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TESTIMONY

STATEMENT BEFORE THE HOUSE ARMED SERVICES COMMITTEE
SEAPOWER AND PROJECTION FORCES SUBCOMMITTEE

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Chairman Forbes, Ranking Member McIntyre, and Members of the Subcommittee, thank you for convening this important series of hearings on Asia-Pacific regional security. I appreciate your invitation to testify today on the subject of PLA naval modernization and its implications for how the United States and its allies preserve the regional security balance during a period of rapid change. I will discuss key trends and priorities in the Chinese People's Liberation Army (PLA) naval modernization program, as well as China's development of an anti-ship ballistic missile, although it is technically not a naval modernization program. I will also address the implications of this modernization effort for U.S. and allied operational and force planning.

Assessing modernization requires comparing capabilities of one country with the capabilities of its competitors. Over the long term, this is an interactive process since the modernization effort of one country will influence the modernization decisions of the other. Since 2003, the U.S. has been engaged in extended counter-insurgency campaigns in Iraq and Afghanistan that have consumed a great deal of American attention and resources that might otherwise have been focused on countering the PLA innovations detailed below. As a result, the PLA has had a relatively free hand to field new systems and forces specifically designed to exploit characteristics of "the American Way of War" that have been easily observable over the past two decades of U.S. military operations in the Middle East, Central Asia, North Africa, and the Balkans. These characteristics include reliance on large theater bases, long-haul satellite communications and logistics networks, and a relatively shallow inventory of long-range precision-guided weapons. While the PLA has fielded a wide and growing array of advanced capabilities to counter U.S. power projection, the United States has spent insufficient time, intellectual effort, and resources responding to new and innovative PLA capabilities.

Assessing modernization also requires thinking about trends in force development over time. In this regard, it is worth recalling just how far China has come over the past decade, a period in which China's rapid naval modernization has been fueled by substantial increases in defense spending. In 2003, annual Chinese defense spending was estimated by the U.S. Department of Defense (DoD) to be $45-60 billion. Ten years later, DoD estimated that PLA spending had

increased to $135-215 billion, or roughly 25-40 percent what the United States spends on its military annually. In addition, China has been able to focus its defense effort almost entirely on its immediate maritime perimeter in support of its "counter-intervention" strategy, unlike the United States with its competing global security responsibilities. This strategy emphasizes surprise and the ability to conduct short, decisive campaigns while precluding effective U.S. intervention long enough that China could realize its campaign objectives and present the United States with a *fait accompli*. Anti-access and area denial (A2/AD) capabilities—designed to prevent an adversary from entering the theater or to deny those already in the theater from being able to operate effectively—play a central role in China's strategy. China's naval modernization, in turn, has underwritten efforts to expand its geographic A2/AD envelope over time and extend it farther out in the western Pacific Ocean.

A Decade of Rapid Naval Modernization

A decade ago China was also heavily reliant on Russian assistance for its armaments. The most sophisticated surface combatants in its fleet at the time were two SOVREMENNY-class destroyers, and the most advanced submarines in its fleet were four KILO-class submarines, all acquired from Russia. Since that time, the situation has changed markedly. The PLA Navy (PLAN) has reduced its reliance on Russia in favor of indigenous ship and submarine design and production. The PLAN today includes roughly 190 major combatants and is on a trajectory to surpass the U.S. Navy in size by 2020. This force is increasingly capable of denying access within 200 miles of the Chinese coastline and will have the ability to support some power projection at greater distances (e.g., along China's sea lines of communication). Interestingly, the PLA fleet is growing even while it is aggressively retiring or transferring older ships to China's maritime law enforcement agencies—the so-called "Five Dragons" under the State Oceanic Administration—paramilitary forces carrying out fisheries law enforcement, surveillance, coast guard and other maritime functions.

As impressive as the PLAN's growth has been, its qualitative improvements are even more remarkable. Ongoing modernization programs with respect to counter-intervention operations include:

Advanced Submarines. China is rapidly building up a modern submarine force while retiring its older submarines. Its latest, indigenously produced submarines—the Improved SHANG-class SSN and Type 095 SSGN—have greater acoustic signature reduction than older HAN-class SSNs and incorporate advanced nuclear reactors. Type 095s also incorporate vertical launch system (VLS) tubes. The YUAN-class (Type 041) SSP now in production replaces obsolete ROMEO- and MING-class SSKs and incorporates air-independent propulsion to extend its submerged endurance. Together, these advanced submarines will help to screen for the surface fleet. The most significant concern, however, is their improving ability to conduct long-range anti-ship and land-attack cruise missile strikes. As long as they can remain submerged underway and receive targeting information, they can attack surface ships and land targets from outside the effective detection range of U.S. systems.

Guided-Missile Destroyers. The PLA is also continuing construction of LUYANG II-class (Type 052C) DDGs, and starting to procure the follow-on LUYANG III-class (Type 052D) DDGs, which incorporate multi-purpose VLS that can launch land attack, anti-ship, or air defense missiles interchangeably. In total, China is likely to have sixteen advanced DDGs (both Type 052Cs and Ds) within the next several years. These advanced guided-missile destroyers represent a major improvement in fleet air defense and, along with advanced submarines, will allow China to protect its aircraft carriers and amphibious ships while pushing China's naval defense perimeter out farther into the Pacific Ocean.

Guided-Missile Patrol Craft. China is beginning to field JIANGDAO-class (Type 056) stealthy corvettes, which, along with its large inventory of HOUBEI-class (Type 022) guided missile patrol boats, will carry the YJ-83 long-range, supersonic anti-ship cruise missile. These fast, small combatants have improved the PLA's ability to conduct littoral warfare, and their numbers could create a significant tracking and targeting problem. Working in tandem with land-based missile forces and aircraft, these smaller naval combatants could make it far more difficult for foreign surface forces to safely approach within 200 nautical miles of China's coast.

Land-Based Naval Fighter and Strike Aircraft. The PLAN has traditionally relied on land-based combat aircraft to provide support to the fleet and has long operated significant numbers of land-based fighter and strike aircraft dedicated to supporting naval operations. A decade ago these aircraft were overwhelmingly Chinese derivatives of 1950s-era Soviet designs. This has changed significantly in recent years. The PLAN now operates more than 100 modern strike-fighters including Russian-supplied Su-30MK2 and indigenous J-11B, JH-7A, and J-10 aircraft equipped with modern avionics, sensors, and advanced air-to-air and anti-ship missiles. The first three of these aircraft are capable of operating 500 nautical miles or more from the Chinese coast while carrying multiple advanced air-to-air and/or anti-ship missiles. The J-10 is a shorter-range multi-role aircraft also capable of employing advanced air-to-air and anti-ship missiles. The PLAN advanced strike aircraft are capable of carrying well over 100 advanced anti-ship missiles in a single mass attack. They could also be supplemented by hundreds of similar aircraft operated by the PLA Air Force to increase the odds of overwhelming the defensive capabilities of U.S. and allied naval forces operating within their reach.

Beyond the PLA Navy: Land-Based Sea Denial Missile Forces

While distinctly separate from the PLA naval force, a critical component of China's counter-intervention strategy is its land-based ballistic missile forces under the control of the Second Artillery Corps (a separate military "service" assigned responsibility for China's nuclear and conventional missile strike forces). China has placed high priority on its missile strike forces, particularly the development of an anti-ship ballistic missile (ASBM). Known as the Dong Feng-21D (DF–21D), the two-stage, solid-fueled missile with a range exceeding 930 miles is a variant of the DF-21 (CSS-5) medium-range ballistic missile (MRBM) and carries a maneuverable warhead optimized to attack large surface combatants, such as aircraft carriers, underway. The motivation for developing the ASBM appears to be the 1996 Taiwan Strait crisis in which two

U.S. aircraft carriers were sent to the vicinity of the Strait. The ASBM is intended to inhibit similar U.S. interventions in the future.

Although the DF-21D reached Initial Operational Capability (IOC) in 2010, there are questions about the maturity the missile system's associated battle network, comprised of the suite of surveillance, reconnaissance, and battle management capabilities needed to enable accurate DF-21D strikes. To date China has yet to conduct a successful test of the capability under realistic conditions at long-range against a mobile target at sea—although it reportedly conducted a test against a stationary mock-up of an aircraft carrier in the Gobi desert earlier this year. Nevertheless, China has made great strides in its long-range surveillance capabilities including improvements in its ability to integrate data from its land-based over-the-horizon radars, airborne sensors, and its naval ocean surveillance satellites to cue China's ASBMs. Despite the lack of evidence that China could effectively target its DF-21D missiles, it is useful to keep in mind that large salvo attacks could compensate for the lack of a fully mature battle network. China might be willing to expend hundreds of ASBMs (with an estimated unit cost of $25 million) in a saturation attack to destroy or "mission kill" a single aircraft carrier (valued $10-15 billion)—essentially a "brute force" approach to compensate for its battle network limitations.

Implications for the U.S. and Allied Defense Planning

The cumulative effect of China's modernization efforts is that the military balance in the western Pacific is being altered, and the costs to the United States of projecting power into the region are rising dramatically. With the DF-21D, advanced submarines, large numbers of modern surface combatants, and maritime strike aircraft, increasingly the United States faces a multi-dimensional "last thousand-mile" power projection problem. These capabilities, coupled with growing evidence that China intends to unilaterally challenge and alter the geo-political status quo of the western Pacific, present the United States with a choice: it can accommodate China's ambitions at the expense of its allies' and partners' security interests, or it can attempt to balance China's increasing assertiveness and growth in military capabilities with measures designed to ensure the continued viability of its power projection forces. There is no single "silver bullet" approach to preserve the regional military balance. Instead the United States and its allies will likely have to undertake a combination of efforts to demonstrate their defensive strength in the face of China's challenge. These efforts should include preparations to:

1. Counter Hostile C4ISR. U.S. and allied military forces should plan to conduct operations to disrupt, degrade, or spoof hostile communications, command and control, computer, intelligence, surveillance and reconnaissance networks. All of these efforts can help to break an adversary's "kill chain"—their ability to effectively employ their weapons against friendly forces. These efforts could help to reduce the size of missile salvos Chinese forces could mount. For example, if target information is degraded or many more targets appear than are actually there, salvos will be diluted or smaller as the attacker "hedges his bets" by attacking each likely target or holding fire until the "real" target becomes clear. The concept of countering C4ISR has generated controversy given that China's battle networks for its conventional and nuclear forces are

intertwined. Nevertheless, a credible capability to counter discrete elements of an adversary's C4ISR systems—ideally using non-kinetic capabilities to inflict reversible effects—could undermine their confidence in achieving "information dominance," which Chinese analysts have written is a prerequisite for taking offensive actions. Finally, there is a need to develop a joint approach to Counter-C4ISR, which could emerge as the most important joint mission area of this century.

2. Sustain Operations Inside a Hostile A2/AD Envelope. Beyond the ability to counter hostile C4ISR systems, U.S. and allied military forces must take additional steps to improve their ability to operate inside China's growing A2/AD envelope. This will entail initiatives to harden facilities at airbases against attacks and to access to a wider range of shared military facilities in the Indo-Pacific. It will also require the development of alternative operating concepts as the U.S. Air Force and U.S. Marine Corps are now pursuing to facilitate distributed air operations from cluster airbases and *ad hoc* forward arming refueling points for short takeoff and vertical landing aircraft, as well as unconventional forward refueling at dispersal bases from transport aircraft like the C-17 and V-22. Finally, it will likely require a new generation of integrated air and missile defense systems incorporating solid-state laser and electro-magnetic rail-gun technologies. While some have argued that the United States could minimize risks to its own forces by withdrawing them from forward positions inside a hostile A2/AD zone area, doing so would call into question America's security commitments to frontline maritime allies like Japan. U.S. military forces must stay forward to reassure its allies and partners while deterring potential adversaries, but they must be more survivable and able to sustain operations under attack. At a minimum, alongside the military forces of maritime frontline states like Japan, they should be capable of denying an aggressor its immediate military objectives within the contested zone.

3. Operate from Beyond the Range of Hostile A2/AD. Complementing improvements in the U.S. military's ability to operate inside hostile A2/AD zones, U.S. air and naval forces must improve their ability to operate from far greater ranges and penetrate contested airspace and seas to find and engage the full range of land and maritime targets. While some have argued that the United States should forswear attacks on an aggressor's territory given the risks of escalation, such a policy could make war more likely as the perceived risks to the aggressor would be lower. A more prudent policy would maximize deterrence through the demonstrated ability to attack targets within an adversary's territory and littoral waters in response to aggression against U.S. or allied interests. Underwriting an enduring US conventional deterrent capability will require the fielding of several new aircraft. The Navy will need a carrier-based unmanned combat air system incorporating advanced features such as broad-band/all-aspect radar cross-section reduction for survivability, aerial refueling for extreme range and endurance, an unrefueled combat radius exceeding 1,000 miles so that tankers can stand off from hostile fighter range, a robust sensor suite to find heavily defended targets, and the largest possible weapons payload feasible in combination with the aforementioned attributes. The Air Force will also need to field a combination of two new aircraft to bolster deterrence: a new stealth bomber and a penetrating,

persistent surveillance/electronic attack system to enhance bomber lethality and survivability. These aircraft would operate as team in the medium- to deep-battlespace, while the carrier-based system would generally focus on the littorals and the shallow- to medium-battlespace. The land-based component of this new conventional airborne "triad" will also need access to a wider range of secure bases throughout the Indo-Pacific region. Submarine forces, including unmanned underwater vehicles, will also be critical for penetrating A2/AD zones from undersea to conduct surveillance and strike missions. Increasing their strike capacity—to include developing an at-sea weapons reloading capability—should be a top priority. Finally, the United States will need longer range stealthy or hypersonic standoff anti-ship and land-attack weapons that can be launched from the air, sea, and undersea, as well as by ground forces.

4. Build Up Allied and Partner A2/AD Capacities. U.S. allies and partners on the new maritime frontline in Asia should accelerate efforts to develop their own mini-A2/AD architectures to defend their own sovereignty and provide U.S. forces sanctuaries from which they could operate in a conflict. Such an archipelagic defense concept would entail allies and partners improving their ability to conduct air and sea denial operations through the use of mobile coastal artillery anti-ship missile batteries and truck-mounted air defense systems as well as the ability to conduct offensive and defensive mining operations and undersea warfare to impede hostile naval forces. Building up the A2/AD capabilities of allies and partners will make help them less susceptible to regional power projection and threats of intimidation, thereby improving regional stability. The Army and Marine Corps in particular might play prominent roles in helping build up partners' air and sea denial capacities.

5. Conduct Peripheral Operations. Finally, as a global maritime power, the United States will continue for the foreseeable future to exercise a high degree of air and sea control beyond the reach of potential adversaries' A2/AD systems. Thus, in a conflict it may have an advantage in conducting more indirect, peripheral operations such as a distant blockade. Such operations are unlikely to be a silver bullet in a major conflict. Historically, blockading alone has rarely achieved its objectives and is unlikely to compel an aggressor to withdrawal and give back its ill-gotten gains. The more effective a blockade is, moreover, the higher the likelihood that it would be perceived by the adversary as an escalatory move, akin to a direct attack on its territory. Despite these potential drawbacks, the prospect of imposing a blockade may help to deter conflict in the first place by holding out the prospect of a protracted conflict and horizontal escalation while raising the risks that an aggressor would not be able to achieve a *fait accompli*.

No single one of these elements on its own is likely to be successful in preserving the regional security balance and upholding our security commitments. It is how they are pursued in combination that will determine the overall success of our approach. Future operating concepts will likely incorporate varying degrees of all of these elements. Force development efforts, in turn, will need to be aligned with them.

Conclusion

Some might argue that in light of our fiscal situation this is the wrong time to introduce what amounts to a major overhaul of our power projection forces. I would argue the opposite: that a clear vision of America's future force design should inform the near-term choices the Administration and Congress will have to make about which forces and capabilities to preserve or expand as well as lower priority areas where we will have to divest and accept greater risk. Changes that begin today will take years, if not decades, to fully play themselves out. PLA modernization and the contested air, sea, land, space, and cyber environments it is creating through its multi-domain denial capabilities offers one lens for evaluating these choices with the objective of ensuring the U.S. military preserves and develops the most viable elements of its forces to remain in the power projection business.

The past decade has illustrated that even relatively small wars against opponents with unsophisticated capabilities are extremely costly. Investments made today to maintain a stable military balance in the Western Pacific, while costly in absolute terms, are a relatively inexpensive "insurance policy" against a major conflict. We have time to make the needed adjustments in our force posture, but no time to waste.