

# CHINA'S NEW UNDERSEA NUCLEAR DETERRENT Strategy, Doctrine, and Capabilities

By TOSHI YOSHIHARA and JAMES R. HOLMES

Over the past few years, Western strategic thinkers have debated what China's emerging force of fleet ballistic submarines (SSBNs) portends for Beijing's overall nuclear strategy. One influential school of thought assumes that the rudimentary land-based missile force that has served Beijing's needs in the past will continue to do so. Others dispute this static model, pointing to the introduction of next-generation, land-based mobile ballistic missiles and improvements to the People's Liberation Army Navy (PLAN) submarine and ballistic missile forces. They predict that China will soon put to sea an SSBN fleet more symmetrical with the U.S. Navy in terms of both quality and quantity. Moreover, it will abandon its traditional stance of "minimum deterrence,"

assuming a more assertive nuclear posture better described as "limited deterrence."

We take issue with both of these projections of Chinese nuclear strategy, doctrine, and undersea capabilities. We assess China's undersea deterrent purely at the strategic level, leaving aside other important questions such as how Beijing might use fleet submarines to support coercion against Taiwan or in other contingencies. Our chief finding is that a larger, more advanced, more capable flotilla of fleet ballistic missile submarines does not necessarily signal a break with China's tradition of minimalist nuclear strategy. Indeed, a modest undersea deterrent would reinforce minimum deterrence as Beijing conceives it.<sup>1</sup> We first examine historical precedents for Chinese ballistic missile submarine development, revealing some

parameters for likely endeavors in this domain. We then attempt to project the likely size and deployment patterns for Chinese SSBNs.

## Historical Models

Five countries have deployed undersea nuclear deterrent forces: the United States, the Soviet Union and its successor, Russia, Great Britain, France, and China. Until now, Chinese shipbuilders and weapons scientists have never managed to construct the reliable fleet ballistic missile submarine the nation needs to furnish an invulnerable second-strike capability.<sup>2</sup> By examining the remaining four historical models, we can glimpse possible futures for China's seabased deterrent. The United States and Soviet Union are obvious choices, given Beijing's much-discussed rise to great-

---

Dr. Toshi Yoshihara and Dr. James R. Holmes are Associate Professors in the Department of Strategy and Policy at the Naval War College.

USS *Georgia* after conversion from ballistic missile to guided missile submarine



## Report Documentation Page

*Form Approved*  
*OMB No. 0704-0188*

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE <b>2008</b>	2. REPORT TYPE	3. DATES COVERED <b>00-00-2008 to 00-00-2008</b>	
4. TITLE AND SUBTITLE <b>China's New Undersea Nuclear Deterrent. Strategy, Doctrine, and Capabilities</b>		5a. CONTRACT NUMBER	
		5b. GRANT NUMBER	
		5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)		5d. PROJECT NUMBER	
		5e. TASK NUMBER	
		5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>National Defense University, Institute for National Strategic Studies, 260 Fifth Avenue SW Bg 64 Fort Lesley J. McNair, Washington, DC, 20319</b>		8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)	
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>			
13. SUPPLEMENTARY NOTES			
14. ABSTRACT			
15. SUBJECT TERMS			
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>	<b>Same as Report (SAR)</b>
			18. NUMBER OF PAGES <b>8</b>
			19a. NAME OF RESPONSIBLE PERSON

power—perhaps superpower—status. But some China-watchers predict that Beijing will settle for regional power status in Asia, similar to the status the United Kingdom and France enjoy. Similar incentives and disincentives—notably misgivings about the reliability of the U.S. nuclear guarantee during the Cold War—induced London and Paris to develop modest undersea nuclear deterrents of their own. This commends the independent North Atlantic Treaty Organization (NATO)–European deterrents to our attention.

**United States.** In the early Cold War, successive U.S. administrations concluded that America depended on a large nuclear force structure. The rationale for a substantial arsenal underwent several phases. In the 1950s, this was mostly a matter of offsetting enormous Soviet advantages in geography and manpower, especially in NATO–Europe. The Eisenhower administration briefly flirted with “massive retaliation” against all communist efforts at expansion, however minor.<sup>3</sup> By the Kennedy years, massive retaliation had lost credibility—the notion of using nuclear weapons against a Third World insurgency, for instance, was unpersuasive—and Washington was scrambling to plug the “missile gap” that seemed to have opened with the Soviet Union’s launch of Sputnik in 1957. In the 1960s and 1970s, strategists developed and refined a doctrine of “mutual assured destruction.” Their logic was that no sane leader would risk a nuclear first strike knowing that it would bring an automatic, devastating second strike.<sup>4</sup>

And so the debate went—but “the weapons never left center stage,” notes Lawrence Freedman, whatever the conventional wisdom happened to be at the time. The dominant view was that a large arsenal was essential to counter an adversary that commanded overwhelming conventional supremacy and its own massive nuclear stockpile.

A powerful submarine force formed the core of the U.S. second-strike capability. By the late Cold War, 18 *Ohio*-class SSBNs armed with Trident II sea-launched ballistic missiles constituted the U.S. undersea deterrent.<sup>5</sup> American submariners are famously close-mouthed about SSBN deployment practices. It is fair to say, nonetheless, that successive U.S. administrations developed elaborate command and control procedures to guard against a mistaken release of nuclear weapons from U.S. strategic submarines.<sup>6</sup>

Yet political and military leaders also seem comfortable allowing individual skip-

pers to roam their patrol grounds without tight political supervision and without the luxury of having attack submarines or land-based platforms nearby to defend them from enemy action. The U.S. approach to seabased nuclear deterrence, then, seems offensive in nature, confident in U.S. submarines’ capacity for concealment, and unfettered by geographically based conceptions that safe havens are necessary to protect American SSBNs. If Chinese leaders follow the U.S. template, and once the supporting technologies mature, the coming years may see PLAN SSBNs roaming throughout the Pacific Ocean basin.

**Soviet Union/Russia.** Like the United States, the Soviet Union seemed convinced that it needed to hold a maximum number of its adversary’s assets—cities or military forces—at risk to ensure deterrence. Accordingly, the Soviet navy put a sizable fleet of nuclear-powered submarines armed with

boats into Atlantic waters, where they could threaten American cities.

Advances in technology, however, ultimately allowed the Soviet preference for a defensive stance at sea to reassert itself. By the 1970s, a growing body of evidence suggested that the Soviet navy was reverting to defensive deployment patterns. Soviet weapons engineers had improved the ranges of the navy’s submarine-launched ballistic missiles while adding capabilities such as multiple independently targeted warheads.<sup>7</sup> Rather than venturing into the Atlantic, Soviet SSBNs were patrolling Arctic waters, where they could still range U.S. targets while enjoying the advantage of proximity to Soviet naval bases. This insight drove the thinking behind the U.S. maritime strategy of the Reagan years, which envisioned U.S. Navy task forces seizing the initiative in wartime and steaming northward into the Norwegian Sea to threaten Soviet strategic forces in their icy

---

*misgivings about the reliability of the U.S. nuclear guarantee during the Cold War induced London and Paris to develop modest undersea nuclear deterrents of their own*

---



Yu-6 torpedo being loaded aboard Type-39 Song-class submarine

waters within the first island chain that runs parallel to the Chinese coastline.<sup>8</sup>

**Britain/France.** Britain and France could offer a third model for a China that is content with regional influence and a second-strike capacity far more modest than those of the United States or the Soviet Union/Russia. London and Paris developed independent submarine deterrents out of fears that the U.S. nuclear umbrella would provide only flimsy protection in wartime. That is, Washington might prove unwilling to expose the American homeland to a nuclear counterattack for the sake of NATO-European allies. Preserving the ability to inflict unacceptable damage on the Soviet Union—and thereby supplementing the U.S. security guarantee—helped them hedge against possible American waffling. Keeping seabased nuclear forces modest in size was imperative in light of meager budgets and competing military demands in continental Europe.

The United Kingdom and France, then, made do with SSBN forces asymmetrical to those of the superpowers. Numbers aside, their SSBN deployment patterns seemingly resembled those of the U.S. Navy. The entire French SSBN force was based at the Atlantic port of Brest, while submarines based in the British Isles patrolled the Atlantic and the North Sea. Neither government required its submarines to stay within confined geographic regions or within range of supporting land-based military forces. Should China take this approach, it would keep its nuclear arsenal small but permit its submarine commanders to patrol widely in the Pacific, the South China Sea, or the Indian Ocean. Targets for Chinese SSBNs would include U.S. bases in the Pacific; other candidates would include sites in India and the Russian Far East.

### Strategic Considerations

Judging from these historical cases, several indices are worth taking into account when appraising China's emerging submarine deterrent.

**Nature of the Regime.** Regimes exhibit distinct strategic and operational preferences. Like their authoritarian counterparts, Western liberal governments possessing nuclear capacity instituted elaborate precautions and stringent command and control arrangements to prevent unauthorized releases of nuclear weapons. They nonetheless evinced a fair degree of comfort with SSBN skippers operating far from their shores, in

an offensive manner and beyond land-based support. Deployment patterns reflected this, with U.S., British, and French SSBNs enjoying considerable latitude to cruise independently within range of Soviet targets. By comparison, authoritarian regimes, which place great weight on political loyalty, are ill disposed to permit naval officers this degree of control over strategic assets. As became apparent in the 1970s and 1980s, Soviet leaders preferred to keep submarines closer to home, under their watchful gaze. Whether Chinese leaders will incline to one of these approaches or fashion their own remains to be seen.

**Strategic Culture.** During the 1970s, Western strategic thinkers disputed whether there was a peculiarly Soviet way of thinking about and executing nuclear strategy. Accumulating evidence indicated that, contrary to the logic of mutual assured destruction, Moscow was pursuing the capacity to fight and prevail in a nuclear conflict. Scholars and practitioners of nuclear strategy held that the same logic of nuclear deterrence governed decisionmaking in all countries. If such

---

### *the United Kingdom and France made do with SSBN forces asymmetrical to those of the superpowers*

---

assumptions were false, U.S. and Western nuclear strategy and force structures designed for mutual assured destruction might have been dangerously misguided. Spurred by the debate over Soviet nuclear strategy, strategic thinkers began taking into account the effects of national traditions, history, and culture on the making of policy and strategy.

Acknowledging the cultural factor did not come easy. Holding Soviet SSBNs back and deploying general-purpose naval and land forces to defend them defied offensively minded Western sensibilities. At one briefing in 1981, Admiral Thomas Hayward, the Chief of Naval Operations, “found the concepts of Soviet strategy so completely different that he expressed disbelief that the Soviets could possibly operate their navy in such a manner.”<sup>9</sup> But they did. If the Soviet Union and other powers displayed distinctive styles in submarine warfare, the People's Republic of China probably will, too.

**Threat Perceptions.** How Beijing views a threat will clearly shape its SSBN forces and doctrine. Generally speaking, the historical

models surveyed here involved putting to sea submarine forces to counter a single threat. For the most part, the United States and Soviet Union sought to deny their opponent a nuclear advantage that would allow it to wage war without fear of a disastrous counterstrike. Britain and France tried to deter the Soviets by deploying modest but sufficient nuclear forces. China clearly faces a more complex geometry. Beijing must worry about not only a U.S. effort to knock out the Chinese intercontinental ballistic missile (ICBM) force in a Taiwan contingency, but also India, a new nuclear neighbor that China shares a long border and a tumultuous history with. Likewise, Russian sites will almost certainly find themselves on the target list for Chinese submarines, despite Russo-Chinese cooperation in recent years. How these competing considerations will affect the size and operations of the PLAN SSBN force remains to be seen.

**Technology Dependence.** Technology imposed constraints on Cold War SSBN deployment patterns, forcing the great powers to depart from political and culturally derived strategic and operational preferences. The Soviet navy preferred a defensive stance leveraging geographic and land-based defenses. Early on, Soviet SSBNs were nevertheless forced to venture into the Atlantic to meet their objectives. Western submarines, similarly, were compelled to patrol in range of their targets, limiting their liberty of action. Once technological constraints eased, however, strategic and operational preferences grounded in political and strategic culture were reasserted. Soviet boats were limited to geographically defined bastions, while U.S., British, and French boats carried on open-ocean patrols with relative freedom of action.

China will undoubtedly confront similar technical obstacles as it develops its first effective SSBN flotilla. Once it meets these challenges, it too may pursue SSBN operations more in keeping with Chinese strategic traditions and preferences.

### China's Nuclear Posture

To test the applicability of the undersea deterrent models postulated above to China, it is necessary to assess the evolution of broader Chinese nuclear doctrine and force posture. Over the past four decades, China has carved out a rather unique niche among the five declared nuclear weapon states. Since China demonstrated its ability to fire ballistic missiles at intercontinental ranges in 1980, its nuclear

posture has remained surprisingly modest and remarkably resistant to change. China maintains what many Western analysts call a doctrine of *minimum deterrence*, which calls for:

- strictly defensive posture
- small arsenal
- pledge not to be the first to use nuclear weapons
- commitment not to attack or threaten nonnuclear states.

Official Chinese documents have repeatedly reaffirmed these minimalist principles.<sup>10</sup>

While there is an ongoing debate in China and the West on the merits of rejecting nuclear minimalism, authorities in Beijing appear committed to existing policy. In the most detailed articulation of Chinese nuclear policy to date, China's latest Defense White Paper forcefully states:

*China remains firmly committed to the policy of no first use of nuclear weapons at any time and under any circumstances. It unconditionally undertakes not to use or threaten to use nuclear weapons against non-nuclear-weapon states. . . . China upholds the principles of counterattack in self-defense and limited development of nuclear weapons, and aims at*

*building a lean and effective nuclear force. . . . It endeavors to ensure the security and reliability of its nuclear weapons and maintains a credible nuclear deterrent force.*<sup>11</sup>

Such nuclear minimalism has exerted significant influence on China's nuclear posture, suppressing the size and readiness of the force structure. According to one analyst:

*China's small but effective nuclear counter attacking force . . . is significantly smaller, less diverse, and less ready to conduct actual operations than any of the arsenals maintained by the other four nuclear powers recognized under the [Nuclear Non-Proliferation Treaty].*<sup>12</sup>

Rather than speculate on a nuclear posture not yet in existence, then, for the purposes of this study, we assume that China will hew closely to its minimalist posture well into the next decade. Such an analytical baseline should at least supply policymakers and analysts with some basis to measure the degree of change if China decides at some future point to depart from minimum deterrence.

It is important to note, however, that minimalism does not equate to immutability. Qualitative and quantitative changes are clearly under way in China's nuclear posture as Beijing

seeks to shape and respond to the dynamic security environment. It is within this context that a new generation of SSBNs (known as Type 094s or *Jin*-class submarines) has entered into China's strategic calculus. Successive White Papers, for example, stress the need to improve nuclear deterrence at sea. The latest version envisions the PLAN "enhancing its capabilities in integrated maritime operations and nuclear counterattacks."<sup>13</sup> Beijing is clearly eyeing a larger role for its undersea deterrent.

### Sufficiency Goes to Sea

Defense planners in Beijing face several basic questions regarding the future of undersea deterrence. What types of force structures would Beijing consider viable? What factors might induce leaders to rely more heavily on the PLAN's nascent fleet of ballistic missile submarines? In short, how much is enough? Sizing the fleet is both an analytical exercise

*since China demonstrated its ability to fire ballistic missiles at intercontinental ranges in 1980, its nuclear posture has remained surprisingly modest and resistant to change*

USS *Florida*, one of four *Ohio*-class submarines slated for conversion to conventional weapons



U.S. Navy (J.L. Keller)

and an art, not least because of the political ramifications of deploying the most destructive single platform known to mankind. A large SSBN fleet not only would impose a substantial financial burden but also could trigger competitive responses from potential adversaries. Thus, China faces a delicate balancing act that seeks to meet strategic requirements without unduly alarming other great powers.

Some advantages unique to an undersea strategic force magnify the relative importance of SSBNs vis-à-vis land-based missile forces. A ballistic missile submarine distinguishes itself even from a road- or rail-mobile ICBM by its stealth and unlimited mobility and endurance, which generate virtually infinite possibilities in terms of launch locations. The survivability of SSBNs reduces vulnerability to preemption and thus eases the temptation for Beijing to adopt a destabilizing nuclear posture that undermines crisis stability and escalation control, including through increased dispersion and decentralized command and control.

However, the abstract strategic and operational benefits of an undersea



Xinhua News Agency

**PLAN South China Sea Fleet vice chief of staff (right) meets Japanese Maritime Self-Defense Force chief of staff during PLAN's first visit to Japan**

strategic force will not likely convince Chinese leadership to lean decisively in favor of SSBNs. Foremost in the thinking of any political leadership is command and control of the nation's nuclear arsenal. It is unclear whether Beijing would be willing to delegate operational control of a nuclear-armed submarine to a tactical commander.<sup>14</sup> Like Moscow during the Cold War, Beijing may want to assert closer supervision. Practical considerations such as technical feasibility and steep financial costs, moreover, could impose burdens that China may be unwilling to carry.

In theory, a relatively modest number of survivable SSBNs should reduce the probability that “bean counting” would prompt a competitive response from the United States. In other words, Beijing will likely favor a force configuration that demonstrates restraint in order to maintain a stable deterrent relationship with Washington.

Accurately determining a quantitative ceiling for seabased ballistic missiles that buttresses deterrence while precluding a countervailing U.S. response, however, is a delicate affair. For example, if China possessed 4 Type 094s carrying 12 JL-2 ballistic missiles armed with 3 warheads each, then Beijing's undersea deterrent would boast 144 warheads.<sup>15</sup> If China deployed 6 SSBNs with 6 multiple warheads atop each JL-2, the number of warheads would jump to 432. These figures exclude the ongoing introduction of land-based intercontinental-range missiles that could also be armed with multiple warheads. Such a dramatic increase would likely raise concerns in Washington, even assuming the United States continues to enjoy commanding quantitative and qualitative advantages over China's nuclear arsenal. While a classic arms race resembling the Cold War probably would not ensue from such a shift in the nuclear balance,

redundancy and capacity for a near-continuous at-sea SSBN presence.”<sup>19</sup> The open-source literature provides even more disparate estimates concerning the number of SSBNs that the Chinese plan to, or will be able to, build. Conservative assessments of China's strategic forces tend to agree with the U.S. Intelligence Community, while other studies have drawn a more alarming picture. Simply put, the future size of the fleet is still anybody's guess.

Some parameters and assumptions embedded in the historical models set forth previously provide useful guidance for estimating the likely size of China's future SSBN fleet. First, an underlying principle of minimum deterrence is that as long as the number of surviving retaliatory weapons after a disarming first strike is not zero, the posture is credible. As the British and French examples suggest, the threshold for sufficiency might be quite low for China.

Second, the only power with the capacity to inflict a disarming preemptive attack on Chinese nuclear forces on land and at sea *simultaneously* for the foreseeable future will be the United States. This reduces if not eliminates China's requirement to conduct deterrent patrols against lesser nuclear powers such as India, and perhaps even Russia. In other

*a ballistic missile submarine distinguishes itself by its stealth and unlimited mobility and endurance, which generate virtually infinite possibilities in launch locations*

it is unlikely that U.S. defense planners would respond passively to this hypothetical orders-of-magnitude increase in the Chinese nuclear inventory.

At present, the forecast number of Chinese SSBNs remains a subject of contention. The U.S. Intelligence Community and Pentagon project that neither the JL-2 ballistic missiles nor the *Jin*-class submarine will enter service until the end of the decade.<sup>16</sup> According to the director of the Defense Intelligence Agency, Lieutenant General Michael Maples, USA, “the 8,000+ kilometer range JL-2 . . . likely will be ready for deployment later this decade.”<sup>17</sup> The Pentagon's most recent assessment of Chinese military power speculates that the JL-2 will achieve initial operational capability in the 2007–2010 timeframe.<sup>18</sup> The U.S. Navy's Office of Naval Intelligence believes that the Type 094 may enter service as early as 2008 and that “a fleet of probably five Type 094 SSBNs will be built in order to provide more

words, the SSBN would only have to cope with one threat vector across the Pacific.

Third, this study assumes that the U.S. ability to degrade the survivability of an SSBN would not improve radically over the coming decade—say, by making the oceans transparent to U.S. sensors and antisubmarine warfare (ASW) weaponry. Since the end of the Cold War, furthermore, America's nuclear attack submarine fleet and ASW aviation squadrons—the most potent counters to an undersea threat—have atrophied in numbers, at rates that many believe will take decades to reverse. Nor is U.S. ballistic missile defense in its current state any match for submerged launched missiles. A counter-sea-launched ballistic missile capability might be decades away from deployment. Under such circumstances, even if all of China's land-based deterrent was destroyed in a first strike, only one SSBN armed with multiple reentry warheads would need to survive a “bolt from

the blue” to conduct a highly destructive retaliatory strike.

Fourth, Beijing's high degree of comfort with the ambiguity surrounding the survivability of its nuclear forces, a longstanding hallmark of Chinese nuclear strategy, would further reduce the need for absolute numerical guarantees.

These factors suggest that the lower-range estimates are more accurate for China. The rule of thumb—familiar to U.S. naval planners—is that three aircraft-carrier expeditionary groups are needed to keep one fully operational at sea at any given time. Of the remaining two groups, one will be in an extended maintenance period, probably in a shipyard, while the other will be undergoing training and workups for deployment (and its availability will thus be reduced). Assuming China adopts similar operating procedures, a minimum deterrent posture would not demand too much in terms of quantity. Assuming 50 percent of the at-sea SSBNs fell prey to enemy ASW—a generous estimate in view of the SSBN capacity for concealment and quiet operations—only two Chinese SSBNs would need to be at sea at any given time to ensure that one survived a first strike. Based on the rotating deployment cycle described above, China would need six SSBNs to fulfill the basic demands of minimum deterrence. Depending on the eventual technical quality, reliability, and characteristics of the Type 094, furthermore, Beijing may not need even six boats. If the PLAN adopted an arrangement similar to the U.S. Navy's Blue and Gold crew system, which alternates crews after each deterrent patrol with a short maintenance period in between, it might even make do with a two-for-one ratio of boats in port to at sea. Four fleet boats would serve China's needs under these circumstances.

### Potential Deployment Patterns

Beyond the question of force sizing, Beijing must also consider a range of possible deployment patterns. Recently, speculation concerning the logic of a “bastion strategy” for China has emerged among U.S. analysts.<sup>20</sup> The Chinese themselves seem intrigued by the Soviet Union's experience in this regard.<sup>21</sup> China could seek to replicate the Soviet model by turning the geographical features of the Asian coastline to its advantage.<sup>22</sup> Beijing could, for instance, concentrate its SSBNs within the protective confines of the Bohai and Yellow Seas. Nuclear attack submarines,

shore-based fighter aircraft, and surface combatants could be poised as “palace guards” to respond quickly against hostile forces seeking to hold China's SSBNs at risk.

The bastion approach would offer sanctuaries within which high-value SSBNs could operate. In theory, sea- and shore-based assets would be able to identify and hold at bay hostile forces operating near or in the Bohai or Yellow Seas. The shallowness and complex acoustic environment of littoral waters, moreover, would pose serious challenges to high-speed American hunter-killer submarines designed for open-ocean operations during the Cold War.

However attractive it seems, a bastion strategy would entail certain risks. Keeping the undersea deterrent in the Bohai area would constrain patrol patterns, thereby increasing the likelihood that the submarines would be detected by enemy forces; forego much of the inherent stealth and mobility of an SSBN; and keep certain targets out of reach due to the longer distances that the missiles must traverse. To overcome such obstacles, China would have to build large, capable naval forces to protect the SSBNs lurking within the bastion and to enable the boats to stage a breakout should hostile forces seek to bottle them up and hunt them down in confined waters. The main risk

*only two Chinese SSBNs would need to be at sea at any given time to ensure that one survived a first strike*

of such an all-consuming strategy of deterrence is that excessive investment in protecting SSBN forces would detract from broader maritime priorities such as Taiwan-related contingencies, sealane defense, and secure access to overseas energy supplies.

As an alternative to a bastion strategy, the strategic submarines could operate more freely along China's long coastline under protective cover from naval and land-based aviation forces on the mainland. Recent studies have postulated that China has already embarked on an ambitious plan to create “contested zones” along its maritime periphery. Premised on the concept of sea denial, such zones would allow Beijing to exercise local superiority in waters and skies within the first island chain, which, roughly speaking, stretches from the Japanese archipelago to the northern Philippines. Under this scenario, China might be confident enough to permit

SSBN patrols along the Asian mainland, particularly in the Bohai, Yellow, East China, and South China Seas and the Taiwan Strait. Given that it confronts several deterrent relationships in Asia, including India, the presence of SSBNs in the South China Sea would help shore up deterrence on the southern flank should Beijing see the need.<sup>23</sup> This sort of “expanded bastion” strategy would clearly open up new options for the People's Liberation Army, albeit at greater risk.

Most ambitiously, China could deploy its submarines out into the Pacific in forays reminiscent of the U.S.-Soviet undersea competition during the Cold War. Some U.S. analysts have speculated that Beijing might base its SSBNs in the South China Sea, enabling them to slip into deeper Pacific waters undetected. Forward deployment would place a much larger number of U.S. targets within the range of the JL-2 missiles. Assuming China manages to develop capable and quiet submarines, its patrols in the Pacific would pose the greatest challenges to U.S. defenders seeking to detect and track lurking SSBNs. Forward patrols would also force the United States to devote more of its attack boats to shadow Chinese submarines in open waters, thereby diverting American attack submarines that might otherwise be available for a Taiwan contingency or some other flareup.

But the PLAN would incur strategic and operational risks by permitting such free-ranging deployments. From a political standpoint, active patrols within the first island chain or in the Pacific could prove highly provocative to the United States and would almost certainly trigger a competitive response from Washington. U.S. naval planners would likely see China's entry into Asian waters as a dramatic change in the threat environment, especially given the lack of Russian deterrent patrols in the Pacific since the Cold War. Given that the *Xia*-class SSBN has failed to conduct a single deterrent patrol,<sup>24</sup> even a modestly forward-leaning deployment pattern could signal a sea change in Chinese nuclear strategy that might significantly heighten American threat perceptions.

From an operational standpoint, submarine patrols along the mainland littoral or in Pacific waters would expose PLAN boats to U.S. and allied ASW measures. Throughout the Cold War, the United States developed extensive and highly effective undersea detection networks—most notably the Sound Surveillance System (SOSUS)—to track the

location of Soviet submarines. In the Pacific theater, U.S. submarines aided by SOSUS monitored every movement of Soviet SSBNs in waters off the Kamchatka Peninsula. In the 1980s, American and Japanese naval forces raised ASW to an art form, working together closely to bottle up Soviet forces operating in the Seas of Okhotsk and Japan.

These “legacy” systems and well-developed tactics would lend themselves readily to ASW against Chinese SSBNs. The ability of the Japan Maritime Self-Defense Force (JMSDF) to track a Chinese *Han*-class submarine that had breached Japanese territorial waters reaffirmed that the JMSDF has maintained a high level of ASW readiness. Commenting on the *Han* incident, a former JMSDF chief of staff boasted that Chinese submarines would be unable to slip into the deep waters of the Pacific through the Ryukyu island chain, to the north or south of Taiwan, or through the Bashi (Luzon) Strait without being detected by U.S. and Japanese antisubmarine forces.<sup>25</sup>

Given such potent risks, China will probably avoid coastal and blue-water patrols for the time being—especially during the initial stages of deployment when training, tactical skills, and doctrine are still immature. Additionally, Beijing simply might not have enough SSBNs to contemplate riskier, more forward-leaning options. As noted above, it may content itself with two boats conducting deterrent patrols at any given time. If so, Chinese strategists could view secondary considerations, such as patrols in the South China Sea aimed at India, as a needless distraction from the primary mission of deterring the United States. Unless the range of the JL-2 is sufficient to reach the continental United States from any location within the first island chain, which seems unlikely, operating farther from American shores may be deemed counterproductive.

These factors suggest that submarine deployment patterns will be rather constrained. Beijing will likely favor protection over effectiveness during the early phases of SSBN deployment and will thus pursue some type of bastion strategy. Over time, if the vessels prove capable of extended patrols well beyond the coasts, Beijing might be willing to relax its protectiveness and permit patrols farther forward.

It is important to note that these deployment options—the bastion strategy, littoral patrols, and open-ocean patrols—are not mutually exclusive. It is possible that the

Chinese may keep their options open, alternating among them as security conditions warrant. For example, Beijing may be content to rely on a bastion strategy during peacetime, when no immediate threat is evident. In times of conflict, it may permit more active coastal patrols or slip its SSBNs into open waters to signal resolve or counter nuclear coercion from an adversary. In sum, even a small undersea deterrent would give Beijing multiple options across a spectrum of contingency scenarios.

### Larger Undersea Deterrent

While a restrained nuclear posture is a more likely outcome at present, it is nevertheless worth exploring how China’s willingness to retain its minimalist posture could come under significant pressure in the future. For at least a decade, the U.S. policy community has speculated about the prospects for a shift in Beijing’s deterrent posture from minimum to limited deterrence.<sup>26</sup> Many Western analysts have predicted that China would make the transition to a more flexible capacity, allowing it to engage in a broader range of nuclear “warfighting” missions. This would require substantial increases in numbers and types of nuclear weapons. So, too, China analysts and policymakers have exhibited greater willing-

ness to build defenses against China.<sup>28</sup> If Washington overtly seeks to deny China a retaliatory option, Beijing will almost certainly respond with a larger and faster buildup that includes its undersea strategic forces.

Second, China’s more leisurely approach to bolstering its nuclear posture could come under strain from unforeseen strategic technical advances or surprises. For instance, more capable missile defense systems deployed by the United States in the coming decades could shake Beijing’s confidence in its retaliatory options. It is conceivable (although highly improbable in the near term) that the advent of space-based lasers and other advanced capabilities could radically reshape China’s outlook. The track record of the U.S. missile defense program to date casts doubt on the prospects of a radical breakthrough over the next decade. Should such a technological leap nevertheless occur, SSBNs might emerge as a strategic trump card for Beijing.

Third, the reconnaissance/precision-strike complex boasted by the U.S. military could alter China’s exclusively retaliatory posture. In July 2005, Major General Zhu Chenghu created a sensation when he declared to the foreign press, “If the Americans draw their missiles and position-guided

---

*if Washington overtly seeks to deny China a retaliatory option, Beijing will almost certainly respond with a larger and faster buildup that includes its undersea strategic forces*

---

ness to reconsider and question the basic merits of minimum deterrence. Although official policy remains firmly rooted in the status quo, three key factors could challenge the logic of minimalism.

First, China’s ongoing refusal to acknowledge that an adversary’s nuclear first-strike option could succeed—a premise central to the concept of minimum deterrence—depends in part on whether the United States wants to submit to the logic of assured (but minimal) retaliation vis-à-vis China. There is evidence that some U.S. strategists have dismissed such a mutual vulnerability, asserting that the United States should direct its ballistic missile defenses specifically to negating China’s deterrent.<sup>27</sup> Reflecting such an attitude, one advocate of missile defense argues that should Beijing continue to exhibit hostile intent toward Washington, particularly with regard to Taiwan, the United States “may simply have no choice” but to

ammunition onto the target zone on China’s territory, I think we will have to respond with nuclear weapons.” He argued that if China faced the prospect of defeat in a conventional conflict over Taiwan, Beijing would have no choice but to conduct a nuclear strike against American cities.

Similarly, in a candid assessment of how Chinese calculations might change, Shen Dingli argues that precision conventional strikes against China’s nuclear forces during a Taiwan contingency could force Beijing to abandon its no-first-use pledge. He asserts that “if China’s conventional forces are devastated, and if Taiwan takes the opportunity to declare *de jure* independence, it is inconceivable that China would allow its nuclear weapons to be destroyed by a precision attack with conventional munitions, rather than use them as true means of deterrence.”<sup>29</sup> In other words, if the effects of conventional U.S. attacks were indistinguishable from those of a

disarming nuclear strike, China's no-first-use policy would become untenable.<sup>30</sup> Shen's stark if sensible conclusion seems consistent with China's longstanding worries about nuclear blackmail. In this context, Beijing might regard a much larger SSBN fleet as its only viable insurance policy against a conventional and/or nuclear disarming first strike.

Clearly, a next-generation undersea deterrent would give Beijing the strategic option to hedge against sudden shifts in the international security environment. However, it is important to acknowledge that SSBNs are not China's only answer to the strategic dilemmas noted above. Beijing is actively developing an array of alternative countermeasures to firm up the credibility of its deterrent forces. For instance, it boasts a rather comprehensive set of programs designed to defeat U.S. ballistic missile defenses. The January 2007 antisatellite test testified to Beijing's determination to develop multiple options, ensuring that missile defenses cannot vitiate the nation's deterrent posture.

This study has demonstrated how China can make significant qualitative and quantitative improvements to its nuclear strategy, forces, and doctrine without fundamentally overturning the type of minimalism (at least at the strategic level) that has characterized its approach to nuclear matters. It appears that Beijing has redefined the parameters of minimalism to conform to the fluid security environment. China will have a more effective and credible nuclear deterrent with the deployment of its Type 094s, despite the elements of nuclear instability introduced by U.S. technical and doctrinal advances. Such a balancing trend should not be surprising for such a rising power, and indeed it augurs well for a more stable nuclear relationship with the United States.

Mutual ambivalence continues to characterize Sino-American ties. As long as Beijing and Washington refuse to embark on a Cold War-style rivalry, however, radical shifts in China's nuclear posture remain improbable. **JFQ**

## NOTES

<sup>1</sup> Terms ascribed to China's nuclear posture, including *minimum deterrence*, are highly contested in the West. Moreover, the Chinese policy community does not employ terms and concepts that correspond to the Western lexicon. For clarity, we use the term *minimum deterrence* loosely, connoting the ability to inflict a modest degree

of damage that is nonetheless unacceptable to an adversary with a high degree of confidence.

<sup>2</sup> John Wilson Lewis and Xue Litai, *China's Strategic Sea Power: The Politics of Force Modernization in the Nuclear Age* (Stanford: Stanford University Press, 1994).

<sup>3</sup> John Foster Dulles, "The Evolution of Foreign Policy," *Department of State Bulletin* 30 (January 25, 1954).

<sup>4</sup> For an excellent snapshot of the debates over U.S. nuclear strategy, see Lawrence Freedman, "The First Two Generations of Nuclear Strategists," in *Makers of Modern Strategy from Machiavelli to the Nuclear Age*, ed. Peter Paret (Princeton: Princeton University Press, 1986), 735–778.

<sup>5</sup> See "SSBN-726 Ohio Class FBM Submarines," available at <www.globalsecurity.org/wmd/systems/ssbn-726.htm>; and "Trident II D-5 Fleet Ballistic Missile," available at <www.globalsecurity.org/wmd/systems/d-5.htm>.

<sup>6</sup> U.S. Department of Defense, *Soviet Military Power: Prospects for Change, 1989*, available at <www.fas.org/irp/dia/product/smp\_89.htm>.

<sup>7</sup> See "R-39M/Grom [Bark]/RSM-52V/SS-28," available at <www.globalsecurity.org/wmd/world/russia/r39m.htm> and <www.globalsecurity.org/wmd/world/russia/r39m-specs.htm>.

<sup>8</sup> John B. Hattendorf, *The Evolution of the U.S. Navy's Maritime Strategy, 1977–1986*, Newport Paper No. 19 (Newport: Naval War College Press, 2004), 23–36.

<sup>9</sup> *Ibid.*, 33.

<sup>10</sup> See, for example, Information Office of the State Council of the People's Republic of China, *China's Endeavors for Arms Control, Disarmament and Non-Proliferation*, September 1, 2005.

<sup>11</sup> Information Office of the State Council of the People's Republic of China, *China's National Defense in 2006*, December 29, 2006.

<sup>12</sup> Jeffrey G. Lewis, *The Minimum Means of Reprisal: China's Search for Security in the Nuclear Age* (Cambridge: MIT Press, 2007), 52.

<sup>13</sup> Information Office of the State Council of the People's Republic of China, *China's National Defense in 2004*, December 27, 2004.

<sup>14</sup> For an assessment of the command and control challenge, see Andrew S. Erickson and Lyle J. Goldstein, "China's Future Nuclear Submarine Force: Insights from Chinese Writings," *Naval War College Review* 60, no. 1 (Winter 2007), 69–70.

<sup>15</sup> For a similar calculation based on the assumption that the Type 094 is equipped with 16 launch tubes, see Zhang Baohui, "The Modernization of Chinese Nuclear Forces and Its Impact on Sino-U.S. Relations," *Asian Affairs* 34, no. 2 (Summer 2007), 92.

<sup>16</sup> See U.S. Department of Defense, *Military Power of the People's Republic of China 2005* (Washington, DC: Department of Defense, 2005), 28.

<sup>17</sup> Michael D. Maples, "Current and Projected National Security Threats to the United States,"

Statement for the Record, Senate Armed Services Committee, February 28, 2006, 11.

<sup>18</sup> U.S. Department of Defense, *Military Power of the People's Republic of China 2007* (Washington, DC: Department of Defense, 2007), 19.

<sup>19</sup> Office of Naval Intelligence, *Seapower Questions on the Chinese Submarine Force*, unclassified document obtained under the Freedom of Information Act by Hans M. Kristensen.

<sup>20</sup> Lyle J. Goldstein and William Murray, "China Emerges as a Maritime Power," *Jane's Intelligence Review*, October 2004, 35.

<sup>21</sup> See Dong Qifeng, "Comparative Analysis of U.S. and Soviet/Russian Nuclear Submarine Development Strategies" [in Chinese], *Modern Ships*, no. 11B (November 2007), 34.

<sup>22</sup> See Wu Xie, "Zhanlue Heqianting Sheji Fangan Jianxi [Analysis of Nuclear Submarine Design]," *Bingqi Zhishi [Ordnance Knowledge]* 4, no. 198 (April 2004), 53.

<sup>23</sup> Christopher McConaughy, "China's Undersea Nuclear Deterrent: Will the U.S. Navy Be Ready?" in *China's Nuclear Force Modernization*, ed. Lyle J. Goldstein and Andrew S. Erickson (Newport: Naval War College Press, 2005), 44.

<sup>24</sup> Hans M. Kristensen, Robert S. Norris, and Matthew G. McKinzie, *Chinese Nuclear Forces and U.S. Nuclear War Planning* (Washington, DC: Federation of American Scientists/Natural Resources Defense Council, November 2006), 89.

<sup>25</sup> Oga Ryohei, "What the PRC Submarine Force Is Aiming For," *Sekai no Kansen*, July 1, 2005, 96–101.

<sup>26</sup> For the most widely cited work on this issue, see Alastair Iain Johnston, "China's New 'Old Thinking': The Concept of Limited Deterrence," *International Security* 20, no. 3 (Winter 1995/1996).

<sup>27</sup> Robert A. Manning, Ronald Montaperto, and Brad Roberts, *China, Nuclear Weapons, and Arms Control* (New York: Council on Foreign Relations, 2000), 47.

<sup>28</sup> Stephen J. Hadley, "A Call to Deploy," *Washington Quarterly* 23, no. 3 (Summer 2000), 26.

<sup>29</sup> Shen Dingli, "Nuclear Deterrence in the 21<sup>st</sup> Century," *China Security* 1 (Autumn 2005), 13.

<sup>30</sup> For an American analysis of this point, see James C. Mulvenon, "Missile Defenses and the Taiwan Scenario," in *China and Missile Defense: Managing U.S.-PRC Strategic Relations*, ed. Alan D. Romberg and Michael McDevitt (Washington, DC: Henry L. Stimson Center, 2003), 58–60.