta, "Pentagon Stands Up new AirSea Battle Office," *Inside the Navy*, November 14, 2011; Ann Roosevelt, "DoD Office Created To Implement Air-Sea Battle Concept," *Defense Daily*, November 14, 2011: 6; Michael Fabey, "Pentagon Acknowledges New Air-Sea Battle Office," Aerospace Daily & Defense Report, November 14, 2011: 3.

[110] DOD held a background briefing on the Air-Sea Battle concept on November 9, 2011, but the briefing provided very few specific details about the concept. The transcript of the briefing is available at http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4923. For a blog entry commenting on the relative lack of specific details provided at the briefing, see Colin Clark, "Air-Sea Battle: What's It all About, Or Not," *AOL Defense (*http://defense.aol.com*)*, November 10, 2011.

disrupt U.S. power projection through means designed to complicate both movement to and maneuver within an area of mutual interest. These two elements of an adversary's comprehensive warfare strategy are referred to as "anti-access" and "area denial" or "A2/AD".

Over the past two decades, the development and proliferation of advanced weapons, targeting perceived U.S. vulnerabilities, have the potential to create an A2/AD environment that increasingly challenges U.S. military access to and freedom of action within potentially contested areas. These advanced systems encompass diverse capabilities that include ballistic and cruise missiles; sophisticated integrated air defense systems; anti-ship weapons ranging from high-tech missiles and submarines to low-tech mines and swarming boats; guided rockets, missiles, and artillery, an increasing number of 4th generation fighters; low-observable manned and unmanned combat aircraft; as well as space and cyber warfare capabilities specifically designed to disrupt U.S. communications and intelligence systems. In combination, these advanced technologies have the potential to diminish the advantages the U.S. military enjoys in the air, maritime, land, space, and cyberspace domains today. If these advances continue and are not addressed effectively, U.S. forces could soon face increasing risk in deploying to and operating within previously secure forward areas—and over time in rear areas and sanctuaries—ultimately affecting our ability to respond effectively to coercion and crises that directly threaten the strategic interests of the U.S., our allies, and partners.

Air-Sea Battle

Appreciating the need to address the growing challenge posed by the emerging A2/AD environment, the Secretary of Defense directed the Department of the Air Force and the Department of the Navy to develop an Air-Sea Battle Concept. In response, the services designed an operational concept, focused on the ways and means necessary to neutralize current and anticipated A2/AD threats, to ensure our Joint force maintains the ability to project power and protect U.S. national interests.

The Air-Sea Battle Concept centers on networked, integrated, attack-in-depth to disrupt, destroy and defeat (NIA-D3) A2/AD threats. This approach exploits and improves upon the advantage U.S. forces have across the air, maritime, land, space and cyberspace domains, and is essential to defeat increasingly capable intelligence gathering systems and sophisticated weapons systems used by adversaries employing A2/AD systems. Offensive and defensive tasks in Air-Sea Battle are tightly coordinated in real time by networks able to command and control air and naval forces in a contested environment. The air and naval forces are organized by mission and networked to conduct integrated operations across all domains.

The concept organizes these integrated tasks into three lines of effort, wherein air and naval forces attack-in-depth to disrupt the adversary's intelligence collection and command and control used to employ A2/AD weapons systems; destroy or neutralize A2/AD weapons systems within effective range of U.S. forces; and defeat an adversary's employed weapons to preserve essential U.S. Joint forces and their enablers. Through NIA-D3, air and naval forces achieve integrated effects across multiple domains, using multiple paths to increase the resilience, agility, speed and effectiveness of the force.

Air-Sea Battle is a limited operational concept designed to address an adversary's A2/AD capabilities. It is not a concept aimed at any particular potential adversary, nor a campaign plan designed to accomplish a specific national objective. Instead, it is a concept that will spark innovation and development of the means to support future operations. The Air-Sea Battle Concept identifies the actions needed to defeat A2/AD threats and the materiel and non-materiel solutions required to execute those actions.

Implementing the Air-Sea Battle Concept

There are three key components to implementation of the Air-Sea Battle Concept by the Department of Defense. The first is institutionalizing the concept. An enduring Air-Sea Battle Office, manned by representatives from all four services, has been established to facilitate further concept exploration, refinement and validation. The second component is service alignment, which will be achieved through adherence to the concept's operational design and description of how capabilities shall be integrated to defeat A2/AD threats. The final component of implementation is the completion of ASB Concept initiatives, comprised of Doctrine, Organization, Training, Materiel, Leadership & Education, Personnel, and Facilities (DOTMLPF) solutions that have been collaboratively developed. These carefully considered initiatives, once implemented, will provide capabilities which are complementary where appropriate, redundant when mandated by capacity requirements, and fielded with integrated acquisition strategies that seek efficiencies where they can be achieved.

While Air-Sea Battle is fiscally informed, the concept was not prompted by fiscal constraints. Prudent efficiencies are a consideration of Air-Sea Battle, but some redundancy and overmatch is necessary in specific areas to lower risk to mission and to forces conducting those missions. The Air Force and Navy Departments would likely have pursued Air-Sea Battle solutions independently, but the accelerating A2/AD threat to global stability demands a smarter, more integrated approach. Air-Sea Battle Concept solutions must and will be collaboratively implemented by the Air Force and Navy Departments.

Regardless of anticipated advancements in A2/AD threats, implementation of the Air-Sea Battle Concept will ensure the U.S. can gain access and project power in defense of U.S. interests and those of our allies and partners.[111]

A November 10, 2011, press report states:

Military officials from the three services told reporters during a [November 9, 2011, DOD] background briefing that the concept is not directed at a single country. But they did not answer when asked what country other than China has developed advanced anti-access arms.

A senior Obama administration official was more blunt, saying the new concept is a significant milestone signaling a new Cold War-style approach to China.

"Air Sea Battle is to China what the [U.S. Navy's mid-1980s] maritime strategy was to the Soviet Union," the official said.

During the Cold War, U.S. naval forces around the world used a strategy of global presence and shows of force to deter Moscow's advances.

"It is a very forward-deployed, assertive strategy that says we will not sit back and be punished," the senior official said. "We will initiate."

The concept, according to defense officials, grew out of concerns that China's new precision-strike weapons threaten freedom of navigation in strategic waterways and other global commons.

[111] "The Air-Sea Battle Concept Summary," accessed February 8, 2011, at http://www.navy.mil/search/display.asp?story_id=63730.

Defense officials familiar with the concept said among the ideas under consideration are:

- Building a new long-range bomber.
- Conducting joint submarine and stealth aircraft operations.
- New jointly operated, long-range unmanned strike aircraft with up to 1,000-mile ranges.
- Using Air Force forces to protect naval bases and deployed naval forces.
- Conducting joint Navy, Marine Corps and Air Force strikes inside China.
- Using Air Force aircraft to deploy sea mines.
- Joint Air Force and Navy attacks against Chinese anti-satellite missiles inside China.
- Increasing the mobility of satellites to make attacks more difficult.
- Launching joint Navy and Air Force cyber-attacks on Chinese anti-access forces.[112]

An October 12, 2011, press report states that

> The Pentagon is engaged in a behind-the-scenes political fight over efforts to soften, or entirely block, a new military-approved program to bolster U.S. forces in Asia.
>
> The program is called the Air Sea Battle concept and was developed in response to more than 100 war games since the 1990s that showed U.S. forces, mainly air and naval power, are not aligned to win a future war with China.
>
> A senior defense official said Defense Secretary Leon E. Panetta is reviewing the new strategy.
>
> "We want to do this right," the official said. "The concept is on track and is being refined to ensure that we are able to implement it wherever we need to—including in the Asia-Pacific region, where American force projection is essential to our alliances and interests."
>
> The official noted that the program is "the product of unprecedented collaboration by the services."
>
> Pro-defense members of Congress aware of the political fight are ready to investigate. One aide said Congress knows very little about the concept and is awaiting details.
>
> Officially, the Pentagon has said the new strategy is not directed at China.
>
> But officials familiar with the classified details said it is designed to directly address the growing threat to the United States and allies in Asia posed by what the Pentagon calls China's "anti-access" and "area denial" weapons—high-technology arms that China has been building in secret for the past several decades….

[112] Bill Gertz, "Battle Concept Signals Cold War Posture On China," *Washington Times*, November 10, 2011: 13.

> The U.S. response in the Air Sea Battle concept is said to be a comprehensive program to protect the "global commons" used by the United States and allies in Asia from Chinese military encroachment in places such as the South China Sea, western Pacific and areas of Northeast Asia.
>
> The highly classified program, if approved in its current form, will call for new weapons and bases, along with non-military means. Plans for new weapons include a long-range bomber.
>
> Other systems and elements of the program are not known….
>
> However, defense officials said China's government was alerted to some aspects of the concept earlier this year when the Center for Strategic and Budgetary Assessments think tank presented its own concept for a new warfighting strategy against China.
>
> Andrew Krepinevich, the center's director who recently left the Pentagon's Defense Policy Board, could not be reached for comment.
>
> As a result of the disclosure, China launched a major propaganda and influence campaign to derail it. The concept was raised in several meetings between Chinese and U.S. officials, with the Chinese asserting that the concept is a sign the Pentagon does not favor military relations and views China as an enemy.
>
> Officials in the Obama administration who fear upsetting China also are thought to have intervened, and their opposition led Mr. Panetta to hold up final approval.
>
> The final directive in its current form would order the Air Force and the Navy to develop and implement specific programs as part of the concept. It also would include proposals for defense contractors to support the concept.[113]

An October 2011 magazine article stated:

> AirSea Battle emerged from a memorandum between the air and sea services in 2009. The Air Force and Navy realized sophisticated threats involving high technology, networked air defenses, modern ballistic missile, and sea and air capabilities, and anti-space weapons required the services to marry up many of their respective strengths. The plan, which has received a great amount of attention since the 2010 Quadrennial Defense Review, mandated the creation of an operations concept to protect US and allied access to certain areas in the world while also protecting forward-based assets and bases….
>
> Both services are said to be fully on board with the plan, and to weed out duplication, officers from each branch have been cleared to see "all the black programs," or classified projects, of the other service as the ASB plan has matured….
>
> The plan had been vetted by both services by June [2011], and is awaiting blessing from the Office of the Secretary of Defense…. Service officials have been predicting a formal release of more information on the doctrine for months as well.
>
> As early as Feb. 17 [2011], Lt. Gen. Herbert J. Carlisle, the Air Force's deputy chief of staff for operations, plans, and requirements, had said a public document explaining the outlines of ASB in detail would occur "possibly within two weeks." The now-retired Chief of Naval Operations Adm. Gary Roughead told reporters in Washington in March he expected to

[113] Bill Gertz, "Inside the Ring," *Washington Times*, October 12, 2011 (item entitled "Air Sea Battle Fight").

> release details on ASB in "a few weeks," as the service Chiefs of the Marines Corps, USAF, and Navy were "basically done" with their work on the concept. The majority of the plan will remain classified, he added, "as it should be."[114]

A sidebar to this magazine article stated:

> The AirSea Battle rollout was repeatedly delayed over the course of 2011. According to Office of the Secretary of Defense and Air Force officials, new Secretary of Defense Leon E. Panetta is reviewing the ASB plan—a sort of executive summary of the overall operations concept (which, as of early September, remains classified).
>
> However, then-Vice Chief of Naval Operations Adm. Jonathan W. Greenert, now the CNO, told the House Armed Services Committee in late July he expected a release of unclassified portions of the plan soon.
>
> The AirSea Battle concept was signed by the USAF, Navy, and Marine Corps service Chiefs, and the Air Force and Navy Secretaries on June 2 and "forwarded to the [Secretary of Defense] for approval," the Air Force said in a brief official statement Aug. 2.
>
> Previous Defense Secretary Robert M. Gates, who departed July 1, had the document in his possession and had told senior Air Force officials he would sign it before his departure. In late July, however, Air Force and DOD officials privately indicated the concept was held up in OSD's policy shop, and Gates did not sign the document before leaving the Pentagon.
>
> Air Force and defense officials have indicated both publicly and privately that there are strong international political considerations at play. Spin "concern" has likely contributed to the delay in officially rolling out the AirSea Battle concept. In late July, USAF officials privately indicated that there is a great deal of concern within OSD about how China will perceive and react to the concept.[115]

A September 29, 2011, press report on a reported new DOD Defense Planning Guidance (DPG) document (see "September 2011 Press Report About New Defense Planning Guidance" above) quoted "a senior defense official" as stating: "It seems clear that there will be increased emphasis on [the] AirSea Battle approach going forward."[116]

A July 26, 2011, press report, stated:

> U.S. Defense Secretary Leon Panetta is reviewing an Air Force-Navy battle concept that was ordered by the Pentagon last year in response to China's military buildup and Iran's advanced weapons, Vice Chief of Naval Operations Admiral Jonathan Greenert said today.
>
> The Navy and Air Force have submitted to Panetta the equivalent of an executive summary of the battle concept with the intent to release unclassified portions within weeks, depending on Panetta's reaction, Greener told a House Armed Services readiness panel and a Bloomberg News reporter after the hearing.

[114] Marc V. Schanz, "AirSea Battle's Turbulent Year," *Air Force Magazine*, October 2011: 32-33.

[115] "An ASB Summer," *Air Force Magazine*, October 2011: 33.

[116] Christopher J. Castelli, "DOD Aims To Boos Investment In Capabilities For Major-Power War," *Inside the Pentagon*, September 29, 2011.

> The plan aims to combine the strengths of the Navy and Air Force to enable long-range strikes. It may employ a new generation of bombers, a new cruise missile and drones launched from aircraft carriers. The Navy also is increasing funding to develop new unmanned submarines.[117]

A June 10, 2011, press report stated that "while defense officials publicly insist that the military's new AirSea Battle concept, a study meant to reshape the way the U.S. military fights future wars, is not focused on China, one Navy team is quietly contradicting their claims. The group, called the China Integration Team, is hard at work applying the lessons of the study to a potential conflict with China, say sources familiar with the effort." The report also stated that "though sources familiar with the study have said that the first draft of the concept has been completed, those same sources highlighted that the project is ongoing—something that official spokesmen have stressed as well."[118] A January 10, 2011, press report stated that "the AirSea Battle concept study, meant to outline the future of Navy and Air Force operations in anti-access environments, is near completion and is being briefed to Navy Secretary Ray Mabus and Air Force Secretary Michael Donley this month, according to sources familiar with the study."[119]

## Navy Response to China Naval Modernization

The U.S. Navy has taken a number of steps in recent years that appear intended, at least in part, at improving the U.S. Navy's ability to counter Chinese maritime anti-access capabilities, including but not limited to those discussed below.

### Force Posture and Basing Actions

The final report on the 2006 QDR directed the Navy "to adjust its force posture and basing to provide at least six operationally available and sustainable carriers and 60% of its submarines in the Pacific to support engagement, presence and deterrence."[120] Additional force posture actions that appear intended, at least in part, at improving the U.S. Navy's ability to counter Chinese maritime anti-access capabilities, include the following:

- earlier actions (i.e., actions implemented over the past several years)
  - shifting three Pacific Fleet Los Angeles (SSN-688) class SSNs to Guam;
  - basing all three Seawolf (SSN-21) class submarines—the Navy's largest and most heavily armed SSNs—in the Pacific Fleet (at Kitsap-Bremerton, WA);
  - basing two of the Navy's four converted Trident cruise missile/special operations forces submarines (SSGNs) in the Pacific (at Bangor, WA);[121]

[117] Tony Capaccio, "Panetta Reviewing Air-Sea Battle Plan Summary, Greenert Says," *Bloomberg News*, July 26, 2011.

[118] Andrew Burt and Christopher J. Castelli, "Despite Improved Ties, China Weighs Heavily In Pentagon's War Planning," Inside the Navy, June 13, 2011.

[119] Andrew Burt, "Final AirSea Study Being Briefed To Mabus And Donley This Month," *Inside the Navy*, January 10, 2011.

[120] U.S. Department of Defense, *Quadrennial Defense Review Report*. Washington, 2006. (February 6, 2006) p. 47.

[121] For more on the SSGNs, see CRS Report RS21007, *Navy Trident Submarine Conversion (SSGN) Program: Background and Issues for Congress*, by Ronald O'Rourke.

- assigning most of the Navy's ballistic missile defense (BMD)-capable Aegis cruisers and destroyers to the Pacific—and homeporting some of those ships at Yokosuka, Japan, and Pearl Harbor, HI;

- more recent actions
  - announcing an intention to station several Littoral Combat Ships (LCSs) at Singapore;
  - announcing a plan to rotate Marines on six-month training deployments through Darwin, Australia; and
  - conducting talks with the Philippines about the possibility of rotating surveillance aircraft or perhaps Navy ships through Philippine bases.[122]

A January 19, 2012, press report stated:

> The head of the Navy told sailors Thursday [January 19] that the Asia-Pacific will be the service's focus in the future, and he views Hawaii as the gateway to the region.
>
> "Let me give it to you straight, right here. The focus of this department in the future is the Asia-Pacific region, where you are," Adm. Jonathan Greenert told more than 500 sailors during a visit to Pearl Harbor, one of the Navy's largest bases. "I look at Hawaii and I say it's the gateway—it's the most strategic base—out into the Asia-Pacific."
>
> Greenert attributed the shift to an evolving world, the U.S. drawdown from operations in the Middle East, and a declining defense budget.....
>
> Greenert explained to reporters afterward that the Navy would channel future investments to meet the needs of the Pacific Command first.
>
> He said ships and aircraft deployments in the Pacific would remain at current levels or be increased. The same goes for efforts involving unmanned equipment, cyber security and electronic warfare, he said.[123]

A January 16, 2012, press report further quoted Greenert as saying that about half of the Navy's 50 ships in the Western Pacific on any given day are forward-deployed naval forces in and around Japan. According to the report, Ggreenert stated, in reference to this deployment, "That's the most advanced airwing we have, the most advanced cruisers and destroyers, ordnance, antisubmarine warfare.... And we screen our sailors and our commanders very carefully. We put our best in the Western Pacific."[124]

A January 10, 2012, press report stated:

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[122] See, for example, Manuel Mogato, "Philippines Study U.S. Offer to Deploy Spy Planes," *Reuters.com*, January 27, 2012.

[123] Audrey McAvoy, "US Navy Chief: Asia-Pacific Will Be Navy's Focus," *Yahoo.com (Associated Press)*, January 19, 2012.

[124] Christopher J. Castelli, "CNO: 'Big Naval Buildup' Not Needed In Asia-Pacific Region," *Inside the Navy*, January 16, 2012. See also Donna Miles, "CNO: Navy Advances Asia-Pacific Partnerships," *Navy News Service*, January 11, 2012, accessed online at http://www.navy.mil/search/display.asp?story_id=64711.

> President Barack Obama's decision to reorient the U.S. military's focus to the Asia-Pacific region will not lead to a major naval buildup there, the top U.S. Navy officer said on Tuesday [January 10], adding that the United States already has a robust presence in the area....
>
> Addressing a forum in Washington, Admiral Jonathan Greenert, the chief of naval operations, put forward a chart showing that the U.S. Navy has about 50 ships and submarines deployed today in the western Pacific, compared with about 30 in the Middle East.
>
> Greenert said the Navy would review Obama's strategy and "adjust accordingly."
>
> "But my first assessment is that we're in good shape in the Navy where we stand in the western Pacific," he told a forum hosted by the Center for a New American Security think tank in Washington.
>
> Asked about a possible buildup in naval forces and equipment in Asia, Greenert appeared to play down speculation about a major change in the deployment of forces there and in the Middle East.
>
> "My point is, it's not a big naval buildup in the Far East. We're there, we have been there, we will continue to be there," he said.
>
> "And that I see the same proportion in the (Middle East), I don't see a naval movement" from there, he said.[125]

In a December 2011 journal article, Admiral Jonathan Greenert, the Chief of Naval Operations, stated that the Navy

> will expand [its] forward-stationed forces to improve our posture and responsiveness. In Southeast Asia, we will station several of our newest littoral combat ships at Singapore's naval facility, and as announced in November by President Barack Obama, begin rotational deployments of Marines to Darwin, Australia.[126]

A September 17, 2011, press report stated:

> The defence alliance between the US and Australia is to be significantly beefed up as more American ships, aircraft and troops move from North Asia to the southern hemisphere to be based locally at joint military facilities.
>
> New US Defence Secretary Leon Panetta said yesterday that enhancement of the relationship between the alliance partners was intended to send a "very clear signal" to the Asia-Pacific region.

[125] Phil Stewart and Paul Eckert, "No Big U.S. Naval Buildup in Asia, Top Officer Says," *Reuters.com*, January 10, 2012. See also Christopher J. Castelli, "CNO: 'Big Naval Buildup' Not Needed In Asia-Pacific Region," *Inside the Navy*, January 16, 2012.

[126] Jonathan Greenert, "Navy, 2025: Forward Warfighters," *U.S. Naval Institute Proceedings*, December 2011: 20. Greenert's statement about stationing several LCSs at Singapore followed statements by other administration officials dating back to June 2011 about operating a small number of LCSs out of Singapore. See, for example, Wong Maye-E (Associated Press), "Gates Pledges Wider U.S. Military Presence in Asia," USA Today, June 4, 2011; and Dan de Luce (Agence France-Presse), "Gates: New Weapons For 'Robust' U.S. Role in Asia," *DefenseNews.com*, June 3, 2011.

> Mr Panetta was speaking in San Francisco after a high-level ministerial meeting, known as Ausmin, that marked the 60th anniversary of the signing of the ANZUS [Australia-New Zealand-U.S.] treaty in the same city.
>
> "We've done exchanges, we've had exercises together," he said. "That is something we've done pretty much in the past. The goal here is to strengthen that relationship as best we can to send a clear signal to the Asia-Pacific region that the US and Australia are going to continue to work together to make very clear to those that would threaten us that we are going to stick together."
>
> The Ausmin talks yesterday, which included cyber terrorism as part of the alliance pact for the first time, were hosted by US Secretary of State Hillary Clinton and attended by Mr Panetta, Foreign Minister Kevin Rudd and Defence Minister Stephen Smith….
>
> Australia will also host more US troops and military hardware at jointly run bases on its soil, although Mr Smith stressed at the conclusion of yesterday's talks that negotiations were continuing about the planned expansion….
>
> Mrs Clinton said after the meeting that the US and Australia were committed to working together to seize the opportunities of a "fast-changing Asia-Pacific" region.[127]

A September 16, 2011, blog entry stated that

> China's improving air and naval power and its assertion of claims in the South China Sea are very likely moving the most important [U.S.] defense mission [in the Western Pacific] 2,000 miles south from [Japan and South Korea,] where U.S. forces in the region are now concentrated. This mismatch is presumably not lost on the U.S. and Australian ministers gathered in San Francisco.
>
> In addition to pledging greater cooperation on cyberdefense (a problem increasingly blamed on sources in China), the United States will gain greater access to Australian military training areas, pre-position military equipment in Australia, obtain access to Australian facilities and ports, and establish options for more joint military activities in the region.
>
> This step-up in military coordination with Australia follows similar U.S. diplomatic forays around the South China Sea. In 2005, the United States and Singapore signed a strategic framework agreement on military cooperation that was expanded this year with an agreement to deploy new U.S. Navy littoral combat ships to Singapore. The deepening of this agreement will enhance the ability of the U.S. Navy to support the multilateral military training exercises it leads every year with partners around the South China Sea.
>
> However, Washington appears to be taking a notably different approach in the southwest Pacific. Unlike its agreement with Japan and South Korea, the new agreements with Australia and Singapore, along with other low-key arrangements with the Philippines and others in the region, do not call for the permanent basing of U.S. combat units in these countries. Both the United States and its partners in the region have an interest in maintaining the "forward presence" of U.S. military forces in the region. But the permanent bases and garrisons in South Korea and Japan have become corrosive, especially on Okinawa, where the local population has become hostile to the U.S. military presence. In addition, restrictions on training areas in Japan and South Korea are impairing the readiness of U.S. forces there and reducing the utility of their presence.

[127] Brad Norington, "Troop Boost A Signal To Asia-Pacific," *The Weekend Australian*, September 17, 2011: 2.

> The model the U.S. planners appear to have in mind for Australia, Singapore, and around the South China Sea involves regular and frequent training exercises, temporary access to host countries' facilities, and frequent consultation by staff officers and advisors. For training exercises or in response to crises, U.S. air and ground forces would fly in and meet up with pre-positioned equipment, with naval forces arriving soon thereafter. This method would avoid the political friction the United States has encountered in Japan and South Korea and allow U.S. soldiers to remain at bases inside the United States that have better training facilities and provide better living arrangements for soldiers and their families.
>
> This new method of providing security for the southwest Pacific remains mostly a theory and will face increasing pressure if Chinese forces eventually threaten easy access to the region. But if the model succeeds, it could call into question the utility of maintaining the existing garrisons on Okinawa and South Korea, which in any case are increasingly untenable as the Chinese missile threat expands. The trick for U.S. military strategists and diplomats will be implementing this more flexible deployment model while simultaneously reassuring regional partners that U.S. security commitments are as firm as ever. As pressures increase, that trick may not be easy to pull off.[128]

## Acquisition Programs

As mentioned earlier (see "Limitations and Weaknesses" in "Background"), China's navy exhibits limitations or weaknesses in several areas, including C4ISR systems, anti-air warfare (AAW), antisubmarine warfare (ASW), and mine countermeasures (MCM). Countering China's naval modernization might thus involve, among other things, actions to exploit these limitations and weaknesses, such as developing and procuring electronic warfare systems, antiship cruise missiles, Virginia (SSN-774) class attack submarines, torpedoes, unmanned underwater vehicles (UUVs), and mines.

Many of the Navy's programs for acquiring highly capable ships, aircraft, and weapon systems can be viewed as intended, at least in part, at improving the U.S. Navy's ability to counter Chinese maritime anti-access capabilities. Examples of highly capable ships now being acquired include Ford (CVN-78) class aircraft carriers,[129] Virginia (SSN-774) class attack submarines,[130] and Arleigh Burke (DDG-51) class Aegis destroyers, including the new Flight III version of the DDG-51, which is to be equipped with a new radar for improved air and missile defense operations.[131] The procurement rate of Virginia-class submarines was increased to two per year in FY2011, and the Navy wants to start procuring the Flight III version of the DDG-51 in FY2016.

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[128] Robert Haddock, "The New Pacific Theater," *SmallWarsJournal.com*, September 16, 2011. See also Anne Gearan and Lolilta C. Baldor, "Deal Near On More US Military Access In Australia," *Yahoo.com (Associated Press)*, September 15, 2011; Simon Mann, "US, Australia Inch Towards Troops, Military Deal," *Sydney Morning Herald (smh.com.au)*, September 16, 2011; Australian Associated Press, "US, Australia Coy About Asia-Pacific Strategy," *TheAustralian.com.au*, September 16, 2011; Ernie Bower and Alexander Vagg, "AUSMIN Outcomes: GIs Based Down Under?" *CogitASIA (CSIS Asia Policy Blog) (cogitasia.com)*, September 14, 2011.

[129] For more on the CVN-78 program, see CRS Report RS20643, *Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress*, by Ronald O'Rourke.

[130] For more on the Virginia-class program, see CRS Report RL32418, *Navy Virginia (SSN-774) Class Attack Submarine Procurement: Background and Issues for Congress*, by Ronald O'Rourke.

[131] For more on the DDG-51 program, including the planned Flight III version, see CRS Report RL32109, *Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress*, by Ronald O'Rourke.

Examples of highly capable aircraft now being acquired by the Navy include F-35C carrier-based Joint Strike Fighters (JSFs),[132] F/A-18E/F Super Hornet strike fighters and EA-18G Growler electronic attack aircraft,[133] E-2D Hawkeye early warning and command and control aircraft, the P-8A Multi-mission Maritime Aircraft (MMA), the Navy carrier-based Unmanned Combat Air System (N-UCAS program) demonstrator program, and the follow-on Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) system.[134] Some analysts, such as those at the Center for Strategic and Budgetary Assessments (CSBA), an independent defense study group, have emphasized the need for the Navy to develop and acquire a long-range unmanned aircraft such as UCLASS for use on Navy aircraft carriers. A September 29, 2011, press report on a new DOD Defense Planning Guidance (DPG) document stated:

> "The Navy and Air Force are positioned to do well [in forthcoming DOD budgets]—but I imagine business as usual for them won't be an option either," [an administration official] said, noting unmanned aircraft will need to be a prominent feature for both. The Navy needs to "get serious" about unmanned combat air vehicles "if they want to keep carriers relevant" and the Air Force "needs to rethink whether the [service's planned new] long-range bomber will be manned," the official said.[135]

The Navy is also developing a number of new sensor and weapon technologies that might be of value in countering Chinese maritime anti-access capabilities, such as an electromagnetic rail gun (EMRG) whose potential missions include air and missile defense, and high-power free electron lasers (FELs) and solid state lasers (SSLs), whose potential missions also include air and missile defense.[136]

An October 10, 2011, press report states that Admiral Jonathan Greenert, the Chief of Naval Operations (CNO), in a memorandum dated September 23, 2011, "has launched a new review to identify warfighting investments that could counter Chinese military methods for disrupting key battlefield information systems." According to the report, the memorandum "requests options for warfighting in 'the complex electromagnetic environment' and for countering 'anti-access/area-denial' threats—terms closely associated with China's military." The report quotes the memorandum as stating that "Today's weapons rely on EM [electromagnetic] sensors, EM communications and EM seekers to complete their 'kill chains,' while defenders are increasingly turning to EM methods for protection," and that "some kill chains never leave the EM environment at all, damaging an adversary's military capability by affecting control systems alone—no bomb or missile required." The report states that the memorandum "directs the group to 'generate innovative concepts for [the] Navy to employ the EM environment as a primary line of operation in a 2025-2030 warfighting campaign."[137]

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[132] For more on the F-35 program, see CRS Report RL30563, *F-35 Joint Strike Fighter (JSF) Program*, by Jeremiah Gertler.

[133] For more on the F/A-18E/F and EA-18G programs, see CRS Report RL30624, *Navy F/A-18E/F and EA-18G Aircraft Program*, by Jeremiah Gertler.

[134] The Navy is currently developing a stealthy, long-range, unmanned combat air system (UCAS) for use in the Navy's carrier air wings. The demonstration program for the system is called UCAS-D. The subsequent production version of the aircraft is called N-UCAS, with the N standing for Navy.

[135] Christopher J. Castelli, "DOD Aims To Boos Investment In Capabilities For Major-Power War," *Inside the Pentagon*, September 29, 2011.

[136] For more on the Navy's laser-development efforts, see CRS Report R41526, *Navy Shipboard Lasers for Surface, Air, and Missile Defense: Background and Issues for Congress*, by Ronald O'Rourke.

[137] Christopher J. Castellil, "Memo: Navy Seeks To Counter China's Battle-Disruption Capabilities," *Inside the Navy*, (continued...)

In a December 2011 journal article, Greenert stated that

> regional powers in 2025 could use ballistic and cruise missiles, submarines, and guided rockets and artillery to prevent military forces or legitimate users from entering an area ("anti-access," or A2) or operating effectively within an area ("area-denial," or AD). Those capabilities can be characterized as defensive, reducing opposition to them, and they can be deployed from the country's mainland territory, making attacks against them highly escalatory. Their intended purpose, however, is clear—intimidation of neighboring countries, including U.S. allies and partners. Aggressors can threaten to hold key maritime crossroads at risk, render territorial claims moot, and assert that intervention by the United States or others in these disputes can be delayed or prevented. The stated or unstated implication is that their neighbors should capitulate to the aggressor's demands.
>
> To help defend our allies and protect our interests, U.S. forces in 2025 will need to be able to operate and project power despite adversary A2/AD capabilities. Over the next decade naval and air forces will implement the new AirSea Battle Concept and put in place the tactics, procedures, and systems of this innovative approach to the A2/AD challenge....
>
> Over the next decade, maintaining the Navy's war-fighting edge and addressing fiscal constraints will require significant changes in how we develop the force. We will need to shift from a focus on platforms to instead focus on what the platform carries. We have experience in this model. Aircraft carriers, amphibious ships and the littoral combat ships are inherently reconfigurable, with sensor and weapon systems that can evolve over time for the expected mission. As we apply that same modular approach to each of our capabilities, the weapons, sensors, unmanned systems, and electronic-warfare systems that a platform deploys will increasingly become more important than the platform itself.
>
> That paradigm shift will be prompted by three main factors. First, the large number, range of frequencies, and growing sophistication of sensors will increase the risk to ships and aircraft—even "stealthy" ones—when operating close to an adversary's territory. Continuing to pursue ever-smaller signatures for manned platforms, however, will soon become unaffordable. Second, the unpredictable and rapid improvement of adversary A2/AD capabilities will require faster evolution of our own systems to maintain an advantage or asymmetrically gain the upper hand. This speed of evolution is more affordable and technically possible in weapons, sensors, and unmanned systems than in manned platforms.
>
> The third factor favoring a focus on payloads is the changing nature of war. Precision-guided munitions have reduced the number and size of weapons needed to achieve the same effect. At the same time, concerns for collateral damage have significantly lowered the number of targets that can be safely attacked in a given engagement. The net effect is fewer weapons are needed in today's conflicts.
>
> Together, those trends make guided, precision stand-off weapons such as Tomahawk land-attack missiles, joint air-surface stand-off missiles, and their successors more viable and cost-effective alternatives to increasingly stealthy aircraft that close the target and drop bombs or shoot direct-attack missiles. To take full advantage of the paradigm shift from platform to payload, the Fleet of 2025 will incorporate faster, longer-range, and more sophisticated weapons from ships, aircraft, and submarines. In turn, today's platforms will evolve to be more capable of carrying a larger range of weapons and other payloads.

(...continued)

October 10, 2011.

Those other payloads will include a growing number of unmanned systems. Budget limitations over the next 10 to 15 years may constrain the number of ships and aircraft the Navy can buy....

The future Fleet will deploy a larger and improved force of rotary wing unmanned aerial vehicles (UAVs) including today's Fire Scout and soon, the armed Fire-X. Those vehicles were invaluable in recent operations in Libya and in counterterrorism operations around the Central Command area of responsibility. Deploying from the deck of a littoral combat ship, a detachment of Fire Scouts can provide continuous surveillance more than 100 miles away. Those systems will expand the reach of the ship's sensors with optical and infrared capabilities, as well as support special operations forces in the littorals. Even more significant, the Fleet of 2025 will include UAVs deploying from aircraft carrier decks. What started a decade ago as the unmanned combat air system will be operating by 2025 as an integral element of some carrier air wings, providing surveillance and some strike capability at vastly increased ranges compared with today's strike fighters. Once that aircraft is fielded, it will likely take on additional missions such as logistics, electronic warfare, or tanking.

Submarines will deploy and operate in conjunction with a family of unmanned vehicles and sensors by 2025 to sustain the undersea dominance that is a clear U.S. asymmetric advantage. Large-displacement unmanned underwater vehicles (UUVs) will deploy from ships, shore, or Virginia-class submarine payload tubes to conduct surveillance missions. With their range and endurance, large UUVs could travel deep into an adversary's A2/AD envelope to deploy strike missiles, electronic warfare decoys, or mines. Smaller UUVs will be used by submarines to extend the reach of their organic sensors, and will operate in conjunction with unattended sensors that can be deployed from surface combatants, submarines, and P-8A patrol aircraft. The resulting undersea network will create a more complete and persistent "common operational picture" of the underwater environment when and where we need it. This will be essential to finding and engaging adversary submarines, potentially the most dangerous A2/AD capability.

The undersea picture is extremely important in terms of countering enemy mining. The most basic of A2/AD weapons, mines can render an area of ocean unusable for commercial shipping for weeks or months while we laboriously locate and neutralize them. Even the threat of mines is enough to severely restrict ship movements, significantly affecting trade and global economic stability if it happens in key choke points such as the Malacca or Hormuz straits. The mine countermeasure capabilities we are developing for littoral combat ships and MH-60 aircraft rely heavily on unmanned sensors to rapidly build the underwater picture, and unmanned neutralization systems to disable mines. By 2025 those systems will be fully fielded, and their portable nature could allow them to be another swappable payload on a range of combatants....

Electronic warfare (EW) and cyber operations are increasingly essential to defeating the sensors and command and control (C2) that underpin an opponent's A2/AD capabilities. If the adversary is blinded or unable to communicate, he cannot aim long-range ballistic and cruise missiles or cue submarines and aircraft. Today, Navy forces focus on deconflicting operations in the electromagnetic spectrum or cyber domains. By 2025, the Fleet will fully operationalize those domains, more seamlessly managing sensors, attacks, defense, and communications, and treating EW and cyber environments as "maneuver spaces" on par with surface, undersea, or air.

For example, an electronic jammer or decoy can defeat individual enemy radar, and thus an enemy C2 system using the radar's data. A cyber operation might be able to achieve a similar effect, allowing U.S. forces to avoid detection. This is akin to using smoke and "rubber-duck" decoys in World War II to obscure and confuse the operational picture for Japanese

> forces, allowing U.S. ships to maneuver to an advantageous position. The future Fleet will employ EW and cyber with that same sense of operational integration.[138]

## Training and Forward-Deployed Operations

The Navy in recent years has increased antisubmarine warfare (ASW) training for Pacific Fleet forces and conducted various forward-deployed operations in the Western Pacific, including exercises and engagement operations with Pacific allied and partner navies, as well as operations that appear to have been aimed at monitoring Chinese military operations.[139]

In a December 2011 journal article, Admiral Jonathan Greenert, the Chief of Naval Operations, stated:

> Critical to shaping the environment is cooperation with partners and allies across the range of operations. At the high end [of operations], we will expand our combined efforts with allies in Japan, South Korea, and Australia to train and exercise in missions such as antisubmarine warfare and integrated air and missile defense. Over the next decade, we will also increase deployments of ships and aircraft for the cooperative missions our other allies and partners need most. Our ships ships [sic] in Singapore will conduct cooperative counterpiracy or countertrafficking operations around the South China Sea. Similarly, 2025 may see [land-based] P-8A Poseidon [maritime patrol] aircraft or unmanned broad area maritime surveillance aerial vehicles periodically deploy to the Philippines or Thailand to help those nations with maritime domain awareness....
>
> As Secretary of State Hillary Clinton noted in a recent *Foreign Policy* article, the Asia-Pacific region will be emphasized in our forward posture.... We will continue our robust rotational deployments to the western Pacific, complemented with our forward-stationed navy and marine forces in Japan, Guam, Singapore, and Australia.[140]

## Statements of Confidence

Countering China's naval modernization effort can also involve stating publicly (while withholding classified details) the U.S. Navy's ability to counter improved Chinese maritime forces. Such public statements could help prevent Chinese overconfidence that might lead to incidents, while also reassuring regional allies, partners, and neutrals. Conversely, some observers might argue, having an ability to counter Chinese maritime military forces but not stating it publicly could invite Chinese overconfidence and thereby be destabilizing. A February 1, 2011, press report stated:

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[138] Jonathan Greenert, "Navy, 2025: Forward Warfighters," *U.S. Naval Institute Proceedings*, December 2011: 20. Greenert's statement about stationing several LCSs at Singapore followed statements by other administration officials dating back to June 2011 about operating a small number of LCSs out of Singapore. See, for example, Wong Maye-E (Associated Press), "Gates Pledges Wider U.S. Military Presence in Asia," USA Today, June 4, 2011; and Dan de Luce (Agence France-Presse), "Gates: New Weapons For 'Robust' U.S. Role in Asia," *DefenseNews.com*, June 3, 2011.

[139] Incidents at sea in recent years between U.S. and Chinese ships and aircraft in China's Exclusive Economic Zone (EEZ) (see "China's View Regarding Right to Regulate Foreign Military Activities in EEZ" in "Background") appear to involve, on the U.S. side, ships and aircraft, such as TAGOS ocean surveillance ships and EP-3 electronic surveillance aircraft, whose primary apparent mission is to monitor foreign military operations.

[140] Jonathan Greenert, "Navy, 2025: Forward Warfighters," *U.S. Naval Institute Proceedings*, December 2011: 20.

> U.S. military commanders are expressing confidence that they can hold their own in the face of faster-than-expected advances by China's military, but looming cost cuts are adding to doubts about the future of American power in the Pacific….
>
> In an interview from an office at the Washington Navy Yard, a military base in the nation's capital, the top Navy commander said the military had plans in place to cope with advances in China, and elsewhere. "We're not flat footed" in the response to China, Admiral Gary Roughead told Reuters.
>
> "I would say that we are responding, or advancing, our capabilities in such a way that we're pacing the global developments that are taking place," he said.
>
> "That includes Chinese advances, it includes developments that are taking place in other parts of the world as well."[141]

A December 2010 press report stated:

> The man who would face the Chinese in battle, Adm. Patrick Walsh, the current commander of the U.S. Navy's Pacific Fleet, sees preparation as a way to avoid a future fight. "When we look at these sorts of [Chinese military] developments, such as the ASBM, they are technological developments that we respect, but do not necessarily fear," Walsh says. "The key element in any sort of deterrent strategy is to make it clear to those who would use a given piece of technology that we have the means to counter it, and to maintain a technological edge."[142]

One observer stated in 2009 that

> It is time for the national security community to get a grip on itself. The AA/AD [anti-access/area-denial] threat is neither new nor all that daunting. The U.S. military has already faced down the mother of all AA/AD threats. It was the Soviet military. The Red Army was postured for the ultimate AA/AD operation, including a massive air and missile assault—employing chemical weapons—on all our forward bases and using hundreds of submarines and aircraft to sweep the seas of our ships. The AA/AD Cassandras are hyping today's threat. Equally bad, they are forgetting recent history.
>
> The U.S. military will employ a full sweep of technologies, tactics and techniques to counter the AA/AD threat. As my colleague Loren Thompson pointed out… a few weeks ago the U.S. Navy has ways of addressing the anti-shipping ballistic missile threat. Advanced organic mine warfare capabilities are being developed to counter sea mines. The Air Force will employ a combination of airfield defenses, electronic warfare, SEAD [suppression of enemy air defenses], unmanned systems, long-range precision weapons and most important, stealthy aircraft to defeat the AA/AD threat. There is an AA/AD threat, but it is not an apocalyptic danger.[143]

[141] Phil Stewart, "U.S. Military Says Keeps Up With China; Is It Enough?" *Reuters.com*, February 1, 2011.

[142] Erik Sofge, "China's Deadliest Game," *Popular Mechanics*, December 2010: 83.

[143] Daniel Goure, "The Overblown Anti-Access, Area Denial Threat," Lexington Institute Early Warning Blog, October 23, 2009, accessed at http://www.lexingtoninstitute.org/the-overblown-anti-access-area-denial-threat?a=1&c=1171.

# Issues For Congress

## Future Size of U.S. Navy

One potential oversight issue for Congress, particularly in the context of reductions in planned levels of defense spending that are anticipated as a result of the Budget Control Act of 2011 (S. 365/P.L. 112-25 of August 2, 2011), concerns whether the U.S. Navy in coming years will be large enough to adequately counter improved Chinese maritime anti-access forces while also adequately performing other missions of interest to U.S. policymakers around the world. Some observers are concerned that a combination of growing Chinese naval capabilities and budget-driven reductions in the size of the U.S. Navy could encourage Chinese military overconfidence and demoralize U.S. allies and partners in the Pacific, and thereby make it harder for the United States to defend its interests in the region.[144]

Navy officials state that, to carry out Navy missions around the world in coming years, the Navy will need to achieve and maintain a fleet with a minimum of 313 ships of various types and numbers. The Navy's FY2012 30-year (FY2012-FY2041) shipbuilding plan, however, does not include enough ships to fully support all elements of the Navy's 313-ship goal over the long run. Among other things, the Navy projects that the cruiser-destroyer and attack submarine forces would drop substantially below required levels in the latter years of the 30-year plan.[145] In addition, as discussed earlier (see "January 26, 2012, Document on Selected FY2013 Program Decisions"), DOD announced on January 26, 2012, that the Navy's FY2013 budget will propose the early retirement of nine ships, including seven Aegis cruisers, and deferral of some planed ship procurements.

Potential oversight questions for Congress, particularly after the proposed FY2013 budget and FY2013-FY2017 Future Years Defense Plan (FYDP) are submitted in February 2012, include the following:

- Under the Administration's plans, will the Navy in coming years be large enough to adequately counter to adequately counter improved Chinese maritime anti-access forces while also adequately performing other missions of interest to U.S. policymakers around the world?
- What might be the political and security implications in the Asia-Pacific region of a combination of growing Chinese naval capabilities and budget-driven reductions in the size of the U.S. Navy?
- If the Navy is reduced in size and priority is given to maintaining Navy forces in the Pacific, what will be the impact on Navy force levels in other parts of the world, such as the Persian Gulf/Indian Ocean region or the Mediterranean Sea,

[144] See, for example, Dan Blumenthal and Michael Mazza, "Asia Needs a Larger U.S. Defense Budget," *Wall Street Journal*, July 5, 2011; J. Randy Forbes, "Defence Cuts Imperil US Asia Role," *The Diplomat (*http://the-diplomat.com*)*, October 26, 2011. See also Andrew Krepinevich, "Panetta's Challenge," *Washington Post*, July 15, 2011: 15; Dean Cheng, *Sea Power and the Chinese State: China's Maritime Ambitions*, Heritage Foundation Backgrounder No. 2576, July 11, 2011, p. 10.

[145] For additional discussion, see CRS Report RL32665, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, by Ronald O'Rourke.

and consequently on the Navy's ability to adequately perform its missions in those parts of the world?

- To what extent could the operational impacts of a reduction in Navy ship numbers be mitigated through increased use of forward homeporting, multiple crewing, and long-duration deployments with crew rotation (i.e., "Sea Swap")? How feasible are these options, and what would be their potential costs and benefits?
- Particularly in a situation of constrained DOD resources, if enough funding is allocated to the Navy to permit the Navy in coming years to maintain a fleet of about 313 ships including 11 aircraft carriers, how much would other DOD programs need to be reduced, and what would be the operational implications of those program reductions in terms of DOD's overall ability to counter improved Chinese military forces and perform other missions?

## Air-Sea Battle Concept

Another potential oversight issue for Congress concerns the Air-Sea Battle concept. As mentioned earlier (see "Air-Sea Battle (ASB) Concept" in "Background"), little of an authoritative nature has been reported about the concept. In a November 7, 2011, letter to Secretary of Defense Panetta, Representative J. Randy Forbes, the chairman of the Readiness subcommittee of the House Armed Services Committee, stated in part:

> Despite reports throughout 2011 that AirSea Battle had been completed in an executive summary form, to my knowledge Members of Congress have yet to be briefed on its conclusions or in any way made a part of the process. This support will be critical if this concept is to be both properly resourced and enduring….
>
> … I believe the development of this operational concept, like AirLand Battle during the late 1970s and early 1980s, will require the support of Congress if it is to be both successful and enduring. As you will recall, after Airland Battle was finalized in 1980 the Army worked to build a consensus around the effort, first within the Department and then with Members of Congress through a series of briefings. These briefings described the doctrine and the weapons coming into production that would form the basis of this major doctrinal transition. With Congress' support, AirLand Battle received the proper resources that led to a revolution in the way America's Army and Air Force conducted joint operations. If AirSea Battle is to have similar success, the Congress will have to be made a full partner of this effort.
>
> As AirSea Battle moves from the development stage to implementation, I am eager to understand how you plan to make Congress part of this process. More specifically, what is the overall fiscal program required to support the basic concept? In the short term, I would also appreciate a brief to better understand the findings of the Department's two-year effort to comprehend the challenges created by sophisticated A2/AD [anti-access/area-denial] environments and the operational and tactical demands that will be required to sustain our freedom of action in these theaters.[146]

[146] Letter dated November 7, 2011, from Representative J. Randy Forbes to the Honorable Leon Panetta, accessed November 30, 2011, at http://forbes.house.gov/UploadedFiles/Panetta_ASB.pdf. The letter was also posted at *InsideDefense.com* (subscription required) on November 18, 2011. See also Megan Eckstein, "Forbes Asks Pentagon For Details On New AirSea Battle Office," *Inside the Navy*, November 21, 2011.

## Navy's Ability to Counter China's ASBMs

Another potential oversight issue for Congress concerns the Navy's ability to counter China's ASBMs. Although China's projected ASBM, as a new type of weapon, might be considered a "game changer," that does not mean it cannot be countered. There are several potential approaches for countering an ASBM that can be imagined, and these approaches could be used in combination. The ASBM is not the first "game changer" that the Navy has confronted; the Navy in the past has developed counters for other new types of weapons, such as ASCMs, and is likely exploring various approaches for countering ASBMs.

### Breaking the ASBM's Kill Chain

Countering China's projected ASBMs could involve employing a combination of active (i.e., "hard-kill") measures, such as shooting down ASBMs with interceptor missiles, and passive (i.e., "soft-kill") measures, such as those for masking the exact location of Navy ships or confusing ASBM reentry vehicles. Employing a combination of active and passive measures would attack various points in the ASBM "kill chain"—the sequence of events that needs to be completed to carry out a successful ASBM attack. This sequence includes detection, identification, and localization of the target ship, transmission of that data to the ASBM launcher, firing the ASBM, and having the ASBM reentry vehicle find the target ship.

Attacking various points in an opponent's kill chain is an established method for countering an opponent's military capability. A September 30, 2011, press report, for example, quotes Lieutenant General Herbert Carlisle, the Air Force's deputy chief of staff for operations, plans, and requirements, as stating in regard to Air Force planning that "We've taken [China's] kill chains apart to the 'nth' degree."[147]

To attack the ASBM kill chain, Navy surface ships, for example, could operate in ways (such as controlling electromagnetic emissions or using deception emitters) that make it more difficult for China to detect, identify, and track those ships.[148] The Navy could acquire weapons and systems for disabling or jamming China's long-range maritime surveillance and targeting systems, for attacking ASBM launchers, for destroying ASBMs in various stages of flight, and for decoying and confusing ASBMs as they approach their intended targets. Options for destroying ASBMs in flight include developing and procuring improved versions of the SM-3 BMD interceptor missile (including the planned Block IIA version of the SM-3), accelerating the acquisition of the Sea-Based Terminal (SBT) interceptor (the planned successor to the SM-2 Block IV terminal-phase BMD interceptor),[149] accelerating development and deployment of the electromagnetic rail gun (EMRG), and accelerating the development and deployment of shipboard high-power free

[147] David A. Fulghum, "USAF: Slash And Burn Defense Cuts Will Cost Missions, Capabilities," *Aerospace Daily & Defense Report*, September 30, 2011: 6.

[148] For a journal article discussing actions by the Navy during the period 1956-1972 to conceal the exact locations of Navy ships, see Robert G. Angevine, "Hiding in Plain Sight, The U.S. Navy and Dispersed Operations Under EMCON, 1956-1972," *Naval War College Review*, Spring 2011: 79-95. See also Jonathan F. Sullivan, Defending the Fleet From China's Anti-Ship Ballistic Missile: Naval Deception's Roles in Sea-Based Missile Defense, A Thesis submitted to the Faculty of the Graduate School of Arts and Sciences of Georgetown University in partial fulfillment of the requirements for the degree of Master of Arts in Security Studies, April 15, 2011, accessed August 10, 2011 at http://gradworks.umi.com/1491548.pdf.

[149] For more on the SM-3, including the Block IIA version, and the SBT, see CRS Report RL33745, *Navy Aegis Ballistic Missile Defense (BMD) Program: Background and Issues for Congress*, by Ronald O'Rourke.

electron lasers (FELs) and solid state lasers (SSLs). Options for decoying and confusing ASBMs as they approach their intended targets include equipping ships with systems, such as electronic warfare systems or systems for generating radar-opaque smoke clouds, that could confuse an ASBM's terminal-guidance radar.[150] One observer has argued that active defenses alone are unlikely to succeed, and that the U.S. Navy should place stronger emphasis on passive defenses.[151]

## AAW and BMD Capability of Flight III DDG-51 Destroyer

One issue for Congress is whether the Flight III version of the DDG-51 destroyer—the version that the Navy wants to procure starting in FY2016—would have sufficient AAW and BMD capability to perform projected air and missile defense missions against Chinese forces, including ASBMs.

The Flight III DDG-51 would have more AAW and BMD capability than the current Flight IIA DDG-51 design, but less AAW and BMD capability than was envisioned for a now-canceled cruiser called the CG(X), in large part because the Flight III DDG-51 would be equipped with a 12- or 14-foot-diameter version of a new radar called the Air and Missile Defense Radar (AMDR) that would have more sensitivity than the SPY-1 radar on Flight IIA DDG-51s, but less sensitivity than the substantially larger version of the AMDR that was envisioned for the CG(X). The CG(X) also may have had more missile-launch tubes than the Flight III DDG-51.

Supporters of the Navy's proposal to procure Flight III DDG-51s could argue that a 12- or 14-foot-diameter version of the AMDR would provide the DDG-51 with sufficient AAW and BMD capability to perform projected AAW and BMD missions because this radar would be substantially more capable than the SPY-1 radar currently on DDG-51s, and because Flight III DDG-51s (and other Navy ships) would also benefit from data collected by other sensors, including space-based sensors.

Skeptics could argue that Flight III DDG-51s might not have sufficient AAW and BMD capability because a 12- or 14-foot-diameter AMDR would be substantially less capable than the substantially larger AMDR that the Navy previously believed would be needed to adequately perform projected AAW and BMD missions, because the off-board sensors on which the Flight III DDG-51 would rely for part of its sensor data that might turn out to be less capable as the Navy assumed in 2008 that they would be, and because the off-board sensors and their related data-communication links could in any event be vulnerable to enemy attack.

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[150] Regarding the option of systems for generating radar-opaque smoke clouds, Thomas J. Culora, "The Strategic Implications of Obscurants," *Naval War College Review*, Summer 2010: 73-84; Scott Tait, "Make Smoke!" U.S. Naval Institue Proceedings, June 2011: 58-63.

[151] Marshall Hoyler, "China's 'Antiaccess' Ballistic Missiles and U.S. Active Defense," *Naval War College Review*, Autumn 2010: 84-105.

For additional discussions of options for countering ASBMs, see Sam J. Tangredi, "No Game Changer for China," *U.S. Naval Institute Proceedings*, February 2010: 24-29; and Loren B. Thompson, "China's New "Carrier-Killing" Missile Is Overrated," Lexington Institute (Early Warning Blog), August 9, 2010 (available online at http://www.lexingtoninstitute.org/chinas-new-carrier-killing-missile-is-overrated?a=1&c=1171). See also Craig Hooper and Christopher Albon, "Get Off the Fainting Couch," *U.S. Naval Institute Proceedings*, April 2010: 42- 47; and Duncan Lennox, "China's ASBM Project: Keep Calm and Carry On," *Jane's Defence Weekly*, February 16, 2011: 23.

A January 2012 Government Accountability Office (GAO) report on DDG-51 acquisition stated that

> the Navy's choice of DDG 51 as the platform for AMDR limits the overall size of the radar to one that will be unable to meet the Navy's desired (objective) IAMD [integrated air and missile defense] capabilities. If the Navy selects a 12-foot AMDR—which may reduce the impacts on the ship and design—it may not be able to meet the requirements for AMDR as currently stated in the Navy's draft capabilities document....
>
> [The] Flight III [DDG-51] with a 14-foot AMDR will not be powerful enough to meet the Navy's objective, or desired IAMD capabilities. The shipyards and the Navy have determined that 14-foot radar arrays are the largest that can be accommodated within the confines of the existing DDG 51 configuration. Adding a radar larger than 14 feet to DDG 51 is unlikely without major structural changes to the ship. AMDR is being specifically developed to be a scalable radar—meaning that it can be increased in size and power to provide enhanced capability against emerging threats.
>
> According to AMDR contractors, the Navy had originally contracted for an investigation of a Variant 2 AMDR with a sensitivity of SPY+40,[152] but this effort was cancelled. They added that the maximum feasible size of AMDR would be dictated by the ship and radar power and cooling demands, but that they had investigated versions as large as 36 feet. Leveraging AMDR's scalability will not be possible on DDG 51 without major changes, such as a new deckhouse or adding to the dimensions of the hullform itself by broadening the beam of the ship or adding a new section (called a plug) to the middle of the ship to add length. Navy officials have stated that adding a plug to DDG 51 is not currently a viable option due to the complexity, and that a new ship design is preferable to a plugged DDG 51.
>
> The Navy has not yet determined the size of AMDR for Flight III, and two sizes are under consideration: a 14-foot AMDR with a sensitivity of SPY+15, and a 12-foot AMDR with a sensitivity of SPY+11. According to a draft AMDR Capability Development Document, the Navy has identified that an AMDR with SPY+15 will meet operational performance requirements against the threat environment illustrated in the [destroyer] Radar/Hull Study.[153] This document also notes that a significantly larger SPY+30 AMDR is required to meet the Navy's desired capability (known as objective) against the threat environment illustrated in the MAMDJF AOA.[154] The Navy could choose to change these requirements. The MAMDJF AOA eliminated the DDG 51-based SPY+15 solution from consideration in part due to the limited radar capability, and identified that a radar closer to SPY+30 power with a signal to noise ratio 1,000 times better than SPY+0 and an array size over 20 feet is required to address the most challenging threats. If a 12-foot array is chosen, the Navy will be selecting a capability that is less than the "marginally adequate" capability offered by a SPY+15 radar as defined by the Radar/Hull Study red team assessment. According to Navy officials, only through adding additional square footage can the Navy effectively make large improvements in the sensitivity of the radar the SPY+30 radar considered in the MAMDJF AOA could only be carried by a newly designed cruiser or a modified San Antonio [LPD-17]

[152] This is a way of characterizing how much more sensitive a particular version of the AMDR is compared to the SPY-1 radar on the current Flight IIA DDG-51. The larger the number after the plus sign, the greater the degree of improvement in sensitivity that the AMDR would have over the SPY-1 radar. The SPY-1 radar itself in this nomenclature would be referred to as SPY+0.

[153] This is a study that the Navy conducted to compare various combinations of radars on the DDG-51 and DDG-1000 destroyer hull forms.

[154] MAMDJF AOA is Maritime Air and Missile Defense of Joint Forces Analysis of Alternatives—a DOD study that examined ship-design options for the now-canceled CG(X) cruiser.

class [amphibious] ship, and only a modified DDG 1000 [destroyer] and could carry the approximately SPY+25 radar. According to the draft AMDR Capability Development Document, the Navy's desired IAMD capability can only be accommodated on a larger, currently unspecified ship. As part of the MAMDJF AOA, the Navy identified that DDG 1000 can accommodate a SPY+25 radar. As part of a technical submission to the Navy, BIW—the lead designer for DDG 1000[155]—also identified a possible design for a 21-foot radar on DDG 1000. The Navy did not include a variant with this size radar in the Radar/Hull Study.

According to senior Navy officials, since the MAMDJF AOA was released the Navy has changed its concept on the numbers of Navy ships that will be operating in an IAMD environment. Rather than one or a small number of ships conducting IAMD alone and independently managing the most taxing threat environments without support, the Navy now envisions multiple ships that they can operate in concert with different ground and space-based sensor assets to provide cueing for AMDR when targets are in the battlespace. This cueing would mean that the shooter ship could be told by the off-board sensors where to look for a target, allowing for earlier detection and increased size of the area that can be covered. According to the Navy, this concept—referred to as sensor netting—can be used to augment the reduced radar capability afforded by a 12 or 14-foot AMDR as compared to the larger radars studied in the MAMDJF AOA. For example, the Navy cited the use of the Precision Tracking Space System program as an example of sensors that could be leveraged. However, this program (envisioned as a constellation of missile tracking satellites) is currently in the conceptual phase, and the independent Radar/Hull Study red team stated that the development timeline for this system is too long to consider being able to leverage this system for Flight III. Navy officials told us that another option would be to leverage the newly completed Cobra Judy Replacement radar ship and its very powerful dual-band radar to provide cueing for DDG 51s. This cueing could allow the DDG 51s to operate a smaller AMDR and still be effective. The Cobra Judy Replacement ship is comparatively cheaper than DDG 51s (approximately $1.7 billion for the lead ship), and was commercially designed and built. However, it is not a combatant ship, which would limit its employment in a combat environment and make it difficult to deploy to multiple engagement locations.

Senior Navy officials told us that the concept of sensor netting is not yet well defined, and that additional analysis is required to determine what sensor capabilities currently exist or will be developed in the future, as well as how sensor netting might be conceptualized for Flight III. Sensor netting requires not only deployment of the appropriate sensors and for these sensors to work alone, but they also need to be able to share usable data in real-time with Aegis in the precise manner required to support BMD engagements. Though sharing data among multiple sensors can provide greater capabilities than just using individual stand-alone sensors, officials told us that every sensor system has varying limitations on its accuracy, and as more sensors are networked together and sharing data, these accuracy limitations can compound. Further, though there have been recent successes in sharing data during BMD testing, DOD weapons testers responsible for overseeing BMD testing told us that there have also been issues with sending data between sensors. Although sensor technology will undoubtedly evolve in the future, how sensor netting will be leveraged by Flight III and integrated with Navy tactics to augment Aegis and the radar capability of Flight III is unknown...

The Navy's choices for Flight III will likely be unsuitable for the most stressful threat environments it expects to face....

[155] This is reference to Bath Iron Works of Bath, ME, a shipyard that is part of General Dynamics.

> We recommend that the Secretary of Defense direct the Secretary of the Navy to take the following three actions:
>
> 2. Report to Congress in its annual long-range shipbuilding plan on its plans for a future, larger surface combatant, carrying a more capable version of AMDR and the costs and quantities of this ship....
>
> DOD concurred with our second recommendation that the Navy report to Congress in its annual long-range shipbuilding plan on its plans for a future larger surface combatant carrying a more capable version of AMDR. Given the assessments that the Navy is currently conducting on surface combatants, the Navy's next submission should include more specific information about its planned future surface combatant acquisitions.[156]

Another CRS report discusses potential options for improving or augmenting the AAW and BMD capabilities of future Navy destroyers.[157]

## Endo-Atmospheric Target for Simulating DF-21D ASBM

A December 2011 report from DOD's Director, Operational Test and Evaluation (DOT&E)—the DOT&E office's annual report for FY2011—states the following in its section on test and evaluation resources:

> **Anti-Ship Ballistic Missile Target**
>
> A threat representative Anti-Ship Ballistic Missile (ASBM) target for operational open-air testing has become an immediate test resource need. China is fielding the DF-21D ASBM, which threatens U.S. and allied surface warships in the Western Pacific. While the Missile Defense Agency has exo-atmospheric targets in development, no program currently exists for an endo-atmospheric target. The endo-atmospheric ASBM target is the Navy's responsibility, but it is not currently budgeted. The Missile Defense Agency estimates the non-recurring expense to develop the exo-atmospheric target was $30 million with each target costing an additional $30 million; the endo-atmospheric target will be more expensive to produce according to missile defense analysts. Numerous Navy acquisition programs will require an ASBM surrogate in the coming years, although a limited number of targets (3-5) may be sufficient to validate analytical models.[158]

## Press Reports

A November 9, 2011, press report stated that Vice Admiral Scott Swift, the commander of the U.S. Navy's 7th Fleet (the fleet responsible for the Western Pacific),

> downplayed concerns about China's development of a ballistic missile, dubbed the DF-21D, that could theoretically be capable of sinking American aircraft carriers at great distance. If

[156] Government Accountability Office, *Arleigh Burke Destroyers[:] Additional Analysis and Oversight Required to Support the Navy's Future Surface Combatant Plans*, GAO-12-113, January 2012, pp. 31, 41-44, 52, 53.

[157] See CRS Report RL32109, *Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress*, by Ronald O'Rourke.

[158] Department of Defense, Director, Operational Test and Evaluation, *FY2011 Annual Report*, December 2011, p. 294. See also Christopher J. Castelli, "Report: Urgent Effort To Counter China's Anti-Ship Missile Needs Funding," *Inside the Navy*, January 23, 2012.

> true, it's the kind of game changer that some fear could, during a crisis, force the U.S. away from strategic areas such as the Taiwan Strait, the waters around Korea, and the South China Sea.
>
> "The capability is significant. Whether any given system will live up to its design is arguable," Adm. Swift said. He said it's unwise to figure any single weapon could be a "holy grail" for a particular fighting force and emphasized the totality of a fighting force's options.
>
> "You have to look at those systems holistically and what the overall impact is. I will tell you based on what I see, I don't envision changing any of my operation based on one specific system," Adm. Swift said.[159]

An August 29/September 5, 2011, press report states:

> Each possible [Chinese] source of ISR [intelligence, surveillance and reconnaissance targeting data] for the DF-21 looks vulnerable in its own way, helping to explain why the U.S. Navy says it can break the kill chain for the missile. Yet it seems that in many links [in the kill chain], information [on the location of U.S. Navy ships] could be collected redundantly, so breaking one [link] does not mean breaking the chain….
>
> In all cases, the data needs to flow back to China from the [ISR] sensor, and the system's control center presumably needs to send commands to the sensor platform—more links in the kill chain that would have to be protected [by the Chinese]. If the DF-21D needs targeting updates as it flies, then that data feed would also be at risk.
>
> If the missile is designed for an air burst—to spread destruction across a carrier's deck rather than lunging into the hangar, machinery and command spaces—then its fuse could also be a target of countermeasures.[160]

The then-Chief of Naval Operations, Admiral Gary Roughead, stated the following in an interview published on April 4, 2011:

> **Question:** China reportedly has deployed a so-called aircraft carrier killer. Does such a weapon upset the balance of power insofar as the Navy is concerned?
>
> **Roughead:** No. You have to look at the total employment of the weapon. You have to look at the nature of being able to first locate, then target, and then engage a moving sea-borne target at range. I'm always struck at how captivated people have gotten about the carrier killer. Nobody's talking about the precision with which every fixed airfield in the region could be targeted. I really do think that it is not the game-changer people have played it up to be.[161]

A March 16, 2011, press report states:

> "There has been a lot of discussion about the Dong Feng 21 missile," [Admiral Gary] Roughead acknowledged. "But the DF 21 is no more an anti-access weapon than a submarine is. I would argue that you can put a ship out of action faster by putting a hole in

[159] Alex Frangos, "U.S. Navy Commander Calls for Greater Dialogue," *Wall Street Journal (*http://blogs.wsj.com/chinarealtime*)*, November 9, 2011.

[160] Bradley Perrett, "Pacific Projections," *Aviation Week & Space Technology*, August 29/September 5, 2011: 67-68.

[161] "'We're Not Gambling,'" *Aviation Week & Space Technology*, April 4, 2011: 66.

> the bottom [with a torpedo] than by putting a hole in the top [with a weapon like the DF-21]."
>
> Noting the superiority of the Navy's Virginia-class attack submarines over the several types China is building, Roughead declared that "even though the DF 21 has become a newsworthy weapon, the fact is our aircraft carriers can maneuver, and we have systems that can counter weapons like that."
>
> "My objective," in regards to the Chinese, Roughead said, "is to not be denied ocean areas were can operate, or not be restricted in our ability to operate."[162]

A February 15, 2011, press report states:

> A new "carrier killer" missile that has become a symbol of China's rising military might will not force the U.S. Navy to change the way it operates in the Pacific, a senior Navy commander told The Associated Press.
>
> Defense analysts say the Dong Feng 21D missile could upend the balance of power in Asia, where U.S. aircraft carrier battle groups have ruled the waves since the end of World War II.
>
> However, Vice Adm. Scott van Buskirk, commander of the U.S. 7th Fleet, told the AP in an interview that the Navy does not see the much-feared weapon as creating any insurmountable vulnerability for the U.S. carriers - the Navy's crown jewels.
>
> "It's not the Achilles heel of our aircraft carriers or our Navy - it is one weapons system, one technology that is out there," Van Buskirk said in an interview this week on the bridge of the USS George Washington, the only carrier that is home-based in the western Pacific….
>
> Van Buskirk, whose fleet is responsible for most of the Pacific and Indian oceans, with 60-70 ships and 40,000 sailors and Marines under its command, said the capabilities of the Chinese missile are as yet unproven. But he acknowledged it does raise special concerns.
>
> "Any new capability is something that we try to monitor," he said.
>
> "If there wasn't this to point to as a game changer, there would be something else," he said. "That term has been bandied about for many things. I think it really depends in how you define the game, whether it really changes it or not. It's a very specific scenario for a very specific capability - some things can be very impactful."…
>
> Still, van Buskirk said the Navy has no intention of altering its mission because of the new threat and will continue to operate in the seas around Japan, Korea, the Philippines and anywhere else it deems necessary.
>
> "We won't change these operations because of this specific technology that might be out there," he told The AP while the USS George Washington was in its home port just south of Tokyo for repairs last week. "But we will carefully monitor and adapt to it."[163]

Admiral Roughead stated the following in a January 14, 2011, interview:

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[162] Christopher P. Cavas, "Roughead Says Russian, Chinese Navies Growing," NavyTimes.com, March 16, 2011.

[163] Eric Talmadge, "3-Star: Anti-Carrier Missile Won't Stop Navy," *NavyTimes.com*, February 15, 2011.

**Question:** As you say, you don't jump with the revelation of another capability, particularly as you might have known it was coming. But excitable headline writers like to talk about the ASBM as a game-changer. Is that accurate?

**Roughead:** I think it is a bit of an overstatement. I find it very interesting when you talk about the ballistic missile capability and the fixation on the ASBM, the fact of the matter is that with regard to the other military capabilities that are land-based, you could have the co-ordinates of every 20 feet of airstrip preprogrammed and you know it is not going to move. I would submit the beauty of naval forces is their flexibility, and the challenges of finding, targeting and then hitting them. It is a new capability and a new application of a ballistic missile, but at the same time, I look at it and say let's move forward with this.

**Question:** Do you have any idea about timetables for deployment? Admiral Willard has talked about this.

**Roughead:** He talked about the initial operational capability, which is a term we use. It would not surprise me that in the next couple of years that that capability will be in play.

**Question:** But have you been preparing for some time your own structure to incorporate that?

**Roughead:** I think across the board I am always looking at developments and at how do we keep our options open relative to those developments. For me personally, the PLAN has been an area of interest since I was first exposed to it in a very personal way starting in 1994. Through a series of assignments I have been able to watch it. I have had a focused professional interest in it. So I watch and do the things that I have to do to make sure that my navy is ready.[164]

Vice Admiral David J. Dorsett, the Deputy Chief of Naval Operations for Information Dominance, stated the following at a January 5, 2011, meeting with defense reporters:

**Question:** What are the resourcing requirements implications of the Chinese missile given you said it's got capability [inaudible]? Are there major improvements in the Aegis air defense system that you're recommending or [inaudible] the edges? What are the defensive implications for the Navy and resources in the next four or five years?

**Dorsett:** First of all, Tony, going into any level of detail would be a classified answer, and I'll tell you, like any advanced technology that's developed for military use around the globe, the U.S. Navy needs to develop counters. We need to be innovative in that approach. I think that's one of the things that with creation of information dominance, we've been able to look at a variety of kinetic and non-kinetic solution sets to counter advancing capabilities. And relative to advanced missile systems, we're doing that as well. It's a vague answer for you, but it's the best I can do.

**Question:** Can you give a sense of whether the Aegis system is roughly capable of handling this threat?

**Dorsett:** Because of the – I'd prefer not to answer the question.[165]

[164] Source: Transcript of interview, as appended to Richard McGregor, "US Fleet Chief Voices Doubts On Chinese Navy," *Financial Times*, January 18, 2011.

[165] Source: Transcript of Defense Writers Group roundtable with Vice Admiral David J. Dorsett, Deputy CNO for Information Warfare. Material in brackets as in the transcript.

A December 17, 2010, press report quotes Rear Admiral Terry Kraft, the head of Carrier Strike Group 12, as stating:

> "What I will say about that is, before you can target a ship you've got to find the ship…. There are a lot of tactics that you could look at and that you could use to try to make yourself harder to find. And if you could break that chain at the part where they can't locate you, you make it much harder for potential adversaries."[166]

In a December 2011 journal article, Major General Timothy Hanifen, the Director of Expeditionary Warfare (N85) in the office of the Chief of Naval Operations, stated:

> Logistically, in order to sustain the Fleet's capability to fight near-continuously across vast distances, a game-changing technology-development effort is needed in the area of rapid at-sea vertical-launch system (VLS)[167] replenishment and reloading. Current pier-side VLS reload requirements force a disruption of Fleet combat tempo and increase the probability of warship engagement in port, when it is most vulnerable. With rapid at-sea replenishment and an adequate combat reload inventory, the fleet could continue to leverage the vastness of the seas to complicate targeting and lower effective engagement probabilities, while simultaneously maintaining a very high and sustained combat tempo during both force closure and across the joint campaign. Without that ability, battle-force operations increase in risk as they become more tied to naval-base replenishment and thereby more predictable, sequential, and vulnerable....
>
> At present, the Navy is developing very capable and elegant anti-ballistic intercept missiles that allow its ships to defensively engage with precision at long ranges. The Fleet also has less-elegant, close-in missile- and weapons-capabilities. What is potentially missing is an intermediate-range naval gun capability that increases engagement opportunities and adds both density and depth to layered defenses. Within the Navy, there are a total of 106 MK 45 5-inch 54/62-caliber guns that can be linked via warship sensors for shared battle-network awareness and cooperative-engagement capability—one that is currently unused.
>
> The existing guns, if outfitted with common, modular, long-range 5-inch rounds, could provide both an individual warship and the overall Fleet with a greater engagement range and weapons-effects density through the massing of fires. That massing of fire could be accomplished against over-the-horizon high and low targets at long ranges, then gradually shifted in successive engagement opportunities to direct line-of-sight fires within the radar envelope. It could effectively create a wall of shrapnel pellets and fragments into which inbound aircraft and missiles would fly and be destroyed—not unlike the old 3-inch/50 variable time and radio-frequency fuse weapons effects of World War II. A 5-inch pellet/flechette round would have equally blinding and devastating effects on adversary surface and land-based radars and electronic systems, swarming small boats, command-and-control ships, and sites ashore—with a value-added naval surface fire support application against ground forces.
>
> Developing a near-term, long-range naval gunfire engagement capability for air, missile, and surface defense is feasible, achievable, and affordable. Recently, the Zumwalt-class destroyers' advance gun system 6-inch/155-mm long-range land attack projectile round was successfully and accurately fired to a distance of about 62 nautical miles. Advances in its

[166] Andrew Burt, "Carriers Could Use Evasive Tactics Against Anti-Ship Ballistic Missiles," *Inside the Navy*, December 20, 2010.

[167] A ship's battery of vertical tubes for storing and launching missiles is referred to as a VLS. At present, VLS tubes cannot be rapidly reloaded at sea.

> technical maturity and adaptability have made it possible to develop and produce a smaller, common 5-inch long-range variant. For the equivalent research-and-development cost of procuring fewer SM3/SM6 missiles, the Fleet could potentially design, develop, and field a modular 5-inch long-range round to be used in both the MK 45 and EMRG gun mounts when the latter enter service in the mid-2020s. The common 5-inch round is conceptually, technologically, fiscally, and developmentally feasible and achievable. It should be pursued and fielded at flank speed.[168]

## Navy's Ability to Counter China's Submarines

Another potential oversight issue for Congress concerns the Navy's ability to counter China's submarines. Some observers raised questions about the Navy's ability to counter Chinese submarines following an incident on October 26, 2006, when a Chinese Song-class submarine reportedly surfaced five miles away from the Japan-homeported U.S. Navy aircraft carrier *Kitty Hawk* (CV-63), which reportedly was operating at the time with its strike group in international waters in the East China Sea, near Okinawa. According to press reports, the carrier strike group at the time was not actively searching for submarines, and the Song-class boat remained undetected by the strike group until it surfaced and was observed by one of the strike group's aircraft.[169] The Chinese government denied that the submarine was following the strike group.[170]

Improving the Navy's ability to counter China's submarines could involve procuring platforms (i.e., ships and aircraft) with ASW capabilities, and/or developing technologies for achieving a new approach to ASW that is distributed and sensor-intensive (as opposed to platform-intensive). Navy officials in 2004-2005 spoke of their plans for achieving distributed, sensor-intensive ASW architecture.[171] Such an approach might involve the use of networked sensor fields, unmanned vehicles, and standoff weapons. Implementing such an approach to ASW reportedly would require overcoming some technical challenges, particularly for linking together large numbers of distributed sensors, some of which might be sonobuoys as small as soda cans.[172]

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[168] Timothy C. Hanifen, "At the Point of Inflection," *U.S. Naval Institute Proceedings*, December 2011: 26 and 31.

[169] Bill Gertz, "China Sub Secretly Stalked U.S. Fleet," *Washington Times*, November 13, 2006: 13; Philip Creed, "Navy Confirms Chinese Sub Spotted Near Carrier," *NavyTimes.com*, November 13, 2006; Bill Gertz, "Defenses On [sic] Subs To Be Reviewed," *Washington Times*, November 14, 2006; En-Lai Yeoh, "Fallon Confirms Chinese Stalked Carrier," *NavyTimes.com*, November 14, 2006; Bill Gertz, "Admiral Says Sub Risked A Shootout," *Washington Times*, November 15, 2006; Jeff Schogol, "Admiral Disputes Report That Kitty Hawk, Chinese Sub Could Have Clashed," *Mideast Starts and Stripes*, November 17, 2006.

[170] Associated Press, "China Denies Reports That Sub Followed Kitty Hawk," *NavyTimes.com*, November 16, 2006. A shorter version of the same story was published as Associated Press, "China Denies Sub Followed A Group Of U.S. Warships," *Asian Wall Street Journal*, November 17, 2006: 11.

[171] See, for example, Otto Kreisher, "As Underwater Threat Re-Emerges, Navy Renews Emphasis On ASW," *Seapower*, October 2004, p. 15, and Jason Ma, "ASW Concept Of Operations Sees 'Sensor-Rich' Way Of Fighting Subs," *Inside the Navy*, February 7, 2005.

[172] Jason Ma, "Autonomous ASW Sensor Field Seen As High-Risk Technical Hurdle," *Inside the Navy*, June 6, 2005. See also Jason Ma, "Navy's Surface Warfare Chief Cites Progress In ASW Development," *Inside the Navy*, January 17, 2005. More recent press reports discuss research on ASW concepts involving bottom-based sensors, sensor networks, and unmanned vehicles; see Richard Scott, "GLINT In the Eye: NURC Explores Novel Autonomous Concepts For Future ASW," *Jane's International Defence Review*, January 2010: 34-35; Richard Scott, "DARPA Goes Deep With ASW Sensor Network," *Jane's International Defence Review*, March 2010: 13; Richard Scott, "Ghost In The Machine: DARPA Sets Course Towards Future Unmanned ASW Trail Ship," *Jane's Navy International*, April 2010: 10-11; Norman Friedman, "The Robots Arrive," *Naval Forces*, No. IV, 2010: 40-42, 44, 46; Bill Sweetman, "Darpa Funds Unmanned Boat For Submarine Stalking," *Aerospace Daily & Defense Report*, January 6, 2011: 5; Richard Scott, "Networked Concepts Look to Square the ASW Circle," *Jane's International Defence Review*, January 2011: 42-47; (continued...)

Countering wake-homing torpedoes more effectively could require completing development work on the Navy's new anti-torpedo torpedo (ATT) and putting the weapon into procurement.[173] A July 21, 2011, press report states that DOD "is seeking congressional permission to immediately boost funding for a high-priority Navy effort to give aircraft carriers and other high-value ships the ability to defend against torpedo attacks, something they lack today. Pentagon comptroller Robert Hale, in a May 8 reprogramming request not made public by the Defense Department, told lawmakers DOD wants to shift $8 million into Navy research-and-development accounts to support rapid prototyping of the Anti-Torpedo Torpedo Defense System (ATTDS)."[174]

## Navy's Fleet Architecture

Another potential oversight issue for Congress concerns the Navy's fleet architecture. Some observers, viewing the anti-access aspects of China's naval modernization effort, including ASBMs, ASCMs, and other anti-ship weapons, have raised the question of whether the U.S. Navy should respond by shifting over time to a more highly distributed fleet architecture featuring a reduced reliance on carriers and other large ships and an increased reliance on smaller ships. Supporters of this option argue that such an architecture could generate comparable aggregate fleet capability at lower cost and be more effective at confounding Chinese maritime anti-access capabilities. Skeptics, including supporters of the currently planned fleet architecture, question both of these arguments.[175]

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(...continued)

Richard Scott, "DARPA's Unmanned ASW Sloop Concept Casts Lines," *Jane's Navy International*, January/February 2011: 5.

[173] For articles discussing torpedo defense systems, including ATTs, see Richard Scott, "Ships Shore Up," *Jane's Defence Weekly*, September 1, 2010: 22-23, 25, 27; Mike McCarthy, "NAVSEA Seeks Industry Thoughts On Torpedo Defense Systems," *Defense Daily*, November 29, 2011: 4-5.

[174] Jason Sherman, "Navy Seeks Funding To Develop First Anti-Torpedo Capability For Carriers," *Inside the Navy*, July 18, 2011.

[175] The question of whether the U.S. Navy concentrates too much of its combat capability in a relatively small number of high-value units, and whether it should shift over time to a more highly distributed fleet architecture, has been debated at various times over the years, in various contexts. Much of the discussion concerns whether the Navy should start procuring smaller aircraft carriers as complements or replacements for its current large aircraft carriers.

Supporters of shifting to a more highly distributed fleet architecture argue that that the Navy's current architecture, including its force of 11 large aircraft carriers, in effect puts too many of the Navy's combat-capability eggs into a relatively small number of baskets on which an adversary can concentrate its surveillance and targeting systems and its anti-ship weapons. They argue that although a large Navy aircraft carrier can absorb hits from multiple conventional weapons without sinking, a smaller number of enemy weapons might cause damage sufficient to stop the carrier's aviation operations, thus eliminating the ship's primary combat capability and providing the attacker with what is known as a "mission kill." A more highly distributed fleet architecture, they argue, would make it more difficult for China to target the Navy and reduce the possibility of the Navy experiencing a significant reduction in combat capability due to the loss in battle of a relatively small number of high-value units.

Opponents of shifting to a more highly distributed fleet architecture argue that large carriers and other large ships are not only more capable, but proportionately more capable, than smaller ships, that larger ships are capable of fielding highly capable systems for defending themselves, and that they are much better able than smaller ships to withstand the effects of enemy weapons, due to their larger size, extensive armoring and interior compartmentalization, and extensive damage-control systems. A more highly distributed fleet architecture, they argue, would be less capable or more expensive than today's fleet architecture. Opponents of shifting to a more highly distributed fleet architecture argue could also argue that the Navy has already taken an important (but not excessive) step toward fielding a more distributed fleet architecture through its plan to acquire 55 Littoral Combat Ships (LCSs), which are small, fast surface combatants with modular, "plug-and-flight" mission payloads. (For more on the LCS program, see CRS Report RL33741, *Navy Littoral Combat Ship (LCS) Program: Background, Issues, and Options for Congress*, by Ronald
(continued...)

# Legislative Activity for FY2012

## FY2012 Defense Authorization Act (H.R. 1540/P.L. 112-81)

### House

**Section 243** of H.R. 1540 as reported by the House Armed Services Committee (H.Rept. 112-78 of May 17, 2011) states:

> SEC. 243. REPORT ON FEASIBILITY OF ELECTROMAGNETIC RAIL GUN SYSTEM.
>
> Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense shall submit to the congressional defense committees a report on the feasibility of developing and deploying the electromagnetic rail gun system to be used for either land- or ship-based force protection.

**Section 345** states:

> SEC. 345. STUDY OF UNITED STATES PACIFIC COMMAND TRAINING READINESS.
>
> (a) Study Required- In fulfillment of the recommendations in the 2010 Quadrennial Defense Review, the Secretary of Defense, in conjunction with the Commander of the United States Pacific Command, shall conduct a study to identify current and future training requirements for all members of the Armed Forces assigned to the Pacific Command area of responsibility, the sufficiency of current training infrastructure to meet those requirements, and the effect on operational readiness of providing additional training venues.
>
> (b) Training Locations-
>
> (1) IN GENERAL- In carrying out the study required under subsection (a), the Secretary of Defense and the Commander of the United States Pacific Command shall identify locations within the United States Pacific Command's area of responsibility as suitable to establish combat training centers to fulfill requirements for live-fire and simulated individual, small-unit, and collective pre-deployment and post-deployment training of United States combat forces in joint, multi-national, and coalition full-spectrum operations as well as counterinsurgency, stability, and humanitarian operations.

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(...continued)

O'Rourke.)

The issue of Navy fleet architecture, including the question of whether the Navy should shift over time to a more highly distributed fleet architecture, was examined in a report by DOD's Office of Force Transformation (OFT) that was submitted to Congress in 2005. OFT's report, along with two other reports on Navy fleet architecture that were submitted to Congress in 2005, are discussed at length in CRS Report RL33955, *Navy Force Structure: Alternative Force Structure Studies of 2005—Background for Congress*, by Ronald O'Rourke. The functions carried out by OFT have since been redistributed to other DOD offices. See also Wayne P. Hughes, Jr., *The New Navy Fighting Machine: A Study of the Connections Between Contemporary Policy, Strategy, Sea Power, Naval Operations, and the Composition of the United States Fleet*, Monterey (CA), Naval Postgraduate School, August 2009, 68 pp.; Timothy C. Hanifen, "At the Point of Inflection," *U.S. Naval Institute Proceedings*, December 2011: 24-31; and the blog entry available online at http://www.informationdissemination.net/2011/06/navy-is-losing-narratives-battle.html.

(2) SUITABILITY FOR TRAINING- The locations identified by the Secretary and the Commander of the United States Pacific Command pursuant to paragraph (1) shall be suitable for training forces equivalent to a Marine Expeditionary Force, an Army division, an Air and Space Expeditionary Force, or a Navy carrier strike group.

(3) LOCATIONS FOR CONSIDERATION- In identifying locations to be studied pursuant to paragraph (1), the Secretary and the Commander of the United States Pacific Command may consider, among others, current as well as former United States military installations.

(c) Study Requirements- In carrying out the study required under subsection (a), the Secretary and the Commander of the United States Pacific Command shall—

(1) determine cost estimates for any necessary acquisition, development (including military construction), operation, and maintenance of the locations identified under subsection (b);

(2) determine the estimated cost to upgrade any current infrastructure at any location identified to bring the location to a state required for the training described in subsection (b);

(3) provide a description of the possible environmental impact of conducting the training described in subsection (b);

(4) include an estimate of the potential economic impact, either positive or negative, to the local community of accommodating the training described in subsection (b); and

(5) provide a description of the anticipated impact on the quality of life for military personnel who would train at the identified locations.

(d) Assessment of Readiness Impact- The Secretary and the Commander of the United States Pacific Command shall include in the study required under this section an assessment of the effect on operational and training readiness that would be achieved by providing training at the training locations identified under subsection (b).

(e) Report- Not later than February 28, 2013, the Secretary shall submit to the Committee on Armed Services of the House of Representatives and the Committee on Armed Services of the Senate a report that contains the results of the study required under this section along with any conclusions and recommendations of the Secretary and the Commander of the United States Pacific Command regarding the activation and implementation of training sites in the Pacific Command area of responsibility.

(f) Comptroller General Briefing- Not later than 120 days after the submittal of the report under subsection (e), the Comptroller General of the United States shall provide to the Committee on Armed Services of the House of Representatives and the Committee on Armed Services of the Senate a briefing on the completeness of the Secretary's report in fulfilling the requirements of this section and the feasibility of successfully establishing additional training opportunities based on the recommendations included in the report.

**Section 1221** states:

SEC. 1221. REVIEW AND REPORT ON IRAN'S AND CHINA'S CONVENTIONAL AND ANTI-ACCESS CAPABILITIES.

(a) Review- The Secretary of Defense shall direct an appropriate entity outside the Department of Defense to conduct an independent review of the following:

(1) The gaps between Iran's conventional and anti-access capabilities and United States' capabilities to overcome them.

(2) The gaps between China's anti-access capabilities and United States' capabilities to overcome them.

(b) Report-

(1) IN GENERAL- Not later than 270 days after the date of the enactment of this Act, the Secretary of Defense shall submit to the appropriate congressional committees a report that contains the review conducted under subsection (a).

(2) APPROPRIATE CONGRESSIONAL COMMITTEES DEFINED- In this subsection, the term `appropriate congressional committees' means—

(A) the congressional defense committees; and

(B) the Committee on Foreign Relations of the Senate and the Committee on Foreign Affairs of the House of Representatives.

(c) Additional to Other Reports, etc- The review conducted under subsection (a) and the report required under subsection (b) are in addition to the report required under section 1238 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (P.L. 111-383; 124 Stat. 4402) and the strategy and briefings required under section 1243 of such Act (P.L. 111-383; 124 Stat. 4405).

(d) Definition- In this section, the term `anti-access' has the meaning given the term in section 1238(f) of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (P.L. 111-383; 124 Stat. 4403).

Regarding Section 1221, the committee's report states:

This section would require the Secretary of Defense not later than 270 days after the date of enactment of this Act to submit to the congressional defense committees a classified study undertaken by an independent entity outside the Department of Defense assessing the gaps between the conventional and anti-access capabilities of the Islamic Republic of Iran and the People's Republic of China and the U.S. forces' ability to overcome such capabilities. The committee notes that sections 1238 and 1243 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (Public Law 111–383) required a report and a briefing from the Department of Defense on these subjects. However, given the potentially grave threats posed by these capabilities to U.S. national security and stability in the western Pacific and Middle East, the committee believes an additional, independent assessment is warranted to further inform the Department's planning and the committee's oversight of these issues. The committee encourages the Secretary to select an entity with the necessary security clearances and expertise to review the intelligence assessments upon which the Department's findings were based pursuant to the report and briefing required by sections 1238 and 1243. (Page 243)

**Section 1227** of H.R. 1540 states:

SEC. 1227. ANNUAL REPORT ON MILITARY POWER OF THE PEOPLE'S REPUBLIC OF CHINA.

> (a) Matters to Be Included- Subsection (b) of section 1202 of the National Defense Authorization Act for Fiscal Year 2000 (P.L. 106-65; 113 Stat. 781; 10 U.S.C. 113 note), as most recently amended by section 1246(b) of the National Defense Authorization Act for Fiscal Year 2010 (P.L. 111-84; 123 Stat. 2544), is further amended—
>
> (1) in paragraph (7)—
>
> (A) by adding at the end before the period the following: `or otherwise undermine the Department of Defense's capability to conduct information assurance'; and
>
> (B) by adding at the end the following: `Such analyses shall include an assessment of the damage inflicted on the Department of Defense by reason thereof.'; and
>
> (2) in paragraph (9), by adding at the end the following: `Such analyses shall include an assessment of the nature of China's cyber activities directed against the Department of Defense and an assessment of the damage inflicted on the Department of Defense by reason thereof. Such cyber activities shall include activities originating or suspected of originating from China and shall include government and non-government activities believed to be sanctioned or supported by the Government of China.'.
>
> (b) Conforming Amendment- Such section is further amended in the heading by striking `military and security developments involving' and inserting `military power of'.
>
> (c) Effective Date- The amendments made by this section shall take effect on the date of the enactment of this Act, and shall apply with respect to reports required to be submitted under subsection (a) of section 1202 of the National Defense Authorization Act for Fiscal Year 2000, as so amended, on or after that date.

Regarding Section 1227, the committee's report states:

> This section would amend section 1202 of the National Defense Authorization Act for Fiscal Year 2000 (Public Law 106–65), as most recently amended by section 1246(b) of the National Defense Authorization Act for Fiscal Year 2010 (Public Law 111–84), by changing the name of the annual report required by such section from "Annual Report on Military and Security Developments Involving the People's Republic of China" to "Annual Report on Military Power of the People's Republic of China". This section would also clarify the reporting requirements relating to China's cyber and espionage activities. (page 245)

The committee's report also states:

> Military and Security Developments Involving the People's Republic of China
>
> The committee commends the Secretary of Defense for delivering a comprehensive report on the "Military and Security Developments Involving the People's Republic of China," in accordance with section 1202 of the National Defense Authorization Act for Fiscal Year 2000 (Public Law 106–65), including a discussion of the extent to which China's ballistic and cruise missiles increase its ability to control access to the western Pacific.[176] The committee does not believe, however, that the report sufficiently addressed China's domestic production capabilities or proliferation of these technologies.

[176] This may be a reference to the release in August 2010 of the 2010 edition of the report. As of the date of the committee's report (May 17, 2011), the 2011 edition of the report was not known to have been released.

> The committee directs the Secretary of Defense to include greater detail on the ballistic and cruise missile activities of the People's Republic of China, in subsequent submission of report required by section 1202, including China's domestic development and production of these capabilities, and any Chinese proliferation activities of technologies related to cruise missiles, ballistic missiles, unmanned aerial vehicles, and weapons of mass destruction to other countries. This detail should include, but should not be limited to, the proliferation of missile technologies and components at or near the threshold prohibited by the Missile Technology Control Regime and other multinational export control regimes, in as much unclassified detail as possible.
>
> Finally, the committee encourages the Secretary to submit the next report by March 1, 2012, as required by section 1202. (page 234)

## Senate (S. 1867)

S. 1867, an original measure reported by Senator Levin on November 15, 2011, without written report, in effect supersedes S. 1253 (see below). **Section 1079** of S. 1867 states:

> SEC. 1079. STUDY ON UNITED STATES FORCE POSTURE IN EAST ASIA AND THE PACIFIC REGION.
>
> (a) Independent Assessment-
>
> (1) IN GENERAL- The Secretary of Defense shall commission an independent assessment of America's security interests in East Asia and the Pacific region. The assessment shall be conducted by an independent, non-governmental institute which is described in section 501(c)(3) of the Internal Revenue Code of 1986 and exempt from tax under section 501(a) of such Code, and has recognized credentials and expertise in national security and military affairs with ready access to policy experts throughout the country and from the region.
>
> (2) ELEMENTS- The assessment conducted pursuant to paragraph (1) shall include the following elements:
>
> (A) A review of current and emerging United States national security interests in the East Asia and Pacific region.
>
> (B) A review of current United States military force posture and deployment plans, with an emphasis on the current plans for United States force realignments in Okinawa and Guam.
>
> (C) Options for the realignment of United States forces in the region to respond to new opportunities presented by allies and partners.
>
> (D) The views of noted policy leaders and regional experts, including military commanders in the region.
>
> (b) Report- Not later than 90 days after the date of the enactment of this Act, the designated private entity shall provide an unclassified report, with a classified annex, containing its findings to the Secretary of Defense. Not later than 90 days after the date of receipt of the report, the Secretary of Defense shall transmit the report to the congressional defense committees, together with such comments on the report as the Secretary considers appropriate.

(c) Authorization of Appropriations- Of the amounts authorized to be appropriated under section 301 for operation and maintenance for Defense-wide activities, up to $1,000,000, shall be made available for the completion of the study required under this section.

Section 1080H states:

SEC. 1080H. REPORT ON APPROVAL AND IMPLEMENTATION OF AIR SEA BATTLE CONCEPT.

(a) Report Required- Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense shall submit to Congress a report on the approved Air Sea Battle Concept, as required by the 2010 Quadrennial Defense Review Report, and a plan for the implementation of the concept.

(b) Elements- The report required by subsection (a) shall include, at a minimum, the following:

(1) The approved Air Sea Battle Concept.

(2) An identification and assessment of risks related to gaps between Air Sea Battle Concept requirements and the current force structure and capabilities of the Department of Defense.

(3) The plan and assessment of the Department on the risks to implementation of the approved concept within the current force structure and capabilities.

(4) A description and assessment of how current research, development, and acquisition priorities in the program of record meet or fail to meet current and future requirements for implementation of the Air Sea Battle Concept.

(5) An identification, in order of priority, of the five most critical force structure or capabilities requiring increased or sustained investment for the implementation of the Air Sea Battle Concept.

(6) An identification, in order of priority, of how the Department will offset the increased costs for force structure and capabilities required by implementation of the Air Sea Battle Concept, including an explanation of what force structure, capabilities, and programs will be reduced and how potentially increased risks based on those reductions will be managed relative to other strategic requirements.

(7) A description and assessment of the estimated incremental increases in costs and savings from implementing the Air Sea Battle Concept, including the most significant reasons for those increased costs and savings.

(8) A description and assessment of the contributions required from allies and other international partners, including the identification and plans for management of related risks, in order to implement the Air Sea Battle Concept.

(9) Such other matters relating to the development and implementation of the Air Sea Battle Concept as the Secretary considers appropriate.

(c) Form- The report required by subsection (a) shall be submitted in both unclassified and classified form.

## Senate (S. 1253)

S. 1253 has been, in effect, superseded by S. 1867 (see above). **Section 1079** of S. 1253 as reported by the senate Armed Services Committee (S.Rept. 112-26 of June 22, 2011) states:

> SEC. 1079. STUDY ON UNITED STATES FORCE POSTURE IN EAST ASIA AND THE PACIFIC REGION.
>
> (a) Independent Assessment-
>
> (1) IN GENERAL- The Secretary of Defense shall commission an independent assessment of America's security interests in East Asia and the Pacific region. The assessment shall be conducted by an independent, non-governmental institute which is described in section 501(c)(3) of the Internal Revenue Code of 1986 and exempt from tax under section 501(a) of such Code, and has recognized credentials and expertise in national security and military affairs with ready access to policy experts throughout the country and from the region.
>
> (2) ELEMENTS- The assessment conducted pursuant to paragraph (1) shall include the following elements:
>
> (A) A review of current and emerging United States national security interests in the East Asia and Pacific region.
>
> (B) A review of current United States military force posture and deployment plans, with an emphasis on the current plans for United States force realignments in Okinawa and Guam.
>
> (C) Options for the realignment of United States forces in the region to respond to new opportunities presented by allies and partners.
>
> (D) The views of noted policy leaders and regional experts, including military commanders in the region.
>
> (b) Report- Not later than 90 days after the date of the enactment of this Act, the designated private entity shall provide an unclassified report, with a classified annex, containing its findings to the Secretary of Defense. Not later than 90 days after the date of receipt of the report, the Secretary of Defense shall transmit the report to the congressional defense committees, together with such comments on the report as the Secretary considers appropriate.
>
> (c) Authorization of Appropriations- Of the amounts authorized to be appropriated under section 301 for operation and maintenance for Defense-wide activities, up to $1,000,000, shall be made available for the completion of the study required under this section.

Regarding Section 1079, the committee report states:

> The committee recommends a provision that would require the Secretary of Defense to commission an independent assessment of America's security interests in the Asia and Pacific region.
>
> The committee notes that the 2010 Quadrennial Defense Review (QDR) emphasized the critical need of the United States to consistently assess and adapt to a dynamic world environment and changes in the international security environment. The QDR also established a goal to seek new opportunities for cooperation with existing allies and emerging partners to mutually address regional and global security challenges.

> In the Asia and Pacific region, the United States has embarked on a series of initiatives intended to realign its military force structure to respond to regional interests with the understanding that U.S. forces play an indispensible role in protecting our security and economic interests, while ensuring a stable and prosperous Asia. In this regard, U.S. bilateral security arrangements in the region, especially with Japan and with South Korea, remain the foundation for our security posture and activities in Asia.
>
> The committee realizes the region is changing and opportunities are emerging to update the U.S. force posture to better align it with our dynamic regional interests. As such, the committee believes that defense and foreign policy decision makers in the administration and in Congress would benefit from an independent assessment of plans in the region with the goals of freeing the review from the inertia of past decisions and instead assessing what lies ahead in terms of security challenges and opportunities.
>
> The committee believes an independent assessment of current initiatives, to include force deployment plans and options for the realignment of forces in the region to respond to new opportunities presented by allies and partners, should be undertaken by a nongovernmental institute that has broad credibility in national security, drawing widely from policy experts throughout the country, and from the region. The report would be delivered to the Secretary of Defense within 90 days of enactment of this Act, and then, 90 days later, to Congress, incorporating the comments of the Secretary. (Pages 185-186)

The committee's report also states:

> **United States force posture in the Asia-Pacific region**
>
> The committee strongly supports the need for a robust U.S. presence in the Asia-Pacific, but has become increasingly concerned about the posture planning for U.S. military forces and, particularly, the strategic implications and costs associated with U.S. commitments throughout the region. The Defense Department's (DOD) 2010 report on the Quadrennial Defense Review (QDR) states that the United States needs to "sustain and strengthen our Asia-Pacific alliances and partnerships to advance mutual security interests and ensure sustainable peace and security in the region," and that, to accomplish this, DOD "will augment and adapt our forward presence" in the Asia-Pacific region. The QDR report does not provide detail on what is intended by this broad policy objective. Since the 2010 QDR was published, however, more detail has begun to emerge regarding the broad plans for the region. The 2011 National Military Strategy (NMS), released in January 2011, stated that the United States intends to "invest new attention and resources in Southeast and South Asia." Likewise, in testimony before the committee in April, the Commander, U.S. Pacific Command offered that "attaining better access to and support from Allied and partner nations in South and Southeast Asia is increasingly important." The Commander also stated that "[c]urrent force posture throughout the Asia-Pacific remains heavily influenced by post-World War II- and Cold War-era basing and infrastructure." In addition to potential new resource requirements in these southern areas, DOD remains engaged in significant realignment efforts for U.S. forces in Northeast Asia, specifically in South Korea and Japan.
>
> Despite the enhanced explanation from DOD regarding what is planned for the region, the details, and particularly details regarding cost, have not been fully presented. A recently released Government Accountability Office (GAO) report, entitled "Comprehensive Cost Information and Analysis of Alternatives needed to assess Military Posture in Asia," reached the independent conclusion that "across the Pacific region, DOD has embarked on complex initiatives to transform U.S. military posture, and these initiatives involve major construction programs and the movement of tens of thousands of DOD civilians and military personnel, and dependents—at an undetermined total cost to the United States and host nations." The report goes on to explain that "DOD is presenting Congress with near-term funding requests

that will result in significant long-term financial requirements whose extent is unknown." The committee agrees with GAO's conclusion that DOD needs to develop comprehensive cost estimates of posture in the Pacific and the recommendation that DOD develop annual cost estimates for DOD posture in the U.S. Pacific Command area of responsibility.

The strategic posture and presence of the U.S. military in the Asia-Pacific is critically important to the overall security and stability in that region. Expanding U.S. military presence in Southeast Asia is a mid- to long-term prospect that will require deliberate planning and resource allocation. Strategic choices regarding posture and presence must support the strong alliances we maintain in the region and respond to the opportunities presented by emerging alliances and partners, while also addressing the reality of constrained budgets and the intense competition for resources in the United States as well as in our allied and partner nations.

Accordingly, the committee directs the Secretary of Defense to complete the following actions no later than December 31, 2011:

1. Review the current operational plans of Commander, U.S. Pacific Command to determine whether the existing force posture, as well as proposed U.S. force realignments in the region are consistent with the QDR, the NMS, and the forecast of future U.S. national security objectives in the region over the next 20 years;

2. Develop a strategic plan for the region with goal for force posture realignments required to sustain U.S. national interests that will guide agreements and investments over the next 20 years; and

3. Require the military departments to develop annual cost estimates for DOD posture in the U.S. Pacific Command area of responsibility that provide a comprehensive assessment of overall posture costs, including costs associated with posture initiatives.

The committee also directs the Secretary of Defense to provide for an independent assessment of America's security interests in Asia, current force deployment plans, and likely future needs related to the posture of U.S. military forces in the region, to include plans for South and Southeast Asia as well as plans to realign U.S. forces and increase the number of families in South Korea, transfer U.S. Marines from Okinawa to Guam, and substantially increase the U.S. force presence on Guam with the corresponding impact on Guam's infrastructure. This independent study should be conducted by a group of policy and regional experts drawn widely from throughout the country and the Asia-Pacific region and should incorporate input from the Secretary of Defense and the congressional defense committees of Congress. Results of the study should be available to the Committees on Armed Services of the Senate and House of Representatives by May 1, 2012, in order to inform future congressional deliberations on the adequacy of the Department's force deployments plans in the Asia-Pacific region. (Pages 196-197)

The committee's report also states:

**Naval laser technology**

The budget request included $60.0 million in PE 602114N for directed energy research. The committee recommends a reduction of $30.0 million to terminate the Free Electron Laser (FEL) and continue pursuing other laser technologies such as fiber and slab solid state lasers that have more near-term applications as weapon systems.

The Navy is pursuing a variety of directed energy weapons to provide naval platforms with point defense capabilities against current and future surface and air threats, including anti-

ship cruise missiles and swarms of small boats. The key laser systems are the Laser Weapon System (LaWS), the Maritime Laser Demonstration (MLD), and FEL. The LaWS and MLD have been demonstrated against an unmanned aerial vehicle and small boat respectively, with the MLD test being conducted on a ship and the LaWS test being conducted from shore. The FEL is in a much earlier state of development and has just commenced the critical design phase.

The committee understands that each of these lasers is based upon different technologies with different capabilities and different stages of development and technical risk. Earlier this year, the Congressional Research Service published a report, "Navy Shipboard Lasers for Surface, Air, and Missile Defense: Background and Issues for Congress" that laid out a number of options for Congress, ranging from altering the Navy's funding requests for the development of potential shipboard lasers to encouraging or directing the Navy to adopt a program of record for procuring a production version of a shipboard laser with a roadmap that calls for installing lasers on specific ships by specific dates.

The committee believes that in the current budgetary environment, the Navy needs to develop a broader affordable strategy on which laser systems it will develop and migrate onto ships or other platforms. In light of these considerations, the committee directs the Navy to conduct comparative analyses and testing to determine whether the LaWS or the MLD or both should be carried forward for further technology maturation and ultimate integration as a shipboard weapon system. The strategy should also include plans for which ships will receive which laser weapons systems. Furthermore, the committee expresses concerns over the technical challenges such as thermal management considerations and packaging that the FEL potentially faces in scaling to a megawatt class laser for actual weapon use.

**Naval electromagnetic railgun**

The budget request included $10.0 million in PE 602114N and $16.9 million in PE 603114N for the development of an electromagnetic railgun.

The Navy is developing an electromagnetic railgun (EMRG) for engagements of surface and air threats at long-ranges up to 200 nautical miles. While such a capability theoretically could be revolutionary, the committee believes that the technical challenges that have to be overcome in order to develop a fully operational weapon system that will have realistic power and thermal management requirements suitable for ships, as well as far greater barrel life compared to current barrel life, are daunting.

Based upon the committee's belief that the significant future resources required for attempting to develop and operationalize an EMRG would be better spent on other naval science and technology activities, the committee recommends authorizing no funding in these PE's for the EMRG and recommends terminating the program. (Pages 43-44)

The committee's report also states:

**Surface ship torpedo defense**

The Navy has been developing an anti-torpedo torpedo defense system (ATTDS) within the surface ship torpedo defense program. The ATTDS consist of a torpedo warning system (TWS) and a countermeasures anti-torpedo (CAT). Last year, the Navy was planning to field the ATTDS with the combined capability of the TWS and the CAT, with an initial operating capability (IOC) in fiscal year 2015, beginning with cruisers and destroyers.

> Since last year, the Navy has bifurcated and delayed the program and now intends to do the two subcomponents of the ATTDS system separately. The Navy would achieve an IOC for the TWS in fiscal year 2017 and for the CAT in fiscal year 2021.
>
> The committee understands that the Navy is seeking to field some prototype versions of the TWS and the CAT in 2015 on different ships, but those prototypes would not have the benefit of testing or a robust logistics support system. The committee also understands that this delay is not due to technical issues, but merely reflects a lower funding priority for this program in fiscal year 2013 and beyond.
>
> This lower funding priority and resultant delay in fielding full capability is at odds with testimony the committee received about the importance to war fighting capability of fielding a full ATTDS system as soon as possible.
>
> The committee encourages the Navy to review this decision and, if the combined ATTDS system is as important as the testimony to the committee indicated it was, reallocate funds to support the original IOC dates in its fiscal year 2013 budget request. (Page 79)

## Conference

In the conference report (H.Rept. 112-329 of December 12, 2011) on H.R. 1540/P.L. 112-81 of December 31, 2011, **Section 243** states:

> SEC. 243. REPORT ON THE ELECTROMAGNETIC RAIL GUN SYSTEM.
>
> (a) Report- Not later than 180 days after the date of the enactment of this Act, the Secretary of the Navy shall submit to the congressional defense committees a report on the development, future deployment, and operational challenges of the electromagnetic rail gun system of the Navy.
>
> (b) Elements- The report required by subsection (a) shall include the following:
>
> (1) An assessment of the various operational problem sets the electromagnetic rail gun system might be used against, including—
>
> (A) naval surface fire support;
>
> (B) anti-surface warfare, including small-boat threats;
>
> (C) cruise missile, ballistic missile, and anti-aircraft defense; and
>
> (D) other missions as defined by the Secretary.
>
> (2) An analysis of the technical challenges in developing the electromagnetic rail gun system, including—
>
> (A) power generation and storage to achieve desired firing rates and ranges;
>
> (B) projectile development;
>
> (C) launcher/bore design and lifetime; and
>
> (D) ship integration challenges.

(3) An identification of existing supporting research programs being executed outside of the Navy that support the development of the electromagnetic rail gun system, as well as opportunities where collaborative research between the Navy and other research components could accelerate development.

(4) An assessment of possible deployment configurations, including—

(A) for ship-based applications, an identification of candidate ships for initial integration;

(B) for land-based applications, an identification of possible mission sets and locations for early prototyping opportunities; and

(C) other alternative approaches for rapid prototyping.

(5) With respect to the information provided by the Secretary of the Navy under paragraphs (1) through (4), the opinions of the Secretary of the Army, the Commandant of the Marine Corps, the Assistant Secretary of Defense for Research and Engineering, the Director of the Missile Defense Agency, and the Director of the Defense Advanced Research Projects Agency.

(c) Interim Update- Not later than 90 days after the date of the enactment of this Act, the Chief of Naval Research shall provide an update briefing to the congressional defense committees.

(d) Form- The report required by paragraph (a) shall be submitted in unclassified form, but may include a classified annex.

**Section 346** states:

SEC. 346. STUDY ON UNITED STATES FORCE POSTURE IN THE UNITED STATES PACIFIC COMMAND AREA OF RESPONSIBILITY.

(a) Independent Assessment-

(1) IN GENERAL- The Secretary of Defense, in consultation with the Chairmen and Ranking Members of the Committees on Armed Services of the Senate and the House of Representatives, shall commission an independent assessment of United States security interests in the United States Pacific Command area of responsibility. The assessment shall be conducted by an independent, non-governmental institute which is described in section 501(c)(3) of the Internal Revenue Code of 1986 and exempt from tax under section 501(a) of such Code, and has recognized credentials and expertise in national security and military affairs with ready access to policy experts throughout the country and from the region.

(2) ELEMENTS- The assessment conducted pursuant to paragraph (1) shall include the following elements:

(A) A review of current and emerging United States national security interests in the United States Pacific Command area of responsibility.

(B) A review of current United States military force posture and deployment plans of the United States Pacific Command.

(C) Options for the realignment of United States forces in the region to respond to new opportunities presented by allies and partners.

(D) The views of noted policy leaders and regional experts, including military commanders in the region.

(b) Report- Not later than 90 days after the date of the enactment of this Act, the designated private entity shall provide an unclassified report, with a classified annex, containing its findings to the Secretary of Defense. Not later than 90 days after the date of receipt of the report, the Secretary of Defense shall transmit the report to the congressional defense committees, together with such comments on the report as the Secretary considers appropriate.

(c) Authorization of Appropriations- Of the amounts authorized to be appropriated under section 301 for operation and maintenance for Defense-wide activities, up to $1,000,000, shall be made available for the completion of the study required under this section.

Regarding Section 346, the conference report states:

The conferees note that over recent years, the United States has embarked on a number of initiatives in the Pacific Command area of responsibility that are intended to realign our military force structure to respond to regional interests and, in this regard, U.S. bilateral security arrangements, especially with Japan and the Republic of Korea. Our continued strong alliance and cooperation with these two countries maintain a significant part of the foundation that supports our force posture and military activities in the region. Accordingly, the conferees direct that the assessment required by this provision include a particular focus on the current posture and plans for United States force realignments in Korea, Okinawa, and Guam. (Page 608)

**Section 1080** of the conference report states:

SEC. 1080. REPORT ON APPROVAL AND IMPLEMENTATION OF AIR SEA BATTLE CONCEPT.

(a) Report Required- Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense shall submit to Congress a report on the approved Air Sea Battle Concept, as required by the 2010 Quadrennial Defense Review Report, and a plan for the implementation of the concept.

(b) Elements- The report required by subsection (a) shall include, at a minimum, the following:

(1) A description of the approved Air Sea Battle Concept.

(2) An identification and assessment of—

(A) the materiel solutions required to employ the concept in support of approved operational plans and contingency plans; and

(B) the risks to approved operational plans and contingency plans resulting from unfulfilled materiel solutions identified pursuant to subparagraph (A).

(3) A summary of the implementation plan, including—

(A) an assessment of the risks to implementation of the approved concept within the current and programmed force structure, capabilities, and capacity;

(B) a description of the criteria that will be used to measure progress toward full implementation of the concept; and

(C) a timeline for implementation of the concept.

(4) A description and assessment of how current research, development, and acquisition priorities in the program of record deliver or fail to deliver the materiel solutions identified pursuant to paragraph (2)(A).

(5) An identification, in order of priority, of the five most critical materiel solutions identified pursuant to paragraph (2)(A) requiring increased or sustained investment for the implementation of the Air Sea Battle Concept.

(6) An identification, in order of priority, of how the Department will offset the increased costs required by implementation of the Air Sea Battle Concept, including an explanation of what force structure, capabilities, and programs will be reduced and how potentially increased risks based on those reductions will be managed relative to other strategic requirements.

(7) A list of any new organization required to implement the concept, including an explanation of the function of each organization and why such functions cannot be assigned to existing organizations.

(8) A description and assessment of the estimated incremental increases in costs, including the cost of any new organization identified pursuant to paragraph (7), and savings from implementing the Air Sea Battle Concept, including the most significant reasons for those increased costs and savings.

(9) A description and assessment of the contributions required from allies and other international partners, including the identification and plans for management of related risks, in order to implement the Air Sea Battle Concept.

(10) Such other matters relating to the development and implementation of the Air Sea Battle Concept as the Secretary considers appropriate.

(c) Form- The report required by subsection (a) shall be submitted in both unclassified and classified form.

**Section 1232** states:

SEC. 1232. REVIEW AND REPORT ON IRAN'S AND CHINA'S CONVENTIONAL AND ANTI-ACCESS CAPABILITIES.

(a) Review- The Comptroller General of the United States shall conduct an independent review of the following:

(1) Any gaps between Iran's conventional and anti-access capabilities and United States' capabilities to overcome them.

(2) Any gaps between China's anti-access capabilities and United States' capabilities to overcome them.

(b) Report- Not later than January 31, 2013, the Comptroller General shall submit to the congressional defense committees a report that contains the review conducted under subsection (a).

(c) Additional to Other Reports, etc- The review conducted under subsection (a) and the report required under subsection (b) are in addition to the report required under section 1238 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (P.L. 111-383; 124 Stat. 4402) and the strategy and briefings required under section 1243 of such Act (P.L. 111-383; 124 Stat. 4405).

(d) Definition- In this section, the term `anti-access' has the meaning given the term in section 1238(f) of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (P.L. 111-383; 124 Stat. 4403).

**Section 1238** states:

SEC. 1238. ANNUAL REPORT ON MILITARY AND SECURITY DEVELOPMENTS INVOLVING THE PEOPLE'S REPUBLIC OF CHINA.

(a) Matters to Be Included- Subsection (b) of section 1202 of the National Defense Authorization Act for Fiscal Year 2000 (P.L. 106-65; 113 Stat. 781; 10 U.S.C. 113 note), as most recently amended by section 1246(b) of the National Defense Authorization Act for Fiscal Year 2010 (P.L. 111-84; 123 Stat. 2544), is further amended—

(1) in paragraph (7)—

(A) by adding at the end before the period the following: `or otherwise undermine the Department of Defense's capability to conduct information assurance'; and

(B) by adding at the end the following: `Such analyses shall include an assessment of the damage inflicted on the Department of Defense by reason thereof.'; and

(2) in paragraph (9), by adding at the end the following: `Such analyses shall include an assessment of the nature of China's cyber activities directed against the Department of Defense and an assessment of the damage inflicted on the Department of Defense by reason thereof. Such cyber activities shall include activities originating or suspected of originating from China and shall include government and non-government activities believed to be sanctioned or supported by the Government of China.'.

(b) Effective Date- The amendments made by this section shall take effect on the date of the enactment of this Act, and shall apply with respect to reports required to be submitted under subsection (a) of section 1202 of the National Defense Authorization Act for Fiscal Year 2000, as so amended, on or after that date.

# Resolution Calling for Peaceful and Multilateral Resolution to Maritime Territorial Disputes in Southeast Asia (S.Res. 217)

## Senate

S.Res. 217 was introduced in the Senate on June 27, 2011, and passed by the Senate the same day by unanimous consent. The text of S.Res. 217 is as follows:

RESOLUTION

Calling for a peaceful and multilateral resolution to maritime territorial disputes in Southeast Asia.

Whereas, on June 9, 2011, 3 vessels from China, including 1 fishing vessel and 2 maritime security vessels, ran into and disabled the cables of an exploration ship from Vietnam, the VIKING 2;

Whereas that use of force occurred within 200 nautical miles of Vietnam, an area recognized as its Exclusive Economic Zone;

Whereas, on May 26, 2011, a maritime security vessel from China cut the cables of another exploration ship from Vietnam, the BINH MINH, in the South China Sea in waters near Cam Ranh Bay;

Whereas, in March 2011, the Government of the Philippines reported that patrol boats from China attempted to ram 1 of its surveillance ships;

Whereas those incidents occurred within disputed maritime territories of the South China Sea, including the Spratly Islands, composed of 21 islands and atolls, 50 submerged land atolls, and 28 partly submerged reefs over an area of 340,000 square miles, and the Paracel Islands, a smaller group of islands located south of China's Hainan Island;

Whereas China, Vietnam, the Philippines, Taiwan, Malaysia, and Brunei have disputed territorial claims over the Spratly Islands, and China and Vietnam have a disputed claim over the Paracel Islands;

Whereas the Government of China claims most of the 648,000 square miles of the South China Sea, more than any other nation involved in those territorial disputes;

Whereas, in 2002, the Association of Southeast Asian Nations and China signed a declaration on the code of conduct of parties in the South China Sea;

Whereas that declaration committed all parties to those territorial disputes to `reaffirm their respect for and commitment to the freedom of navigation in and overflight above the South China Sea' and to `resolve their territorial and jurisdictional disputes by peaceful means, without resorting to the threat or use of force';

Whereas the South China Sea contains vital commercial shipping lines and points of access between the Indian Ocean and Pacific Ocean;

Whereas, although not a party to these disputes, the United States has a national economic and a security interest in ensuring that no party uses force unilaterally to assert maritime territorial claims in East Asia;

Whereas, in September 2010, the Government of China also deliberately provoked a controversy within the waters of the Senkaku Islands, territory under the legal administration of Japan in the East China Sea;

Whereas the actions of the Government of China in the South China Sea have also affected United States military and maritime vessels transiting through international air space and waters, including the collision of a fighter plane of the Government of China with a United States surveillance plane in 2001, the harassment of the USNS IMPECCABLE in March

2009, and the collision of a Chinese submarine with the sonar cable of the USS JOHN MCCAIN in June 2009;

Whereas, like every nation, the United States has a national interest in freedom of navigation and open access to the maritime commons of Asia;

Whereas the Government of the United States expressed support for the declaration by the Association of Southeast Asian Nations and China in 2002 on the code of conduct of parties in the South China Sea, and supports a collaborative diplomatic process by all claimants for resolving the various territorial disputes without coercion;

Whereas the United States has a national interest in freedom of navigation and in unimpeded economic development and commerce;

Whereas, on October 11, 2010, Secretary Gates maintained `The United States has always exercised our rights and supported the rights of others to transit through, and operate in, international waters.';

Whereas, on June 3, 2011, at the Shangri-La Dialogue in Singapore, Secretary Gates stated that `[m]aritime security remains an issue of particular importance for the region, with questions about territorial claims and the appropriate use of the maritime domain presenting on-going challenges to regional stability and prosperity';

Whereas, on June 4, 2011, at the Shangri-La Dialogue, Liang Guanglie, the Defense Minister from China, said, `China is committed to maintaining peace and stability in the South China Sea.';

Whereas, on June 11, 2011, the Government of Vietnam held a live-fire military exercise on the uninhabited island of Hon Ong, 25 miles off the coast of Vietnam in the South China Sea; and

Whereas, on June 11, 2011, Hong Lei, the Foreign Ministry spokesman of China, stated, `[China] will not resort to force or the threat of force' to resolve the territorial dispute: Now, therefore, be it

Resolved, That the Senate—

(1) reaffirms the strong support of the United States for the peaceful resolution of maritime territorial disputes in the South China Sea, and pledges continued efforts to facilitate a multilateral, peaceful process to resolve these disputes;

(2) deplores the use of force by naval and maritime security vessels from China in the South China Sea;

(3) calls on all parties to the territorial dispute to refrain from threatening force or using force to assert territorial claims; and

(4) supports the continuation of operations by the United States Armed Forces in support of freedom of navigation rights in international waters and air space in the South China Sea.

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