TESTIMONY OF MIKE STUDEMAN

REAR ADMIRAL (RADM), U.S. NAVY RETIRED

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"Part of Your World: US-China Competition Under the Sea"

Good morning Chairman Shriver and Vice Chairman Kuiken, and distinguished members of the Commission. I am Mike Studeman, a retired two-star admiral with 35 years of service as an intelligence officer. Thank you for the opportunity to appear before you to discuss undersea issues.

The views expressed in my testimony are my own and do not represent any organization I am currently or previously affiliated with as a retired officer or as a formerly active duty member of the military.

In terms of my background, my last four assignments before I retired in 2023 were Commander of the Office of Naval Intelligence, Director of Intelligence (J2) for the Indo-Pacific Command, Director of Intelligence (J2) for the Southern Command, and Commander of the Joint Intelligence Operations Center at U.S. Cyber Command. I have a Master's in Asian Affairs from the Naval Postgraduate School in Monterey California and studied Mandarin Chinese at the Defense Language Institute. I served in a variety of intelligence posts around the world and at sea dealing with a range of global geopolitical issues, but also developed substantial experience in China matters across many jobs over decades going back to the late 1990s. I'm currently an advisory board member for the National Bureau of Asian Research and a non-resident Senior Associate at the Center for Strategic and International Studies (CSIS), inter alia.

Strategic Perspective

I'd first like to build on the excellent testimonies of Vice Admiral Seif and Rear Admiral Brookes and address the topic of what US policymakers might misunderstand about China's undersea strategy.

From the outset, it is important to note how deeply invested China has become in ruling the waves, and I mean this in the broadest possible sense. CCP General Secretary Xi Jinping has proven himself China's first great maritime statesman and has arguably been the strongest proponent of maritime power of any world leader. Some might say, he is the most Mahanian leader in power today, who has helped complete China's swing from its longstanding

continental focus to become the world's foremost maritime power. Xi understands that great powers have largely been dominant sea powers (Athens, Carthage, Venice, Ottoman, Dutch, British, Imperial Japan, US), particularly in the period since the Industrial Revolution. Xi persistently exhorts his people to enlarge China's access to, and development of, strategic maritime points around the world, secure China's perceived offshore rights, protect China's gateways to the world, and strive to achieve technological superiority across a broad swath of maritime capabilities. Massive state-directed investments have been made over decades to strengthen China's ability to expand its strategic space, extend and protect its strategic lifelines to global goods and markets, exploit the "blue economy" to meet China's growing resource needs, dominate major tracts of the First Island Chain and beyond, and ready the country for high-intensity combat in wartime across a wide battlespace.

China is a Maritime Power, America is a Naval Power

Indeed, China's efforts to expand its presence, sensing, reach, and access to areas under, on, and over the ocean, from the polar regions to distant seas, continue at a breakneck pace. China now boasts the world's largest Navy, Coast Guard, maritime militia, deep-sea diving force, fishing fleet, marine scientific research fleet, as well as the most expansive ownership and operational control regime of global ports of any nation. While America remains a great naval power, because we field world-class warships capable of projecting power globally, over the last 40 years, our country has experienced a significant decline in its overall maritime strengths as measured by the size and capabilities of the U.S. merchant fleet, merchant mariner cadre, shipbuilding industry, offshore fishing fleet, coast guard, port infrastructure, and more. While the current administration in Washington recognizes these shortfalls and plans to plow investment into these areas, China will remain the world's preeminent maritime power for many years to come.

The main takeaway I hoped to share upfront is that from China's perspective, preponderant maritime strength conveys technological, economic, commercial, military, and *political* advantage. The undersea environment isn't simply a dimension of military operations related to a handful of territorial disputes, important as they may be. Beijing sees the undersea domain (along with space and the polar regions) as a priceless frontier that is integral to China's overarching ambition to win the grand geopolitical contestations of the 21st Century. By strengthening its hand in undersea exploration, mapping, discovery, sensing, infrastructure development, resource extraction, gray and black zone operations, military power projection, and influence projection internationally, China intends to increase its own means of leverage, enlarge its comprehensive national power, expand its global throw-weight, and, over the long run, outcompete the U.S. as the world's strongest techno-economic superpower.

China's Multi-Pronged Approach to Acquire Knowledge and Convert it into Maritime Power

Given the oceans' importance to China's so-called national rejuvenation, and in line with top-down directed civil-military fusion, China has engineered a vast military-industrial-research complex devoted to undergirding its maritime ambitions. A dizzying web of Chinese state-

owned and private companies, military organizations, government institutes, bureaus, associations, and universities collaborate to exploit and control the ocean in line with national goals. The Chinese have been immeasurably helped by using commercial or research cover to join international projects, engage in a wide spectrum of exchanges, conferences, and fora outside China, and access foreign intellectual property and insights that the Chinese re-inject into their technical institutes and industrial base to rapidly develop, prototype, test, and produce capabilities for fielding in the deep blue.

China has also mastered the ability to legitimately buy and illicitly steal maritime technology and trade secrets from foreign governments and private defense contractors. China aggressively facilitates tech transfers through either cyber theft or via coopted/cooperative insiders associated with, or members of, foreign companies, labs, research programs, academic institutions, or trade associations. The CCP encourages its roughly 60 million ethnic Chinese diaspora to "serve abroad" to help China "leapfrog" or "pass other nations on the curve." No amount of warnings has yet sufficiently mobilized U.S. and other foreign centers of knowledge to sufficiently harden themselves or adequately curb China's ability to harvest scientific and technical insights from abroad and parlay them into rapidly evolving capabilities. The collective effect has been to surpass the U.S. in a host of non-military maritime endeavors and erode pre-existing U.S. undersea military advantages.

The Concerning China-Russia Nexus in the Undersea Domain

A key relationship that we must be tracked with higher fidelity is China-Russia cooperation on undersea technologies, operations, and tactics. Intense joint research collaboration between China and Russian R&D organizations has existed for years on topics such as underwater robotics, communications, sensors, and networks. Bodies such as the Association of Sino-Russian Technical Universities and China-Russia Polar Acoustic Symposia have regularized exchanges. Russian technical advisors have longstanding relationships within the PLA Navy. Russia is rumored to have helped China in various ways on a number of PLA submarine programs over the years including the SHANG SSN and JIN SSBN programs. Of course, Russia sold advanced KILO SS diesel submarines and associated weapon systems to China decades ago, which China then was able learn from and reverse engineer components to help develop their own indigenized diesel submarine programs. Suspicions exist that the Russians may have directly or indirectly helped contribute to China's latest Type 095 and Type 096 SSGN and SSBN programs in the areas of construction, quieting, and propulsion. Those platforms are assessed to be world-class, incorporating large munitions capacity, higher speeds, stronger steel hulls, greater stealth, and longer reach and endurance.

Operationally, the PLA and Russian Navy have conducted a number of joint Anti-Submarine Warfare exercises in the Western Pacific over the years. China and Russia reportedly conducted a first-ever joint submarine patrol in the Sea of Japan and East China Sea in the summer of 2025. While these interactions carry more symbolic value and are curated for political impact (e.g., demonstrating anti-West solidarity and the power of the "red" coalition in the face of a strengthening U.S. alliance system in the Indo-Pacific), they also help improve PLA undersea

competencies. Russia and China likely collaborated to destroy undersea cables in the Baltic using merchant ships, demonstrating a new dimension of mutual support related to seabed critical infrastructure. Notably, Chinese researchers have been inspired by Russia's high-speed, deep-running, trans-oceanic, nuclear-powered, nuclear-armed autonomous torpedo called the Poseidon (aka Status 6) and are already discussing how such a capability might be modified to hold U.S. capital ships and other assets at risk in their own homeland waters.

A key concern is whether Russia will offer or China will demand more Russian military undersea technologies, scientific data, and/or operational knowledge in exchange for continued Chinese support as an economic lifeline and technology provider to sustain Russia's war in Ukraine. Putin and Xi's supposed "no limits" relationship is deepening, to be sure, but mutual suspicions abide at multiple levels and it remains unclear if Moscow might ultimately be willing to share its best undersea technology and richest subsurface operational knowledge. To this point, the Russians may have determined that it is in their best interests to share knowledge that is one to two generations older than their state-of-the-art (put another way, if N = current generation tech, then N-1 or N-2 tech). Monitoring how these dynamics change will be key to understanding whether China is proceeding along a slower or faster track to close the gap with the U.S. in the undersea domain.

The Subsurface Challenges Exist in China's Near Seas, but are not just Over There

With or without fulsome Russian support, over the next decade the U.S. must prepare for the reality that Chinese SSNs and SSGNs will likely gradually expand their operational arcs into U.S. home waters, not just up to Guam, or the Hawaiian Islands, but to the U.S. West Coast. China already operates in allied nations' waters in the Western Pacific. Given China's discussion about ice-hardening its submarines, we should not consider it outlandish that we may see PLA arctic patrols and perhaps select operations in the Northern Atlantic (a 2030s and later prospect). Just as Russia has long conducted hold-at-risk nuclear cruise missile options against CONUS with their subsurface forces, China may do so as well in peacetime and wartime as an element of their own deterrence strategy. China may experiment first with long-range patrols in the Indian Ocean, which offers an opportunity to further strengthen cooperation with the Quad, AUKUS, India, and others in the region.

U.S. policymakers are likely aware of the proliferating variety of subsurface capabilities that China intends to deploy, or already has, to operationally and strategically relevant sea areas and ocean spaces, including straits, channels, and other chokepoints. Admirals Seif and Brookes already described the vast array of systems in the Chinese inventory that will form elements of China's "Undersea Great Wall" and "Blue Water Information Network" to deliver on Xi's mandate that he issued in 2014 to create "an impregnable wall for border and ocean defense." Manned and unmanned platforms, including autonomous unmanned underwater vehicles (UUVs) ranging from the small to extra extra-large size; underwater arrays; gliders; submersibles; deep-sea capable divers and diving platforms; manned airborne ASW patrol aircraft; unmanned airborne platforms (UASs) with ASW sensors and weapons; rotary wing ASW assets; combatants and auxiliaries capable of towing passive and active acoustic arrays;

heavyweight torpedoes and lightweight anti-torpedo torpedoes; fixed and mobile sensors on the seabed, in the water column, on the surface, in the air, and in space; sea mines; modernized depth charges; cable laying and cable cutting assets; seabed charging stations for UUVs, etc are all part of China's existing and planned latticed underwater ecosystem.

But the undersea domain is a gigantic, infinitely complex, hard, and dangerous place to do business. The Chinese have not yet matched our technical expertise or militarily relevant knowledge of the undersea, nor have they accumulated the hard-won experiential know-how of American operators; therefore, the U.S. and allied assets continue to enjoy sufficient capability to project power where needed. But China's rapidly expanding capabilities in multiple domains germane to subsurface activities have markedly increased the challenges associated with maneuver, attaining battlespace awareness, and effecting sea denial and/or sea control.

U.S. policymakers should remain sensitive to Chinese skill, cleverness, innovativeness, and risk-taking not just inside and along the First Island Chain, but farther afield to the more easterly Island Chains out to the mid-Pacific, far seas, and inside U.S. and allied Exclusive Economic Zones and territorial waters. China's core doctrine of "Multi-Domain Precision Warfare" involves systems-of-system destruction of key enemy assets, nodes, and critical dependencies, regardless of where they might be. The Chinese have debated the merits of executing unrestricted warfare incorporating the use of sabotage, dirty tricks, and black operations. There are both "assassin's mace" weapons in the PLA inventory and "assassin's mace" methodologies in their cultural warfighting ethos.

As such, we need to be prepared for the Chinese to engage in a combination of symmetric and asymmetric tactics that may range from: (1) COSCO ships dropping leave behind seafloor sensors or munitions along critical sea lines of communication or near U.S. ports/bases, (2) China's fishing fleet or maritime militia engaged in surveillance, spotting, scouting, or deploying unmanned platforms or weapons closer to U.S. shores, (3) Chinese sleeper cells that might use commercial UxS drones for sensing or delivery of various packages near or inside U.S. naval bases or port facilities, including for sabotage, (4) severing of U.S. seabed cables or Sound Surveillance Systems lines, (5) development and deployment of a Chinese version of Poseidon torpedoes with transoceanic capability tipped with various conventional or nuclear capabilities, and/or (6) capability development in other domains, such as future ballistic missiles that could deliver torpedoes or other maritime effectors quickly at long range toward U.S. operating areas. These threats are within China's means and willingness to employ under various conditions, and the Chinese continue to demonstrate that they are working on capabilities to bring the fight to wherever we operate and inside CONUS if necessary.

Recommendations for Policymakers

An executive list of ideas to consider related to this important area of strategic interest:

- **Supercharge efforts to strengthen the maritime industrial base and workforce to increase the availability of existing U.S. Navy platforms and speed throughput of new**

construction assets including Virginia class, Columbia class, and a more voluminous family of unmanned systems and associated sensor/payloads/weapons. Expand the number of commercial Rapid Manufacturing Facilities dedicated to producing unmanned systems.

- **Speed prototyping, experimentation, concepts of operations, and DOTMLPF development for unmanned systems. Increase manned-unmanned teaming, exercises, and training opportunities in concert with allies and partners.**

- **Strengthen efforts to develop and field maritime assets such as unmanned vehicles, buoys, charging stations, munitions packs, and sensors forward into areas of continuing geopolitical relevance for more persistent options for intelligence collection, surveillance, targeting, fires, and special operations.**

- **Explore the feasibility and cost-effectiveness of developing submersible "arsenal ships" or mobile underwater missile barges of various sizes to increase the availability of prompt, survivable firepower in standoff areas near crisis zones to strengthen deterrence and crisis options.**

- **Increase Intelligence Community funding for foreign material acquisition and exploitation, particularly as new generation and higher-variety adversary maritime systems field, to better understand blue vulnerabilities and reduce the time to develop mitigations and counters.**

- **Ensure sufficient funding exists to allow the Office of Naval Intelligence, in concert with other agencies, to improve its analytic and technical efforts to generate digital twins of adversary systems to enable high-integrity modeling, simulation, and wargaming.**

- **Pursue legislation to create an Undersea Infrastructure Security Initiative and increase public-private partnerships to better protect U.S. undersea assets such as seabed cables, energy pipelines, and government/military assets on the seafloor. Develop monitoring, deterrent, and repair options to increase strategic resilience. Encourage multinational efforts, such as responsive cable repair fleets, to better protect critical infrastructure of shared interest beyond any individual nation's home waters.**

- **Raise awareness that adversaries may use surface and undersea access to maneuver under any American "Golden Dome" system, shorten attack timelines, and hold U.S. strategic assets at risk. Direct the Departments of War and Homeland Security to review flexible response options to monitor, detect, and respond to asymmetric efforts (including use of merchant ships, fishing vessels, other commercial craft, divers, autonomous vehicles, etc) to threaten U.S. strategic waterways, bases, and port facilities. An element of this effort should include baseline surveys of the**

acoustic environment around select high-value installations and approaches to better distinguish anomalous behavior.

- **Direct the Department of War to review the monitoring and detection networks in the Atlantic and Pacific to determine what elements require upgrading and expansion to deal with modernized subsurface threats, either submarine and submersible "archers" or long-range "arrows" (such as Poseidon-like transoceanic torpedoes) that submarines, or other assets, may be able to launch against U.S. homeland targets.**

- **Direct the Director of National Intelligence to invest more effectively in collection, analysis, and reporting on Chinese R&D related to commercial and government maritime technology and related developments. Direct the DNI and FBI Director to support building a stronger, more robust counterintelligence capability to protect U.S. maritime intellectual property from basic research through RDTE stages. Direct the DNI and Department of War to contract commercial companies to provide "outside in" and "inside out" protections for the Defense Industrial Base and cleared defense contractors to guard against penetration, exploitation, or cooption. Enhanced public-private partnerships in these areas can help disambiguate bad actors, screen potential partners or hires, and discern negligent or dangerous behavior and stop breaches before it is too late.**