



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. 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. 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.

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 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 living and working 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, in the context of anticipated reductions in planned levels of defense spending, 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 On October 11, 2011, Secretary of Defense Leon Panetta stated that

we are adjusting our strategy and rebalancing our military to better confront the most pressing security needs. As a Department, we have to seize the moment as an opportunity to think long and hard about the future security environment and the kind of military we need in order to confront that challenge in the future. As we look ahead, our overriding priority must remain to succeed in current operations....

And then we must contend with rising powers, and rapidly modernizing militaries, particularly in the Asia-Pacific region—where the security and economic future of our nation will largely rest in the 21st century. The rise of China will continue to shape the international system, and we will have to stay competitive and reassure our allies in the region. That means continuing to project our power and maintaining forward-deployed forces in the Asia-Pacific region.³

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.

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 Rabirow, "Mullen Moves From 'Curious' To 'Concerned' Over China's Military," *Stripes.com*, July 21, 2010.

³ Lee H. Hamilton Lecture, As delivered by Secretary of Defense Leon F. Panetta, Woodrow Wilson Center, Washington, DC, October 11, 2011, accessed online at <http://www.defense.gov/speeches/speech.aspx?speechid=1620>.

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.⁴

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.

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,⁵ an August 2009 report from the Office of Naval Intelligence (ONI),⁶ 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).

⁴ Dan De Luce, “For US Navy, Asia is crucial priority: admiral,” *Agence France-Presse*, October 19, 2011.

⁵ 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.

⁶ 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*.)

Background

Overview of China's Naval Modernization Effort⁷

Date of Inception

Observers date the beginning of China's naval modernization effort to various points in the 1990s.⁸ Design work on the first of China's newer ship classes appears to have begun in the later 1980s.⁹ 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.¹⁰

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 C4ISR¹¹ 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.¹²

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,¹³ joint operations with other parts of China's military,¹⁴ C4ISR systems, anti-air

⁷ 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.

⁸ China ordered its first four Russian-made Kilo-class submarines in 1993, and its four Russian-made Sovremenny-class destroyers in 1996. China laid the keel on its first Song (Type 039) class submarine in 1991, its first Luhui (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.

⁹ 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.

¹⁰ 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.)

¹¹ C4ISR stands for command and control, communications, computers, intelligence, surveillance, and reconnaissance.

¹² For a discussion of improvements in personnel, training, and exercises, see 2009 ONI Report, pp. 31-40.

¹³ DOD states that "By the latter half of the current decade, China will likely be able to project and sustain a modest- (continued...)"

warfare (AAW), antisubmarine warfare (ASW), MCM, a dependence on foreign suppliers for certain key ship components,¹⁵ and a lack of operational experience in combat situations.¹⁶

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.¹⁷

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.

(...continued)

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.)

¹⁴ 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.)

¹⁵ 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.

¹⁶ 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)

¹⁷ See, for example, 2011 DOD CMSD, pp. 15, 29, 47, 49.

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 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;
- 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.¹⁸

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

¹⁸ 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.)

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.

- 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.
- 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

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..

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.

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 missile²⁰ 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."²¹ 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]."²²

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.²³

²⁰ 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).

²¹ 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.)

²² 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.

²³ 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- (continued...)

Regarding the operational status of the DF-21D, DOD states that “during 2010, China made strides toward fielding an operational anti-ship ballistic missile....”²⁴ 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.²⁵

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.”²⁶ A February 18, 2011, press report from China quoted an unnamed source as saying that the DF-21D “is already deployed in the army.”²⁷ In December 2010 and January 2011, it was reported that DOD believes

(...continued)

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.

²⁴ 2011 DOD CMSD, p. 13.

²⁵ Tony Capaccio, “China Has ‘Workable’ Anti-Ship Missile Design, Pentagon Says,” *Bloomberg.com*, August 25, 2011.

²⁶ 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.

²⁷ Zhang Han and Huang Jingling, “New Missile ‘Ready by 2015,’” *Global Times* (<http://military.globaltimes.cn>), (continued...)

the missile has achieved the equivalent of what for a U.S. weapon would be called Initial Operational Capability (IOC).²⁸

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,"²⁹ 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."³⁰

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."³¹

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;

(...continued)

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.

²⁸ 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 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.

²⁹ 2011 DOD CMSD, p. 30.

³⁰ 2011 DOD CMSD, p. 4.

³¹ 2009 ONI Report, p. 20.

- a new nuclear-powered attack submarine (SSN) design called the Shang class or Type 093;³²
- a new SS design called the Yuan class or Type 041 (or Type 039A);³³ and
- another (and also fairly new) SS design called the Song class or Type 039/039G.

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.³⁴

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.³⁵

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.³⁶ Photographs of the submarine published in press reports in June

³² Some sources state that a successor to the Shang class SSN design, called the Type 095 SSN design, is in development.

³³ 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.)

³⁴ 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.)

³⁵ 2011 DOD CMSD, p. 4.

³⁶ 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/> (continued...)

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.³⁷

Figure 2. Yuan (Type 041) Class Attack Submarine



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

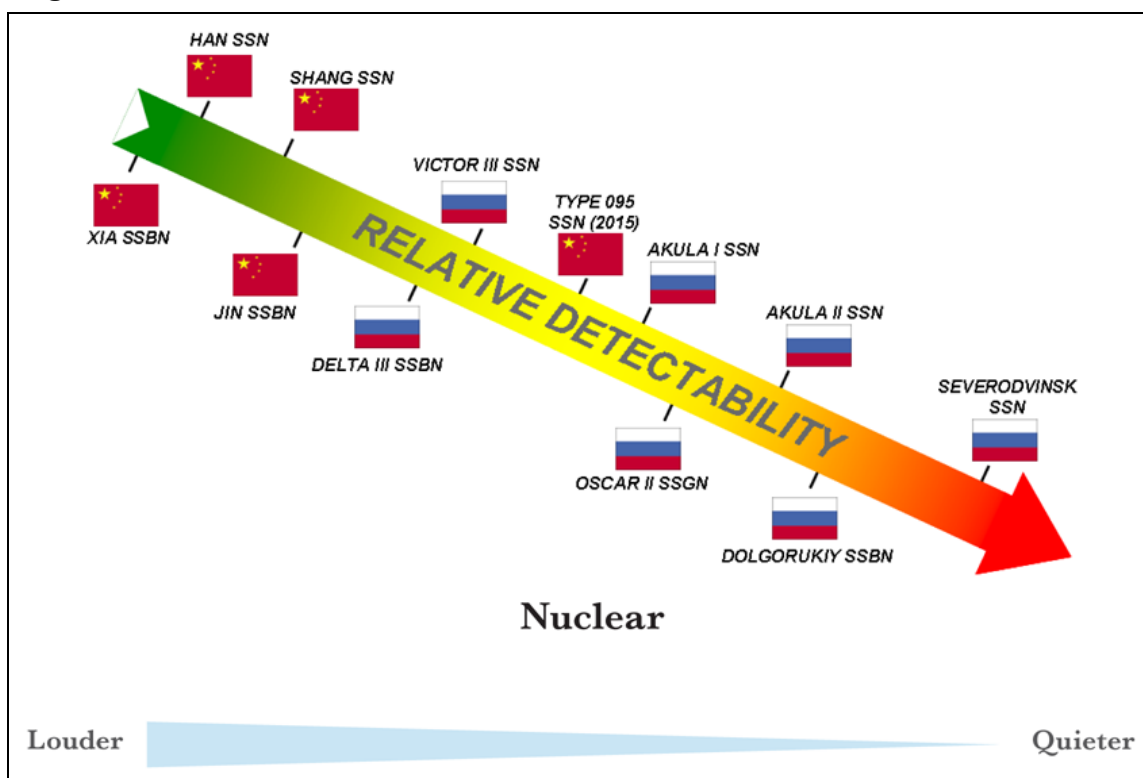
Figure 3 and **Figure 4**, which are taken from the August 2009 ONI report, show the acoustic quietness of Chinese nuclear- and non-nuclear-powered submarines, respectively, relative to that of Russian nuclear- and non-nuclear-powered submarines. The downward slope of the arrow in each figure indicates 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.

(...continued)

[recent-photos-from-chinese-shipyards.html](#).

³⁷ See, for example, Ted Parsons, “Chinese Sub Images Offer Mission Clues,” *Jane’s Defence Weekly*, June 2011: 14.

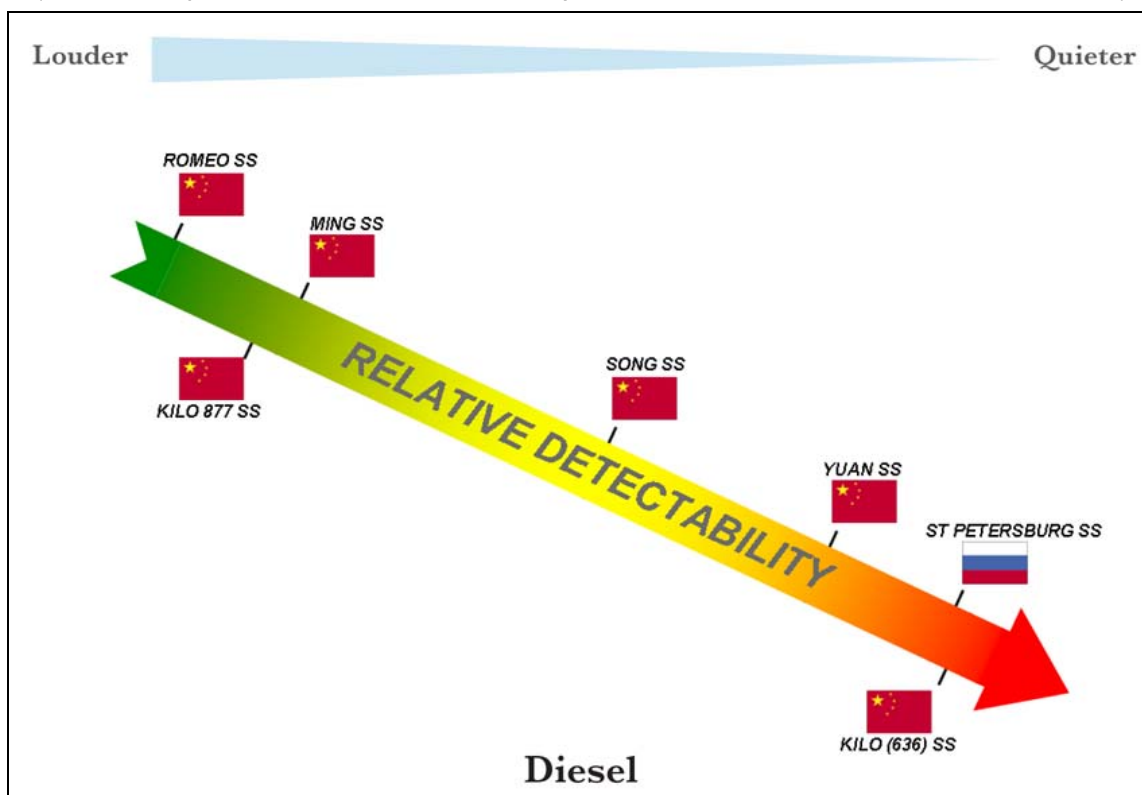
Figure 3. Acoustic Quietness of Chinese and Russian Nuclear-Powered Submarines



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,³⁸ and has modernized its substantial inventory of mines.³⁹

³⁸ Lyle Goldstein and Shannon Knight, "Coming Without Shadows, Leaving Without Footprints," *U.S. Naval Institute Proceedings*, April 2010: 30-35.

³⁹ 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.”⁴⁰

⁴⁰ 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 I. 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.

- Some observers believe the Yuan class to be a variant of the Song class and refer to the Yuan class as the Type 039A.
- 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.
- This total excludes the Jin-class SSBNs and the Ming-class SSs.
- 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.
- No further units expected after the 12th and 13th shown for 2006.
- 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.
- 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).⁴¹ 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.”⁴²

Aircraft Carriers and Carrier-Based Aircraft

Chinese officials since 2006 have been talking openly about eventually operating aircraft carriers.⁴³ 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.”⁴⁴ 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.”⁴⁵

Ex-Ukrainian Aircraft Carrier Varyag

The *Varyag* reportedly conducted initial sea trials, without aircraft, on August 10-14, 2011, and then returned to the shipyard for further work. The ship reportedly began a second round of sea trials on November 29, 2011.⁴⁶ At some later point, when work on the ship is completed, the ship will become fully operational. Some press reports in August 2011 speculated that the ship might be commissioned into service by August 2012,⁴⁷ but a Chinese admiral reportedly downplayed

⁴¹ 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.

⁴² 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.”

⁴³ 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.”

⁴⁴ 2011 DOD CMSD, p. 46.

⁴⁵ 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.”

⁴⁶ Agence France-Presse, “China’s First Aircraft Carrier Starts Second Trial,” *Yahoo.com*, November 29, 2011; and “China’s Refitted Aircraft Carrier Platform Sets Sail for 2nd Trial,” *Xinhua* (<http://news.xinhuanet.com>), November 29, 2011.

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 Chosun Ilbo* (english.chosun.com), August 17, 2011.

this as “rumors.”⁴⁸ 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. 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 70 or more aircraft, including conventional takeoff and landing (CTOL) airplanes (which tend to have a greater range/payload than STVOL airplanes) and some helicopters.

⁴⁸ “Chinese Admiral Denies China Will Put Carrier Into Service Next Year,” *Mainichi Japan* (<http://mdn.mainichi.jp>), August 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.

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.”⁵⁰ 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.⁵¹

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.⁵²

⁵⁰ 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.”

⁵¹ Bill Gertz, “China Begins To BUild Its Own Aircraft Carrier,” *Washington Times*, August 2, 2011: 1. Material in brackets as in original.

⁵² 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] 2019-2020.⁵³

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-33.⁵⁴ 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.⁵⁵

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.”⁵⁶

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

⁵³ Keith Jacobs, “The Chinese and Japanese Navies Compared,” *Naval Forces*, No. VI, 2010: 80-85.

⁵⁴ 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.

⁵⁵ 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.

⁵⁶ 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.⁵⁷

Surface Combatants⁵⁸

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 has also 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,”⁵⁹ and that “in recent years, the most notable upgrade to the PLA(N) surface force has been its shipboard area-air-defense (AAD) capability.”⁶⁰ 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.”⁶¹

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.

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),

⁵⁷ 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.; and Aaron Shraberg, “Near-Term Missions for China’s Maiden Aircraft Carrier,” *China Brief*, June 17, 2011: 4-6.

⁵⁸ 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&zzoneid=7.

⁵⁹ *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.

⁶⁰ *2009 ONI Report*, p. 18.

⁶¹ *2010 DOD CMSD*, p. 3.

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.⁶² 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.

Destroyer Production Rates

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 phase of its construction) on November 28, 2010, and is expected to enter service in 2012, and

⁶² 2009 ONI Report, p. 1.

that three further ships are expected.⁶³ 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.⁶⁴

Table 2. PLA Navy Destroyer Commissionings

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

| | Sovremenny (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), 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.

⁶³ *Jane's Fighting Ships 2011-2012*, p. 139.

⁶⁴ "Update From PLAN Land," *Information Dissemination* (www.informationdissemination.net), October 17, 2011.

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.***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 is 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.”⁶⁵ Production of the design slowed in 2009, but a total of as many as 100 might be built.⁶⁶ 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.”⁶⁷

⁶⁵ 2011 DOD CMSSD, p. 4.⁶⁶ *Jane's Fighting Ships 2011-2012*, p. 151.⁶⁷ 2009 ONI Report, p. 20. For further discussion of the Houbei class, see John Patch, “A Thoroughbred Ship-Killer,” (continued...)

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.

Report of Potential New Type 056 Corvette

A December 2010 press report stated that China may be developing a design for a new corvette (i.e., light frigate), possibly to be called the Type 056, that might be intended as a replacement for some of China's older light frigates and fast attack craft.⁶⁸

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 2011.⁶⁹ A third ship in the class reportedly has been launched, and a fourth may be under construction.⁷⁰

(...continued)

U.S. Naval Institute Proceedings, April 2010: 48-53.

⁶⁸ Ted Parsons and Mrityunjay Mazumdar, "Photos Provide Clues for Chinese 'Type 056' Corvette Design ..." *Jane's Navy International*, December 2010: 4. (the ellipsis appears in the article's title) See also *Jane's Fighting Ships 2011-2012*, p. 149.

⁶⁹ *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>.

⁷⁰ Blog entry dated September 27, 2011 and available online at <http://www.informationdissemination.net/2011/09/latest-activity-at-hd-shipyard.html>.

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.

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.⁷¹ 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

⁷¹ *Jane's Fighting Ships 2011-2012*, p. 153.

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.⁷²

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."⁷³ 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."⁷⁴

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,

⁷² 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.

⁷³ 2011 DOD CMSD, p. 32.

⁷⁴ 2009 ONI Report, pp. 28-29. See also Wendell Minnick, "China's Silver Hawk UAV Program Advances," *DefenseNews.com*, July 14, 2011.

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.”⁷⁵

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.⁷⁶

Numbers of 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 2010.⁷⁷

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.”⁷⁸

⁷⁵ Bill Gertz, “Beijing Develops Pulse Weapons,” *Washington Times*, July 22, 2011: 1. Except for “[July 21],” materials in brackets as in original.

⁷⁶ 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.

⁷⁷ 2011 DOD CMSD, p. 43 (figure).

⁷⁸ 2009 ONI Report, p. 46.

As can also be seen in the table, ONI projects 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.

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.”⁷⁹ **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 2009.⁸⁰

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 | ~ 60 | n/a | 51 | 50 | 53 | 54 | 54 | 54 | 49 |
| Destroyers | ~20 | ~ 60 | > 60 | n/a | 21 | 25 | 25 | 29 | 27 | 25 | 26 |
| Frigates | ~40 | ~ 60 | > 60 | 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 | 50 | | | 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.

⁷⁹ 2011 DOD CMSD, p. 3.

⁸⁰ 2011 DOD CMSD, p. 43 (figure).

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 Ark."⁸¹ 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."⁸²

⁸¹ 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.

⁸² 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.)

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.⁸³ 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 collection of places for Chinese navy ships to occasionally visit for purposes of refueling and restocking supplies, but not bases).⁸⁴ 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.⁸⁵ 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.⁸⁶

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:

⁸³ 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.

⁸⁴ 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.

⁸⁵ 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.

⁸⁶ 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.

- **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 naval capability,⁸⁷ 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.**⁸⁸ 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.⁸⁹ 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 2010.⁹⁰ 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

⁸⁷ 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.

⁸⁸ 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).

⁸⁹ 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.

⁹⁰ 2011 DOD CMSD, p. 43 (figure).

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 low-capability, single-mission platforms, to a leaner force equipped with more modern, multi-mission platforms."⁹¹ 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."⁹² 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

Asia-Pacific Identified As High-Priority Region For DOD

In apparent response to China's military modernization effort and assertive behavior regarding its maritime territorial claims, as well as other economic, political, and security developments in the Asia-Pacific region, Administration officials are now identifying the Asia-Pacific as a high-priority region for the United States. Secretary of State Hillary Clinton, for example, has stated that

As the war in Iraq winds down and America begins to withdraw its forces from Afghanistan, the United States stands at a pivot point. Over the last 10 years, we have allocated immense resources to those two theaters. In the next 10 years, we need to be smart and systematic about where we invest time and energy, so that we put ourselves in the best position to

⁹¹ 2011 DOD CMSD, p. 3.

⁹² 2009 ONI Report, p. 46.

sustain our leadership, secure our interests, and advance our values. One of the most important tasks of American statecraft over the next decade will therefore be to lock in a substantially increased investment—diplomatic, economic, strategic, and otherwise—in the Asia-Pacific region.⁹³

Consistent with the above statement, observers now perceive that U.S. military strategy is shifting toward a greater focus on the Asia-Pacific region.⁹⁴ These perceptions have been reinforced by multiple comments from Secretary of Defense Leon Panetta in October 2011 that identified the Asia-Pacific as a high-priority region for U.S. military plans and programs. On October 7, 2011, in remarks to U.S. service members in Naples, Italy, Panetta stated that

the most important role that we play in the world, particularly with our naval forces, is our ability to project force, to have that presence in the world. It's particularly true in the Pacific region. It's true out in this area [the Mediterranean] as well.

In the Pacific, we're concerned about China. The most important thing we can do is to project our force into the Pacific. To have our carriers there, to have our fleet there, to be able to make very clear to China that we are going to protect international rights to be able to move across the oceans freely. That's a fundamental right and we're going to protect it. And they need to know that we're going to have a presence there as a result of it.⁹⁵

Later that month, Panetta made a trip to Indonesia, Japan, and South Korea. On October 23, 2011, in remarks to the media in Bali, Indonesia, Panetta stated:

Let me say for all of you [that] the principal message that I bring to Indonesia and to this part of the world, and that is that the United States as a Pacific nation, and I as secretary of defense coming from the Pacific coast of the United States, as someone who was born and raised in California and who appreciates the Pacific and the importance of that region to our country, [that I've] made very clear to those that I've spoken to, and I will continue to make very clear that the United States remains a Pacific power, that we will continue to strengthen our presence in this part of the world, and that we will remain a force for peace and prosperity in this region.

We continue to push for free and open commerce and continue to push for open access to the sea and to the air, and we'll continue to seek the just international order.⁹⁶

⁹³ Hillary Clinton, "America's Pacific Century," *Foreign Policy* (www.foreignpolicy.com), November 2011, accessed at http://www.foreignpolicy.com/articles/2011/10/11/americas_pacific_century.

⁹⁴ See, for example, John T. Bennett, "Pentagon May Shift Focus to Asia-Pacific," *TheHill.com*, October 31, 2011; Adam Entous, "Pentagon Will Add To Asia Operations," *Wall Street Journal*, October 26, 2011: 12; Elisabeth Bumiller, "U.S. Pivots Eastward To Address Uneasy Allies," *New York Times*, October 25, 2011; Adam Entous, "U.S. Won't Cut Forces In Asia," *Wall Street Journal* (wsj.com), October 25, 2011; Gerald F. Seib, "After Iraq, U.S. To Refocus On Asia," *Wall Street Journal*, October 25, 2011: 8; Elisabeth Bumiller, "U.S. to Sustain Military Power in the Pacific, Panetta Says," *New York Times*, October 24, 2011: 9; Adam Entous, "Panetta Assures On U.S. In Asia," *Wall Street Journal*, October 24, 2011: 11; Robert Burns, "Panetta: US At 'Turning Point,' To Refocus On Asia," *Yahoo.com*, October 24, 2011; Phil Stewart, "No U.S. Troop Cuts In Asia, Defense Chief Says," *Reuters.com*, October 24, 2011; Mathieu Rabechault, "Panetta Stresses US Role In Pacific, Praises China," *Yahoo.com*, October 24, 2011; Daniel Goure, "U.S. Strategic 'Pivot' Towards Asia-Pacific Provides Basis For Reshaping Military," *Lexington Institute Early Warning Blog*, October 20, 2011; Phil Stewart, "U.S. Defense Chief Heads To Asia As Budget Cuts Loom," *Reuters.com*, October 21, 2011.

⁹⁵ Transcript of Secretary Panetta speaking to U.S. service members in Naples Italy, October 7, 2011, accessed at <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4900>.

⁹⁶ Transcript of media availability with Secretary Panetta in Bali, Indonesia, October 23, 2011, accessed at (continued...)

That same day, in a statement to ASEAN (Association of Southeast Asian Nations) defense ministers, Panetta stated:

We are also excited about president Obama's attendance at the East Asia Summit meeting next month [i.e., November]....

President Obama has three priority security topics for next month's discussion: maritime security, nonproliferation, and humanitarian assistance and disaster relief....

And finally, president Obama will address the issue of maritime security. We believe it is important to provide venues for all nations to come together to discuss maritime issues in an open and transparent manner. On this note, I applaud the creation of the ASEAN Maritime Forum (AMF). We are hopeful that over time we will be able to find ways for all EAS states to informally engage with the AMF.

Beyond discussion, we also want to put a premium on building maritime capabilities. This is why the United States will be rolling out a new Southeast Asia maritime partnership at the U.S.-ASEAN summit in Bali. This partnership will focus on regional maritime security. It will provide a comprehensive strategic framework for key aspects of U.S. bilateral security assistance in Southeast Asia. We are very excited about this initiative and look forward to discussing it with you further.

As we have noted before, the U.S. position on maritime security remains clear: we have a national interest in freedom of navigation and overflight, in unimpeded economic development and commerce, and in respect for international law. I would also add that while we do not take a position on competing claims, we do hope that in the interest of peaceful resolution, all parties will clarify their maritime claims in terms consistent with customary international law, as reflected in the Law of the Sea Convention.

I applaud the July accord between ASEAN and China on implementing guidelines to the 2002 declaration on the conduct of parties in the South China Sea. I would encourage you to maintain this momentum, and continue working towards a binding code of conduct. I know that president Obama will be interested in hearing your views at the East Asia summit.

Finally, I would like to address a personal priority—our future defense posture in Asia. We are continuously re-evaluating our global defense posture, including efforts to modernize our basing arrangements in Northeast Asia and enhance our presence in Southeast Asia and into the Indian Ocean. We are looking at a number of ways to do this, including increased defense activities and cooperation in Australia and the deployment of a Littoral Combat Ship to Singapore. This enhanced posture will allow us to undertake new capacity-building activities, expand opportunities for shared military training, and better support humanitarian missions in the region.

I know you have probably all been following the budget debate in the United States with keen interest and are questioning whether we will follow through on these commitments. Let me assure you that we will not be reducing our presence in Asia. Through our defense posture, relationships, and capacity-building activities in the region, we will continue to build stronger and more effective partnerships in the region. This commitment will not

(...continued)

<http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4909>.

change. And because of this commitment I am optimistic, even confident, that the future of the U.S.-ASEAN defense partnership will be dynamic and secure.⁹⁷

In an October 24, 2011, opinion column published in a Japanese newspaper during his visit there, Panetta stated that “China is rapidly modernizing its military, but with a troubling lack of transparency, coupled with increasingly assertive activity in the East and South China Seas,” and that “As a Pacific power, the United States remains committed to a robust forward presence in Asia.”⁹⁸

That same day, in a town hall meeting with U.S. and Japanese military personnel at Yakota Air Base, Japan, Panetta stated:

And in this capacity [as Secretary of Defense] I bring a very important message to Japan and to this region, and the basic message is that the United States, as a Pacific nation, is and will remain a Pacific power in this region. We will always maintain a strong presence in the Pacific, and we will be a force for peace and prosperity in the Pacific region. This alliance with Japan stretches over 50 years, and the U.S.-Japan alliance is in many ways the cornerstone of peace and stability in the Pacific—and it will be for the next 50 years as well.

We will continue to strengthen our presence in this area and continue to build the strong alliance that we've developed with Japan and with other countries throughout this region.

At the town hall meeting, Panetta was asked, “So with the budget cuts that you’re looking at, are you going to review the deployment of aircraft carrier, and also are you looking into reduction of forces elsewhere?” Panetta replied:

The question—the question was basically, as a result of going through the budget, are we going to reduce carrier presence and make other cuts in this region. And I want to make clear to everyone in this region that one of the things in discussing what our future strategy will be—and we’ve begun those discussions within the Pentagon; we’ve also had discussions in the White House—and the one thing that the president made very clear and the one thing that I will make clear is that the Pacific remains a priority for the United States of America, and that we will continue to have force projection in this area; we will continue to not only maintain but to strengthen our presence in this part of the world. We are a Pacific nation, and we will have a Pacific presence in this area. So I want to make it be very clear that the United States is going to remain a presence in the Pacific for a long time, and that means, just so you understand, that we are not anticipating any cutbacks in this region. If anything, we’re going to strengthen our presence in the Pacific.⁹⁹

On October 25, 2011, at a joint press conference with Japan’s defense minister, Panetta stated that

the message that I want to send is simple. The United States is and always will be a Pacific power, and we are here to stay.

⁹⁷ Statement to ASEAN Defense Ministers, as prepared for delivery by Secretary of Defense Leon E. Panetta, Bali, Indonesia, October 23, 2011, accessed at <http://www.defense.gov/speeches/speech.aspx?speechid=1624>.

⁹⁸ Leon Panetta, “United States And Japan: An Enduring 21st Century Alliance,” *Yomiuri Shimbun (Japan)*, October 24, 2011.

⁹⁹ Transcript of town hall meeting with Secretary Panetta and U.S. military and Japanese defense force personnel at Yakota Air Base, Japan, October 24, 2011, accessed at <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4911>.

The forward presence of U.S. forces here is not merely a symbol of U.S. commitment to Japan, but also a symbol of our commitment to the peace and security that must exist across the Pacific region....

It's no secret that the United States faces some very tough fiscal decisions back home. But let me reassure the people of Japan, let me reassure you as secretary of defense that the one thing that we have determined in discussions as to our future strategy, the one thing we are agreed up on is that the Pacific will remain a key priority. I will continue to strengthen our forces in this part of the world.

At the joint press conference, Panetta was asked, "You said you plan to increase the U.S. presence in the Pacific region. Does it mean you intend to send more carriers, Marines or civilian aircraft into these waters?" Panetta replied:

As I—as I stated, we—we will maintain our presence in this area and we will strengthen our presence in the Pacific region. And there are a number of areas that we are looking at in order to be able to do that. One is obviously the realignment of our forces, that we are—will certainly engage in as we deal with the realignment at [the base at] Futenma.

We are also looking at increasing exercises in the Pacific region and training exercises and assistance that can be provided to our regional partners. We are looking at strengthening alliances in this region as well. I just came from Indonesia, where I met with the ASEAN defense ministers, all of whom agreed that we must work together in order to advance the security of this region. And we will do that.

In addition to that, obviously presence, taking steps to advance our presence, as well, and also developing enhanced capabilities in this region. It's very important that we work with our partners in the Pacific region to try to develop their capabilities so that they too can improve the security that they provide to this region. There are a number of steps that we can take, it seems to me, to strengthen our position in the Pacific, and not only strengthen our position, but strengthen the other countries in this region so that we can advance the security of all.¹⁰⁰

At an October 26, 2011, town hall meeting with U.S. military personnel aboard the Navy command ship *Blue Ridge* at the naval base at Yokosuka, Japan, Panetta stated: "And I've got a very basic message that I'm sending, and the basic message is this: The United States of America is a Pacific power. We are a Pacific nation. We will not only remain a Pacific power, but we will strengthen our presence in this area. We are here to stay. And that's an important message to send to the region and to send to all of our allies."¹⁰¹

In an October 26, 2011, opinion column published in a South Korean newspaper during his visit there, Panetta stated that "The deepening [U.S.-South Korea] alliance demonstrates the growing importance of South Korea and of the Asia-Pacific region as a whole. I believe that the economic and security future of the U.S. will largely rest in Asia in the 21st century, and that as a result the

¹⁰⁰ Transcript of joint press conference with Secretary Panetta and Japanese Defense Minister Ichikawa in Tokyo, Japan, October 25, 2011, accessed at <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4912>.

¹⁰¹ Transcript of town hall meeting with Secretary Panetta and U.S. military personnel aboard the USS *Blue Ridge* at Yokosuka Naval Base, Japan, October 26, 2011, access at <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=4913>.

U.S. will continue to sustain its military presence and activities in the region even at a time of fiscal austerity.”¹⁰²

September 2011 Press Report About August 29 Defense Planning Guidance

A September 29, 2011, press report stated that a new DOD Defense Planning Guidance (DPG) document¹⁰³ dated August 29 “advocat[es] increased investment in military capabilities designed for high-end war among major powers, according to sources familiar with the 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.”¹⁰⁴

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 (see “2010 Quadrennial Defense Review (QDR)” below). Although little of an authoritative nature has been reported about the ASB concept,¹⁰⁵ many observers believe it is focused to a large degree, if not principally, on countering Chinese and Iranian anti-access forces. DOD has established an office to guide the implementation of the concept.¹⁰⁶

A November 10, 2011, press report states:

¹⁰² Leon Panetta, “U.S.-ROK Alliance A Great Force For Peace And Prosperity In Asia-Pacific Region,” *Chosun Ilbo* (South Korea), October 26, 2011: 39.

¹⁰³ The DPG is an internal DOD document that guides DOD’s preparation of its proposed budget.

¹⁰⁴ 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.

¹⁰⁵ 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.

¹⁰⁶ Christopher P. Cavalas, “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.

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.

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.¹⁰⁷

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.

¹⁰⁷ Bill Gertz, “Battle Concept Signals Cold War Posture On China,” *Washington Times*, November 10, 2011: 13.

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....

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.¹⁰⁸

An October 2011 magazine article stated:

¹⁰⁸ Bill Gertz, “Inside the Ring,” *Washington Times*, October 12, 2011 (item entitled “Air Sea Battle Fight”).

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 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.”¹⁰⁹

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.¹¹⁰

¹⁰⁹ Marc V. Schanz, “AirSea Battle’s Turbulent Year,” *Air Force Magazine*, October 2011: 32-33.

¹¹⁰ “An ASB Summer,” *Air Force Magazine*, October 2011: 33.

A September 29, 2011, press report on a reported new DOD Defense Planning Guidance (DPG) document (see “September 2011 Press Report About August 29 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.”¹¹¹

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.

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.¹¹²

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.”¹¹³ 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.”¹¹⁴

A February 18, 2011, press report stated:

The commander of U.S. forces in the Pacific said Thursday [February 17] that the Pentagon is developing new battle plans for Asia that include adding Marines to better-coordinated naval and air forces in the region where China is expanding its military might....

On the new AirSea Battle Concept, which the Pentagon is still crafting, Adm. Willard said: “This is a natural evolution, progression for us, as we advance our military capabilities, and I

¹¹¹ Christopher J. Castelli, “DOD Aims To Boos Investment In Capabilities For Major-Power War,” *Inside the Pentagon*, September 29, 2011.

¹¹² Tony Capaccio, “Panetta Reviewing Air-Sea Battle Plan Summary, Greenert Says,” *Bloomberg News*, July 26, 2011.

¹¹³ Andrew Burt and Christopher J. Castelli, “Despite Improved Ties, China Weighs Heavily In Pentagon’s War Planning,” *Inside the Navy*, June 13, 2011.

¹¹⁴ Andrew Burt, “Final AirSea Study Being Briefed To Mabus And Donley This Month,” *Inside the Navy*, January 10, 2011.

think it will only enhance the capabilities that we present to this region, the Asia Pacific, within U.S. Pacific Command.”

The battle concept calls for a broad range of steps to better coordinate the Air Force and the Navy in the Pacific, said defense officials close to the study. The plans include better joint communications and integrated attack and defense strategies.

Officials said the plan responds to China’s “anti-access” strategy of using ballistic and cruise missiles, submarines and aircraft to drive U.S. forces out of the western Pacific or limit them in aiding U.S. allies....

The four-star admiral’s comments were unusual because the study’s details are highly classified. Defense Secretary Robert M. Gates ordered the study in 2009 amid concerns that U.S. forces, especially the Navy and the Air Force, were unable to operate closely in a wartime scenario.

“We’ve since integrated [the] Marine Corps into the study and their capabilities, and at the end of the day, this will be an enhancement to our joint force writ large,” he said after a speech to the Asia Society in Washington.

One defense official said later that the Marine Corps was added to the AirSea Battle Concept amid growing assertiveness by China’s military. The concept will call for potentially using Marines in sensitive scenarios, such as ejecting Chinese forces from disputed islands in the East China or South China seas.

“The Japanese and South China Sea states don’t have Marine Corps-type capabilities to stop a Chinese occupation of islands, a U.S. Marine Corps specialty for 80 years,” the official said....

The concept will give the Marines a new role in Asian Pacific strategy....

One part of the battle plan calls for expanding war games in Asia against simulated Chinese forces, something the U.S. military had been limited in doing in the past. For example, the Air Force will do exercises in protecting aircraft carriers, and the Navy will work on defending air bases throughout the region.

The battle-plan study also is examining a major increase in defenses on the U.S. western Pacific island of Guam that are vulnerable to long-range Chinese missile attacks. Military facilities would be hardened on Guam.¹¹⁵

Proposed FY2012 Budget

Some observers believe that DOD’s proposed FY2012 budget reflects a shift in spending toward a stronger emphasis on programs for countering improved Chinese military forces. A January 25, 2011, press report states:

After years of shining a laser-like focus on winning “today’s wars,” [Secretary of Defense Robert] Gates shifted gears when he mapped out spending cuts and new investment priorities in the 2012 budget at a marathon news conference earlier this month.

¹¹⁵ Bill Gertz, “Military To Bolster Its Forces In Pacific,” *Washington Times*, February 18, 2011: 1.

Funding for a new generation of long-range nuclear bombers, new electronic jammers and radar, and rockets to launch satellites would help the U.S. military maintain its competitive edge even as China flexes its growing military muscle, Gates told reporters during his recent trip to Asia.

Revival of those projects—which Gates largely halted in April 2009—would be good news for big U.S. defense companies like Lockheed Martin Corp, Boeing Co and Northrop Grumman Corp, which are scrambling for new work now that defense spending is beginning to taper off.

For the past two years, Gates had focused—perhaps too much—on land wars while deferring investments in long-term capabilities aimed more at possible enemies like China, said Patrick Cronin at the Center for a New American Security.

“You have to walk and chew gum at the same time,” he said, adding, “Gates may have tilted too far, but he has indeed made some adjustments with this latest plan.”

U.S. defense officials say the fiscal 2012 budget plan, which was nearly a year in the making, is not a knee jerk reaction to China’s military buildup, and Pentagon budgets have factored in Chinese military ambitions for many years.

The new budget reflects a swing of the pendulum toward future challenges now that the U.S. military has begun pulling troops out of Iraq and has set 2014 as a date for withdrawal from Afghanistan, said the officials.¹¹⁶

2010 Quadrennial Defense Review (QDR)

DOD’s report on the 2010 Quadrennial Defense Review (QDR) states:

China’s growing presence and influence in regional and global economic and security affairs is one of the most consequential aspects of the evolving strategic landscape in the Asia-Pacific region and globally. In particular, China’s military has begun to develop new roles, missions, and capabilities in support of its growing regional and global interests, which could enable it to play a more substantial and constructive role in international affairs. The United States welcomes a strong, prosperous, and successful China that plays a greater global role. The United States welcomes the positive benefits that can accrue from greater cooperation. However, lack of transparency and the nature of China’s military development and decision-making processes raise legitimate questions about its future conduct and intentions within Asia and beyond. Our relationship with China must therefore be multidimensional and undergirded by a process of enhancing confidence and reducing mistrust in a manner that reinforces mutual interests. The United States and China should sustain open channels of communication to discuss disagreements in order to manage and ultimately reduce the risks of conflict that are inherent in any relationship as broad and complex as that shared by these two nations.¹¹⁷

The report also contained a lengthy section on deterring and defeating aggression in anti-access environments that identified the following programming priorities:

- develop a joint air-sea battle concept;

¹¹⁶ Andrea Shalal-Esa, “China Prism Focuses Pentagon Budget On New Weapons,” *Reuters.com*, January 25, 2011.

¹¹⁷ Department of Defense, *Quadrennial Defense Review Report*, February 2010, p. 60.

- expand future long-range strike capabilities;
- exploit advantages in subsurface operations;
- increase the resiliency of U.S. forward posture and base infrastructure;
- assure access to space and the use of space assets;
- enhance the robustness of key C4ISR capabilities;
- defeat enemy sensor and engagement systems; and
- enhance the presence and responsiveness of U.S. forces abroad.¹¹⁸

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.”¹¹⁹ 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:

- 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);¹²⁰
- 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; and
- announcing an intention to occasionally operate a few Littoral Combat Ships (LCSs) out of Singapore.¹²¹

¹¹⁸ Department of Defense, *Quadrennial Defense Review Report*, February 2010, pp. 31-34. The report on the 2010 QDR uses the terms China, Chinese, anti-access (with or without the hyphen), and area-denial (with or without the hyphen) a total of 34 times, compared to a total of 18 times in the report on the 2006 QDR, and 16 times in the report on the 2001 QDR. Subtracting out the uses of anti-access and area denial, the report on the 2001 QDR used the terms China or Chinese zero times; the report on the 2006 QDR used them 16 times; and the report on the 2010 QDR used them 11 times.

¹¹⁹ U.S. Department of Defense, *Quadrennial Defense Review Report*. Washington, 2006. (February 6, 2006) p. 47.

¹²⁰ For more on the SSGNs, see CRS Report RS21007, *Navy Trident Submarine Conversion (SSGN) Program: Background and Issues for Congress*, by Ronald O'Rourke.

¹²¹ 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 (continued...) ”

A February 24, 2011, press report stated:

The head of the U.S. 7th Fleet [i.e., the Navy's fleet for the Western Pacific] revealed plans this week for an increased naval presence in the Asia-Pacific region, divulging details about the deployment of Ohio-class guided missile submarines, the doubling of the Navy's mine countermeasures ships in the area and added submarine maintenance facilities in Guam and Diego Garcia, as well as the use of civilian shipyards in Vietnam for maintenance on Navy ships....

"It is often asserted—quite falsely—that U.S. presence in this region is shrinking," [Vice Admiral Scott Van Buskirk] said. "On the contrary, our growth in capabilities and maritime partnerships reflects a clear focus." The U.S. Navy, he added, "is here to stay."¹²²

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.

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.¹²³

A September 16, 2011, blog entry stated that

(...continued)

Asia," *DefenseNews.com*, June 3, 2011.

¹²² Andrew Burt, "Fleet Commander Outlines Navy's Increasing Presence In Asia," *Inside the Pentagon*, February 24, 2011.

¹²³ Brad Norington, "Troop Boost A Signal To Asia-Pacific," *The Weekend Australian*, September 17, 2011: 2.

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.

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.¹²⁴

¹²⁴ Robert Haddock, "The New Pacific Theater," *SmallWarsJournal.com*, September 16, 2011. See also Anne Gearan and Lolita 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.

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,¹²⁵ Virginia (SSN-774) class attack submarines,¹²⁶ 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.¹²⁷ 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.

Examples of highly capable aircraft now being acquired by the Navy include F-35C carrier-based Joint Strike Fighters (JSFs),¹²⁸ F/A-18E/F Super Hornet strike fighters and EA-18G Growler electronic attack aircraft,¹²⁹ 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.¹³⁰ 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”

¹²⁵ 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.

¹²⁶ 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.

¹²⁷ 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.

¹²⁸ For more on the F-35 program, see CRS Report RL30563, *F-35 Joint Strike Fighter (JSF) Program*, by Jeremiah Gertler.

¹²⁹ 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.

¹³⁰ 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.

and the Air Force “needs to rethink whether the [service’s planned new] long-range bomber will be manned,” the official said.¹³¹

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.¹³²

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.’”¹³³

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.¹³⁴

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

¹³¹ Christopher J. Castelli, “DOD Aims To Boos Investment In Capabilities For Major-Power War,” *Inside the Pentagon*, September 29, 2011.

¹³² 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.

¹³³ Christopher J. Castelli, “Memo: Navy Seeks To Counter China’s Battle-Disruption Capabilities,” *Inside the Navy*, October 10, 2011.

¹³⁴ 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.

publicly could invite Chinese overconfidence and thereby be destabilizing. A February 1, 2011, press report stated:

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."¹³⁵

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."¹³⁶

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.¹³⁷

¹³⁵ Phil Stewart, "U.S. Military Says Keeps Up With China; Is It Enough?" *Reuters.com*, February 1, 2011.

¹³⁶ Erik Sofge, "China's Deadliest Game," *Popular Mechanics*, December 2010: 83.

¹³⁷ 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 in Context of Anticipated Reductions in Defense Spending

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.¹³⁸

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, including 11 aircraft carriers. 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.¹³⁹

In response to reductions in planned levels of defense spending that are anticipated as a result of the Budget Control Act of 2011, the Navy reportedly is examining options for maintaining a fleet with considerably fewer than 313 ships, for retiring certain ships in the near term, well before the ends of their expected service lives, and for deferring or cancelling certain planned procurements. A September 1, 2011, press report stated that the Navy is considering the following options, among others:

- reducing the Navy to a 250-ship fleet that includes 10 aircraft carriers or a 240-ship fleet that includes 8 aircraft carriers (a fleet with 9 carriers is another option);
- retiring (rather than performing a nuclear-refueling overhaul on) the aircraft carrier George Washington (CVN-73), which would be one measure for reducing the size of the carrier force;
- delaying the procurement of the aircraft carrier John F. Kennedy (CVN-79) by two years, to FY2015 (an option that was first reported in July 2011¹⁴⁰);

¹³⁸ 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 Krepinovich, "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.

¹³⁹ For additional discussion, see CRS Report RL32665, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, by Ronald O'Rourke.

¹⁴⁰ See Christopher P. Cavas, "U.S. May Delay Next Carrier," *Defense News*, July 11, 2011: 1.

- eliminating six aircraft squadrons;
- retiring at least some of the Navy's 22 Ticonderoga (CG-47) class Aegis cruisers;
- reducing the planned number of next-generation Ohio replacement ballistic missile submarines (SSBN[X]s) by two boats, from 12 to 10, and consequently delaying the procurement of the first SSBN(X), perhaps by two years; and
- maintaining funding for procurement of two Virginia-class submarines per year, and for Arleigh Burke (DDG-51) class Aegis destroyers and Littoral Combat Ships (LCSs).¹⁴¹

An October 14, 2011, press report stated that the Navy is considering retiring four Aegis cruisers in FY2013, another five Aegis cruisers in FY2014, and three Whidbey Island/Harpers Ferry (LSD-41/49) class amphibious ships in FY2014.¹⁴²

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, 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

¹⁴¹ Christopher J. Castelli, "Navy Of Tomorrow Could Have Fewer Cruisers, Aircraft Carriers," *Inside the Pentagon*, September 1, 2011.

¹⁴² Carlo Munoz, "Navy Delays Carrier, Cuts Cruisers, Amphibs In Draft Budget," *AOL Defense* (<http://defense.aol.com>), October 14, 2011. A blog entry identified the four cruisers that would be retired in FY2013 as *Normandy* (CG-60), *Anzio* (CG-68), *Vicksburg* (CG-69), and *Cape St. George* (CG-71), the five cruisers that would be retired in FY2014 as *Princeton* (CG-59), *Cowpens* (CG-63), *Gettysburg* (CG-64), *Chosin* (CG-65), and *Hue City* (CG-66), and the four amphibious ships that would be retired in FY2014 as *Whidbey Island* (LSD-41), *Fort McHenry* (LSD-43), and *Tortuga* (LSD-46). ("ALT POM Early Decommission Plans," *Information Dissemination* (www.information dissemination.net), October 17, 2011.)

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.¹⁴³

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.

¹⁴³ 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.

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."¹⁴⁴

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.¹⁴⁵ 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),¹⁴⁶ accelerating development and deployment of the electromagnetic rail gun (EMRG), and accelerating the development and deployment of shipboard high-power free 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.¹⁴⁷ 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.¹⁴⁸

¹⁴⁴ David A. Fulghum, "USAF: Slash And Burn Defense Cuts Will Cost Missions, Capabilities," *Aerospace Daily & Defense Report*, September 30, 2011: 6.

¹⁴⁵ 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>.

¹⁴⁶ 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.

¹⁴⁷ 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 Institute Proceedings, June 2011: 58-63.

¹⁴⁸ 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 (continued...)"

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.¹⁴⁹

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 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.¹⁵⁰

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

(...continued)

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.

¹⁴⁹ Bradley Perrett, "Pacific Projections," *Aviation Week & Space Technology*, August 29/September 5, 2011: 67-68.

¹⁵⁰ Alex Frangos, "U.S. Navy Commander Calls for Greater Dialogue," *Wall Street Journal* (<http://blogs.wsj.com/chinarealtime>), November 9, 2011.

could be targeted. I really do think that it is not the game-changer people have played it up to be.¹⁵¹

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 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 where we can operate, or not be restricted in our ability to operate.”¹⁵²

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.

¹⁵¹ “‘We’re Not Gambling,’” *Aviation Week & Space Technology*, April 4, 2011: 66.

¹⁵² Christopher P. Cavas, “Roughead Says Russian, Chinese Navies Growing,” *NavyTimes.com*, March 16, 2011.

“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.”¹⁵³

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

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 coordinates 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.¹⁵⁴

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.

¹⁵³ Eric Talmadge, “3-Star: Anti-Carrier Missile Won’t Stop Navy,” *NavyTimes.com*, February 15, 2011.

¹⁵⁴ Source: Transcript of interview, as appended to Richard McGregor, “US Fleet Chief Voices Doubts On Chinese Navy,” *Financial Times*, January 18, 2011.

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.¹⁵⁵

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.”¹⁵⁶

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.¹⁵⁷ The Chinese government denied that the submarine was following the strike group.¹⁵⁸

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.¹⁵⁹ 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.¹⁶⁰

¹⁵⁵ 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.

¹⁵⁶ Andrew Burt, “Carriers Could Use Evasive Tactics Against Anti-Ship Ballistic Missiles,” *Inside the Navy*, December 20, 2010.

¹⁵⁷ 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.

¹⁵⁸ 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.

¹⁵⁹ 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.

¹⁶⁰ Jason Ma, “Autonomous ASW Sensor Field Seen As High-Risk Technical Hurdle,” *Inside the Navy*, June 6, 2005. (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.¹⁶¹ 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)."¹⁶²

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.¹⁶³

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

¹⁶¹ For an article discussing torpedo defense systems, including ATTs, see Richard Scott, "Ships Shore Up," *Jane's Defence Weekly*, September 1, 2010: 22-23, 25, 27.

¹⁶² Jason Sherman, "Navy Seeks Funding To Develop First Anti-Torpedo Capability For Carriers," *Inside the Navy*, July 18, 2011.

¹⁶³ 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 (continued...)

Legislative Activity for FY2012

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

(...continued)

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 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.; and the blog entry available online at <http://www.informationdissemination.net/2011/06/navy-is-losing-narratives-battle.html>.

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.

FY2012 Defense Authorization Bill (H.R. 1540/S. 1867/S. 1253)

House

Section 1221 of H.R. 1540 as reported by the House Armed Services Committee (H.Rept. 112-78 of May 17, 2011) 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.¹⁶⁴ The committee does not believe, however, that the report sufficiently addressed China’s domestic production capabilities or proliferation of these technologies.

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)

¹⁶⁴ 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.

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.

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 indispensable 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)

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