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**Part of Your World: U.S.-China Competition Under the Sea**

*Preserving America's Undersea Advantage in the Indo-Pacific: Strategic Imperatives, China's Challenge, and U.S. Responses*

Commissioner Schriver, Commissioner Kuiken, and distinguished Members of the Commission, thank you for inviting me to testify here today. America's military advantage under the sea has been a decisive, enduring source of deterrence and warfighting leverage in the Indo-Pacific. The undersea domain enables the United States to operate with stealth, persistence, and survivability in ways that are difficult to replicate with aviation and surface forces—especially in the most contested maritime environments. This advantage helps prevent conflict by raising uncertainty for potential aggressors' ability to achieve their military and political objectives and ensuring unacceptable losses to their military forces.

China is working to erode this advantage through rapid growth and modernization of its submarine force, expanding anti-submarine warfare (ASW) capacity, and investments in seabed sensing and networked surveillance in key maritime approaches. Public reporting has described elements of this effort as an "Underwater Great Wall": an integrated concept of fixed and mobile sensors, unmanned systems, and data fusion designed to increase the probability of detecting and tracking submarines in strategically valuable areas. The likely effect is not "transparency" of the undersea environment, but a narrowing of the stealth margin—particularly near chokepoints, operating areas, and approaches that matter most in crisis and conflict.

To preserve undersea advantage, the United States should prioritize (1) submarine readiness and capacity, (2) resilient undersea sensing and counter-sensing, (3) rapid fielding and scaling of unmanned undersea systems, (4) munitions and payload reserves to sustain combat power, (5) industrial base and maintenance throughput, and (6) deeper interoperability, interchangeability, and information-sharing with allies and partners in the Indo-Pacific. The United States must also maintain a disciplined but forward posture that preserves initiative and combat readiness and complicates China's planning.

**Undersea Domain as a Pillar of Indo-Pacific Security**

The Indo-Pacific is the world's most consequential maritime theater. It contains vital trade routes, key industrial hubs, numerous treaty allies and security partners, and several of the most complex flashpoints in modern geopolitics. In this environment—defined by distance, contested access, and the potential for rapid escalation—undersea forces provide a unique combination of survivability, persistence, and lethality.

For decades, U.S. submarines have performed missions that shape deterrence in peacetime and enable decisive advantage to our combatant commanders in conflict: intelligence collection, surveillance, strike, sea denial, special operations support, and—through our ballistic missile submarine force—strategic deterrence. These missions do not simply create tactical advantages; they influence adversary calculations at the strategic level.

However, undersea advantage is not static. It is the result of sustained investment, operational expertise, advanced technology, and a highly trained workforce—both uniformed and civilian. China understands this. The People’s Liberation Army Navy (PLA(N)) rapid modernization is increasingly oriented toward denying U.S. forces access to critical areas, raising the risks of U.S. intervention in the event of a contingency, and altering the regional balance of power in China’s favor.

The question before us is not whether the undersea domain will remain important—it will. The question is whether the United States will preserve its ability to operate freely and effectively in the maritime domain throughout the Indo-Pacific as competition intensifies.

### **Why Undersea Advantage Matters: Strategic Effects and Operational Leverage**

The undersea domain contributes to U.S. national security in the Indo-Pacific through four mutually reinforcing advantages: stealth and survivability, power projection, sea denial and sea control, and deterrence.

1. Stealth and Survivability: Submarines remain the most survivable military platforms. The ability to operate at sea for extended periods of time with a low probability of detection allows undersea forces to remain in contested areas where other forces may face significant risk. This persistence is central to the credibility of U.S. options—both in day-to-day competition and in crisis response. In practical terms, survivability allows the United States to maintain presence and awareness in the battlespace without relying exclusively on forward basing or overt signals. Presence provides military and civilian decision-makers with more time and information and complicates an adversary’s planning by introducing uncertainty about how U.S. forces may be positioned to respond to their actions.

2. Power Projection: U.S. submarines provide flexible, precise power projection across great distances. They can hold a range of maritime and land-based targets at risk, enable all-domain Joint Force access and operations, and create dilemmas for adversary forces without requiring large surface formations or permissive airspace. This matters in the Indo-Pacific because geography and distance impose real logistical and operational constraints. In a crisis, access to forward bases may be contested, air and surface routes may be threatened, and visible force packages may be politically escalatory. Submarines offer an option set that is both credible and resilient and enables combat actions at a time of our choosing.

3. Sea Denial and Sea Control: In conflict, the ability to deny an adversary the use of the sea—while maintaining our own and allied freedom of movement—is foundational. Undersea forces

threaten high-value naval assets, maritime logistics, and critical sea lines of communication. They impose caution and friction on adversary operations and can constrain operational tempo.

The undersea domain is particularly influential because, in many scenarios, a single submarine can hold at risk a much larger surface force and impede their ability to achieve their objectives. This asymmetric advantage makes undersea capabilities a powerful lever in both deterrence and warfighting. Undersea forces can also patrol ahead of a large surface force to sanitize the area, ensure safe passage and uncontested operations, and effectively counter the threat posed by adversary undersea forces. Sea lines of communication can also be protected to enable sustained combat action.

4. Deterrence and Strategic Stability: Deterrence rests on the ability to credibly impose costs and deny objectives. Submarines contribute to both. Conventionally armed submarines raise uncertainty and risk for any military plan that depends on maritime freedom of action. At the same time, our ballistic missile submarines provide the most survivable component of America's strategic deterrence, a top priority mission for the Department of War and our nation. Deterrence in the Indo-Pacific is not solely about demonstrating strength; it is about preserving stability by making aggression unattractive and escalation difficult to control. Undersea forces—because of their survivability and persistence—are central to our ability to deter our adversaries.

### **China's Evolving Strategy: From Maritime Defense to Regional Denial and Control**

China's approach to the maritime domain has evolved significantly. While historical narratives often focus on coastal and regional defense, today China's military modernization reflects an ambition to operate farther from its shores, protect strategic interests, and shape outcomes in contested areas—especially in the East and South China Seas and surrounding approaches.

A core element of this approach is anti-access/area denial (A2/AD): capabilities intended to deter or delay U.S. forces from safely entering the theater, degrade U.S. operational effectiveness, and raise the expected costs of intervention. In a crisis, China's objective would be to create a time-sensitive window in which it can achieve political or military objectives before the United States and its allies can respond effectively.

The undersea domain is central to both sides of that equation. The United States relies on undersea survivability and access; China seeks to reduce that access and protect its own forces and critical infrastructure. This competition is playing out through several major capability lines.

### **China's Emerging Undersea Capabilities and the Challenge to U.S. Advantage**

1. Submarine Force Modernization: China continues to modernize both nuclear-powered and conventional submarine forces. Broad trends visible in open sources suggest improvements in platforms, sensors, weapons, endurance, and operational proficiency. Even incremental improvements can matter greatly in undersea competition, where small changes in quieting, endurance, or detection can alter tactical dynamics.

China's new SHANG III and follow-on Type 095 nuclear-powered guided-missile submarines (SSGNs), for example, represent significant advances in capabilities, posing a multi-faceted threat to the United States and its interests in the Indo-Pacific. These next-generation submarines are formidable, incorporating advanced technologies that challenge the U.S. Navy's long-standing undersea dominance.

These SSGNs are significantly more capable than China's previous submarines, with enhancements in stealth, propulsion, and armament with the ability to launch a significant salvo of long-range land-attack cruise missiles (LACMs) from a concealed, submerged position. A more capable PLA(N) submarine force increases the operational demands on U.S. and allied ASW units and capabilities and raises the stakes and costs for maintaining our own undersea superiority. It also increases the complexity of any conflict scenario in which both sides field advanced submarines in contested waters.

2. Expanding Anti-Submarine Warfare Capacity: China is investing in a more comprehensive ASW architecture—air, surface, and subsurface—supported by command-and-control and improved training. This includes maritime patrol aircraft, helicopters, surface combatants with towed arrays, and undersea sensors. The goal is not necessarily to “defeat” submarines everywhere, but to increase the probability of detection and tracking of submarines in specific areas that matter strategically.

This is a critical point: undersea competition is often localized. A nation does not need to make the entire ocean transparent; it can seek advantage by improving detection in chokepoints, approaches to key operating areas, or defensive “bastions” intended to protect high-value assets so they can safely carry out combat operations.

3. Seabed Sensing and Networked Surveillance (“Underwater Great Wall”): Public reporting has described China’s efforts to deploy seabed sensors and integrated maritime surveillance networks in parts of the near seas, sometimes characterized as an “Underwater Great Wall.” While open sources cannot verify the performance of any particular system, the strategic intent is consistent with China’s broader A2/AD approach: to improve undersea domain awareness and reduce the operational freedom of adversary submarines in key areas.

If such sensor networks mature, the most likely effect would be a narrowing of the U.S. stealth margin in geographically constrained areas—especially where sound propagation, seabed bathymetry, and predictable transit routes can favor fixed sensing. That would not eliminate U.S. undersea effectiveness, but it could raise operational risk, increase the burden on tactics and countermeasures, and require new concepts for access and persistence.

4. Unmanned Undersea Vehicles and Autonomous Systems: China is also investing in unmanned and autonomous undersea systems for intelligence collection, mapping, surveillance, and potentially mine warfare and counter-mine operations. The significance of unmanned systems is scale and persistence: they can expand sensing coverage and complicate defenses at a lower unit and personnel cost than manned platforms.

The operational result is an undersea environment that may become more contested not only by submarines and ships, but by networks of sensors and unmanned vehicles—some designed for tracking, others designed for deception, and some potentially designed to disrupt or damage infrastructure.

### **Strategic Implications: What Is at Stake for the United States and Allies**

1. Operational Access and the Credibility of Intervention: If China can credibly raise the cost of undersea operations in key areas, it can weaken the credibility of the United States' ability to successfully intervene. Deterrence depends not only on capability, but on the adversary's perception that the United States can act quickly and effectively when required. Any perceived erosion of U.S. undersea freedom of action may alter China's risk calculus and embolden them to pursue their strategic objectives.

2. Increased Risk to High-Value Assets and Infrastructure: As undersea surveillance and unmanned systems expand, so does the potential threat to undersea infrastructure—cables and nodes that support military operations and the global economy. This risk is not hypothetical in the abstract; it is inherent in a competitive maritime environment where physical infrastructure on the seabed can be surveilled and potentially manipulated. We have recently seen examples where Russian merchant vessels have severed undersea cables in the Baltic. Taiwan has experienced and responded to similar grey-zone threats to their undersea cables from China.

3. The Need for Resilience Over Perfection: The United States should not frame this challenge as a binary contest between invisibility and transparency. In reality, the operational goal is resilience: the ability to operate effectively even as detection risks increase in certain areas. That means investing in counter-sensing, deception, distributed networks, and adaptable operational concepts rather than assuming past conditions will persist.

### **Recommendations: How the United States Should Respond**

Preserving the U.S. undersea advantage requires action and innovation across force structure, technology, posture, alliances, and the industrial base. The following recommendations are offered at a strategic level appropriate for unclassified discussion:

1. Sustain and Grow Submarine Readiness and Capacity: Submarines are the centerpiece of undersea deterrence and warfighting in the Indo-Pacific. The United States should prioritize:

- Operational availability of in-service submarines: Reduce maintenance delays and increase shipyard throughput to deliver ready submarines on schedule.
- Submarine industrial base investment to improve new submarine construction capacity and throughput.
- Workforce and infrastructure: Strengthen the public and private shipyard workforce pipeline, modernize facilities, and stabilize supplier networks. Our forward basing and infrastructure, particularly in Guam, is vital to forward-deployed readiness and sustainment.

- Force capacity and pacing: Align requirements with the operational demand signal in the Indo-Pacific and mitigate readiness degradation caused by extended and surge deployments, and maintenance backlogs.

Put simply: the best submarine is the one that is ready, crewed, and forward when needed. Readiness is a strategic asset.

2. Invest in Resilient Undersea Sensing and Counter-Sensing: The competition is increasingly about sensing, networking, and decision advantage. The United States should continue to evolve undersea surveillance toward systems that are:

- Distributed and redundant: Avoid single points of failure by combining fixed sensors, mobile platforms, and deployable nodes.
- Hard to target and recoverable: Build resilience in the architecture and the ability to restore capability quickly.
- Paired with counter-sensing: Prioritize methods that reduce detectability, confuse tracking, and degrade the adversary's ability to fuse data into actionable targeting.

This is not solely a Navy challenge; it is a joint and interagency challenge involving communications, cyber resilience, space-based awareness, and infrastructure protection.

3. Field Unmanned Undersea Systems at Scale: Unmanned undersea vehicles should be treated as a central element of future undersea operations, not a niche capability. The future Submarine Force will be a force comprised of manned submarines and robotic and autonomous systems. Priorities include:

- Families of systems: Small and medium unmanned underwater vehicles (UUVs) for intelligence, surveillance, and reconnaissance (ISR) and mapping; larger systems for endurance, payload delivery, and network support.
- Manned–unmanned teaming: Use unmanned systems to extend sensing, increase coverage, and complicate adversary defenses while preserving the advantages and operational flexibility of manned submarines.
- Rapid iteration: Adopt acquisition and experimentation pathways that allow frequent upgrades and learning cycles, recognizing that autonomy and sensing evolve quickly.

4. Ensure Sustained Lethality: Munitions and Payload Depth: Undersea forces deliver strategic effects only if they can sustain combat power. The United States should ensure adequate inventories and production capacity for undersea-relevant munitions and payloads, and pursue concepts that expand effective magazines through teaming, distributed fires, and adaptable payload modules.

5. Strengthen Alliances and Partnerships in the Undersea Domain: The Indo-Pacific is too large—and the challenge too complex—for any single nation to address alone. The United States should continue to enrich and deepen collaboration with allies and partners through:

- Interoperable systems and procedures in surveillance, ASW, communications, and training;
- Intelligence sharing and combined awareness in key maritime areas;
- Joint exercises focused on contested undersea operations; and
- Coordinated posture that leverages geography along critical sea lines and approaches.

Effective interchangeability with allied and partner nation submarine forces does not require identical capabilities; it requires complementary strengths and shared operating concepts.

6. Maintain a Disciplined, Forward Operational Posture: Finally, posture matters. The United States should preserve initiative by continuing to operate forward in a way that is professional, lawful, sustainable, and stabilizing—demonstrating capability and resolve without unnecessary escalation. Forward posture should be paired with messaging and diplomacy that reinforce the principle of a free and open regional order in the Indo-Pacific.

The objective is not to seek conflict for its own sake, but to ensure that China’s leaders do not miscalculate the United States’ capability or will to respond in a contingency.

### **Conclusion**

The undersea domain has been a cornerstone of U.S. military advantage in the Indo-Pacific for decades. It provides survivability, persistence, and strategic leverage that are difficult to replace—and it underwrites deterrence and stability in a region where distance and contested access are defining realities.

China’s modernization and growing undersea ambitions represent a serious challenge, especially where improved ASW capacity, unmanned systems, and networked undersea surveillance may narrow the stealth margin in key areas. The appropriate response is not to assume the undersea environment will remain unchanged, nor to overstate China’s capabilities. The response is to act with urgency to preserve freedom of action through readiness, resilient sensing and counter-sensing, unmanned systems, industrial capacity, munitions depth, and allied integration.

America’s undersea advantage has never been guaranteed; it has been earned. With focused investment and disciplined operational concepts, the United States can sustain that advantage and help ensure that the Indo-Pacific remains free and open for generations to come.