



Center for Strategic and Budgetary Assessments

TESTIMONY

STATEMENT BEFORE THE UNITED STATES SENATE COMMITTEE ON ARMED SERVICES ON UNITED STATES NUCLEAR STRATEGY AND POLICY

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Chairman Reed, Ranking member Inhofe, members of the Committee, thank you for the opportunity to address the challenges that the United States faces in continuing to deter nuclear war and preserving the tradition of non-use of nuclear weapons that has prevailed globally since 1945.

Today the United States faces the most complex configuration of questions about nuclear weapons than it has ever faced since the onset of the nuclear age. Some of these developments are the result of quantitative and qualitative changes in the composition of the nuclear arsenals of the major nuclear weapons states, some from the aspirations of new or prospective nuclear powers, and some arise from the advent of new technologies whose interaction with nuclear weapons may create new uncertainties about strategic stability.

Of course, competition is not the same thing as conflict. Nor does competition necessarily lead to conflict. It must be admitted, however, that in addition to the reality of great power competition, we face an increasing possibility of great power war. The possibility is remote, but not inconceivable, and it is growing. What was once a hypothetical future contingency is now a real, and present, danger.

Deterrence and The New Global Environment: What's New?

The most important new factor is the potential that the U.S. will have to deal with two near nuclear peers simultaneously. For the 40 years of the Cold War the United States was preoccupied with the threats represented by Soviet nuclear forces. Even after the People's Republic of China tested a nuclear weapon in 1964 the dangers presented by its nuclear forces were mitigated by what most observers concluded was China's reliance on a minimum nuclear deterrence strategy and then later by the Sino-Soviet split and the ability of U.S. diplomacy to seek better relations with each of the communist power than they had with one another. As Chairman Reed noted last week "We need to seriously consider that we are entering a new, trilateral nuclear competition era" in which the United States and its allies

must “deter not one, but two near-peer nuclear adversaries,” a challenge, we would note that it is unprecedented.¹

The PRC arsenal which experts had estimated to consist of roughly 200 warheads for many years has expanded significantly. Today China disposes of roughly 350 warheads -- but that arsenal is expanding rapidly. The most recent report of the Department of Defense on Chinese military power suggests that by 2027 China will have some 700 warheads enroute to nearly 1000 by 2030.

Although projections of the growth of nuclear arsenals are always subject to uncertainty commercially available satellite imagery of missile silos being excavated in northern China as well as the PRC’s efforts to expand plutonium production certainly suggest that these projects are well rooted in reality. It is no wonder that STRATCOM commander Charles Richards described the growth of China’s arsenal as “breathtaking” and former Vice Chairman of the Joint Chiefs of Staff General Hyten called it “unprecedented” and suggested that prudence required the U.S. to plan against this growing threat.²

China’s quantitative and qualitative nuclear modernization entails not just the growing size of its intercontinental ballistic missile threat but the development of a full nuclear triad on a timeline that is much earlier than most observers anticipated and capabilities that could call “strategic stability” into question. The key developments include the PLA Air Force’s H6N air-refuelable bomber armed with air launched ballistic missiles that are likely dual capable as well as the prospective development of the H20 long range strategic bomber. In addition, the deployment of the type 094 SSBNs armed with JL-2 SLBMs provide the PRC with its “first credible, sea-based nuclear deterrent.” Finally, the test last year of what seems to be a Fractional Orbital Bombardments system raises the prospect of a short or no-warning attack – an extremely destabilizing development.³

In addition to the buildup of its strategic nuclear forces the PRC is also augmenting its theater nuclear capabilities with the DF-26 dual-capable intermediate-range ballistic missile System (IRBM) which the DoD China Military Power report notes is China’s “first nuclear capable missile system that can conduct precision strikes , and therefore, is the most likely weapon system to field a lower-yield warhead in the near term.” Chinese writings suggest that “the most important type of future regional wars will be conventional conflicts under conditions of nuclear deterrence, deterrence and actual war-fighting will exist at the same time, and their function will be mutually complementary.” In light of the recent Russian invasion of Ukraine and accompanying threats to use so-called “tactical” nuclear weapons we need to consider whether the PRC will see its full suite of nuclear weapons as providing it with a powerful counter-intervention capability to deter the U.S. and its allies from defending Taiwan in a crisis. ⁴

Russia, of course, remains today the only existential challenge to the United States because of the size of its nuclear arsenal. The extensive modernization of Russian nuclear forces over the past decade and a half, as well as the promiscuous Russian nuclear sabre-rattling (both before and after the February 24 unprovoked, premeditated Russian invasion of Ukraine) represent an especially important challenge for U.S. nuclear policymaking. Although the United States has argued that MIRVs are destabilizing, and we have de-MIRVed our own ICBM force Russia continues to modernize its forces with MIRVed missiles. New variants (both road mobile and silo-based) of the TOPOL-M missile are being deployed. The Russians are about halfway through the modernization of their SSBN fleet and the air leg of their nuclear triad features upgraded TU-95 and TU-160 bombers armed with the new KH-102

nuclear armed cruise missile that will serve as a bridge to the future PAK-DA next generation bomber that is expected to enter into production by the end of the decade.⁵

Russia, of course, also maintains a large stockpile of theater nuclear weapons – perhaps 10 times the number of similar weapons in the U.S. inventory. Russian theater nuclear forces are unfinished business of the Cold War – a fact recognized by the Senate in its Resolution of Ratification of the New START Treaty in 2010 which, as a condition of ratification, insisted that it is the policy of the United States to negotiate an agreement “to address the disparity between the non-strategic (tactical) nuclear weapons stockpiles of the Russian Federation and the United States.” Unfortunately, this disparity remains unaddressed and Russian threats to use such weapons in Ukraine underscores the importance of doing so.⁶

President Putin announced, with great fanfare in 2018, several exotic nuclear weapons including “a new heavy intercontinental ballistic missile (ICBM); a nuclear-armed hypersonic glide vehicle (HGV); a nuclear-armed, air-launched hypersonic missile; a nuclear-powered, nuclear-armed cruise missile; and a nuclear-powered, nuclear-armed submarine drone.” Most of these, like Russia’s theater nuclear weapons are not covered by the New START Treaty. The precise purpose of these new weapons remains unclear and some of them seem to reflect the pursuit of capabilities which the U.S. considered but decided not to pursue because they were too dangerous (nuclear powered cruise missiles). Nonetheless, they create additional uncertainty about “strategic stability” and must be addressed if there is to be any follow-on agreement to New START.⁷

The challenge of deterring two near-peer or peer nuclear competitors will require some rethinking about U.S. nuclear posture, declaratory policy, and potentially arms control. It does not, however, mean that we must reinvent the proverbial wheel – a theme to which we will return below.

In addition to the challenge of deterring Russia and China, the U.S. must also contend with the challenge of the growing DPRK nuclear arsenal whose diversification and sophistication is outstripping what earlier forecasts might have suggested. Open-source estimates suggest that the DPRK possesses 20 - 60 warheads (with the capability of producing roughly 6 warheads a year) although most observers seem to believe the number is closer to the lower than the higher end of the spectrum. That said, North Korea continues to produce fissile material and to diversify its means of delivery by developing ICBMs and SLBMs. Recently the DPRK adopted a new law on nuclear weapons that suggests it has developed an automated launch system that would enable a retaliatory strike even if Kim Jong Un were killed or incapacitated much like the old Soviet Dead Hand or Perimetr system. Recent activity suggesting an imminent nuclear test should serve as a reminder that the scale and scope of the North Korean nuclear effort will remain a persistent challenge for U.S. policymakers.⁸

Whether or not Iran and the U.S. ultimately agree on steps to resuscitate the Joint Comprehensive Plan of Agreement (JCPOA) that country’s progress enroute to a nuclear weapons capability continues apace. Even if the JCPOA is revived many of the limitations on Iranian enrichment capacity and capability will begin to expire within a few years and all the limits will end in 2030. At that point Iran will be a latent, if not declared, nuclear power. That could well be the death knell of the Nuclear Nonproliferation Treaty and the non-proliferation order it created – arguably the most significant accomplishment of arms control and a crucial element of U.S. grand strategy since 1945. Russia, which has traditionally cooperated with the U.S. on non-proliferation policy, even in the worst days of the Cold War has recently shown its willingness to subordinate commitment to the NPT

order to short-term considerations by blocking consensus at the NPT Review Conference to protest the final document's reference to "concern" about the situation in Ukraine. A more proliferated world will mean even more challenges to nuclear deterrence, notably to the US but to Moscow and Beijing as well.⁹

The role of new technologies like artificial intelligence, hypersonics, and cyber capabilities may complicate nuclear deterrence in ways we are only beginning to understand. Cyber intrusions into nuclear command and control systems, for instance, could undermine important assumptions that underpin our concepts of nuclear deterrence like assured second-strike retaliatory capability. Although there is a lot of hype about hypersonic weapons (it is good to remember that ICBMs enroute to their targets travel at hypersonic speeds) it is also the case that combined with other technologies – like the Fractional Orbital Bombardment system that China tested in 2021 it could provide nations with a "decapitation" option that would also undermine many assumptions about deterrence and force governments to adopt very risky launch on warning postures. Russia, and now perhaps North Korea, may have incorporated automated launch systems into their nuclear forces. Artificial intelligence may be seen by some as an antidote to decreasing warning times, but it seems highly inadvisable to put our trust in computer systems to decide whether we launch nuclear war today. These kinds of question will require the kind of sustained intellectual effort that we undertook in the Cold War but largely abandoned after 1992.

Finally, as if all of the above challenges were not enough, we must also think through the potential of a combined Russia-China attack scenario. This may seem far-fetched to some but the historical record of alliances of strange bedfellows which emerge at extremely short notice (the Molotov-Ribbentrop Pact provides one example) means that it cannot be excluded and planning against such a threat could prove extremely difficult.

What is Old but Still Relevant?

Facing these daunting challenges some observers and officials have concluded that the lessons of deterrence learned during the Cold War are no longer valid and that new circumstances require a root and branch rethinking of deterrence including the novel challenge of simultaneously deterring two near-peers. Some argue that the United States should move away from the long-term tendency to focus on what potential enemy leaders value rather than counter-value strategies and must accept that extended nuclear deterrence for U.S. allies is unlikely to hold up in the future. Before we dispense with the hard-won intellectual achievements of the Cold War and discard approaches that successfully prevented the kinds of great power conflicts that made the first half of the 20th Century the most destructive in human history, we think it is worth reasserting some continuing hardy perennial verities.¹⁰

First and foremost, it is still the case that deterrence requires holding at risk what potential enemy leaders value. Doing so is very difficult because understanding exactly how foreign policymakers understand the world and reach judgments about it is intrinsically problematic. As Henry Kissinger has noted "deterrence seeks to prevent a given course by making it seem less attractive than all possible alternatives. It therefore ultimately depends on an intangible quality: the state of mind of the potential aggressor." As a result, the United States must be able to show that even in the worst case we are still capable of

inflicting unacceptable damage after having absorbed a surprise first strike. With two near peers this will have unavoidable implications for the size of America's nuclear force.¹¹

American treaty allies still rely heavily on the U.S. nuclear guarantee. The proof of that proposition was recently demonstrated by the universal opposition of our NATO and Asian allies to mooted changes in U.S. declaratory policy considered as the Biden Administration prepared its nuclear posture review. Moreover, undermining extended deterrence remains a clear objective of both Russia and China. As long as the U.S. hopes to maintain one of its most important comparative strategic advantages in the long-term competition with Moscow and Beijing it must still assure allies that we will defend them against conventional and nuclear aggression. The credible threat of nuclear retaliation against an aggressor will necessarily remain a part of the equation.¹²

Preliminary Judgments

These reflections lead us to some preliminary judgments recognizing that much additional thought must be devoted to understanding the requirements of deterrence under today's unique conditions.

First, we must proceed with modernization of all three legs of the nuclear triad. This was actually a condition that the United States Senate attached to the resolution of ratification of New START in 2010 and the headlong modernization efforts by our two leading adversaries requires that the U.S. maintain a robust, redundant, survivable, responsive, controllable, visible deterrent force that is capable of penetrating enemy defenses to hold their forces and leadership at risk.

We must avoid a situation in which our retaliatory force can only be used to threaten adversary populations. In order to be able to absorb a first strike and retaliate against an aggressor while also holding in reserve sufficient forces to deter the other near peer may, in the future, require larger numbers of deployed warheads than currently allowed under New START. In the midst of Russia's ongoing aggression against Ukraine this will undoubtedly be very challenging, and it is hard to be optimistic about the prospects for arms control in a period where Russian nuclear threats hang heavy in the air.¹³

We must be sensitive to both strategic and theater nuclear balances. Russia and China will seek to stress and undermine U.S. extended nuclear deterrence, much as they did in the Cold War by "seeking to de-couple" the defense of the US homeland from defense of our allies. We cannot allow adversaries to make nuclear threats to deter US counter-intervention in Europe or Indo-Pacific without the means to answer in kind rather than relying on coercive diplomacy backed by the threat of strategic nuclear forces. It is for that reason that we support the lower yield options developed in the 2018 Nuclear Posture Review and believe it is unfortunate that the Biden Administration seems intent on killing the SLCM-N. We would urge the Congress to restore funding for that program whose utility has been attested to by both Chairman Milley and Admiral Richard.

Conclusion

Nuclear deterrence today faces very real and novel challenges, but that does not mean we need to start from scratch. There is much about what we have learned about deterrence

that remains valid. “U.S. conventional and nuclear capabilities together must provide Russia and China with seamless and overwhelming disincentives to their initiating attacks or engaging in nuclear escalation in the event of conflict.” We must maintain a relentless focus on the survivability of US second strike nuclear retaliatory forces even if it proves uncomfortable from the point of view of arms control. And we must continue to focus on tailored deterrent strategies for a range of nuclear armed adversaries, Russia, China, (as well as potentially a combined Sino-Russian coordinated strike), North Korea and prospectively Iran.¹⁴

As the Scowcroft Commission noted some 40 years ago:

Deterrence is not, and cannot be bluff. In order for deterrence to be effective we must not merely have weapons, we must be perceived to be able, and prepared, if necessary, to use them effectively against the key elements of [an enemy’s] power. Deterrence is not an abstract notion amenable to simple quantification. Still less is it a mirror of what would deter ourselves. Deterrence is the set of beliefs in the minds of the [enemy] leaders, given their own values and attitudes, about our capabilities and our will. It requires us to determine, as best we can, what would deter them from considering aggression, even in a crisis—not to determine what would deter us.”¹⁵

About the Center for Strategic and Budgetary Assessments

The Center for Strategic and Budgetary Assessments (CSBA) is an independent, nonpartisan policy research institute established to promote innovative thinking and debate about national security strategy and investment options. CSBA’s analysis focuses on key questions related to existing and emerging threats to U.S. national security, and its goal is to enable policymakers to make informed decisions on matters of strategy, security policy, and resource allocation.

¹ Karoun Demirjian, “U.S. General Warns of China’s Expanding Nuclear Arsenal,” *Washington Post*, September 15, 2022, <https://www.washingtonpost.com/national-security/2022/09/15/china-nuclear-weapons/>; Hal Brands, “U.S. Isn’t Ready for Nuclear Rivalry with Russia and China,” *Bloomberg Opinion*, January 30, 2022, <https://www.bloomberg.com/opinion/articles/2022-01-30/u-s-isn-t-prepared-for-a-nuclear-war-with-russia-and-china?leadSource=uverify%20wall>

² Office of the Secretary of Defense, *Military and Security Developments Involving the Peoples Republic of China 2021*, (Washington, DC: Department of Defense, November, 2021), p. 92; Demetri Sevastoulo, “China’s Nuclear Build-up: One of the Largest Shifts in Geostrategic Power Ever,” *The Financial Times*, November 15, 2021, <https://www.ft.com/content/d7c50283-18c8-4f2e-8731-970d9a547688>; Henry Sokolski, ed. *China’s Civil Nuclear Sector: Plowshares to Swords*, Occasional Paper 2102, Nonproliferation Policy Education Center, March 2021; John Grady, “Hyten: China’s ‘Unprecedented Nuclear Modernization’ Chief Concern,” *USNI News*, September 14, 2021 <https://news.usni.org/2021/09/14/hyten-chinas-unprecedented-nuclear-modernization-chief-concern>.

³ OSD, *Military and Security Developments Involving the People’s Republic of China, 2021*, p. 49; *SIPRI Yearbook 2022: Armaments, Disarmament and International Security*, (Oxford, Oxford University Press, 2022) pp. 380-390.

⁴ OSD, *Military and Security Developments Involving the People’s Republic of China, 2021*, p. 49; *SIPRI Yearbook 2022*, p. 93; Yu Xijun, ed, *The Science of Second Artillery Campaigns*, quoted in Jennifer Bradley, “China’s Nuclear Modernization: Ways Beijing Could Adapt its Nuclear Policy,” *National Institute for Public Policy, Occasional Paper*, 2:7, July 2022, pp. 27-28; Evan Montgomery and Toshi Yoshihara, “Leaderless, Cut Off, and Alone: The Risks to Taiwan in the Wake of Ukraine,” *War on the Rocks*, April 5, 2022 <https://warontherocks.com/2022/04/leaderless-cut-off-and-alone-the-risks-to-taiwan-in-the-wake-of-ukraine/> and Evan Braden Montgomery and Toshi Yoshihara, “China’s Post-Minimalist Challenge: Implications for U.S. Assurance and Deterrence,” forthcoming.

⁵ *SIPRI Yearbook 2022*, pp. 355-368.

⁶ *SIPRI Yearbook 2022*, pp. 365-366; The text of the Resolution of Ratification can be found at <https://2009-2017.state.gov/documents/organization/154123.pdf>

⁷ Matthew Kroenig, Mark Massa, Christian Trotti, “Russia’s Exotic Nuclear Weapons and Implications for the United States and NATO,” *Atlantic Council, Issue Brief*, March 2020 <https://www.atlanticcouncil.org/wp-content/uploads/2020/07/Russias-Exotic-Nuclear-Weapons.pdf>

⁸ David Sanger and William Broad, “How U.S. Intelligence Agencies Underestimated North Korea,” *The New York Times*, January 6, 2018, <https://www.nytimes.com/2018/01/06/world/asia/north-korea-nuclear-missile-intelligence.html>; *SIPRI Yearbook 2022*, pp. 417-418; Josh Smith, “New North Korea law outlines nuclear arms use, including preemptive strikes,” *Reuters*, September 9, 2022 <https://www.reuters.com/world/asia-pacific/nkorea-passes-law-declaring-itself-nuclear-weapons-state-kcna-2022-09-08/>; Michelle Nichols, “North Korea ‘Paves the Way’ for More Nuclear Tests, UN report says,” *Reuters*, August 4, 2022 <https://www.reuters.com/world/asia-pacific/north-korea-paves-way-more-nuclear-tests-un-report-2022-08-04/>

⁹ See the two recent reports by David Albright and his colleagues at the Institute for Science and International Security, https://isis-online.org/uploads/isis-reports/documents/Analysis_of_Sept_2022_IAEA_Iran_Verification_Report_Sept_12_Final.pdf; https://isis-online.org/uploads/isis-reports/documents/The_IAEA's_Iran_NPT_Safeguards_Report_-_Sept_12_2022_Final.pdf; Francis J. Gavin, “Strategies of Inhibition: U.S. Grand Strategy, the Nuclear Revolution, and Non-Proliferation,” *International Security*, 40:1, pp. 9-46

https://www.belfercenter.org/sites/default/files/files/publication/004-ISEC_a_00205-Gavin.pdf;
<https://www.state.gov/nuclear-non-proliferation-treaty-remains-strong-despite-russian-obstructionism/>

¹⁰ <https://breakingdefense.com/2022/08/the-nuclear-3-body-problem-stratcom-furiously-rewriting-deterrence-theory-in-tri-polar-world/>; Francis J. Gavin, “Time to Rethink America’s Nuclear Strategy: How to Learn the Right Lessons of the Cold War,” *Foreign Affairs*, September 5, 2022 <https://foreignpolicy.com/2021/03/23/its-time-to-fold-americas-nuclear-umbrella/>; Stephen M. Walt, “Time to Fold America’s Nuclear Umbrella Over Its European and Asian Allies,” *Foreign Policy*, March 23, 2021 <https://foreignpolicy.com/2021/03/23/its-time-to-fold-americas-nuclear-umbrella/>; for an effort to capture the achievements of Cold War strategists and explain why practitioners diverged from the late Cold War writings of nuclear strategists see Eric S. Edelman, “Nuclear Strategy in Theory and Practice: The Great Divergence,” in Hal Brands, ed., *The New Makers of Modern Strategy: From the Ancient World to the Digital Age*, (Princeton, NJ: Princeton University Press, 2023) pp. 665-691 forthcoming.

¹¹ Henry A. Kissinger, *The Necessity of Choice* (New York, NY: Harper Brothers, 1961) p. 12.

¹² Keith Payne, “Rethinking Deterrence: How and Why?,” National Institute for Public Policy, Information Series, No. 533, September 7, 2022; Demetri Sevastopulo and Henry Foy, “Allies Lobby Biden to Prevent Shift to ‘No First Use’ of Nuclear Arms,” *Financial Times*, October 29, 2021 <https://www.ft.com/content/8b96a60a-759b-4972-ae89-c8ffbb36878e>; Eric Edelman and Franklin Miller, “President Biden, don’t help our adversaries break NATO,” *The Washington Post*, November 4, 2021 <https://www.washingtonpost.com/opinions/2021/11/04/president-biden-dont-help-our-adversaries-break-nato/>

¹³ On the case for nuclear modernization – particularly the land-based leg of the Triad see Frank G. Klotz and Alexandra T. Evans, *Modernizing the U.S. Nuclear Triad: The Rationales for a New Intercontinental Ballistic Missile*, (Santa Monica, CA: RAND Corporation, 2022); Mark Gunzinger, Carl T. Rehberg, and Gillian Evans, *Sustaining the U.S. Nuclear Deterrent: The LRSO and GBSD*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2018); Stephen Cimbala and Adam Lowther, “Nuclear Modernization and the Sentinel ICBM,” *Aether: A Journal of Strategic Airpower and Space Power*, 1:2, pp. 57-68;

¹⁴ Keith Payne, “Rethinking Deterrence,” *National Institute for Public Policy*, Information Series, No. 533, September 7, 2022, p. 6

¹⁵ The Report of the President’s Commission On Strategic Forces, (The Scowcroft Commission) April 1983, pages 2-3 <https://web.mit.edu/chemistry/deutch/policy/1983-ReportPresCommStrategic.pdf>