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HOUSE ARMED SERVICES COMMITTEE

STATEMENT OF
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BEFORE THE
HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES
ON
U.S. ASIA-PACIFIC STRATEGIC CONSIDERATIONS RELATED TO
PLA NAVAL FORCES MODERNIZATION
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Chairman Forbes, Ranking Member McIntyre, Representative Hanabusa, and other distinguished members of the subcommittee, thank you for the opportunity to appear before you today to discuss U.S. Asia-Pacific strategic considerations related to China's naval modernization effort.

As part of my work as a naval issues analyst at CRS, I have been tracking developments relating to China's naval forces since 1984. In 2005, I initiated a CRS report on China's naval modernization effort and its implications for U.S. Navy capabilities.¹ The report was first issued in November 2005 and has since been updated more than 90 times, most recently on September 30. The report currently runs 119 pages and includes a wealth of data and discussion on China's naval modernization effort. This statement draws from that report and makes additional observations in connection with the specific topic of this hearing.

China's forces for influencing events in the Asia-Pacific region include not only the PLA Navy, but also China's newly reorganized Coast Guard and land-based Chinese military forces that are not part of the PLA Navy or China's Coast Guard, 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. For convenience, this statement uses the term China's naval modernization effort to refer to its effort for modernizing all these forces.

Some Top-Level U.S. Strategic Considerations

Top-level U.S. strategic considerations related to China's naval modernization effort include, among other things, the following:

- preventing the emergence of a regional hegemon in one part of Eurasia or another;
- preserving the U.S.-led international order that has operated since World War II;
- fulfilling U.S. treaty obligations;
- shaping the Asia-Pacific region; and
- having a military strategy for China.

Each of these is discussed briefly below.

Preventing Emergence of A Regional Hegemon

In response to the United States' location in the Western Hemisphere, U.S. policymakers for the last several decades have chosen to pursue, as a key element of U.S. national strategy, a goal of preventing the emergence of a regional hegemon in one part of Eurasia or another, on the grounds that such a hegemon could deny the United States access to important resources and economic activity. Although U.S. policymakers do not often state this key national strategic goal explicitly in public, U.S. military operations in recent decades—both wartime operations and day-to-day operations—have been carried out in no small part in support of this key goal. Consequently, a potential key question for Congress to consider is whether China's naval modernization effort forms part of a broader Chinese effort to become a regional hegemon, and if so, how the United States should respond.

¹ CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, by Ronald O'Rourke.

Preserving the U.S.-Led International Order

A second top-level U.S. strategic consideration concerns the implications that developments involving China, including its naval forces, may have for preserving the U.S.-led international order that has operated since World War II. Key characteristics of this order include, among other things, a rules- and norms-based system grounded in international law, the use of international law and other non-coercive mechanisms for resolving disputes, market-based economies and free trade, broadly defined global commons at sea and in the air, and freedom of operations in international waters and airspace. This international order has benefitted not only the United States and its allies, but many other countries as well, including China. Consequently, a second potential key question for Congress to consider is whether China's naval modernization effort forms part of a broader Chinese effort to rewrite one or more elements of the post-World War II international order, at least for the Asia-Pacific region, and if so, how the United States should respond.

It is important to note that a Chinese effort to rewrite one or more elements of the international order in the Asia-Pacific might have implications that go well beyond the Asia-Pacific. International law, for example, is universal in its application, so a change in its application in the Asia-Pacific region would imply a change in its application globally. If China, for example, were to succeed in an effort to gain international acceptance of its view that it, as a coastal state, has the right to regulate the activities of foreign military forces operating in its 200-nautical-mile exclusive economic zone (EEZ), that would have important implications not only for U.S. military operations in the Asia-Pacific, but for U.S. military operations around the world.²

Fulfilling U.S. Treaty Obligations

A third top-level U.S. strategic consideration concerns the potential implications of China's naval modernization effort for the United States in terms of the current and future ability of the United States to fulfill its obligations to treaty allies in the Asia-Pacific region, particularly Japan, South Korea, and the Philippines, and its obligations to Taiwan under the Taiwan Relations Act (P.L. 96-8 of April 10, 1979). This, too, is an issue that could have implications that go beyond the Asia-Pacific region, because a failure to fulfill such obligations in the Asia-Pacific region, or uncertainty among third-party observers regarding the U.S. ability or will to fulfill them, could lead to uncertainty among observers regarding the U.S. ability or will to fulfill obligations to countries in other parts of the world.

Shaping the Asia-Pacific Region

A fourth top-level U.S. strategic consideration for Congress concerns the implications that China's naval modernization effort may have for shaping the future of the Asia-Pacific region. Some observers consider a military conflict involving the United States and China 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 Asia-Pacific region could nevertheless influence day-to-day choices made by other Asia-Pacific countries, including choices on whether to align their policies more closely with China or the United States. In this sense, decisions by policymakers regarding U.S. Navy and other DOD programs (as well as other measures, including possibly non-military ones) for countering improved Chinese naval forces could influence the political evolution of the Asia-Pacific, which in turn could affect the ability of the United States to pursue goals relating to various policy issues, both in the Asia-Pacific region and elsewhere.

² For more on this issue, see CRS Report R42784, *Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China: Issues for Congress*, by Ronald O'Rourke.

Having a Military Strategy for China

A fifth top-level U.S. strategic consideration for Congress is whether the United States has a military strategy for deterring or defeating China. Some observers have questioned whether the United States has such a strategy.³ The Air-Sea Battle (ASB) concept is not a such strategy, and does not purport to be one—it is, rather, a concept for countering anti-access/area-denial (A2/AD) forces (such as those being fielded by China) that could be used to help implement a strategy.

Overview of China's Naval Modernization Effort⁴

China's naval modernization effort appears aimed at producing a regionally powerful navy with a limited but growing ability to conduct operations in more distant waters. The paragraphs below provide an overview of China's naval modernization effort.

Date of Inception

Observers date the beginning of China's naval modernization effort to various points in the 1990s.⁵ Design work on the first of China's newer ship classes appears to have begun in the later 1980s.⁶ 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.⁷

³ See, for example, Seth Cropsey, "America Has No Military Strategy for China," *Real Clear Defense* (www.RealClearDefense.com), November 25, 2013, which states:

The ideas offered by the ASB, while necessary, are neither based upon, nor do they serve as the basis of, strategy for any region of the world where countries, most notably China, are actively building the command and control, intelligence, reconnaissance, surveillance, and offensive capability to deny the U.S. and its allies access to the seas far off its coast. The ASB office public document does not include the word "China." So, although the U.S. Defense Department acknowledges the challenge of China's anti-access efforts, we have no strategy to defeat it nor does there appear to be a plan to construct one.

See also T.X. Hammes, "A Military Strategy to Deter China," *Real Clear Defense* (www.RealClearDefense.com), December 1, 2013, which states that

the United States has no strategy for a conflict with China. Secretary Cropsey notes that the AirSea Battle concept is the 'sole U.S. preparation' but that it is not a strategy.... [T]he United States has a clearly articulated national strategy to encourage peaceful growth in the region. Unfortunately, as Cropsey noted, the United States has failed to express a coherent military strategy to support its national strategy.

⁴ Unless otherwise indicated, shipbuilding program information in this section is taken from *Jane's Fighting Ships 2012-2013*, 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.

⁵ 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 Luhu (Type 052) class destroyer in 1990, its Luhai (Type 051B) class destroyer in 1996, and its first Jiangwei I (Type 053 H2G) class frigate in 1990.

⁶ 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.

⁷ DOD, for example, stated in 2011 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." Department of Defense, *Annual Report to Congress [on] Military and Security Developments Involving the People's Republic of China 2011*, p. 57. (Hereafter *2011 DOD CMSD*; other editions cited similarly.)

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, corvettes, patrol craft, amphibious ships, mine countermeasures (MCM) ships, underway replenishment ships, hospital ships, and supporting C4ISR⁸ systems. China's naval modernization effort also includes reforms and improvements in maintenance and logistics, naval doctrine, personnel quality, education and training, and exercises.⁹

For actual and projected numbers of Chinese ships and aircraft, see the tables presented in the **appendix** to this statement.

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,¹⁰ joint operations with other parts of China's military,¹¹ antisubmarine warfare (ASW), MCM, a dependence on foreign suppliers for some ship propulsion systems,¹² and a lack of operational experience in combat situations.¹³

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 An A2/AD Force

DOD and other observers believe that a near-term focus of China's military modernization effort, including its naval modernization effort, has been to develop military options for addressing the situation

⁸ C4ISR stands for command and control, communications, computers, intelligence, surveillance, and reconnaissance.

⁹ For a discussion of improvements in personnel, training, and exercises, see Office of Naval Intelligence, *The People's Liberation Army Navy, A Modern Navy with Chinese Characteristics*, Suitland (MD), Office of Naval Intelligence, August 2009, pp. 31-40. (Hereafter *2009 ONI Report*)

¹⁰ DOD stated in 2012 that "By the latter half of the current decade, China will likely be able to project and sustain a modest-sized force, perhaps several battalions of ground forces or a naval flotilla of up to a dozen ships, in low-intensity operations far from China. This evolution will lay the foundation for a force able to accomplish a broader set of regional and global objectives. However, it is unlikely that China will be able to project and sustain large forces in high-intensity combat operations far from China prior to 2020." (*2011 DOD CMSD*, p. 27.)

¹¹ DOD stated in 2011 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.)

¹² DOD states that China's naval shipbuilding industry "continues to invest in foreign suppliers for some [ship] propulsion units, but is becoming increasingly self-reliant." (*2013 DOD CMSD*, p. 48.)

¹³ DOD stated in 2010 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)

with Taiwan.¹⁴ Consistent with this goal, observers believe that China wants its military to be capable of acting as an A2/AD 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.

ASBMs, attack submarines, and supporting C4ISR systems are viewed as key elements of China's emerging maritime A2/AD 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.¹⁵

China's emerging maritime A2/AD 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 A2/AD force is that China's force includes ASBMs capable of hitting moving ships at sea.

China's emerging maritime A2/AD force can also support additional Chinese goals not directly related to Taiwan, including those discussed in the next section.

Additional Goals Not Directly Related to Taiwan

DOD and other observers 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;¹⁶
- enforcing China's view—a minority view among world nations—that it has the legal right to regulate foreign military activities in its 200-nautical-mile maritime exclusive economic zone (EEZ);¹⁷
- 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.

A Possible Overarching Goal of Gaining Greater Control of the Near Seas Region and Breaking Out Into the Pacific

A range of Chinese actions in recent years—including the modernization of its navy and coast guard, its actions for asserting and defending China's territorial and EEZ claims in the South China Sea and East China Sea, and its recent announcement of an air defense identification zone (ADIZ) for the East China

¹⁴ For a DOD summary of these options—including maritime quarantine or blockade, limited force or coercive options, an air and missile campaign, and an amphibious invasion—see *2013 DOD CMSD*, pp. 56-57.

¹⁵ For further discussion, see, for example, *2013 DOD CMSD*, pp. 32, 34-35.

¹⁶ For more on China's territorial claims in the South and East China Seas, see CRS Report R42784, *Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China: Issues for Congress*, by Ronald O'Rourke, and CRS Report R42930, *Maritime Territorial Disputes in East Asia: Issues for Congress*, by Ben Dolven, Shirley A. Kan, and Mark E. Manyin.

¹⁷ For more on China's view regarding its rights within its EEZ, see CRS Report R42784, *Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China: Issues for Congress*, by Ronald O'Rourke.

Sea—has suggested to some observers that China is pursuing an overarching goal of gaining greater control of China’s near-seas region (meaning the waters, land features, and airspace of the Yellow Sea, East China Sea, and South China Sea—that is, the area inside the so-called first island chain), and of breaking out into the Pacific.¹⁸ There is debate among observers regarding China’s goals and strategy for the near-seas region, but if China were to achieve a position of being able to exert control over access to, and activities within, this region, it would have major implications for the top-level U.S. strategic considerations outlined at the beginning of this statement: it would constitute a major step toward China becoming a regional hegemon, pose a significant challenge to the preservation of the post-World War II international order, and substantially complicate the ability of the United States to fulfill treaty obligations to countries in the region and shape the region’s future. It would amount to a fundamental reordering of the security situation of the Asia-Pacific.

Some Observations on the U.S. Response To China’s Naval Modernization Effort

Below are some observations on the U.S. response to China’s naval modernization effort, particularly as it relates to U.S. Navy programs.

Funding for Programs

Many observers, viewing constraints on U.S. defense spending levels that could result from the Budget Control Act or other legislation, have expressed doubts about the prospective ability to fully fund Navy and other DOD programs for implementing the military pillar of the U.S. strategic rebalancing toward the Asia-Pacific. In a situation of reduced levels of defense spending, such as what would occur if defense spending were to remain constrained to the revised cap levels in the Budget Control Act, the challenge of fully funding these programs would be intensified. Even so, the challenge would not necessarily be insurmountable, particularly if these programs were given priority in the DOD resource-allocation process, and if actions beyond those now being implemented by DOD were taken to control military personnel pay and benefits and reduce what some observers refer to as DOD’s overhead or back-office costs.

Fully funding the Navy’s current 30-year shipbuilding plan in coming years, for example, would require shifting to the Navy’s shipbuilding account 1.5% or less of what DOD’s total budget would be under the revised caps of the Budget Control Act. Fully funding the Department of the Navy’s (DON’s) total budget as shown in the FY2014 budget submission would require shifting to the DoN budget 4% or 5% of what DOD’s total budget would be under the revised caps of the Budget Control Act. In a context of giving priority to the strategic rebalancing, such budget shifts would appear feasible.¹⁹

¹⁸ See, for example, Henry Sanderson and Shai Oster, “China Air Zone Seen Step to Expanding Access to West Pacific,” *Bloomberg News* (www.bloomberg.com), December 4, 2013; David E. Sanger, “In the East China Sea, a Far Bigger Test of Power Looms,” *New York Times* (www.nytimes.com), December 1, 2013; Daniel Goure, “New Chinese Air Defense Zone Is Latest Move In Beijing’s Strategy To Dominate East Asia,” *Lexington Institute* (www.lexingtoninstitute.org), November 25, 2013; Dean Cheng, “China’s ADIZ as Area Denial,” *The National Interest* (<http://nationalinterest.org>), December 4, 2013; Jim Talent, “The Equilibrium of East Asia,” *National Review Online* (www.nationalreview.com), December 5, 2013; Dan Blumenthal, “China Tips Its Hand,” *The National Interest* (<http://nationalinterest.org>), December 5, 2013; Wendell Minnick, “China’s Air Zone Part Of Anti-access Strategy,” *DefenseNews.com*, December 7, 2013; Trudy Rubin, “The China Strategy,” *Seattle Times*, December 7, 2013 (reporting remarks made by Toshi Yoshihara of the U.S. Naval War College). See also John Bolton, “How to Answer China’s Muscle-Flexing,” *Wall Street Journal* (<http://online.wsj.com>), December 4, 2013.

¹⁹ For further discussion, see Statement of Ronald O’Rourke, Specialist in Naval Affairs, Congressional Research Service, Before the House Armed Services Committee, Subcommittee on Seapower and Projection Forces, on the Navy’s FY2014 30-Year Shipbuilding Plan, October 23, 2013, pp. 1-4.

Forward-Deployed Ships

Responding to China's naval modernization effort can focus attention on options for enhancing the number of forward-deployed ships that the U.S. Navy can maintain in the Asia-Pacific region, particularly if constraints on defense spending limit the size of the Navy to something less than the Navy's 306-ship force-level goal. Such options include lengthening deployments, making greater use of multiple crewing and crew rotation, and making more use of overseas homeporting and/or overseas stationing of ships. Although these options can enhance the Navy's number of forward-deployed ships, they also have potential costs in terms of impact on Navy ship crews, impact on ship maintenance and material condition, and (for ships homeported or stationed in foreign ports) potential host-nation limits on how the ships can be used.

Countering Maritime A2/AD Weapons

Some observers, viewing China's growing maritime A2/AD capabilities, have posited that these weapons will at some point compel U.S. Navy surface ships to remain outside China's A2/AD perimeter. Doing that would, among other things, reduce the Navy's ability to conduct forward-deployed deterrence, reassurance, and engagement operations in the Asia-Pacific, which could lead to doubts among third-party observers about the U.S. ability or willingness to fulfill its treaty obligations to countries in the region and reduce U.S. options for shaping the region's future. It is far from clear, however, that U.S. Navy surface ships will be compelled at some point to remain outside China's maritime A2/AD perimeter, as the Navy has numerous options at its disposal for breaking the kill chains of China's maritime A2/AD weapons (i.e., for disrupting the sequence of actions that China would need to complete to successfully employ these weapons).

Much of the discussion about U.S. Navy surface ships possibly being compelled at some point to remain outside China's A2/AD perimeter, for example, relates to China's ASBMs, which some observers have described as "game changers." Although a new type of weapon like the ASBM might be described as a game changer, that does not mean it cannot be countered. 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.

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. 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.²⁰ 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

²⁰ 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>.

terminal-phase BMD interceptor),²¹ 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.²²

Directed-Energy Weapons

Directed-energy weapons such as the electromagnetic rail gun (EMRG) and high-power lasers could be the U.S. Navy's own "game changers" for countering Chinese air and missile systems, particularly in terms of dramatically reducing the Navy's cost per shot and substantially increasing the magazine depth of Navy surface ships. To field such systems, the Navy would need not only to continue their development, but also procure ships with integrated electric drive systems or some other means of providing enough electrical power to support them. The Navy's shipbuilding plan currently does not include any surface combatants that will clearly have enough electrical power to support lasers with more than a certain amount of power.²³

Long-Range Aircraft and Weapons

The geographic expanse of the Asia-Pacific region and the potential advantages of being able to outrange Chinese A2/AD systems when needed may focus attention on the option of acquiring long-range carrier-based aircraft such as the Unmanned Carrier Launched Surveillance and Strike (UCLASS) aircraft and long-range weapons such as the Long Range Anti-Ship Missile (LRASM). Potential oversight issues for the subcommittee include whether the UCLASS will be designed to be capable of penetrating capable air-defense systems²⁴ and whether the Navy should also pursue the acquisition of a long-range air-to-air missile for carrier-based strike fighters.²⁵

Submarines and Antisubmarine Warfare (ASW)

U.S. Navy attack submarines are considered capable of operating effectively in waters that are well inside China's surface and air A2/AD perimeters. This can focus attention not only on the procurement of Virginia-class attack submarines, but also on other options for expanding the capabilities of the attack

²¹ 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.

²² 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.

²³ For a discussion, see CRS Report R41526, *Navy Shipboard Lasers for Surface, Air, and Missile Defense: Background and Issues for Congress*, by Ronald O'Rourke, particularly the sections entitled "Potential Advantages and Limitations of Shipboard Lasers" and "Implications for Ship Design and Acquisition." See also Statement of Ronald O'Rourke, Specialist in Naval Affairs, Congressional Research Service, Before the House Armed Services Committee, Subcommittee on Seapower and Projection Forces, on the Navy's FY2014 30-Year Shipbuilding Plan, October 23, 2013, pp. 13-14.

²⁴ For a discussion, see Dave Majumdar, "Navy Shifts Plans to Acquire a Tougher UCLASS," *USNI News* (<http://news.usni.org>), November 12, 2013; USNI News Editor, "Pentagon Altered UCLASS Requirements for Counterterrorism Mission," *USNI News* (<http://news.usni.org>), August 29, 2013.

²⁵ Such a missile might be broadly similar to the Advanced Air-to-Air Missile (AAAM), a long-range air-to-air missile that was being developed in the late-1980s as a successor to the Navy's long-range Phoenix air-to-air missile. The AAAM program was cancelled as a result of the end of the Cold War.

submarine force, such as the Virginia Payload Module (VPM),²⁶ submarine-launched unmanned air and underwater vehicles, and the Acoustic Rapid COTS Insertion (ARCI) program for upgrading the capabilities of existing Los Angeles class attack submarines (which will continue to constitute a significant portion of the attack submarine fleet into the 2020s). Conversely, China's submarine force can focus attention on U.S. Navy ASW capabilities and surface-ship torpedo-defense systems, including the anti-torpedo torpedo (ATT), which could improve the Navy's ability to counter wake-homing torpedoes that might otherwise be difficult to counter.

Computers and the Electromagnetic Spectrum

Responding to China's naval modernization effort can focus attention on Navy cyber capabilities, Navy electronic warfare programs, Navy networking capabilities (and, conversely, the ability of Navy ships and aircraft to continue to operating effectively if networks are degraded), and the ability of Navy systems to withstand electromagnetic pulse (EMP).

Fleet Architecture

The growth of Chinese (and Iranian) maritime A2/AD capabilities has helped propel a debate about whether the U.S. Navy should shift from its current fleet architecture to a more-distributed architecture that would include fewer large surface ships (such as aircraft carriers and large surface combatants) and greater numbers of smaller surface ships (such as smaller aircraft carriers and small surface combatants). Advocates of a more-distributed fleet architecture—who appear to include, among others, analysts working at the Naval Postgraduate School—argue that a more-distributed architecture would offer benefits in terms of fleet affordability and effectiveness in countering adversaries who field capable maritime A2/AD systems.²⁷ The Navy and other supporters of the Navy's current fleet architecture disagree on both of these points.

Participants on the two sides of this debate appear to proceed from differing or even contradictory views on underlying factors such as the likely effectiveness of adversary A2/AD weapons, the likely effectiveness of U.S. Navy systems for countering them, the resulting likely survivability of Navy surface ships to attack from such weapons, and how the survivability of a ship changes as a function of ship size. Due to differences on matters such as these, it can sometimes appear as if the two groups are almost talking past one another.

One option for the subcommittee would be to attempt to understand why the two groups have come to such differing views on these underlying issues. Given the significantly different points of view of these two groups, and the potential stakes of this issue in terms of its implications for the Navy's program of record, this might qualify as a high-priority item for the subcommittee.

²⁶ For more on the Virginia class program and the VPM, see CRS Report RL32418, *Navy Virginia (SSN-774) Class Attack Submarine Procurement: Background and Issues for Congress*, by Ronald O'Rourke.

²⁷ See, for example, Wayne P. Hughes, Jr., *The New Navy Fighting Machine: A Study of the Connections Between Contemporary Policy, Strategy, Sea Power, Naval Operations, and the Composition of the United States Fleet*, Monterey (CA), Naval Postgraduate School, August 2009, 68 pp.; Timothy C. Hanifen, "At the Point of Inflection," *U.S. Naval Institute Proceedings*, December 2011: 24-31; David C. Gompert, *Sea Power and American Interests in the Western Pacific*, RAND, Santa Monica (CA), 2013, 193 pp. (RR-151-OSD); and John Harvey Jr., Wayne Hughes Jr., Jeffrey Kline, and Zachary Schwartz, "Sustaining American Maritime Influence," *U.S. Naval Institute Proceedings*, September 13, 2013: 46-51.

Activities Conducted by China's Coast Guard

Many of China's actions for asserting and defending its maritime territorial claims in the East China Sea and South China Sea are being conducted by ships from China's Coast Guard (with PLA Navy ships over the horizon as potential back-up forces). In the East China Sea, operations by Chinese Coast Guard ships for asserting and defending China's maritime territorial claims are being countered by Japanese Coast Guard ships. In the eastern and southern portions of the South China Sea, in contrast, operations by Chinese Coast Guard for asserting and defending China's maritime territorial claims often go uncountered by equivalent Philippine forces, because the Philippines has relatively few such ships. To the extent that gradual consolidation of Chinese control over parts of the Spratly islands and other South China Sea features such as Scarborough Shoal would affect U.S. interests connecting back to the top-level U.S. strategic considerations discussed at the beginning of this statement, policymakers may wish to consider the option of accelerating actions for expanding and modernizing the Philippines' maritime defense and law enforcement capabilities.

Cooperation With China in Maritime Operations

None of the foregoing precludes the United States from pursuing opportunities to cooperate with China in maritime operations when and where the two countries have shared interests. Chinese forces continue to contribute to the international effort to counter piracy in waters off Somalia, and in the future could contribute to anti-piracy operations in other locations as well. U.S. and Chinese naval forces might also cooperate in search-and-rescue operations and humanitarian assistance/disaster response (HA/DR) operations. Such operations, plus Chinese participation in multilateral naval exercises (such as the next RIMPAC exercise) and interactions through multilateral fora such as the Western Pacific Naval Symposium (WPNS)²⁸ and the North Pacific Coast Guard Forum (NPCGF),²⁹ could build trust and help reinforce compliance with rules for operating ships and aircraft safely in proximity to one another. Cooperative maritime operations might also provide an opportunity for demonstrating to China the benefits that China receives from the current international order, and China's consequent interest in preserving that order.

Mr. Chairman, this concludes my statement. I will be pleased to respond to any questions the subcommittee may have.

²⁸ For more on the WPNS, see Singapore Ministry of Defense, "Fact Sheet: Background of the Western Pacific Naval Symposium, MCMEX, DIVEX and NMS," updated March 25, 2011, accessed October 1, 2012, at http://www.mindef.gov.sg/imindef/news_and_events/nr/2011/mar/25mar11_nr/25mar11_fs.html. See also the website for the 2012 WPNS at <http://www.navy.mil.my/wpns2012/>.

²⁹ For more on the NPCGF, see, for example, Glynn Smith, "North Pacific Coast Guard Forum," Coast Guard Compass, September 16, 2010, accessed December 5, 2013, at: <http://coastguard.dodlive.mil/2010/09/north-pacific-coast-guard-forum-2010-2/>; "The North Pacific Coast Guard Forum," U.S. Coast Guard Prevention Blog, May 25, 2010, accessed December 5, 2013, at: <http://cgmarinesafety.blogspot.com/2010/05/north-pacific-coast-guard-forum.html>; and "North Pacific Coast Guard Forum," Canadian Coast Guard, June 24, 2013, accessed December 5, 2013, at: <http://www.ccg-gcc.gc.ca/e0007869>.

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

This appendix, which is adapted from the CRS report on China's naval modernization effort and its implications for U.S. Navy capabilities, presents figures on actual and projected numbers of Chinese ships and naval aircraft and a discussion on comparing U.S. and Chinese naval capabilities.

Numbers Provided by ONI in 2013

Table 1 shows figures provided by the Office of Naval Intelligence (ONI) in 2013 on numbers of Chinese navy ships in 2000, 2005, and 2010, and projected figures for 2015 and 2020, along with the approximate percentage of ships within these figures considered by ONI to be of modern design.

Table 1. Numbers of PLA Navy Ships Provided by ONI in 2013

Ship type	2000	2005	2010	2015	2020
Numbers					
Diesel attack submarines (SSs)	60	51	54	57 to 62	59 to 64
Nuclear-powered attack submarines (SSNs)	5	6	6	6 to 8	6 to 9
Ballistic missile submarines	1	2	3	3 to 5	4 to 5
Aircraft carriers	0	0	0	1	1 to 2
Destroyers	21	21	25	28 to 32	30 to 34
Frigates	37	43	49	52 to 56	54 to 58
Corvettes	0	0	0	20 to 25	24 to 30
Amphibious ships	60	43	55	53 to 55	50 to 55
Missile-armed coastal patrol craft	100	51	85	85	85
Approximate percent of modern design					
Diesel attack submarines	7	40	50	70	75
Nuclear-powered attack submarines	0	33	33	70	100
Destroyers	20	40	50	70	85
Frigates	25	35	45	70	85

Source: Prepared by CRS using data from Craig Murray, Andrew Berglund, and Kimberly Hsu, *China's Naval Modernization and Implications for the United States*, U.S.-China Economic and Security Review Commission (USCC), August 26, 2013, Figures 1 through 4 on pp. 6-7. The source notes to Figures 1 through 4 state that the numbers and percentages "were provided by the U.S. Office of Naval Intelligence. U.S. Office of Naval Intelligence, *PLA Navy Orders of Battle 2000-2020*, written response to request for information provided to the U.S.-China Economic and Security Review Commission, Suitland, MD, June 24, 2013." Citing this same ONI document, the USCC publication states in footnotes on pages 6 and 7 that "Modern submarines are those able to employ submarine-launched intercontinental ballistic missiles or antiship cruise missiles," and that "Modern surface ships are those able to conduct multiple missions or that have been extensively upgraded since 1992."

Numbers Provided by ONI in 2009

Table 2 shows figures provided by ONI in 2009 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. The modern attack submarines, destroyers, and frigates

shown below in **Table 4**, **Table 5**, and **Table 6** account for about half of the attack submarines, about half of the destroyers, and about 42% of the frigates shown in **Table 2** for 2009. An 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.”³⁰

Table 2. Numbers of PLA Navy Ships and Aircraft Provided by ONI in 2009

(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
<i>Large ships (LPDs/LHDs)</i>	0	0	0	0	1	~6?	~6?
<i>Smaller ships</i>	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 *Liaoning*. 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 *Liaoning*, 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.

³⁰ *2009 ONI Report*, p. 46.

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

Table 3 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 2**, the figures in **Table 3** lump older and less capable ships together with newer and more capable ships. The modern attack submarines, destroyers, and frigates shown below in **Table 4**, **Table 5**, and **Table 6** account for about half of the attack submarines, about half of the destroyers, and about 42% of the frigates shown in **Table 3** for 2009. DOD stated in 2011 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 2009.³¹

DOD states that “The PLA Navy has the largest force of major combatants, submarines, and amphibious warfare ships in Asia. China’s naval forces include some 79 principal surface combatants, more than 55 submarines, 55 medium and large amphibious ships, and roughly 85 missile-equipped small combatants.”³²

Table 3. 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	2012	2013
Nuclear-powered attack submarines	5	5	~60	n/a	6	5	5	5	6	6	5	5	5
Diesel attack submarines	~60	~ 50		n/a	51	50	53	54	54	54	49	48	49
Destroyers	~20	~ 60	> 60	n/a	21	25	25	29	27	25	26	26	23
Frigates	~40			n/a	43	45	47	45	48	49	53	53	52
Missile-armed coastal patrol craft	n/a	~ 50	~ 50	n/a	51	45	41	45	70	85	86	86	85
Amphibious ships: LSTs and LPDs	almost 50	~ 40	> 40	n/a	20	25	25	26	27	27	27	28	29
Amphibious ships: LSMs				n/a	23	25	25	28	28	28	28	23	26

Source: Table prepared by CRS based on data in 2000-2013 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.

³¹ 2011 DOD CMSD, p. 43 (figure).

³² 2013 DOD CMSD, p. 6.

Annual Numbers of New Submarines, Destroyers, and Frigates

Table 4, Table 5, and Table 6 present actual and projected figures on new Chinese navy submarines, destroyers, and frigates, respectively, entering service each year. For discussions of the ship classes listed in these tables, see the CRS report on China's naval modernization effort and its implications for U.S. Navy capabilities.

Table 4. PLA Navy Submarine Commissionings

Actual (1995-2011) and Projected (2012-2016)

	Jin (Type 094) SSBN	Shang (Type 093) SSN	Kilo SS (Russian- made)	Ming (Type 035) SS ^a	Song (Type 039) SS	Yuan (Type 039A) SS ^b	Qing SS	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	2				3	9	3
1999			1		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						3	1 ^g	4	46	35
2012	1					5		6	51	40
2013	1					n/a	n/a	n/a	n/a	n/a
2014	1					n/a	n/a	n/a	n/a	n/a
2015						n/a	n/a	n/a	n/a	n/a
2016	1 ^h					n/a	n/a	n/a	n/a	n/a

Source: *Jane's Fighting Ships 2012-2013*, and previous editions.

Note: n/a = data not available.

^a 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.

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

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

^d *Jane's Fighting Ships 2012-2013* lists the commissioning date of one of the two Kilos as December 15, 1994.

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

^f *Jane's Fighting Ships 2012-2013* states that production of the two Shang-class boats shown in the table is expected to be followed by production of a new SSN design known as the Type 095 class, of which a total of five are expected. A graph on page 22 of *2009 ONI Report* suggests that ONI expects the first Type 095 to enter service in 2015.

^g It is unclear whether this is the lead ship of a new class, or a one-of-a-kind submarine built for test purposes. *Jane's Fighting Ships 2012-2013* refers to the boat as an auxiliary submarine (SSA).

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

Table 5. PLA Navy Destroyer Commissionings

Actual (1994-2011) and Projected (2012-2014)

	Sovre- menny (Russian- made)	Luhu (Type 052)	Luhai (Type 051B)	Luyang I (Type 052B)	Lyugang II (Type 052C)	Louzhou (Type 051C)	Luyang III (Type 052D)	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			1	14
2013					2			2	16
2014					1		<i>n/a</i>	<i>n/a</i>	<i>n/a</i>

Source: *Jane's Fighting Ships 2012-2013*, and previous editions.

Table 6. PLA Navy Frigate CommissioningsActual (1991-2011) and *Projected* (2012-2013)

	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				3	3	23
2011				2	2	25
2012				2	2	27
2013				5	5	32

Source: *Jane's Fighting Ships 2012-2013*, and previous editions.

Comparing U.S. and Chinese Naval Capabilities

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

- **A fleet's total number of ships (or its aggregate tonnage) is only a partial metric of its capability.** In light of the many other significant contributors to naval capability,³³ 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

³³ 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.

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.**³⁴ 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.³⁵ As mentioned earlier, DOD stated in 2011 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 2010.³⁶ This CRS report shows numbers of more modern and more capable submarines, destroyers, and frigates in **Table 4**, **Table 5**, and **Table 6**, 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 2**, for example, China's submarine force today has fewer boats than it did in 1990, but has greater aggregate capability than it did in 1990, because larger numbers of older, obsolescent boats have been replaced by smaller numbers of more modern and more capable boats. A similar point might be made about China's force of missile-armed attack craft. DOD states that "Since the 1990s, the PLA Navy has rapidly transformed from a large fleet of low-capability, single-mission platforms, to a leaner force equipped with more modern, multi-mission platforms."³⁷ 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."³⁸ 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 4**, **Table 5**, and **Table 6**, respectively.

³⁴ 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).

³⁵ 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.

³⁶ *2011 DOD CMSD*, p. 43 (figure).

³⁷ *2011 DOD CMSD*, p. 3.

³⁸ *2009 ONI Report*, p. 46.

- **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.