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Responding to China's Changing Nuclear Challenge

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KEY TAKEAWAYS

One area of increasing concern to U.S. policymakers and analysts regarding the Chinese Communist Party's military buildup is its nuclear modernization program.

China has nearly completed a viable nuclear triad, is expanding its ICBM arsenal, and is seeking to develop advanced weaponry, such as hypersonic missiles.

In response, the U.S. must make missile defense a top priority, fully fund U.S. nuclear modernization efforts, and review U.S. nuclear force posture.

The People's Republic of China (PRC) has grand ambitions. It is seemingly determined to replace the United States as the preeminent power in the Pacific. Moreover, it may, at some point in the future, attempt to supersede the U.S. politically, economically, and militarily. Complicating matters further, the Sino–American bilateral relationship is currently replete with strategic distrust.

As the Biden Administration wrote in its March 2021 Interim National Security Guidance:

> China, in particular, has rapidly become more assertive. It is the only competitor potentially capable of combining its economic, diplomatic, military, and technological power to mount a sustained challenge to a stable and open international system.[1]

Along these lines, in June 2021, U.S. Secretary of Defense Lloyd Austin issued an internal directive to the Department of Defense (DOD) to "laser focus" the Pentagon's "efforts to address China as the nation's number one pacing challenge."[2] In other words, China's military, collectively known as the People's Liberation Army (PLA), would now be considered America's greatest military security threat, replacing the Armed Forces of the Russian Federation as the U.S.'s most powerful military rival.

One area of China's military buildup of increasingly deep concern to U.S. policymakers and security analysts, among others, is the PRC's nuclear modernization program. In recent years, the world has witnessed the development of a nascent Chinese nuclear triad, with the deployment of at-sea and air-based nuclear forces; the revelation of hundreds of new intercontinental ballistic missile (ICBM) silos; nuclear-capable hypersonic weapons (HSWs) advances; and increasing questions about the state and possible direction of Beijing's nuclear doctrine.

Unfortunately, these dramatic changes come with little to no reasonable comment or explanation from Beijing, causing great concern. As a result, the United States, its allies, and partners must carefully consider these developments and craft responses to the growing Chinese nuclear threat to ensure that their interests are protected and advanced in an arena of great-power competition.

Accordingly, in response, the United States should:

- **Continue** to make the development and deployment of U.S. missile defense and defeat capabilities a U.S. and allied defense priority;
- **Increase**—alongside allies and partners—conventional deterrence against China's growing military threat;
- **Fund** fully U.S. nuclear modernization capabilities to protect the homeland and provide reassurance to allies;
- **Pressure** China to engage in substantive diplomatic and security dialogues about these new and existing strategic weapons systems as soon as possible; and
- **Review** the U.S. nuclear force posture to ensure the necessary changes are made to address the potential of two nuclear peer competitors, Russia and China.

A Troubling Triad

China and the United States are widely considered to be great-power competitors, and U.S. policymakers now see the PRC as the military "pacing threat" for the United States. One element of its growing military power is the unprecedented diversification of its nuclear weapons arsenal.

The U.S. Department of Defense's 2020 report, *Military and Security Developments Involving the People's Republic of China*, hereafter known as the China Military Power Report (CMPR), observes:

> China's strategic ambitions, evolving view of the security landscape, and concerns over survivability are driving significant changes to the size, capabilities, and readiness of its nuclear forces.[3]

The 2020 CMPR also assesses that:

> China's nuclear forces will significantly evolve over the next decade as it modernizes, diversifies, and increases the number of its land-, sea-, and air-based nuclear delivery platforms.[4]

Moreover, the U.S. Director of National Intelligence (DNI), in his annual threat assessment to the U.S. Congress in 2021, reported:

> China is building a larger and increasingly capable nuclear missile force that is more survivable, more diverse, and on higher alert than in the past, including nuclear missile systems designed to manage regional escalation and ensure an intercontinental second-strike capability.[5]

Alarmingly, the DNI also noted the unprecedented nature of the PLA's nuclear buildup, identifying it as "the most rapid expansion and platform diversification of its nuclear arsenal in its history."[6]

Indeed, China's nuclear forces have now grown from a land-based monad to the near completion of a viable, advanced nuclear triad, which includes sea- and air-based platforms and weapons.[7]

Long a land-based nuclear force of an estimated few hundred silo-based and road-mobile ballistic missiles, in recent years, China has sent its nuclear deterrent to sea, increasing the stealth and survivability of its nuclear arsenal and nuclear deterrent.

The PLA Navy (PLAN) currently operates six nuclear-powered ballistic missile submarines (SSBN) of the *Jin*-class (Type 094).[8] Each *Jin*-class

SSBN can reportedly carry up to 12 JL-2 submarine-launched ballistic missiles (SLBMs). The PLAN's next generation SSBN, the Type 096, is expected to be operational this decade and outfitted with a new SLBM.[9] The DOD expects the PLAN to have eight operational SSBNs by 2030, fulfilling Chinese Chairman Xi Jinping's order for the at-sea nuclear force to achieve "stronger growth."[10]

The PLA Air Force (PLAAF) is adding a strategic mission to its portfolio as well, creating the third leg of China's nuclear triad. The Chinese H-6N Badger is believed to be capable of carrying a nuclear-capable, air-launched ballistic missile, which is assessed to be operational.[11]

The PLAAF is also reportedly developing a new strategic bomber, the H-20.[12] This new stealth bomber will have both a conventional and strategic role. The H-20 could be operational this decade and possibly bring U.S. forces in Guam and Hawaii into range.[13]

These developments in the sea and air nuclear forces—especially the mobility of PLAN SSBNs and PLAAF bombers—will significantly strengthen the credibility and survivability of China's nuclear deterrent if deployed in militarily significant numbers.

A Surge in Silos

Beyond the diversification of the PLA's nuclear forces from a monad to an increasingly viable triad, 2021 witnessed the significant expansion of China's strategic arsenal, especially the unanticipated growth in the number of the PLA's silo-based force under the PLA's Rocket Force (PLARF).

It has long been assessed that China had approximately 20 ICBM silos and 100 road-mobile ICBM launchers, with an operational nuclear warhead count in the low 200s. That appears to be changing—significantly.

The 2020 CMPR wrote that the Chinese nuclear stockpile will expand over the next 10 years. The DOD notes that "[o]ver the next decade, China's nuclear warhead stockpile—currently estimated to be in the low 200s—is projected to at least double in size as China expands and modernizes its nuclear forces."[14]

Strikingly, the 2021 version of the CMPR conveys a dramatically different assessment:

> The accelerating pace of the PRC's nuclear expansion may enable the PRC to have up to 700 deliverable nuclear warheads by 2027. The PRC likely intends to have at least 1,000 warheads by 2030, exceeding the pace and size the DoD [U.S. Department of Defense] projected in 2020.[15]

In September 2021, U.S. Air Force Secretary Frank Kendall said he believes China, with a robust nuclear expansion in the size of its ICBM force, is moving from a countervalue second-strike capability toward a possible counterforce "de facto first-strike capability."[16] To followers of this issue, that striking assertion from Secretary Kendall should come as no surprise.

Civilian and military researchers revealed this summer, in a string of open-source analytical reports based on the exploitation of commercial satellite imagery, that Beijing is secretly building nearly 250—if not more—new ICBM silos in remote areas of China.[17]

In late June 2021, the press reported that one set of civilian researchers uncovered more than 100 new Chinese ICBM silos being constructed in its northwestern desert for the PLARF.[18] Then, in July 2021, researchers reported another shocking discovery: The existence of an additional 100 or so ICBM silos in another new silo field a few hundred miles away from the first new silo field.[19] In total, that is at least an estimated *200 new Chinese ICBM silos*.

Then in August 2021, a U.S. Air Force (USAF) research organization that studies the Chinese military discovered a third new ICBM field, adding another 30 to 36 new silos to the previous total. According to this research organization, the USAF's China Aerospace Studies Institute, if China adds these nearly 250 new ICBM silos to the PLARF's existing operational ICBM arsenal, it would mean:

> the [People's Liberation Army Rocket Force's] projected inventory of ground-based ICBM launchers is close to or more than the United States' current number of deployed Minuteman III ICBMs.[20]

The 400 U.S. Minuteman III ICBMs, located in hardened silos on Air Force bases in Montana, North Dakota, and Wyoming, constitute the United States' land-based ICBM force. Each Minuteman III currently has a single nuclear warhead.[21]

The new land-based Chinese silos could be filled with the most modern PLARF ICBM, the DF-41, which is reportedly capable of carrying five to 10 multiple independently targetable reentry vehicles per missile.[22] If all silos are mated with an operational DF-41, China could match—if not exceed—both the United States' and Russia's number of deployed nuclear warheads, which under the New Strategic Arms Reduction Treaty (New START) stand at 1,550 each.[23]

An assessment by the U.S. National Defense University (NDU) identified this concern: "One possibility is that [Chinese] leadership will decide that

[nuclear] parity (or something close to it) in strategic nuclear weapons is necessary to enhance China's status as a coequal global power and a dominant force in East Asia."[24]

That assessment certainly comports with China's grand ambitions.

Going Hypersonic

Beyond traditional ballistic missiles, China is also looking at new, advanced weaponry as potential delivery systems for its nuclear arsenal, including advanced hypersonic weapons. Based on publicly available assessments, China and Russia are currently at the forefront of developing HSWs, which provide some significant, potential military advantages to those who deploy them, including:

- Flying at speeds in excess of Mach 5—or one mile per second;
- Maneuvering and evading defenses and sensors;
- Reducing the warning and response time of defending forces;
- Carrying conventional explosive or nuclear loads; and
- Comprising a variety of ranges from short-range to intercontinental-range.

For instance, in the summer of 2021, a Chinese civilian Long March space launch vehicle shot through the atmosphere with a nuclear-capable hypersonic glide vehicle (HGV) sitting atop. After circling the globe in low-Earth orbit, the fractional orbital bombardment system (FOBS) released its payload. Upon reentering the Earth's atmosphere, the HGV was guided toward a simulated terrestrial target in China. The simulated strike was reportedly some 20 miles wide of the mark, but the test is largely seen as a success.

In addition, by going into orbit, the Chinese system has a variety of potential flight paths, making it difficult for U.S. defenses to acquire and track due to a variety of limitations: physics, geography, and the location of strategic radars and other available sensors. While this summer reportedly included at least two FOBS test launches, the PLA already has an operational intermediate-range hypersonic weapon, which pairs its DF-17 ballistic missile with an HGV.[25]

In December 2021, while in Seoul, South Korea, Secretary Austin said that China's pursuit of HSWs "increases tensions in the region."[26] Indeed, in November 2021, U.S. Air Force General John Hyten (then Vice Chairman of the Joint Chiefs of Staff), spoke of reports that the PLA has conducted hundreds of HSW tests over the past five years.[27]

It is clear China is committed to testing and developing HSWs, which could provide an asymmetrical military advantage over potential opponents. What it is not yet clear is to what extent China will build and operationally deploy these weapons, which would obviously raise concerns with potential opponents.

Doctrine Developments?

China has long embraced a defensive "minimum deterrence" doctrine accompanied by a no-first use (NFU) pledge. Going back to Chairman Mao, the PRC perceived that its modest nuclear force would allow it to confidently respond to a first nuclear strike from an attacker utilizing countervalue targeting, which would target cities and their civilian populations.

The extraordinary changes seen this year in the PRC's nuclear forces raise questions as to whether China is adhering to and/or will continue to hold to these twin strategic pillars of a "lean and effective" minimum deterrence and an NFU posture.[28] It could be argued that China's progressively advanced and capable nuclear forces could put those long-standing policies into question—or disuse. In other words, could the development and deployment of these new Chinese strategic capabilities allow—or even drive—Beijing to modify its long-standing nuclear doctrine away from minimum deterrence and NFU?

As a result, long-standing assumptions about China's nuclear forces and doctrine should be questioned. For instance, regarding NFU, could the U.S. really expect that China would never use a nuclear weapon first as seemingly called for under NFU? Likewise, would the leadership of the Chinese Communist Party be willing to use a nuclear weapon first if the existence of the regime were threatened in a conventional war?

What about a conflict over determining the future status of Taiwan? On the matter of China's minimum deterrence strategy, what is precipitating the furtive, large-scale change in nuclear force numbers and capabilities?

The United States and Russia have drawn down their nuclear forces under New START, which begs the question: What does China now see as the reason to double, triple, or even quintuple its strategic forces?

These are all reasonable questions being asked often and openly by

security analysts who follow this issue, which leads to another point of concern: China may have changed the alert status of its nuclear forces. In April 2021, Admiral Charles Richard, commander of the U.S. Strategic Command (STRATCOM), said that, while China keeps the majority of its nuclear forces in a peacetime status, the PLA has adopted a limited "high alert duty" strategy, moving a portion of its nuclear forces to an alerted launch-on-warning (LOW) posture.[29] The PLA's move to a LOW status—without any public explanation—increases the risk of misperceptions and miscalculations, undermining the prospects of strategic stability, especially with its great-power competition rival, the United States.

Taken in the aggregate, the expected increase in the number of Chinese nuclear weapons as well as in types of platform and capabilities clearly provide the Chinese with new options for nuclear force deployment as well as force employment. Indeed, again, according to Admiral Richard, China can execute "any plausible nuclear employment strategy within their region and will soon be able to do so at intercontinental ranges as well. They are no longer a 'lesser included case' of the pacing nuclear threat, Russia."[30]

As such, it should be expected that Beijing will try to turn its new nuclear forces into some sort of political and military advantage vis-à-vis its rivals and competitors over interests of vital national interests such as Taiwan, North Korea, and the South China Sea, among others.

Nuclear Talks? Maybe

The expansion and diversification of its nuclear-capable arsenal and possible evolutions in nuclear doctrine should also be put in the context of the PRC's general—and long-standing—aversion to engaging in substantive diplomatic and military discussions on strategic matters. The PRC and the PLA are infamous for their political-military secrecy and lack of modern-day transparency expected of a great power, especially one seeking an international leadership role.

And Beijing seems to be particularly quiet about its nuclear forces.

Indeed, Ambassador Robert Woods, U.S. representative to the Conference on Disarmament, remarked in May 2021:

> Despite the PRC's dramatic build-up of its nuclear arsenal, unfortunately it continues to resist discussing nuclear risk reduction bilaterally with the United States.... To date Beijing has not been willing to engage meaningfully or establish expert discussions similar to those we have with Russia. We sincerely hope that will change.[31]

That said, the Chinese approach to nuclear talks may actually be changing ever so slightly. A media outlet did report that preliminary, working-level Sino–American talks on the subject of the 2021 CMPR may have included some discussion of strategic issues.[32]

Of course, engagement on these issues between two superpowers is not unprecedented. The United States and Russia—and before that the Soviet Union—have a long record of conducting diplomatic discussions and even concluding nuclear arms control agreements. Indeed, the United States and Russia have begun strategic stability talks—formally known as the Strategic Stability Dialogue—despite tension involving several political and military issues, including Ukraine.

It is also worth noting that others, including the U.S. Congress, have also been critical of China's unwillingness to engage in nuclear negotiations based on Article VI of the Nuclear Non-Proliferation Treaty (NPT). The NPT calls upon member states to negotiate in "good faith" on nuclear arms control, reductions, and disarmament, such as the United States and Russia have undertaken over the years.

Troublingly, it is possible that China will wait some time to come to the negotiating table to discuss these matters, including strategic intentions and nuclear doctrine, in a substantive and meaningful way until it reaches near-parity, parity—or even superiority—in its nuclear arsenal with the United States (and Russia).

Recommendations

In response to these troubling trends in Chinese nuclear forces and posture, Washington should:

- **Continue to make the development and deployment of U.S. missile defense and defeat capabilities—especially targeted at China's regional offensive missiles—a U.S. and allied defense priority.** One of the PLA's strengths and arguable asymmetric advantages over potential opponents is its large, varied missile arsenal, which in many cases is capable of both conventional and nuclear strike. Diminishing this potential advantage through the development and deployment of both regional missile defense and missile defeat capabilities will raise the cost and, thereby, reduce the likelihood of the initiation and success of Chinese adventurism.

Responding to the threat should include appropriate budget allocations, research and development, and deployment of systems to detect, track, and defeat a variety of Chinese missile threats**.** Capabilities should include the development and deployment of counter-hypersonic weapon systems and space-based sensors. A failure to do so will give China undue political-military influence and leverage, holding U.S. and allied forces at higher risk during crisis and conflict. Operational planning should also be conducted with other missile defense–capable allies, such as Japan, which might be threatened by Chinese policies and missiles.

- **Increase, alongside allies and partners, conventional military capabilities to deter China's growing military threat.** Doing so will reduce the likelihood of Chinese-initiated provocations, which could ultimately lead to crisis and conflict involving territorial disputes in the South and East China Seas and over Taiwan's future, among other possible contingencies. Like other authoritarian states, the Chinese Communist Party cannot afford to lose a critical crisis or conflict since it could, in theory, domestically threaten the political survival of the authoritarian regime.

  Therefore, Beijing must be dissuaded, deterred, and denied, if necessary, from starting a crisis or conflict that might require American intervention. Once a crisis or conflict ensues, controlling escalation could be difficult—if not impossible—if the stakes are high enough for Beijing.

  For two superpowers like China and the United States, this could include crossing the nuclear threshold at least at the regional level. The addition of U.S. air and naval assets as well as new operating bases and forces like naval strike missiles to the Pacific theater could increasingly hold Chinese conventional forces at risk and improve deterrence of crisis and conflict. Beyond that, Washington must work to bolster Indo–Pacific political and military alliances and partnerships to dissuade, deter, and deny Chinese belligerence, including engaging in defense cooperation and arms sales where mutually beneficial.

- **Fund fully U.S. nuclear modernization capabilities to provide direct deterrence to protect the homeland and deployed U.S. forces and extended deterrence to allies, providing them with**

political–military reassurance. While some progress has been made, U.S. nuclear forces are long overdue for modernization, with many systems decades old. A failure to introduce replacement systems quickly enough could result in vulnerabilities in the U.S. strategic deterrent, especially with the expansion and diversification of new Chinese nuclear-capable weapons and platforms and changes in doctrine.

Such a development is unacceptable. Continuing with U.S. nuclear modernization will ensure there will be no gaps in the U.S. deterrent force that China can exploit to its advantage, reducing the risk of Chinese provocation and adventurism that may require an American military response.

- **Pressure China to engage in substantive diplomatic and security dialogues about these new strategic weapons systems and Chinese nuclear doctrine as soon as possible.** It is in the interest of both sides to pursue political–military efforts aimed at achieving strategic stability, nuclear risk reduction, and potential arms control. This effort will likely be difficult considering Beijing's reluctance to engage on nuclear issues, but, if pursued, small steps toward progress are potentially possible. Initial steps could include diplomatic process measures such as developing working groups that may eventually lead to a series of senior plenary meetings.

  Eventually, these meetings must become increasingly substantive and include working toward reasonable levels of transparency and reciprocity on issues such as Chinese strategic plans, intentions, and nuclear doctrine. China will likely resist this openness to take advantage of the possibility of American transparency offered to facilitate exchanges that will, in the end, benefit the Chinese side unilaterally. While bilateral efforts will be critical, Washington should also look to other capitals, not only in Europe but also in the Indo–Pacific, for consultation and assistance with encouraging and pressuring China to come to the negotiating table for substantive talks on these important, increasingly pressing strategic issues.

- **Review the U.S. nuclear force posture in response to these dramatic changes in the strategic environment.** For the first time in its history, the United States is potentially facing not one, but two, near-peer or peer nuclear competitors. This development calls for a full review

of the United States' nuclear capabilities and infrastructure to ensure that the necessary adjustments can start to be made to American force structure and nuclear doctrine to meet the challenges of this unique, challenging security environment. The creation of an independent congressional commission to address this issue would be welcomed.

Conclusion

Responding to these significant political–military developments in China, Admiral Richard warned during a speech at the 2021 Space and Missile Defense Symposium in the United States:

> We are witnessing a strategic breakout by China. The explosive growth and modernization of its nuclear and conventional forces can only be what I describe as breathtaking. And frankly, that word "breathtaking" may not be enough.... What matters is they are building the capability to execute any plausible nuclear employment strategy—the last brick in the wall of a military capable of coercion.[33]

In addition, according to NDU's 2020 *Strategic Assessment*:

> China's continued expansion and improvement of its nuclear forces may create the basis for a more competitive stance vis-à-vis the United States, should Beijing decide this is necessary to advance its global and regional aspirations. Additionally, Great Power nuclear competition could have important effects on U.S. extended deterrence relationships, prospects for further nuclear proliferation, and the future of the global nonproliferation regime.[34]

Beijing may well be revealing its grand political ambitions through its unprecedented nuclear modernization programs, perhaps seeking some form of nuclear parity, if not superiority, with the United States and Russia, greatly increasing its already significant international leverage and influence.

Beyond doubt, these new Chinese nuclear programs have inserted more uncertainty and risk into an already challenging international security environment, including tense Sino–American ties rife with distrust. If fielded as potentially projected, these new nuclear forces, supported by new doctrine, will increase the flexibility, credibility, and survivability of China's deterrent and strike options.

If these developments unfold as many expect, these changes will improve Beijing's ability to influence and coerce the U.S., its allies, and partners while

restraining their potential response options to unwanted Chinese actions which run against their interests.

When operational, these advanced strategic armaments could also boost the perception of China's political power and military capabilities among competitors, rivals, neighboring, and other states, improving Beijing's ability to deter, dissuade, or deny any attempts at influence, coercion, or aggression.

Beijing's current unwillingness to engage openly and substantively on arms control and strategic stability issues so far arguably raises the chances of unnecessary miscommunications, misperceptions, miscalculations, and mistakes. These possible circumstances could lead to an unwelcome crisis—and conflict. In the nuclear age, that is unacceptable considering the possibility of the escalation of violence beyond the conventional phase and across the nuclear threshold of warfare. As such, the current dramatic developments in China's nuclear force structure, policy, and doctrine deserve U.S.—and global—attention.

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