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U.S. Nuclear Deterrence: *What Went Wrong and What Can Be Done?*

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Introduction

Contemporary U.S. plans for the modernization of nuclear forces are an approximately 15-year-old legacy of the Obama Administration. They were established at a time when many U.S. officials believed that U.S. relations with Russia and China were relatively benign and would remain so, or improve further. Correspondingly, these plans reflected no sense of urgency and, with the exception of a modified B61 bomb, nothing is soon-to-be operational. How a new presidential administration and Congress decide to (or not) adapt the U.S. nuclear posture given the unmistakable reality of a much more dangerous than expected contemporary threat environment will affect the U.S. nuclear force posture for decades, and, consequently, U.S. deterrence strategies and options.

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The United States and allies face unprecedented threats: a Sino-Russian entente, a Russo-North Korean alliance, and emerging Russo-Iranian cooperation. This represents a grouping of authoritarian powers coalescing to overturn the existing liberal global order led by the United States. What decisions and moves must a new president and Congress make in the near term to provide credible deterrence given unprecedented looming threats? The 2023 report of the bipartisan Strategic Posture Commission repeatedly called for "urgent" action to address these threats.[1] That urgency, however, is far from apparent to this point. The next president and Congress must get beyond deeply divided domestic politics to address an unprecedented level of threats to the United States and allies.

A contributor to the need for urgency is the reality that the existing U.S. nuclear rebuilding program does not add appreciably to the diversity or numbers of U.S. nuclear capabilities, and this may be insufficient to assure at least some allies that the U.S. extended nuclear deterrent remains credible. Shigeru Ishiba, leader of Japan's Liberal Democratic Party, has observed that, "Russia and North Korea have formed a military alliance, and nuclear technology is being transferred from Russia to North Korea. North Korea is strengthening its nuclear and missile capabilities, and if China's strategic nuclear weapons are added to these dynamics, *the US extended deterrence in the region will no longer function*."[2] As long as allies are a critical element of U.S. security—which is likely to be the case for the foreseeable future—U.S. nuclear policy and planning must take into account the added requirements for credible extended deterrence and the assurance of allies, which are key to alliance cohesion. As a recent study by the Norwegian Institute of International Affairs concluded, "Trans-atlantic [sic] cohesion is based on extended deterrence, and this is underlined in NATO's strategic concept and thus agreed by all member states."[3]

Washington's Grudging Threat Recognition

Washington's recognition of seriously worsening international threat conditions following the end of the Cold War was glacially slow. U.S. nuclear forces, correspondingly, reflect a 30-year "holiday from history" in which the United States has not prepared realistically for contemporary threat levels. Instead, U.S. nuclear policy has frequently been driven by hubris and naive expectations of a cooperative "new world order," and the forlorn hope that Russia and China would embrace Washington's enthusiasm for reducing the role and number of nuclear weapons.[4]

For example, the 2001 and 2010 *Nuclear Posture Reviews* (NPRs) reflected overly optimistic expectations of U.S. relations with Russia and China. The 2010 NPR stated explicitly that as a result of "fundamental changes in the international security environment in recent years," and in support of the goal of general nuclear disarmament, it placed *highest U.S. policy priority* on nonproliferation and the denial of nuclear capabilities to terrorist organizations. It clearly mandated a reordering of U.S. nuclear policy priorities and a reduction in the role and number of U.S. nuclear forces. Specifically, after listing a variety of key nuclear policy goals, including deterrence, extended deterrence and the assurance of allies, the 2010 NPR stated: "As a critical

element of our effort to move toward a world free of nuclear weapons, the United States will lead expanded international efforts to rebuild and strengthen the global nuclear non-proliferation regime—*and for the first time, the 2010 NPR places this priority atop the U.S. nuclear agenda*." (Emphasis added). Defense Secretary Robert Gates' cover letter to the 2010 NPR explains that, "This NPR places the prevention of nuclear terrorism and proliferation at the top of the U.S. policy agenda" and that reducing the "role and numbers of nuclear weapons" via U.S. arms control efforts was a key to those ends.[5]

Correspondingly, in 2012, a "Nuclear Policy Commission," chaired by Gen. James Cartwright (Ret.), former Vice Chairman of the Joint Chiefs of Staff and Commander of U.S. Strategic Command, recommended that the United States reduce its total inventory of nuclear weapons to 450 "operational" weapons given the "irrelevance" of nuclear weapons "in dealing with 21st century threats," and because "The risk of nuclear confrontation between the United States and either Russia or China belongs to the past, not the future…."[6] In 2014, a noted commentator assured that Russia's "positions don't rise to the nuclear threat level."[7] In 2015, another noted commentator argued that Russian military operations at the time were "not worth a lot of worry," and that, "The portrayal of Vladimir Putin as a grand chess master, shrewdly rebuilding the Russian empire through strength and wiles, is laughable."[8] As late as 2015, policy recommendations that typically followed such sanguine commentary were that, "the United States does not need bold action to shore up its gigantic advantage relative to Russia…. It does not need to engage in a costly arms race, given doubts that Russia can live up to its own military modernization targets." And, "Instead of struggling to cobble together a response to Russian hybrid warfare, NATO should do very little in response."[9]

Between late 2014 and mid-2017, over two hundred commentaries were published in the national press regarding the Obama Administration's nuclear modernization initiative. Three-fourths of those articles were in strong opposition.[10] They generally claimed that these programs would prove to be destabilizing, unnecessary, too costly, increase the probability of a nuclear accident, and/or encourage nuclear proliferation. Former Defense Secretary William Perry recommended *against* the Obama Administration's modernization of the ICBM leg of the triad, stating that ICBMs, "aren't necessary…they're not needed. Any reasonable definition of deterrence will not require that third leg."[11] He also argued *against* the administration's plan to develop the new Long-Range Stand Off weapon (LRSO), stating, "Because they can be launched without warning and come in both nuclear and conventional variants, cruise missiles are a uniquely destabilizing type of weapon. President Obama can lead the world to a stabler and safer future by canceling plans for a new U.S. nuclear-capable cruise missile."[12] Note here the demonstrably mistaken expectation that other states would emulate unilateral U.S. nuclear disarmament moves.

Nevertheless, the latter years of the Obama Administration saw the return of deterrence as DoD's highest nuclear priority and the administration's support for a comprehensive modernization of U.S. strategic nuclear forces (without adding quantitatively to the arsenal). During the second term of the Obama Administration, senior U.S. civilian and military officers identified Russia as a serious threat, including Russia's apparent nuclear first-use regional

strategy. The divergence from the basic orientation of the 2010 NPR was dramatic. Then Secretary of Defense, the late Ashton Carter, described Russia as a "very, very significant threat" and "an antagonist."[13] Then Deputy Defense Secretary Robert Work and Admiral James Winnefeld, then Vice Chairman of the Joint Chiefs of Staff, observed that Moscow's nuclear escalation strategy "is literally playing with fire."[14] Then Chairman of the Joint Chiefs, Gen. Joseph Dunford, described Russia as the "top military threat" to the United States.[15] Numerous senior Obama Administration officials and other commentators advanced the position that, given the significant aging of each leg of the triad and the long-recognized need for flexibility in U.S. capabilities and deterrence threats, recapitalization of the triad had become the highest DoD priority.[16] Deputy Defense Secretary Work said with no ambiguity that, "The choice right now is modernizing or losing deterrent capability in the 2020s and 2030s. That's the stark choice we're faced with."[17] Similarly, Brian McKeon, then Principal Deputy Under Secretary of Defense for Policy, observed: "The effort to modernize our delivery systems and extend the life of our warheads across the Triad and our non-strategic nuclear force will require significant resources over the next decade and beyond. But as I noted at the outset, the nuclear mission is the highest priority mission in the Department of Defense and we must prioritize it accordingly."[18] The Obama Administration ultimately moved from placing highest priority on disarmament and non-proliferation, as specified in the 2010 NPR, to prioritizing deterrence and the modernization of the strategic triad.

The 2018 NPR placed priority on deterrence given the growing aggressiveness of Russia and China and the expansion of their respective nuclear and conventional capabilities. It correspondingly endorsed continuation of the existing Obama Administration's basic nuclear modernization program, but also initiated two new "supplemental" nuclear systems to strengthen extended deterrence, a modified SLBM strategic warhead and a new sea-launched, non-strategic cruise missile (SLCM-N).[19] The subsequent Biden Administration's 2022 NPR also emphasized the unprecedented growing threats posed by China and Russia and endorsed continuation of the strategic nuclear modernization program. However, it also: walked back a long-standing requirement for "hedging" against greater-than-expected-threats and rejected the new SLCM-N initiated by the Trump Administration; emphasized continuation of the goal of "reducing the role of nuclear weapons in U.S. strategy"; and stated that arms control, *not deterrence*, is the most effective way to prevent nuclear war.[20] Understandably then, the Biden Administration almost immediately agreed to the extension of an unmodified New START Treaty.

Now, approximately 15 years after the U.S. nuclear modernization program was initiated, a world in conflict has returned, Moscow repeatedly issues reckless nuclear threats, and the risks of nuclear confrontations with Russia and China, and North Korea (and prospectively Iran) appear to have increased dramatically. As former Defense Secretary Gates has recently observed: "After a 30-year holiday from history, we face an aggressive China and Russia (abetted by North Korea and Iran) and the very real prospect of war between nuclear-armed great powers."[21] Colin Gray's generally unwelcomed observation circa 1999 has proven prescient. He ridiculed then-prevalent expectations of a cooperative New World Order and

forecast instead, "the strong possibility that world politics two to three decades hence will be increasingly organized around the rival poles of U.S. and Chinese power," and that China then "would menace Japan." He also fully expected that Russia would again confront the West militarily and "immediately would threaten independent Ukraine [and] the Baltics."[22] Washington's grudging recognition of the return of "great power competition"—a benign euphemism for renewed hostile relations with China and Russia—can be seen in the 2018 and 2022 NPRs, and in the 2023 Strategic Posture Commission's report which emphasizes the great "urgency" with which Washington now needs to acquire a nuclear deterrence posture suited to the realities of contemporary threats.

The Biden Administration has recently stated that because of the rapidly growing Russian, Chinese and North Korean nuclear threats, it may be necessary to increase the number of U.S. nuclear weapons.[23] Then Assistant Secretary of Defense for Space Policy, Vipin Narang, concluded that the current U.S. "force posture and planned modernization program is necessary but may well be insufficient" and, "We have begun exploring options to increase future launcher capacity or additional deployed warheads—on the land, sea, and air legs—that could offer national leadership increased flexibility if executed."[24] He also announced the end of the administration's opposition to the SLCM-N program initiated by the Trump Administration.

Unfortunately, given the decades of deep strategic and non-strategic force reductions and the atrophying of the U.S. nuclear infrastructure, under the existing program, the United States has a limited near-term capacity to strengthen its nuclear force posture in response to unprecedented contemporary threats. Given these threats, whatever may be the preferred nuclear force posture and characteristics for deterrence and allied assurance purposes, the reality is that U.S. options for adjustment are limited through the early 2030s by available nuclear systems and warheads.

With the exception of a small number of bombs carried by (low production rate) B-21 bombers, the only practicable way to increase deployed U.S. nuclear weapons during this decade is uploading warheads on existing delivery systems. The cost of doing so would be relatively low (transportation and installation.) If the need is to further increase U.S. targeting capabilities/options against combined Russian and Chinese target sets for deterrence purposes, additional measures could be taken, although at greater time and cost.

Consequently, it is critical to understand the difference between the desired force posture and what is likely to be practicable in the near-to-midterm (5-10 years), and to identify near-term actions and decisions that could help adjust the posture to the extent feasible in coming years. In particular, it is important to identify decisions and actions regarding the nuclear force posture and infrastructure that the next administration could/should make in the near term to help put the United States in an improved position to move toward the desired force posture.

Increasing Capability via Uploading

The 2001 NPR stated that the U.S. nuclear triad can be uploaded in "weeks, months and years."[25] The Trident submarine force could likely be uploaded in months, while the Minuteman ICBM force could take years to upload. There are some uncertainties and multiple possible upload options. The Trident force could increase from about 968 to 1,626 deployed warheads and the Minuteman force could increase from 400 to at least 980 deployed warheads, for a deployed strategic ballistic force of 2,606 warheads. (This estimate is based on May 2023 New START data placing the number of deployed U.S. warheads at about 1,368.) The upload potential for current heavy bomber platforms would be considerable if the United States retained numerous nuclear cruise missiles. However, the 2007 decision to eliminate 80 percent of U.S. nuclear air-launched cruise missiles likely reduced the relatively prompt bomber upload potential to a small number of nuclear bombs carried by the 19 B-2s and possibly a small number of cruise missiles carried by B-52s.[26] The 2023 Strategic Posture Commission's report recommended that the United States, "Initiate planning and preparations for a portion of the future bomber fleet to be on continuous alert status, in time for the B-21 Full Operational Capability (FOC) date." This could be done at moderate cost, but would require a near-term decision by the next administration.

The long-term U.S. ability to sustain upload will depend upon how many warheads are life extended. The 2022 NPR abandoned the long-standing requirement for "hedging" against future threat developments as a requirement. It only says that "…we retain the capability to upload a portion of the ICBM force…."[27] However, the next administration has sufficient time to make changes to this policy and supporting capabilities necessary to sustain upload over the long term.

The Biden Administration has revealed that, in 2023, the U.S. nuclear stockpile, defined as "active" and "inactive" weapons, was 3,748.[28] The pertinent report states, "***Active warheads*** include strategic and non-strategic weapons maintained in an operational, ready-for-use configuration, warheads that must be ready for possible deployment within a short timeframe, and logistics spares. They have tritium bottles and other Limited Life Components installed. ***Inactive warheads*** are maintained at a depot in a non-operational status and have their tritium bottles removed." (Emphasis in the original.) The inactive warheads likely could be made active and deployed at modest cost. Reportedly, about 2,000 weapons can be uploaded.[29] If necessary, it may also be possible to reactivate some of about 2,000 weapons awaiting dismantlement. Decisions, time and funding would be necessary to do the required reliability assessment. Ultimately, these warheads would have to be life extended. If more warheads are desired, fissile material "pits" from previously dismantled warheads likely could be used to build new weapons of the same types, but this is much more expensive than uploading existing warheads. When the United States restores limited pit manufacturing capability (apparently circa 2032), the stockpile could gradually be increased.

As noted, the next administration faces immediate decisions with regard to upload options, including a decision regarding withdrawal from New START. The Treaty's 1,550 deployed,

accountable warhead limit (which expires in 2026) now prevents significant upload. However, Russia has been in violation of the Treaty verification regime since 2022 by denying the United States its critical inspection rights and data,[30] and the Biden Administration has since been unable to certify Russian compliance with its numerical limits. And, in 2023, Moscow illegally "suspended" the Treaty. Consequently, the United States has the legal option of declaring a material breach of the Treaty, suspending its obligations and initiating an upload.

There are several prospective overarching goals for changes to the nuclear force posture. For example, given Russia's and China's looming entente and respective nuclear force buildups—and their apparent respective expansions of prompt, counterforce strategic targeting capabilities—it likely is necessary to increase the survivability of U.S. strategic nuclear forces. To do so in the near term, the United States could return to a policy of keeping a portion of its heavy bombers on continuous alert; with more time, the B-1 bombers could be re-nuclearized. In addition, some currently-non-deployed U.S. delivery vehicles could be deployed. The last released U.S. data (May 2023) indicated that the United States had 662 deployed and 800 deployed and non-deployed delivery vehicles.[31] It may be possible to reconstitute some of the delivery vehicles that were removed from accountability under New START. If so, Trident submarines could be reconstituted from 20 to 24 missile launchers. In the longer run, additions to the potential of the current modernization program (now limited by New START) could be employed to further increase the number of survivable, deployed warheads.

In addition, given the dramatic asymmetry in U.S. non-strategic nuclear capabilities relative to those of Russia and China,[32] and the potential value of non-strategic forces for extended deterrence, it also may be important to put the SLCM-N program on a fast track and initiate additional non-strategic programs. This could include, for example, an interim TLAM-N system—possibly putting a W-80 primary into the block 5 version of the TLAM missile. Fast tracking SLCM-N and providing an interim TLAM-N would require near-term decisions, and likely face resistance from a variety of quarters.

There are more expensive and robust options that could be exploited with time and resources. Several decisions for initiatives along this line include:[33] directing that the B-21 be nuclear capable upon IOC (a 2021 Congressional Research Service study stated in this regard that, "[B-21] nuclear qualification will also take two years or so after IOC);[34] increasing the purchase number of B-21s (and associated tankers); deploying Sentinel with MIRVs; and increasing the planned buy of Columbia Class SSBNs.

Finally, for decades, various authoritative studies and reports have recommended numerous possible actions to improve the readiness of the U.S. nuclear weapons infrastructure. For example, Thomas Scheber and the late Dr. John Harvey, former DoD officials from the Obama and Bush Administrations, advised "That establishing a nuclear weapon readiness program should be a national priority in order to provide resilience for new and unforeseen challenges ahead. The nuclear infrastructure and personnel could be called upon to diagnose and fix an unexpected reliability problem in a warhead type, replace older warheads with

similar or different warhead types, increase the number of deployed warheads, or design with different military capabilities. Currently, it is not ready to respond."[35]

Unfortunately, despite long-standing, bipartisan recognition of the need to rebuild the nuclear infrastructure, movement in this direction has been extremely slow and limited. Infrastructure modernization programs are underway, but far from complete. Near-term questions that warrant answers and decisions include, for example: does the United States need to prepare to return to some level of nuclear testing—possibly low-yield testing that Russia apparently has conducted[36]—in order to have the capabilities needed for deterrence in a new and more dangerous threat context? The next administration and Congress will have an opportunity to make decisions that help address infrastructure shortcomings that directly affect the U.S. capability to adjust to a new and more dangerous threat context.

Conclusion

A grouping of authoritarian powers, including a Sino-Russian entente, a Russo-North Korean alliance, and Russo-Iranian cooperation, is seriously challenging the existing liberal international order led by the United States, including via expansionist drives at the expense of U.S. allies and partners. This is a global threat to Western security that includes the potential for great power nuclear war, possibly escalating from a regional conflict. The United States has been extremely slow in recognizing the reality of these threats and, correspondingly, has largely clung to a nuclear modernization program that dates back almost 15 years—to an era when expectations of a cooperative new world order and movement toward nuclear disarmament dominated U.S assumptions about the future security environment. As Yale Professor Paul Bracken observed: "All were on board to oppose nuclear arms… Academics, think tanks and intellectuals quickly jumped on the bandwagon. For a time, it really looked like there was going to be an antinuclear turn in U.S. strategy."[37] Harsh realities, however, ultimately intruded on such credulous expectations. How a new president and Congress can now work to adjust the U.S. nuclear posture to fit an unprecedentedly dangerous threat context will affect the U.S. capacity to deter regional and global war for decades. White House and congressional near-term decisions and actions will either advance U.S. nuclear adjustments to help deter multiple, diverse threats, or adhere to limits and plans that may be inadequate given increasingly dangerous threat realities.

[1] Madelyn Creedon and Jon Kyl, et al., *America's Strategic Posture: The Final Report of the Congressional Commission on the Strategic Posture of the United States*, October 2023 (Alexandria, VA: Institute for Defense Analyses, 2023), available at https://armedservices.house.gov/sites/republicans.armedservices.house.gov/files/Strategic-Posture-Committee-Report-Final.pdf.

[2] See, *Shigeru Ishiba on Japan's New Security Era: The Future of Japan's Foreign Policy*, Hudson Institute, September 25, 2024, available at https://www.hudson.org/politics-government/shigeru-ishiba-japans-new-security-era-future-japans-foreign-policy. (Emphasis added.)

[3] Thanks to Dr. Michaela Dodge for bringing this study to our attention. See, Svein Efjestad, *The Future of the US Nuclear Guarantee* (Oslo: Norwegian Institute of International Affairs, 2023), p. 21, available at https://www.nupi.no/content/pdf_preview/29151/file/NUPI_Report_9_2024_Efjestad.pdf?mc_cid=eace07fcc0&mc_eid=6a56106a20.

[4] The 2022 NPR repeatedly emphasizes the goal of reducing the role of nuclear weapons in U.S. strategy and globally. See, Department of Defense, *2022 Nuclear Posture Review* (Washington, D.C.: U.S. Department of Defense, 2022), pp. 7, 16, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[5] Department of Defense, *Nuclear Posture Review Report* (Washington, D.C.: Department of Defense, April 2010); see Secretary of Defense Robert Gates' included cover letter (April 6, 2010), and pp. iii, V, VI, 15, 45.

[6] General James Cartwright (Ret.), et al., *Global Zero U.S. Nuclear Policy Commission Report* (May 2012), pp. 1, 3, 6, available at https://www.globalzero.org/wp-content/uploads/2018/09/gz_us_nuclear_policy_commission_report.pdf.ry.

[7] Walter Pincus, "Old Nukes and Old Thinking," *The Washington Post*, November 17, 2014.

[8] Fred Kaplan, "Desperate in Damascus," *Slate*, September 22, 2015, available at http://www.slate.com/articles/news_and_politics/war_stories/2015/09/vladimir_putin_sending_russian_troops_to_syria_russia_is_intervening_out.html.

[9] Joshua Rovner, "Dealing with Putin's Strategic Incompetence," *WarOnTheRocks.com*, August 12, 2015, available at http://warontherocks.com/2015/08/dealing-with-putins-strategic-incompetence/.

[10] The National Institute for Public Policy catalogued the number of publications in support of, or in opposition, to the Obama Administration's modernization programs from mid-November 2014 through mid-2017. According to this effort, there were 224 articles published opposed to, or in favor of, the administration's programs. Of these, 165 (74%) were opposed and 59 (26%) were in favor.

[11] Quoted in, Aaron Mehta, "Former Sec Def Perry: US on 'Brink' of New Nuclear Arms Race," *Defense News*, December 3, 2015, available at http://www.defensenews.com/story/defense/policy-budget/2015/12/03/former-secdef-perry-us-brink-new-nuclear-arms-race/76721640/.

[12] William Perry and Andy Weber, "Mr. President, kill the new cruise missile," *The Washington Post*, October 15, 2015, available at https://www.washingtonpost.com/opinions/mr-president-kill-the-new-cruise-missile/2015/10/15/e3e2807c-6ecd-11e5-9bfe-e59f5e244f92_story.html.

[13] Quoted in, Kristina Wong, "Pentagon Chief: Russia is a 'very significant threat,'" *The Hill*, August 20, 2015, available at http://thehill.com/policy/defense/251622-pentagon-chief-russia-is-a-very-significant-threat.

[14] "Statement of Robert Work, Deputy Secretary of Defense, and Admiral James Winnefeld, Vice Chairman of the Joint Chiefs of Staff," House Armed Services Committee, 114th Congress, June 25, 2015, p. 4, available at http://docs.house.gov/meetings/AS/AS00/20150625/103669/HHRG-114-AS00-Wstate-WorkR-20150625.pdf.

[15] Gordon Lubold, "Joint Chiefs Chairman Nominee Says Russia Is Top Military Threat." *The Wall Street Journal*, July 9, 2015, available at http://www.wsj.com/articles/joint-chiefs-chairman-nominee-says-russia is-top-military-threat-1436463896.

[16] Cheryl Pellerin, "Work: Strong Nuclear Deterrence is Critical to National Security," *DoD News*, June 25, 2015, available at http://www.defense.gov/News-Article-View/Article/604900/work-strong-nuclear-deterrence-is-critical-tonational-security.

[17] Ibid.

[18] Brian P. McKeon, "Statement of Brian P. McKeon, Principal Deputy Undersecretary of Defense for Policy," 114th U.S. Congress, House Armed Services Committee, February 26, 2015, available at http://docs.house.gov/meetings/AS/AS29/20150226/102980/HHRG-114-AS29-Wstate-McKeonB-20150226.pdf.

[19] Department of Defense, *Nuclear Posture Review*, February 2018, p. 55, available at https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF.

[20] *2022 Nuclear Posture Review*, op. cit., pp. 7, 12, 16.

[21] Robert Gates, "We Face Unprecedented Peril. The Pentagon and Congress Must Change Their Ways," *The Washington Post*, September 24, 2024, available at https://www.washingtonpost.com/opinions/2024/09/24/robert-gates-peril-china-russia-pentagon-congress-defense/.

[22] See, Colin S. Gray, *The Second Nuclear Age* (London: Lynn Reiner Press, 1999), pp. 39-41.

[23] See for example, Jonathan Landay, "Biden aide raises possible increased deployments of U.S. strategic nuclear weapons," *Reuters*, June 8, 2024, available at https://www.reuters.com/world/us/biden-aide-raises-possible-increased-deployments-us-strategic-nuclear-weapons-2024-06-07/.

[24] "Nuclear Threats and the Role of Allies: Remarks by Acting Assistant Secretary of Defense for Space Policy Dr. Vipin Narang at CSIS," August 1, 2024, available at https://www.defense.gov/News/Speeches/Speech/Article/3858311/nuclear-threats-and-the-role-of-allies-remarks-by-acting-assistant-secretary-of/.

[25] Donald H. Rumsfeld, *Annual Report to the President and the Congress* (Washington, D.C.: Department of Defense, 2002), p. 90, available at https://history.defense.gov/Portals/70/Documents/annual_reports/2002_DoD_AR.pdf?ver=2014-06-24-153732-117.

[26] See, Maj Gen Roger Burg, *PRESENTATION TO SENATE ARMED SERVICES COMMITTEE SUBCOMMITTEE ON STRATEGIC FORCES UNITED STATES SENATE, SUBJECT: ICBMs, Helicopters, Cruise Missiles, Bombers and Warheads*, March 28, 2007, available at https://www.airandspaceforces.com/PDF/testimony/Documents/2007/March%202007/032807Burg.pdf.

[27] Department of Defense, *2022 Nuclear Posture Review*, op. cit., p. 13.

[28] National Nuclear Security Administration, "Transparency in the U.S. Nuclear Weapons Stockpile," National Nuclear Security Administration, July 2024, available at https://www.energy.gov/nnsa/transparency-us-nuclear-weapons-stockpile.

[29] Jessica Rogers, Matt Korda, and Hans M. Kristensen, "Nuclear Notebook: The long view—Strategic arms control after the New START Treaty," *Bulletin of the Atomic Scientists*, November 9, 2022, available at https://thebulletin.org/premium/2022-11/nuclear-notebook.

[30] U.S. Department of State, "Russian Noncompliance with and Invalid Suspension of the New START Treaty," *Fact Sheet* (Washington, D.C.: U.S. Department of State, Office of the Spokesperson, March 15, 2023), available at https://www.state.gov/russian-noncompliance-with-and-invalid-suspension-of-the-new-start-treaty/.

[31] U.S. Department of State, "New START Treaty Aggregate Numbers of Strategic Offensive Arms" (Washington, D.C.: U.S. Department of State, May 12, 2023), available at https://www.state.gov/new-start-treaty-aggregate-numbers-of-strategic-offensive-arms-5/.

[32] See, Mark B. Schneider, *Current and Projected Growth of China's Nuclear Arsenal*, *Occasional Paper*, National Institute for Public Policy, Vol. 4, No. 10 (October 2024); and, Mark B. Schneider, *How Many Nuclear Weapons Does Russia Have?*, *Occasional Paper*, National Institute for Public Policy, Vol. 3, No. 8 (August 2023).

[33] Several of the potential decisions listed here are included in, Creedon, Kyl, et al., *America's Strategic Posture,* op. cit., pp. 48, 60-62.

[34] Jeremiah Gertler, *Air Force B-21 Raider Long-Range Strike Bomber*, Congressional Research Service, September 22, 2021, available at https://crsreports.congress.gov/product/pdf/R/R44463/14.

[35] Quoted in, Thomas Scheber and John R. Harvey, *Assessment of U.S. Readiness to Design, Develop and Produce Nuclear Warheads: Current Status and Some Remedial Steps* (Fairfax, VA: National Institute Press, 2015), pp. xi-xii.

[36] As reported in, William Perry, James Schlesinger, et al., *America's Strategic Posture* (Washington, D.C.: USIP Press, 2009), p. 83.

[37] Paul Bracken, "Whatever Happened to Nuclear Abolition?," *The Hill*, March 19, 2019, available at https://thehill.com/opinion/national-security/434723-whatever-happened-to-nuclear-abolition.

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