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A Nuclear Posture Review for the Next Administration

Building the Nuclear Arsenal of the 21st Century

Robert Peters
Research Fellow, Nuclear Deterrence and Missile Defense

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DOUGLAS AND SARAH ALLISON CENTER FOR NATIONAL SECURITY

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A Nuclear Posture Review for the Next Administration: Building the Nuclear Arsenal of the 21st Century

Robert Peters

A credible nuclear deterrent is not cheap, but it is far cheaper than fighting a nuclear war, even if the United States were to "win" such a war. Failing to deter the autocrats in Beijing and Moscow will allow them to become increasingly emboldened, increasingly threatening, and increasingly tempted to use nuclear coercion to achieve their goals, not only against their neighbors, but against America's allies—and potentially against America itself. To prevent this from happening, the United States must build and field the arsenal necessary to keep the American people safe for the next half-century. Nothing less is at stake than America's global interests and, more important, the welfare of the American people and survival of our constitutional republic.

This *Special Report* is meant to be a draft Nuclear Posture Review (NPR) for a 2025 presidential Administration. It draws on recent and legacy Heritage Foundation analysis and writing—from decade-and-a-half-old debates over ratification of New START to the recent debates regarding responses to the Chinese and Russian nuclear threats—as well as external analysis that examines the strategic challenges posed by the emerging security environment, particularly the emergence of Communist China as a nuclear peer of the United States. Specifically, it builds on the analysis contained within the 2018 and 2022 NPRs as well as the 2023 congressionally mandated Strategic Posture Commission.

This is not the only document that calls for reinvesting in America's strategic deterrent or the need to reexamine the efficacy of the current nuclear program of record.

- The Strategic Posture Commission called America's current nuclear program of record "necessary but not sufficient to meet the future threat."

- Admiral Charles Richard, former Commander of U.S. Strategic Command, has called the Chinese nuclear breakout "breathtaking."

- Louisiana Senator John Kennedy (R) has said that "the United States cannot continue inching along while China quadruples its arsenal with newer and faster weapons. The days when we could neglect our nuclear stockpile without risking our national security are over."

- Senators Deb Fischer (R–NE) and Angus King (I–ME) have written that "an adversary might believe we would not respond to the use of a low-yield tactical nuclear weapon because our only tool is massive retaliation."

Clearly, policymakers, elected officials, and military officers are concerned that the U.S. strategic deterrent may not be credible in the coming years absent substantial changes.

The purpose of this report is to provide future policymakers with a starting point that provides front-end analysis and some key analytic frameworks that could inform a future Nuclear Posture Review. Far too often, NPRs are bureaucratic exercises that involve scores of people across multiple government agencies and departments over many months.

The author believes that, given the urgency of the issues at hand and the need to field a credible deterrent in light of the deteriorating security environment, the next Administration will not have the luxury of spending almost a year writing an NPR. Instead, the next Administration should hand-select a small group of no more than 10 individuals from the Office of the Secretary of Defense, the Joint Staff, and the services, along with one representative from the Department of State and one from the Department of Energy, and task them with providing the Secretary of Defense and the Chairman of the Joint Staff with a draft NPR no later than 12 weeks after the 2025 presidential inauguration. In order to accelerate the analysis, this hand-picked team should leverage existing work on the two-peer nuclear problem, such as the 2023 Strategic Posture Commission report and the Lawrence Livermore Center for Global Security Research Study Group's report on *China's Emergence as a Second Nuclear Peer*, as well as this modest contribution.

This report is written in the same vein as a publicly facing, official Nuclear Posture Review. It is drawn from unclassified sources and is written in a way that will be accessible to those who are not necessarily subject-matter experts.

Without question, a more robust NPR based in part on classified information (to include intelligence assessments and targeting numbers) will provide the fidelity needed to assess the specific numbers of capabilities (both warheads and delivery systems) required to field a credible deterrent. However, the force structure and force mix of the future arsenal detailed below are within the ballpark of what The Heritage Foundation believes is necessary to deter America's adversaries in the coming decades.

Executive Summary

American interests are under siege by autocrats in Beijing and Moscow who are increasingly coercing their neighbors as part of a broader strategy to undermine American leadership. Increasingly, these autocrats rely on nuclear weapons to obviate their failure either to achieve objectives using military means or to strengthen diplomatic or economic interests. Consequently, both Beijing and Moscow are expanding their nuclear arsenals with the goal of achieving at least nuclear parity—and very possibly advantage—over the United States. These are the reasons why Beijing and Moscow in recent years have either rejected or abandoned all attempts at nuclear arms control or risk-reduction measures.

The United States will not let this stand. For that reason, the United States will build the nuclear arsenal needed to ensure that it can deter strategic attack and great-power war for the next half-century. The current nuclear modernization effort, while necessary, is not sufficient to achieve the deterrent effects required to deter such a great-power war or strategic attack.

The United States will therefore modestly expand and diversify its strategic arsenal while significantly expanding its non-strategic nuclear arsenal. These expansions will include a larger ballistic missile submarine (SSBN) force, additional warheads on America's ground-based strategic deterrent, and a modest road-mobile variant of the ground-based strategic deterrent. In the immediate term, the United States will upload non-strategic nuclear warheads from the ready reserve stockpile to existing theater capabilities. These immediate steps are stopgap measures until the nuclear enterprise is able to produce plutonium pits and nuclear warheads at scale—at a rate of 80 per year by 2030 and 200 per year by 2035—for the next generation of non-strategic nuclear weapons (NSNW) that are fit to purpose and meet military requirements.

But capabilities, important as they may be, are not enough. The Department of Defense (DOD) will develop a new nuclear strategy and associated employment guidance to deter two nuclear peers simultaneously. As part of this effort, the United States and its allies will discuss updating America's force posture, to include potentially forward stationing additional American nuclear weapons in Europe and introducing them to the Western Pacific and potentially to include new or long-established allies flying dual-capable aircraft (DCA) loaded with American NSNW.

Deterrence through threats of punishment is "necessary but not sufficient" in view of the threats the United States faces: For too long, the United

States has ignored deterrence threats of denial. Accordingly, the United States will expand its missile defense capabilities through an integrated missile defense architecture. Such a new approach will strengthen the U.S. deterrence posture by eliminating potentially attractive adversary escalation pathways.

The United States will not abandon arms control or nonproliferation goals, but it must recognize that for the time being, the global security environment does not lend itself to treaty-based arms control or other non-treaty-based risk-reduction or confidence-building measures. Nevertheless, given the importance of the issue, the United States will prepare for future arms control treaties and actively pursue a treaty that prohibits the placement of nuclear-armed capabilities in orbit.

None of this will be inexpensive. Nuclear weapons currently account for between 5 percent and 6 percent of the Department of Defense budget. The above additions to America's strategic deterrent may increase the share of the nuclear budget by 1 percent or even 2 percent of the total DOD budget. Ultimately, deterring great-power war—particularly nuclear war—is far less expensive than actually fighting one.

Deterring such a war from happening in the first place is the goal. Accordingly, the United States will field a credible deterrent that will convince an adversary that it should not conduct a strategic attack on the United States or its allies because the United States can hold at risk those targets that the adversary values most under even the most stressful circumstances. America must seek to convince even a desperate adversary or set of adversaries that there is no scenario in which they can achieve some net benefit, as seen through their eyes, by attacking the United States or its allies.

Put another way, the point is not to field a force that can fight and win a nuclear war—but to prevent a war and ultimately prevent strategic attack. To do that, the United States must build and field a nuclear arsenal that is credible. Failure to do so will relegate the United States to the status of a second-tier nuclear power—behind both Russia *and* China—within 10 to 15 years. Such a world—a world in which the United States suffers nuclear disadvantage and the autocrats enjoy nuclear advantage—is a world in which nuclear war is more likely, not less likely.

The Stakes

The current security environment holds extraordinary dangers for the United States. For the first time in its history, the United States is a second-tier nuclear power below Russia, with a third power—China—expanding its conventional and nuclear threats at a breathtaking pace. If the United States fails to defend its interests, which are under attack by Beijing and Moscow, the consequences could be enormous.

The growing threat from China and Russia means that the chance of open conflict with these two nations is rising, and unlike World War II, a large-scale military conflict between the great powers today has the significant potential to escalate into a large-scale nuclear war. Such a war is in no one's interest and would put the American homeland at risk of conventional and strategic attack.

While the United States does not seek open conflict with China or Russia and does not want nuclear war, failure to take the steps necessary to deter conflict could have the perverse effect of making such conflict more likely. An inability to deter conflict and nuclear coercion gives our adversaries the opportunity and further incentive to undermine American interests.

To avoid the great-power war that could become a nuclear war that threatens the continued existence of the American constitutional republic, the United States must build and field the nuclear arsenal of the 21st century. The United States government owes the American people nothing less.

A Deteriorating Global Security Environment

Over the past decade, the world security environment has deteriorated significantly. The United States' attempts during the Obama Administration to get to a world without nuclear weapons failed. American interests are under active assault as authoritarians in Beijing, Moscow, Pyongyang, and Tehran seek to undermine America's security and the security of its allies, intimidate or invade their neighbors, and expand their nuclear arsenals.

Failure to Get to a World Without Nuclear Weapons. In April 2009, President Barack Obama gave a speech in Prague laying out a vision for a world without nuclear weapons. For the next several years, through the 2010 Nuclear Posture Review, the 2010 New START nuclear arms control treaty, and multiple Nuclear Security Summits, the United States championed arms control and disarmament. Despite multiple attempts to engage in bilateral talks with Russia and China, multilateral talks with both parties, and various strategic dialogues, none of these efforts has borne fruit.

From the ratification of New START in 2010 to as recently as the summer of 2023, the United States has publicly sought Russian participation in negotiations for a follow-on to New START. The answer from Moscow has been not only a resounding "no," but also a worsening of Russian compliance with a host of nuclear arms control measures, to include increasing indicators that Russia is expanding its nuclear arsenal.

A similar story has unfolded with China. The United States, through official and unofficial channels, has sought wide-open talks with China on virtually any topic China wants—from arms control to strategic stability, crisis management, and risk-reduction measures—none of which has elicited any meaningful progress or even response from Beijing.

The United States tried to set the stage for a world without nuclear weapons, and no one followed. Quite the contrary, in fact. Due in part to its inability to secure battlefield success, Russia regularly engages in nuclear coercion against Ukraine and North Atlantic Treaty Organization (NATO) allies. China, meanwhile, is the world's fastest-growing nuclear power, building scores of new nuclear warheads every year. The United States must confront the fact that China and Russia have reversed the decades-long decline in nuclear stockpiles and that, for the first time since the Cold War, global nuclear stockpiles are expanding.

Consequently, any U.S. strategy that relies on negotiations with China and Russia to control the size of the world's nuclear arsenal is one that is not based on reality. As others have said across history, we must look at reality as it is, not as how we wish it to be.

The New Era of Great-Power Confrontation. In 2018, the DOD described the current reality as one of "Great Power Competition." Given the continued deterioration in the security environment, it is hard to describe today's environment as one of competition. "Great Power *Confrontation*" would be a more accurate, if imperfect, description of the current security environment.

Increasingly, the security environment is one of the liberal democracies in Europe, North America, and the Indo-Pacific versus a loose confederation of autocrats working if not in cooperation, at least in alignment with one another. This loose confederation of autocrats runs from Beijing to Moscow to Tehran to Pyongyang. This is not to say that the actions and decisions made in these capitals are collective or coordinated, but there is clearly some alignment of interests among the capitals, often to such a degree that the effects certainly appear to be coordinated.

This alignment of interests includes a virulent anti-Americanism and revisionist aims that include the undermining of American interests, including the security of American allies. Therefore, it is to be expected that such alignment will facilitate some degree of opportunism among these autocrats and some level of support for one another that could include verbal support, support in the U.N., or material or technical support for key programs. Such support is evidenced in the renewed relationship between Moscow and Pyongyang, in which North Korean material support for the war in Ukraine is provided as a quid pro quo for technical support for the North Korean missile program and political cover in the U.N. Security Council.

While it is unlikely that the confederation of autocrats would conduct a coordinated attack on the liberal democracies, it is entirely conceivable that a conflict in one theater would spur a conflict in a second theater as part of opportunistic aggression that would overwhelm the ability of each of these liberal democracies to come to the assistance of the others. Given that three of these autocratic states have nuclear arsenals and that the fourth is a near-nuclear power, the likely consequences of such opportunistic aggression cannot be dismissed.

The Threat from China. China is America's primary strategic challenge. Not only does it have hegemonic ambitions, but it is the only nation that has the resources, economy, and industrial base to overturn the position of the United States on the world stage.

In addition, China's newfound confidence and increasingly brazen behavior, coupled with its increasingly capable and growing conventional capabilities, are threats to our allies in the region. Such systems include a large and increasingly capable blue-water navy, hypersonic missiles, a large

and increasingly capable fifth-generation fighter and bomber force, and an enormous cruise and ballistic missile force that can threaten targets from Japan to northern Australia.

As disconcerting as these capabilities are, the most serious development of China's military capabilities is the development of its nuclear arsenal. China is the world's fastest-growing nuclear power and, as noted in the Defense Department's *2023 China Military Power Report*, "possessed more than 500 operational nuclear warheads as of May 2023—on track to exceed previous projections." In addition, it "will probably have over 1,000 operational nuclear warheads by 2030, much of which will be deployed at higher readiness levels[,] and will continue growing its force to 2035." As disclosed in 2021, China is building hundreds of missile silos in its western desert, nuclear-capable bombers, and dual-capable cruise and ballistic missile systems that can strike targets from Japan to Guam to northern Australia with nuclear or conventional weapons. In addition, it is very possible or even likely that China is exploring asymmetric nuclear capabilities, potentially to include anti-ship nuclear capabilities, hypersonic weapons that carry nuclear warheads, and fractional orbital bombardment systems (FOBS) that are loaded with nuclear munitions.

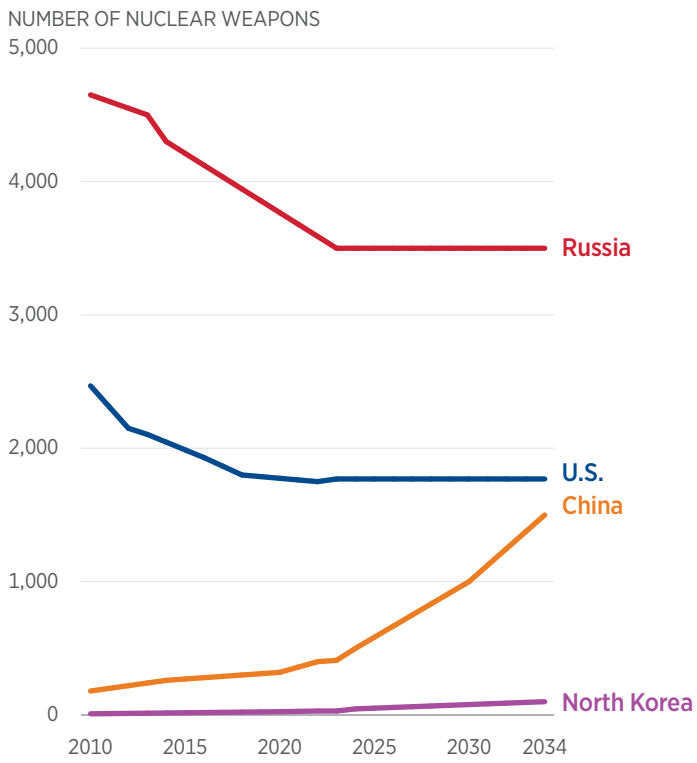
Given that the United States removed its theater nuclear capabilities from Asia and the Western Pacific following the Cold War, China today almost certainly enjoys a theater nuclear advantage over the United States. Such expansion will expand as China continues to develop and deploy new warheads capable of being delivered to targets across the Western Pacific from dual-capable missiles.

Additionally, despite maintaining a nominal "No First Use" doctrine when it comes to nuclear employment—as it has maintained since it became a nuclear power—statements by Chinese political and military leaders, as well as nuclear posture changes, suggest that Beijing is reinterpreting what constitutes a nuclear "First Use," in which case China might feel free to employ nuclear weapons first during a conflict despite its public-facing nuclear employment doctrine.

Although the United States will continue to attempt to use all tools, including diplomacy, to stave off the Chinese nuclear expansion, it should be remembered that the United States has sought for years to reduce the role and salience of nuclear weapons in the global security environment, particularly in Asia. China's nuclear breakout therefore has far more to do with China's goals and perceived security interests than it has to do with any American nuclear posture. Thus, any strategy to counter China's nuclear breakout that relies on the hope that China will reciprocate unilateral U.S. restraint is a strategy that runs counter to history.

CHART 1

U.S. Nuclear Arsenal in Need of Revitalization



NOTES: North Korea's nuclear arsenal in 2010 was estimated to consist of fewer than 10 operationally deployed nuclear weapons, and its 2022 nuclear arsenal was estimated to consist of between 20 and 30.
SOURCES: Hans M. Kristensen et al., "Chinese Nuclear Weapons, 2024," *Bulletin of the Atomic Scientists*, January 15, 2024, https://thebulletin.org/premium/2024-01/chinese-nuclear-weapons-2024/ (accessed February 26, 2024); U.S. Department of Defense, "Military and Security Developments Involving the People's Republic of China, 2023," https://media.defense.gov/2023/Oct/19/2003323409/-1/-1/1/2023-MILITARY-AND-SECURITY-DEVELOPMENTS-INVOLVING-THE-PEOPLES-REPUBLIC-OF-CHINA.PDF (accessed February 26, 2024); Hans M. Kristensen, Matt Korda, and Eliana Reynolds, "Russian Nuclear Weapons, 2023," *Bulletin of the Atomic Scientists*, Vol. 79, No. 3 (May 2023), https://www.tandfonline.com/doi/full/10.1080/00963402.2023.2202542 (accessed February 26, 2024); Asan Institute for Policy Studies, "Countering the Risks of North Korean Nuclear Weapons," https://en.asaninst.org/contents/countering-the-risks-of-north-korean-nuclear-weapons/ (accessed February 26, 2024); and Hans M. Kristensen and Matt Korda, "Nuclear Notebook: United States Nuclear Weapons, 2023," *Bulletin of the Atomic Scientists*, January 16, 2023, https://thebulletin.org/premium/2023-01/nuclear-notebook-united-states-nuclear-weapons-2023/ (accessed February 26, 2024).

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Finally, while it is unclear whether China maintains illegal chemical or biological weapons capabilities, it is very possible that it does maintain dual-use chemical or biological programs that could quickly turn into weapons programs as General Anthony Cotton, Commander of U.S. Strategic Command, recently testified. Such a development would be in direct contravention of the Chemical Weapons Convention and the Biological Weapons Convention.

The Threat from Russia. Russia under Vladimir Putin is a secondary but still highly capable adversary, particularly in the nuclear arena. All evidence indicates that while Putin is not seeking to make Russia the preeminent world power, he is opportunistic in his actions as he pursues a long-term goal of the dissolution of NATO as a means to reestablish Russian preeminence in Eastern Europe and beyond.

Over the past 20 years, Russia has invaded Georgia and Ukraine, attempted to annex neighboring territory, committed war crimes, engaged in targeted assassinations against dissidents, used chemical weapons on foreign soil, and regularly threatened the West with nuclear war.

As the war in Ukraine drags on, Russian military forces have taken severe damage, including the loss of hundreds of thousands of soldiers and many frontline tanks and aircraft, and have expended enormous amounts of ammunition, including significant quantities of long-range precision strike capabilities. However, many reports indicate that Russia has reinvested in its own defense industrial base and is producing significant quantities of munitions, intermediate-range precision strike missiles that can range most of Europe, artillery pieces, and even tanks. There also is evidence that Russia's hypersonic missile capabilities continue to mature and may give Russia the ability to strike a variety of targets with little to no tactical warning.

In addition, given Moscow's use of chemical weapons in 2018 against Russian dissidents living in the United Kingdom, it is plausible that Russia has some amount of chemical and biological weapons in direct contravention of the Chemical Weapons Convention and the Biological Weapons Convention.

Finally, Russia currently maintains rough strategic parity with the United States in the number of fielded strategic nuclear warheads—1,550 warheads—but has a significant advantage over the United States in the number of non-strategic theater-range nuclear weapons. That is, while the United States has roughly 150 theater non-strategic nuclear weapons in Europe, many estimate that Russia fields between 1,500 and 2,200 theater NSNW. Testifying in April 2024, General C.Q. Brown, Chairman of the Joint Chiefs of Staff, noted "Russia's focus on expanding and modernizing its nuclear arsenal" and its impact in "further complicat[ing] the global security dynamic."

The consequence of all this is that Russia presents three specific threats to the West.

- As it rebuilds its conventional capabilities while prosecuting its war in Ukraine, Russia will increasingly present a credible, if localized, conventional military threat on its periphery, including against NATO states that border Russia.

- Russia's hypersonic and intermediate-range missiles have the potential to inflict limited, episodic damage across a number of targets across Europe.

- Most significantly, Russia's nuclear advantage presents a grave challenge for the West. This nuclear advantage, coupled with Russia's struggles to gain significant ground in Ukraine after two years of war, means that Russia has every incentive to rely more heavily on nuclear weapons as a means of coercion and potentially to stave off a conventional battlefield defeat. It could also seek to leverage its nuclear capabilities to coerce or even directly challenge NATO members on its borders.

In short, Russia's nuclear capabilities, history of invading its neighbors, and attempts at nuclear coercion, along with Putin's goal of reestablishing Russian dominance in Eastern Europe, make Russia a relatively unpredictable and potentially high-risk threat—a dangerous combination for the state with the world's largest nuclear arsenal.

The Threat from North Korea. For three decades, North Korea has been a "rogue" state that threatens regional stability. It has a sizable military, albeit one that fields exceedingly old equipment. It does, however, maintain a sizable and increasingly capable ballistic and cruise missile inventory. In addition, North Korea's nuclear arsenal has expanded slowly but steadily for nearly two decades. It also should not be forgotten that North Korea maintains an active chemical and biological weapons program to supplement its conventional shortcomings.

Over that period, North Korea's ruling Kim family have threatened the United States, South Korea, and Japan with nuclear strikes. While such threats have been dismissed in years past, the maturation and expansion of North Korea's missile program and the increasing sophistication of North Korea's nuclear warheads mean that the United States and its allies cannot dismiss the threat from North Korea. It must be taken as a credible capability that could inflict significant and unacceptable damage on all three nations.

Despite three decades of dialogues, six-party talks, and presidential-level direct engagement, there is zero evidence that North Korea is willing to abandon its nuclear weapons program. In many ways, the Kim family has made it clear that North Korea's nuclear arsenal is its most important commodity. Given this—and the failure of every American Administration since President Bill Clinton to get North Korea to denuclearize—it is clear

that North Korea will remain a nuclear challenge at least until the Kim regime collapses.

Other Potential Nuclear Threats. While the foregoing three nuclear-armed adversaries present threats to the United States and its allies, there are other contingencies and potential adversaries that must be addressed when considering a nuclear posture.

Iran. Iran continues to support a number of malign actors, including the Houthis, Hamas, and Hezbollah, and is the source of much unrest and terrorism in the Middle East. While the Intelligence Community does not assess that Iran has an active nuclear weapons program, Iran's actions, including the expulsion of International Atomic Energy Agency (IAEA) inspectors, and the discovery of trace particles of highly enriched uranium at Iranian nuclear facilities suggest that Tehran is interested in acquiring nuclear weapons and may not be far from success.

A nuclear-armed Iran is not in America's national interest, but it is becoming more likely as Iran's nuclear program continues unimpeded. The United States will therefore continue to pursue diplomatic and multilateral options to prevent Iran from becoming nuclear-armed, but it also maintains the capability and reserves the right to use whatever means it deems necessary to prevent Iran from acquiring nuclear weapons.

Terrorists. For a variety of reasons, and despite much fear about the possible emergence of nuclear-armed terrorists, a credible threat of nuclear terrorism has yet to materialize. Nevertheless, the United States will remain vigilant with respect this potential threat and, if and when it does materialize, will use all appropriate means to neutralize terrorists who are actively seeking nuclear weapons.

The Role of America's Nuclear Deterrent

America's nuclear deterrent has a number of important functions and is spread across a triad of capabilities, including land-based intercontinental ballistic missiles (ICBMs), ballistic missile submarines, and bombers as well as a set of non-strategic nuclear weapons. The totality of America's strategic triad is being modernized to ensure that America's deterrent remains credible for the next half-century. Such a modernization, as will be shown below, is necessary but insufficient for the challenges at hand.

The Function of Our Strategic Deterrent. Nuclear weapons are the ultimate guarantor of American security. For decades, both Republican and Democratic Administrations have sought to maintain a robust strategic deterrent as a means to deter strategic attack, assure our allies, achieve U.S. objectives if deterrence fails, and hedge against future uncertainty.

To Deter Strategic Attack. The primary goal of nuclear weapons is to deter a strategic attack on the American homeland, U.S. forces abroad, and allies around the world. Such an attack is most often thought of as a nuclear attack. The American nuclear arsenal therefore is meant to convey to our adversaries that the United States has the will and capability to deter nuclear attack under any conditions and respond to such attacks with the full range of force in the nation's arsenal.

Strategic attack does not necessarily have to be nuclear, however. Other strategic, non-nuclear attacks could include a biological weapons attack on the American homeland, a significant chemical weapons employment against U.S. forces or citizens, a devastating cyberattack against critical U.S. capabilities, or other forms of strategic attack that take place in space or against space-based targets. While this list is not exhaustive, our adversaries should understand that the types of capabilities used in such an attack are less important than their impact. That is, the United States will respond to any type of attack that has a strategic effect on the American homeland, U.S. citizens, or U.S. interests with overwhelming force.

Such adversaries must know that the United States has both the capability required to carry out a strategic response to a strategic attack and the ability to identify the sources of strategic attacks, that it will hold them accountable for their actions, that attacks below the nuclear threshold can still elicit a U.S. nuclear response, and that any attempt to use nuclear weapons as a means to escalate their way out of a conflict will result in unacceptable consequences for the sources of such attacks.

It is for this reason that the United States will field and maintain a full range of nuclear and non-nuclear capabilities that can respond decisively

to strategic attack. The evolving nature of non-nuclear strategic threats, including the growing threat of genetically modified bioweapons, coupled with the need to maintain a credible extended nuclear deterrent, is why every Administration—Republican and Democrat—has refrained from stating either that the United States will never be the first to introduce nuclear weapons on the battlefield or that the sole purpose of nuclear weapons is to deter strategic attack.

To Assure Allies. For decades, the United States has extended nuclear deterrence commitments to our allies in the Indo-Pacific and Europe. Assuring our allies of America's commitments advances our mutual interests by deterring and, if necessary, defeating adversary aggression before it reaches America's shores. Assurance is built upon decades of trust, joint force deployments, strategic dialogues, and personnel exchanges. No one—not our own people, our allies, or our adversaries—should doubt the credibility and capability of America's nuclear umbrella. America's nuclear arsenal has been its most successful nonproliferation tool in assuring allies that they do not need to pursue their own nuclear weapons programs.

To Achieve U.S. Objectives if Deterrence Fails. No one seeks to employ nuclear weapons, nor would anyone do so lightly. Every U.S. President in the atomic age has considered employing nuclear weapons only in the most extreme circumstances and only for defensive use.

Credibility, however, demands that the United States must maintain a reliable nuclear arsenal that is capable of achieving a variety of effects so that if deterrence fails and America's adversaries choose to secure their objectives by using violence and force, the United States is able to achieve its objectives.

The United States will not engage in countervalue targeting against civilian population centers, but it reserves the right to employ any tools at its disposal to respond to strategic attack on the United States or its allies. In addition, the United States does not accept a "No First Use" or "Sole Purpose" declaratory policy when it comes to its strategic arsenal.

Any employment of nuclear weapons will adhere to the Law of Armed Conflict and the Uniform Code of Military Justice and will be implemented in a way that is intended to end any conflict at the lowest level of damage possible consistent with the achievement of U.S. objectives. To that end, flexible and limited nuclear employment options require a diverse set of nuclear capabilities, to include land-based, sea-based, and air-launched capabilities of varying yields. Such capabilities should seek to limit the damage our adversaries can inflict by employing credible nuclear systems combined with adaptive planning, effective missile defenses, and robust

conventional capabilities. Such non-nuclear capabilities are critically important and can complement the effects provided by nuclear weapons, but they can never replace them.

To Hedge Against Future Uncertainty. The United States has pursued and always will pursue a stable security environment that allows for freedom and prosperity for all of the world's peoples, but it also must be prepared for a significant degradation in the security environment. Just as the world security environment degraded from 2010 to 2024, it is entirely possible that further degradations will manifest in heretofore unseen ways. Nuclear weapons must therefore remain a credible deterrent against unknown and unknowable developments in the years to come.

As Russia increasingly relies on nuclear coercion as a means of "diplomacy" and as China continues on its path as the world's fastest-growing nuclear power, the role of nuclear weapons as a hedge against future uncertainty will become more important than ever. This is particularly true during a period when Russia and China have invested so heavily in their defense industrial bases and are seemingly prepared for large-scale, protracted conflict.

In order to hedge, the United States must maintain the ability to produce nuclear warheads and associated delivery mechanisms—to include missiles, bombers, and submarines—at scale rapidly in order to shore up deterrence in times of global uncertainty. This will require sustained investment both in the defense industrial base and across the nuclear enterprise itself.

The Existing Arsenal. In addition to the overall function of America's strategic deterrent and its non-strategic nuclear weapons, it is important to understand the role of each component within the existing arsenal in order to understand what specific capabilities are required to provide the foregoing functions.

A credible arsenal is one with diverse characteristics that can strike a range of targets, providing a variety of yields, with varying degrees of promptness and different types of trajectories or delivery options to ensure that nothing can prevent our ability to hold at risk the targets the enemy values most and thereby present a credible deterrence posture.

Since the 1950s, the United States has relied on a triad of nuclear systems—ICBMs, bombers, and SSBNs—as the backbone of its strategic deterrent. Each leg of this triad performs specific functions that, while different, are mutually supportive and contribute to a nuclear posture that is meaningful to our allies and adversaries alike. These functions and attributes mean that the nuclear triad is:

- **Survivable**—Ensures that the force and associated nuclear command and control are resilient and robust enough to survive adversary attack and function throughout the course of a conflict.

- **Deployable**—Is able to relocate to allied or partner territory for the purposes of political signaling or to enable military effect.

- **Diverse**—Has a number of range options, yield options, warhead and delivery types, and flight profiles; is able to engage multiple geographic locations despite adversary defenses; and is able to change targets quickly to enable adaptive planning and employment, thus giving the United States the ability to craft effective, credible, tailored deterrent strategies.

- **Accurate**—Is able to strike targets with precision, thus minimizing the effects on non-targeted areas.

- **Penetrating**—Is able to overcome adversary active defenses while still holding at risk hardened and deeply buried targets.

- **Responsive**—Has the ability to deploy and deliver military effects as quickly as possible.

- **Visible**—Has the ability during crisis and conflict to signal to our allies and our adversaries the political message of America's willingness to employ nuclear weapons.

ICBMs. The American intercontinental ballistic missile force comprises 400 Minuteman III ICBMs dispersed across a number of states in 450 silos. These missiles are the most responsive and prompt leg of the nuclear triad because of their constant readiness and direct communication with America's leadership. In addition, given the payload and speed of these weapons, they are difficult for adversary missile defenses to intercept.

Each ICBM is currently loaded with a single, high-yield, highly accurate warhead that can hold targets at risk throughout Europe and Asia in under an hour. Each ICBM also has the capacity to carry additional uploaded nuclear warhead, should there be a policy decision to upload.

In addition, the ability to launch the ICBM force promptly means that our adversaries cannot be sure that they will be able to destroy our ICBMs prior to a launch—meaning that even a large-scale nuclear strike

on America's ICBM force not only could fail to destroy the ICBMs, but also could trigger the large-scale American nuclear response that our adversaries are trying to avoid by targeting our ICBMs in the first place. In this sense, the very existence of the ICBM force contributes both to deterrence and to strategic stability because neither the United States nor an adversary has an incentive to launch a nuclear first strike on the other's homeland.

Because the ICBMs are stationed in hardened silos, they are highly survivable against all but multiple strikes from high-yield nuclear warheads. The survivability of the ICBM force means that our adversaries cannot destroy a large number of our strategic bombers and ballistic missile submarines as part of an exquisite first strike without also committing significant (and nearly prohibitive) numbers of their high-end forces to the neutralization of America's missile fields. If the United States were to abandon its ICBM force, our adversaries might be tempted to destroy our bombers and SSBNs while they are in garrison, thereby destroying a large percentage of America's strategic deterrent with relatively few weapons as part of an exquisite first strike.

America's Minuteman III force was first deployed in 1970 with an expected service life of roughly 10 years. The last Minuteman was meant to retire during the Reagan Administration; however, for more than 30 years, the United States has been using life extension programs (LEPs) to extend the Minuteman III's service life. The Sentinel Missile, the Minuteman III's replacement, is scheduled to come online in the early 2030s.

Bombers. The air leg of America's deterrent force consists of B-52 and B-2 nuclear-capable bombers. During the first Cold War, America's strategic bombers were kept on day-to-day strip alert; today's nuclear-capable bombers are de-alerted but remain ready to respond to crises and deterrence requirements.

Bombers, while not as prompt as the missile force, take hours to reach their target. This longer flight time between the decision to employ nuclear weapons and the time of weapon on target gives policymakers the ability to recall bombers while in flight—a flexibility that is unique among America's strategic deterrent capabilities.

In addition, because bombers are globally deployable, they provide an important signaling capability. This signaling can be directed both at America's allies, thus providing a visible assurance of America's extended deterrence commitment to them, and at America's adversaries as a visible demonstration of America's willingness to employ nuclear capabilities in defense of its interests and its allies. The ability to deploy nuclear-capable

bombers forward visibly and openly can demonstrate will and ultimately de-escalate tensions in a region by signaling that America is willing to use force and that an adversary may be crossing a red line.

Bombers are also able to carry a variety of munitions, including standoff air-launched cruise missiles, and a variety of gravity bombs with a number of different explosive yields. This flexibility in payload makes bombers of particular utility in the mission as a hedge against uncertainty.

The totality of the bomber leg of the nuclear triad is currently modernizing with the B-61 Mod 11 gravity bombs being replaced by the more advanced-yield B-61 Mod 12 bombs and the high-yield B-83 gravity bombs being replaced by the B-61 Mod 13 bombs. The standoff air-launched cruise missile is being replaced by the Long-Range Standoff (LRSO) cruise missile, and the B-2 stealth bomber will be replaced by the B-21 Raider bomber later this decade. These modernizations of the weapons, missiles, and the bomber itself means that the bomber leg of the triad will be more survivable in a conflict—and therefore more likely to carry out deterrence missions and deliver munitions successfully if deterrence were to fail.

Ballistic Missile Submarines. Ballistic missile submarines equipped with Trident II (D5) submarine-launched ballistic missiles (SLBMs) are the backbone of America's strategic deterrent. Taken as a whole, this sea-based leg of America's triad is the most survivable component of America's strategic deterrent. Patrolling the Pacific and Atlantic oceans, the SSBNs are virtually undetectable, which means that even if an adversary could carry out a cataclysmic attack on the American homeland, the SSBN force could respond with an assured second-strike capability.

The D5 missiles' intercontinental range and constant readiness while on patrol enable them to hold targets at risk across Eurasia without interruption. The D5s, which travel at hypersonic speeds, carry a variable loadout of warheads with varying yields, enabling the SSBN force to provide a prompt, responsive, and diverse set of penetrating options against a variety of targets. Despite being undetectable, SSBNs can be highly visible because of their ability to travel to foreign ports and provide visible displays of commitment and presence to signal America's commitment to a credible deterrent.

Today, the *Ohio*-class SSBN force, which first entered service in 1981, is in the twilight of its service life. The service life of these vessels, originally intended for 30 years, has been extended to more than 40 years. Further significant life extensions are not feasible beyond the emergency LEPs the Navy is currently considering as a stopgap measure. Beginning in the early 2030s, the *Ohio*-class submarines will be replaced by the next-generation *Columbia*-class SSBNs.

Non-Strategic Nuclear Weapons. Since the early days of the first Cold War, the United States has forward deployed low-yield theater-range nuclear weapons to nations on the front lines. Nuclear munitions were stored in Korea, and NATO pilots in Europe were trained to fly their nations' dual-capable aircraft, which could carry and employ American nuclear weapons. This was called nuclear burden sharing.

Today, NATO allies continue to host American B-61 nuclear gravity bombs as a means to deter regional aggression. NATO allies are transitioning their DCA squadrons from fourth-generation aircraft to fifth-generation F-35 DCA aircraft. Because of their stealthy nature, F-35s will have a greater chance of penetrating enemy air defenses and servicing relevant targets. This upgrade will enhance NATO's deterrent posture in the face of Russian attempts at nuclear coercion. Therefore, the United States will maintain the ability to forward deploy nuclear-capable bombers and U.S. and allied DCA globally.

In addition, the Department of Defense and Department of Energy will continue two programs established by the 2018 Nuclear Posture Review: the sea-launched cruise missile-nuclear (SLCM-N) and the low-yield SLBM.

The SLCM-N is a major defense acquisition program that is slated for fielding in 2035. It fills a hole in the U.S. arsenal that was created with the retiring of the TLAM-N nuclear Tomahawk cruise missile as directed by the 2010 Nuclear Posture Review. The SLCM-N will be launched from a submarine or surface vessel without having to rely on host nation support. It may have a range of between 1,000 and 2,000 nautical miles, making it an important intermediate-range, penetrating theater capability with a low-yield warhead.

The SLCM-N will serve as a visible or covert assurance to allies in the Indo-Pacific and Europe. Its non-ballistic trajectory, combined with its non-visible generation characteristics, will give our adversaries pause and therefore contribute to America's ability to deter strategic attacks on our allies. The SLCM-N's deployability to the Western Pacific or Europe during times of crisis would signal to our adversaries that, despite their theater nuclear advantage, they cannot coerce or gain advantage through nuclear threats or nuclear employment without risking a U.S. theater nuclear response in kind.

Having the ability to counter adversary nuclear aggression with its own theater-range low-yield warhead would also signal to America's adversaries that Washington has a clear interest in limiting the geographic scope and intensity of a nuclear conflict. In addition, a non-ballistic cruise missile launched from an intermediate range might well obviate the need to overfly

third parties—particularly nuclear-armed third parties—in order to hold adversary targets at risk.

Moreover, controlling the weapon's origin and flight trajectory allows America's adversaries to discern viable points of origin and therefore could be less likely to invite or legitimize a strike on the American homeland than a nuclear strike that originates from a strategic nuclear system, such as a U.S.-based bomber, an ICBM, or even a strategic ballistic missile submarine, would be. Relatedly, a theater-range weapon launched from an American naval vessel would mitigate the potential of inviting a reprisal not only against the American homeland, but also against allies that might have to host American nuclear weapons that are delivered by aircraft.

In this way, platforms—particularly non-air-launched platforms—that can deliver effects from within a theater of operation reduce the risk of unintended horizontal escalation of a conflict. In other words, increasing the options for delivering nuclear effects, coupled with increasing the above-noted types of nuclear characteristics, gives the United States greater flexibility in signaling and negotiating its willingness to fight a limited nuclear war without necessarily inviting retaliatory strikes on the American homeland. It is almost a certainty that this same logic has informed Russia's decision to develop its own robust theater nuclear arsenal.

The United States will continue to field the W76-2, the low-yield SLBM introduced following the 2018 Nuclear Posture Review and meant to give the United States a prompt, low-yield nuclear option delivered through a ballistic trajectory, even after SLCM-N is fielded to ensure that America fields a deterrent that is diverse in characteristics and composition.

Importance of the Modernization Program of Record. The United States began its current nuclear modernization program in 2010—when relations with China were mostly positive and before Russia set fire to the global arms control regime, invaded Ukraine, and began its now-tiresome series of nuclear threats against the West—to replace the Cold War legacy triad with new warheads, missiles, bombers, and submarines in a one-for-one manner. Every existing legacy platform or warhead would be replaced by a successor system.

Modestly amended in 2018 to include the low-yield SLBM and the SLCM-N, the 2010 modernization program is a multi-decade endeavor to produce a modernized arsenal. However, the current nuclear modernization program of record is suffering cost overruns and schedule delays in virtually every major aspect of the nuclear enterprise.

The United States has not produced new plutonium pits (the fissile material central to a nuclear detonation) at scale since Rocky Flats ceased

production in 1989, and current efforts to restart the capability are years behind schedule. The Los Alamos National Lab will begin to produce plutonium pits at a small scale in late 2024—14 years after the modernization program began—and the Savannah River site's ability to produce plutonium pits in any meaningful quantity is approximately a decade away. Other key projects, such as the Uranium Processing Facility and Lithium Processing Facility, are similarly over budget and behind schedule.

After not having built nuclear weapons or produced nuclear fissile material in almost three and a half decades, the United States is having to relearn how to enrich uranium for defense purposes. Despite some attempts by the government to shelve critical projects, such as the Tritium Finishing Facility in South Carolina and the High Explosive Synthesis, Formulation, and Production (HESFP) Facility in Texas, the modernization program of record must be not only sustained, but accelerated and expanded.

The Minuteman III ICBM was designed to retire in the 1980s. Its replacement, the Sentinel missile, will replace it beginning in the early 2030s—50 years after Minuteman III was meant to exit service. The *Ohio*-class SSBNs were designed for a 30-year life span. Those life spans will be extended to 42 years. The B-52 first flew in the 1950s as a nuclear-capable bomber and almost assuredly will do so for another 20 years. The B-2 stealth bomber, which first flew at the end of the Cold War, will be replaced later this decade by the next-generation B-21 bomber, which will be capable of performing nuclear and non-nuclear missions.

The Department of Energy's National Nuclear Security Administration (NNSA) is expected to build the first new nuclear warhead in roughly three and a half decades—the W-93—later this year. Meanwhile, most nuclear warheads in the arsenal are older than the median age of the average American. While it is safe to assume that the current force of bombers, submarines, missiles, and associated warheads will continue to perform their military function until they are replaced with the new arsenal in the coming decade, our nation cannot accept further delays in the modernization of its strategic deterrent.

In many cases, this investment in America's strategic deterrent will pay dividends for the next half-century, including the 2070s and 2080s when the new warheads, ballistic missile submarines, and many of the missiles are expected to be retired. This twice-in-a-century moment of recapitalizing our nuclear enterprise and ensuring that the cornerstone of American security remains strong is of paramount importance in protecting our nation.

If the United States is unable to field a credible nuclear deterrent by the 2030s, when China likely will reach parity with the United States and the

current U.S. ICBM and submarine force will age out, America's enemies could well become even more emboldened than they are now and believe that during an acute crisis they can escalate to the nuclear threshold while facing a hobbled and undersized American nuclear deterrent.

The Need to Revitalize the U.S. Arsenal for the 21st Century

The nuclear threats posed by China, Russia, and North Korea are growing, further degrading the global security environment. At the same time, America's current nuclear modernization program of record—long-overdue though it is—is over budget, is behind schedule, and was designed to provide effective deterrence for a world that was far more benign than the one we see today. That program of record, as the 2023 Strategic Posture Commission noted, is "necessary but not sufficient" to deter America's adversaries in a period of growing global instability. Accordingly, America must invest in a larger and more diverse strategic arsenal.

Current Program of Record "Necessary but Not Sufficient" for the Next Half-Century. As noted, the nuclear modernization program of record that includes submarines, bombers, missiles, and warheads was established in 2010 when the security environment was relatively benign and stable—but it is worth remembering just how stable the 2010 environment was in comparison with the environment of the mid-2020s.

The 2010 New START nuclear arms treaty between the United States and Russia was seen in many quarters as the beginning of a new era of arms control. At the signing of New START, President Obama remarked, "Going forward, we hope to pursue discussions with Russia on reducing both our strategic and tactical weapons, including nondeployed weapons."

In addition to deeper cuts in the Russian and American nuclear strategic and non-strategic arsenals (also known as tactical nuclear weapons), national security professionals anticipated future multilateral arms control treaties that might include China and other nuclear powers. The assumption was that modernization would ensure that the strategic arsenal remained adequate to deal with a relatively benign security environment. This point was made explicitly by General Kevin Chilton, then Commander of U.S. Strategic Command, when asked by the Senate Foreign Relations Committee whether the smaller but modernized arsenal provided for in New START was more than what was needed for the 2010 threat environment: "I think the arsenal that we have is exactly what is needed today to provide the deterrent."

Following New START, many hoped that additional nuclear arms control treaties would reduce total arsenals worldwide, eventually culminating in a world without nuclear weapons. In awarding him the Nobel Peace Prize, the Nobel Committee cited President Obama's efforts toward global "nuclear disarmament" as a major reason for his selection.

The 2010 Nuclear Posture Review identified "nuclear terrorism" as the largest threat to American security and noted that "[t]he United States and China are increasingly interdependent and their shared responsibilities for addressing global security threats, such as weapons of mass destruction (WMD) proliferation and terrorism, are growing." In one of the few passages that dealt with both China and Russia, the NPR stated that "[by] promoting strategic stability with Russia and China and improving transparency and mutual confidence, we can help create the conditions for moving toward a world without nuclear weapons...."

Upon these assumptions, now revealed to be seriously flawed no matter how well-intentioned they were at the time, the current American nuclear modernization program was built.

The New START nuclear arms treaty limited both Russia and the United States to strategic nuclear weapons and was meant to be a waypoint or stopgap measure on the path to a broader, multilateral nuclear reduction treaty that would lower both the strategic and non-strategic nuclear arsenals in Russia and the United States. However, Russia has rejected repeated attempts to engage in a follow-on treaty, and China has rejected both preliminary inquiries for nuclear arms treaties and meaningful attempts to engage in broader strategic dialogues on issues related to stability, risk reduction, or confidence-building measures. Moreover, Russia retains a non-strategic nuclear arsenal that is roughly 2,000 warheads larger than that of the United States, and China is the world's fastest-growing nuclear power and is on track to reach parity with the United States by the mid-2030s.

Add to these developments Russia's attempts at nuclear coercion and China's investment in dual-capable theater systems, and it is clear that the benign security environment foreseen in 2010—the one in which the United States decided it needed 1,550 strategic nuclear weapons arrayed on B-21 bombers, *Columbia*-class SSBNs, and Sentinel missiles to maintain strategic stability and a credible deterrent posture—never materialized.

If the 2010 nuclear modernization program of record was sufficient to ensure strategic stability in a benign security environment, it is fair to question whether or not it is still sufficient for the degrading security environment of the 2020s or the security environment that may exist in the 2030s and 2040s.

It is also fair to say that the United States should take steps to build and field a strategic deterrent—one that incorporates nuclear and conventional capabilities along with active and passive defenses—that is credible for the security environment of the next half-century. This is not to say that the United States need field a nuclear arsenal that is as large as those of Russia

and China combined, but it does need to field an arsenal that is sufficiently credible to deter our adversaries from conducting strategic attacks on or significant aggression against the United States or its key allies. Such an arsenal likely should be modestly larger and more diverse than the one we have today at the strategic level but significantly larger and far more diverse than the non-strategic arsenal that we have today.

In light of all this, the 2023 congressionally mandated Strategic Posture Commission noted that the 2010 nuclear program of record was "necessary but insufficient" and that a new posture was needed. To prepare for the emerging threat environment and ensure that the United States is able to field a credible deterrent that deters strategic attack, the United States must therefore build a new arsenal for the 21st century.

Consequences of Not Building the Arsenal for the 21st Century. If the functions of nuclear weapons are to deter strategic attack, assure allies, achieve U.S. objectives if deterrence fails, and hedge against future uncertainty, any review of nuclear posture must consider the consequences of failure: What are the consequences if America's strategic deterrent does not perform its functions? What might that look like in practice?

- *Failure to Deter Strategic Attack.* An arsenal that is not sufficient to meet deterrence requirements relevant to a variety of adversaries could lead to the first use of nuclear weapons in war since 1945, the consequences of which would be horrendous, by adversaries who believe that they had such a degree of nuclear advantage that they could employ nuclear weapons without fear of the consequences. Put another way, failure to field a credible deterrent could incentivize our adversaries to conduct strategic attacks—whether they took the form of nuclear attacks, strategic cyberattacks, or bioattacks—on the United States and its allies.

- *Failure to Assure Allies.* An arsenal that is not sufficient to meet extended deterrence and assurance requirements could lead to proliferation in some of the most volatile parts of the world, potentially unraveling alliances that took decades to build. While selective allied proliferation may be an acceptable alternative to nuclear war, it is a sub-optimal development and should be avoided if possible. A credible arsenal that deters our adversaries and assures our allies is therefore one of the strongest nonproliferation tools available to the United States.

- *Failure to Achieve Objectives if Deterrence Fails.* An arsenal that is not sufficient to achieve warfighting objectives if deterrence fails could lead to an increased chance of losing a conflict and at greater cost than would be the case with a credible deterrent. Put another way, if the American nuclear arsenal could not achieve battlefield objectives if an adversary was not deterred from carrying out a strategic attack on the United States or its allies, the United States and its allies could very possibly find themselves in a large-scale, industrialized conflict with far more casualties than would the case if nuclear weapons were used to end a conflict rapidly and decisively.

- *Failure to Hedge Against Future Uncertainty.* Failure to keep production lines operating for bombers, missiles, submarines, and warheads and a decision that more or more diverse strategic capabilities are needed as a hedge against new security threats could lead to crash nuclear programs as a means to offset or catch up with America's adversaries. Such programs would almost certainly end up being more expensive than sustained investments in America's nuclear enterprise and less likely to meet the needs of policy and strategy.

Credible Deterrence: More Than Nuclear Weapons. Credible deterrence requires more than nuclear weapons. It requires conventional forces, such as long-range precision fires, ground forces, fighter aircraft, naval surface combatants, sealift, airlift, drones, air refueling tankers, and a range of active and passive defenses that include integrated air and missile defenses as well as a distributed and resilient force posture.

Cyber networks, command and control, surveillance and reconnaissance architectures, and space-based sensors and the workforce that enables them are critical components of a credible deterrence posture. New technologies that leverage artificial intelligence and machine learning may also prove to be powerful contributors to deterrence.

This does *not* mean, however, that such non-nuclear capabilities are sufficient for a credible deterrent posture. Nuclear weapons—and their destructive power—are essential if the United States is to maintain a credible strategic deterrent.

Toward a Larger, More Diverse Strategic Arsenal. To prepare for the emerging security environment, the United States must field a credible strategic deterrent that is moderately larger and somewhat more diverse than the current arsenal. To that end, the United States will seek to field the following force by 2035.

Strategic Bombers. The United States will continue to field a mix of B-52 and B-21 nuclear-capable bombers into the 2030s. At least 100 of the B-21s will be nuclear-capable.

Within the strategic arsenal, the United States will field 200 B-61 gravity bombs of various configurations. It will also field a stockpile of 1,000 LRSO nuclear cruise missiles.

ICBMs. The United States will field of an arsenal of 450 Sentinel ICBMs, 400 of which will be silo-based. Each missile will carry a mix of one to three warheads of various yields.

The United States will also field a road-mobile variant of the Sentinel missile to ensure that it has an additional second-strike capability throughout the program life of the *Columbia*-class SSBN fleet. The *Columbia*-class boats have an expected life span of roughly 40 years, which means that they will be operating into the early 2080s.

It is assumed that the *Columbia*-class boats, built using 2020s technology, will remain undetectable throughout most of the 21st century; that U.S. adversaries will not develop new technologies with which they can detect the submarines; and that the U.S. will therefore retain an assured second-strike capability that will disincentivize U.S. adversaries from attempting a first strike.

However, these assumptions raise critical issues. It is not certain that the *Columbia*-class submarines will be undetectable a half-century from now. Nor is it certain that the technologies and capabilities developed in the 2020s will not be overcome by heretofore undeveloped detection technologies.

Because it is not certain that 2020s technology will be undetectable through the 2080s, it is in the U.S. interest to consider an additional survivable, second-strike capability as a hedge against the day when the SSBNs may no longer be undetectable. The United States will therefore field a small road-mobile Sentinel force as a hedge against an advancement in anti-submarine warfare by our adversaries. The Air Force will design and field vertical erector launchers that can be attached to heavy trucks that are capable of holding and launching either the Sentinel ICBM or modified Sentinel ICBMs as may be required. Combined with security details on accompanying vehicles, the Sentinel becomes a road-mobile ICBM—something that it is, while not impossible, exceedingly difficult to target.

Road-mobile Sentinels will be permanently stationed in garrisons on existing missile bases but will exit those garrisons and move on randomized circuits during exercises or times of crisis as a signaling tool. Air Force missileers will operate and drive them on designated public and Defense

Department roads and highways. Road-mobile Sentinels will be armed with up to three nuclear warheads of variable yield, giving them the equivalent of the striking power of a submarine-launched ballistic missile.

Road-mobile Sentinels will operate inside American territory along preapproved (but not preplanned) routes in relatively unpopulated areas, thus—given the flight times that even extremely fast missiles need to traverse from Russia or China to the United States—creating significant targeting challenges for our adversaries. Should a launch against the American homeland be detected, the ICBMs will be able to move to any number of launch sites to await further orders (to include launch or alert orders).

In this way, road-mobile Sentinels will provide the United States with a backup second-strike capability for most of the rest of the 21st century.

Columbia-*Class SSBNs.* First fielded in the 1960s, nuclear ballistic missile submarines patrol the waters of the North Atlantic and Pacific oceans undetected with only the ships' captains knowing exactly where they lie. The value of these submarines lies in their secrecy and their ability to deliver scores of nuclear warheads in a relatively brief period of time. Amazingly silent to the point of being undetectable, they represent the assured second-strike leg of the American nuclear triad.

The *Columbia*-class SSBNs will perform a function similar to that of the *Ohio*-class boats, albeit in a smaller quantity. The current program of record calls for the United States to replace the 14 *Ohio*-class SSBNs with 12 *Columbia*-class boats at the rate of one boat per year beginning in 2031. Although the Navy will field a smaller fleet, the current program of record calls for the *Columbia*-class boats to carry fewer missiles than the current *Ohio*-class SSBNs carry.

When originally deployed, the *Ohio* class operated 24 ballistic missile tubes. After the 2010 New START nuclear arms control treaty entered into force, the U.S. Navy shuttered four ballistic missile tubes to comply with the treaty. The *Columbia* class is currently programmed to have a smaller missile capacity, fielding only 16 missile tubes per boat.

With the current Trident II (D5) missile, this fleet of 12 *Columbia* SSBNs could deploy a maximum of 1,920 warheads versus the nearly 5,000 possible warheads loaded onto the original *Ohio*-class ballistic missile fleet. The new *Columbia* SSBNs are designed to be the quietest ever built and therefore safely undetectable by current technologies. Averaging between $8.4 billion and $9.2 billion per boat for the 12 to be built, they are admittedly expensive, but they will be patrolling the world's oceans and providing a continuous deterrence presence into the 2080s.

Given the increasing number and diversity of adversary nuclear weapons, which create additional targets that the United States must consider holding at risk to deter strategic attack on the United States or its allies and to hedge against future uncertainty and further degradations in the security environment, it is incumbent upon the United States to field a larger SSBN force for the next half-century to ensure that it is capable of fielding a credible deterrent.

The fundamental question facing the U.S. Navy is how the current ballistic missile submarine program of record, conceptualized in 2010, can be amended to ensure that we have a fleet of ballistic missile submarines that is sufficient to maintain a credible deterrent into the 2080s.

The U.S. Navy has a duty to ensure the viability and credibility of the nation's assured second-strike capability in a way that is flexible and responsive to the evolving threat environment. For this reason, it is time to revisit America's at-sea deterrent writ large. To this end, the United States will take immediate action on the existing *Ohio*-class SSBN fleet and longer-term actions on the *Columbia*-class fleet.

Beginning in February 2026, the Navy will reopen the missile tubes that were shuttered on *Ohio*-class SSBNs as a result of the New START treaty limitations, thus bringing the total number of tubes to 24 on each *Ohio*-class submarine. Each *Ohio* will carry the full complement of D5 Trident SLBMs akin to their pre–New START loadout.

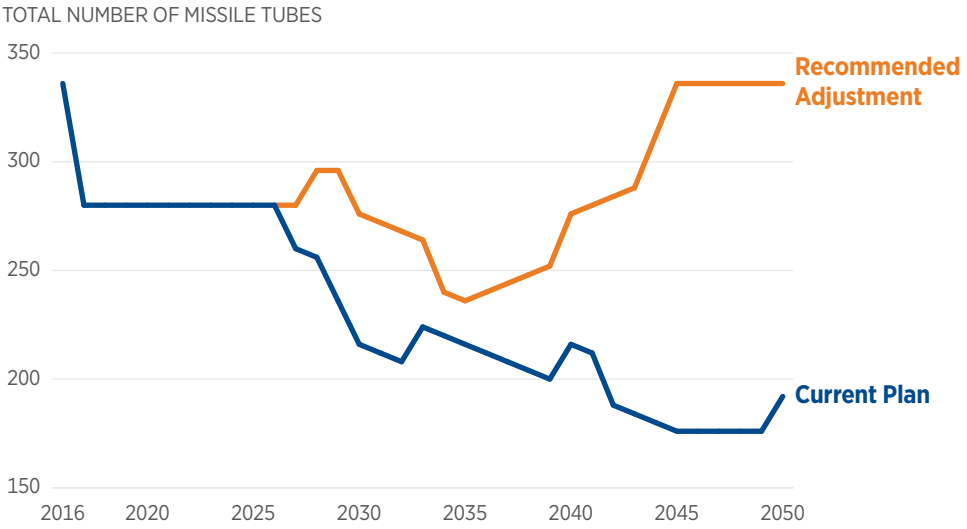
In addition, the Navy will amend the *Columbia* program of record as follows.

Columbia-class boats from hulls seven onwards will carry two additional quad packs (the modular components that carry four ballistic missile tubes per component) per boat, bringing the total number of tubes per boat to 24. Eight additional missile tubes on future *Columbia* boats will enable each SSBN to carry upwards of 40 more nuclear warheads, allowing each boat to hold more targets at risk and strengthening the United States' deterrent credibility.

This NPR recognizes the risks associated with amending the nuclear modernization program of record in the immediate term. It is for this reason that such a redesign will be effective beginning with the seventh *Columbia*, delivery of which is expected in 2036. This maximum addition of missile tubes from the seventh through 12th boats, for a total in 2042 of 240 missile tubes versus the currently planned 192 when the last planned *Columbia* is delivered, will provide the United States with a hedge against strategic risk by ensuring that the United States will not have capacity shortfalls if the U.S. nuclear arsenal of the coming decades must be increased to a level significantly higher than that of the 2030s.

CHART 2

Mitigating Lost Deterrence: *Ohio*-Class Life Extension and Additional Missile Tubes



SOURCES: U.S. Navy, Naval History and Heritage Command, "US Ship Force Levels," https://www.history.navy.mil/research/histories/ship-histories/us-ship-force-levels.html (accessed May 24, 2024); U.S. Navy, Office of the Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2025*, March 2024, https://s3.amazonaws.com/static.militarytimes.com/assets/pdfs/1710968056.pdf (accessed May 24, 2024); and authors' analysis.

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Next, the Navy will expand the *Columbia* program of record to include four additional SSBNs and will make the necessary budgetary and industrial plans for such an expansion. This programmatic expansion is necessary not only to hedge against an uncertain 21st century future and maintain a credible deterrence posture against a single nuclear peer—the driving construct that led the U.S. Navy to program for 12 *Columbia* SSBNs in 2010—but also to deter two nuclear peers in the 2030s.

Assuming that the build rate achieved by 2031 of one *Columbia* a year is sustained, the United States will build a total of 16 SSBNs by 2045. In addition, the seventh through 16th *Columbia* boats will be built with 24 missile tubes each. This will give the *Columbia* class a total of 336 more ballistic missile tubes than the 192 currently programmed.

In addition, the Navy will continue its expansion of dry docks and shipyards, along with bases, to accommodate the larger *Columbia*-class submarines.

A Significantly Larger, Far More Diverse Non-Strategic Arsenal. As noted earlier, the current nuclear force posture was designed for a benign security environment—one in which our adversaries did not engage in nuclear coercion against its neighbors and were not rapidly expanding their strategic and non-strategic nuclear arsenals. Today, additional U.S. theater, non-strategic nuclear capabilities are necessary in both Europe and the Indo-Pacific to deter adversary theater nuclear advantage and offset potential adversary conventional advantage. Such additional theater, non-strategic nuclear capabilities must be deployable, survivable, and variable in their available yield options.

While it is not necessary to match the number or diversity of non-strategic systems fielded by adversaries of the United States in order to present a credible deterrent, it *is* necessary to field a credible arsenal of variable yields that is capable of holding a variety of theater-range targets at risk from multiple launch points within the theater.

The importance of having the ability to launch nuclear strikes from within the theater should not be overlooked or discounted. If the United States needed to respond to adversary theater-range nuclear strikes with relatively high-yield U.S. nuclear strikes generated out of the American homeland, the chances of retaliatory nuclear strikes against those bases in the U.S. homeland might well increase. By fielding a capable theater nuclear arsenal that can generate effects from within the theater, the United States can reduce the chances that the American homeland will be struck with nuclear weapons and limit the chances of horizontal escalation.

This is not to say that the United States seeks a theater nuclear war—but it does seek to field a credible force that will deter our adversaries. Theater-range nuclear weapons—particularly those that are of variable yield—strengthen deterrence and therefore promote stability by limiting the chances for escalation and increasing the options for tailored deterrence strategies.

Gravity Bombs. Given the staggering Russian advantage in theater-range nuclear weapons, the United States will increase the number of B-61 gravity bombs in Europe by 75. In addition, given the Chinese dual-capable theater-range systems, particularly the nuclear-capable DF-21 anti-ship missile and the nuclear-capable intermediate-range DF-26 land attack missile, the United States will dedicate 75 nuclear weapons to the Indo-Pacific theater.

Anti-Ship Nuclear Weapons. As noted above, the United States must be able to hold adversary targets at risk in order to deter our adversaries from pursuing escalation pathways during a conflict. Increasing the types of targets that the military can hold at risk with either conventional or nuclear weapons gives the United States more flexible—and therefore more tailorable—deterrence options.

It is plausible that America's adversaries are developing theater-range, nuclear-capable anti-ship missiles. Therefore, the United States obviously has good reasons for doing so as well.

The ability to target enemy capital ships with nuclear weapons offers a leader the ability to employ low-yield theater-range weapons against legitimate military targets with virtually no chance of civilian casualties and with minimal nuclear fallout because of the maritime nature of the target set. Adding naval vessels to potential target lists further expands the attack surface from which that actor can select.

The Department of Defense will therefore field an integrated sensor and targeting package that will enable a long-range anti-ship missile to find, fix, and finish moving adversary naval assets with a nuclear warhead. An anti-ship nuclear capability will give the President more graduated nuclear response options in the face of an adversary's use of nuclear weapons, thereby better deterring the adversary's limited nuclear strikes.

Accordingly, the United States will build 100 theater-range, nuclear-capable anti-ship missiles with 50 allocated to the Indo-Pacific and 50 held in reserve for contingencies in other areas of operation.

Nuclear-Capable Hypersonic Weapons. America's adversaries are developing nuclear-capable hypersonic systems. These platforms allow them to hold key U.S. and allied targets at risk with fast-traveling and maneuverable delivery systems that are difficult to intercept with missile defenses. They are prompt, penetrating, and potentially responsive and can be delivered from a variety of platforms. Taken together, the combination of hypersonic-speed, long-range maneuverable missiles and nuclear warheads presents an asymmetric capability that could erode strategic stability and incentivize our adversaries to employ nuclear weapons first in a conflict.

By fielding a similar capability, the United States will provide the President with more options by which he can hold enemy targets—particularly those protected by missile defenses deep inside their homelands—at risk. While the development and fielding of such capabilities might not necessarily strengthen or compensate for the erosion of strategic stability triggered by adversary development of hypersonic nuclear weapons, it would address some of the asymmetry that results from such adversary capabilities.

Accordingly, the United States will field nuclear-capable variants of the Army's Long-Range Hypersonic Weapon and the Navy's Mako Multi-Mission Hypersonic Missile, fielding a total of 150 nuclear-capable hypersonic missiles.

Ground-Based, Intermediate Range Nuclear Weapons. The dissolution of the Intermediate Range Nuclear Forces (INF) Treaty because of Russian

treaty violations is unfortunate, but it is also a reality. Moreover, China's breathtaking expansion of its theater-range conventional and nuclear-capable missile force creates an opportunity for it to hold at risk maritime and ground targets from Japan to Northern Australia.

The ability to strike adversary targets with ground-based, road-mobile, intermediate-range nuclear-capable missiles complicates the adversary targeting calculus. Such a deployment would also help to deter conventional and nuclear aggression against allies by presenting adversaries with the demonstrable threat of America's non-strategic arsenal, which is forward deployed for use in the defense of America's interests and allies. Such a step would also assure U.S. allies of the credibility of the American security commitment and therefore reduce proliferation risks among key allies who enjoy but may be questioning America's extended deterrence commitments.

The United States will therefore develop and field an arsenal of intermediate range, nuclear-capable missiles that can be deployed to American and allied bases in the Indo-Pacific, European, and Middle Eastern areas of operation.

Tailored Deterrence Strategies

Deterrence must be tailored to specific actions and different actors. It is impossible simply to "have deterrence." Nuclear weapons or other strategic systems such as missile defenses do not deter in and of themselves. Effective deterrence strategies require an understanding of what the targets of deterrence value: their vulnerabilities, interests, strategic objectives, theories of victory, and strengths.

Such tailored deterrence strategies should be developed with specific actors and specific actions in mind because a deterrence strategy that is effective for one actor in one scenario may not prove to be effective against another. Consequently, the United States must have a variety of deterrent capabilities that can enable a variety of strategies keyed to specific actors. Those capabilities should incorporate flexibility, diversity, responsiveness, promptness, and the other attributes of a credible nuclear arsenal.

Effective tailored deterrence strategies communicate the costs of aggression to adversaries based on how those adversaries think about the risks and costs of both action and inaction. Tailored deterrence strategies should be developed with input from regional experts, operations specialists, intelligence analysts, strategists, diplomats, and planners.

A Tailored Deterrence Strategy for China. China is not only the world's second largest economy, with a gross domestic product (GDP) that is 70 percent as large as that of the United States, but also the world's fastest-growing nuclear power. Its "breathtaking" nuclear expansion is part of a larger military buildup that includes the doubling of its missile arsenal in recent years, the building of the world's largest navy, and large-scale production of fifth-generation fighters.

This military buildup seems to be part of a strategy aimed at reaching military parity with the United States over the coming years, forcing unification with Taiwan, and ultimately supplanting the United States as the world's preeminent power. Increasingly, China is fielding a survivable second-strike capability with the expansion of its ballistic missile submarine fleet. It also has built hundreds of ICBM silos in its western desert and is radically expanding its ability to range the American homeland and targets across the Western Pacific from Japan to Australia to India.

Coupled with its conventional capabilities designed to counter the ability of the United States to project power into the Western Pacific, China is posturing itself to supplant U.S. hegemony in the Western Pacific with the ultimate goal of replacing the United States as the preeminent power on

the world stage. To do so, however, it must assert its dominance over the democracies of Australia, Japan, Korea, the Philippines, and Taiwan.

For these reasons—and myriad others—the United States will develop and field a mix of conventional and strategic capabilities, based in the U.S. homeland and forward deployed across the Indo-Pacific, to deter Chinese aggression against U.S. interests and its allies. These capabilities are intended to deter China from initiating large-scale conventional aggression against its neighbors and from employing nuclear weapons to achieve strategic or operational objectives.

Specifically, the United States will field the capabilities that are necessary to hold at risk what China's leaders value most: themselves, their political support structures, and key elements of their nuclear and conventional forces, to include Chinese nuclear capabilities, key amphibious targets, and specific command and control nodes. Of most immediate concern is the need to mitigate or obviate China's theater nuclear advantage. With this in mind, the United States will forward deploy theater-range ballistic and non-ballistic nuclear capabilities that can be employed from maritime, ground, or air platforms; missile defenses; and significant amounts of long-range conventional fires. Chinese maritime targets central to the employment of amphibious forces will be of central American and allied concern.

A Tailored Deterrence Strategy for Russia. Russia's 2022 invasion of Ukraine is brutal, illegal, and destabilizing to European security. Russian forces have terrorized the people of Ukraine, committing war crimes along the way. Russian leaders have engaged in nuclear coercion and intimidation against the West, most likely in response to their failure to achieve a rapid victory over Ukraine. And as noted, Russia maintains an active stockpile of non-strategic nuclear weapons that is 10 times that of the United States.

However, Russia cannot pose the same level of threat that the Soviet Union posed at the height of the Cold War. Today, Russia's economy is one-tenth the size of Europe's, whereas during the Cold War, it was one-third the size of the U.S. economy. Russia's population is smaller by 100 million people than it was in the days of the Soviet Union, while NATO's population is three times larger than it was when the Alliance was founded—and its economy is 40 times larger. And for all intents and purposes, NATO has "absorbed" almost all of the nations of the Warsaw Pact with the exception of the Russian Federation.

While Russia poses a localized threat along its borders and can conduct limited strikes against multiple targets across Europe because of its significant investments in theater-range missiles, it cannot supplant the U.S.-led order on the world stage.

The United States will field the strategic deterrent necessary to stave off a Russian strategic attack on the U.S. homeland and will field a non-strategic nuclear force that is sufficient to deter limited theater nuclear attacks across Europe while encouraging European allies to take the lead for the conventional defense of Europe.

A robust European-led conventional force, an integrated air and missile defense posture, and a more diversified and expanded theater nuclear force in Europe—one that moves beyond the nuclear sharing agreements of the Cold War and embraces the critical role that new NATO allies can play—will deter Russia by ensuring that Russia's leaders understand that any nuclear employment on their part will not achieve their hoped-for strategic or operational objectives: They will see no benefits to be derived from nuclear employment—only costs to be borne.

American nuclear weapons, coalition missile defenses, and European-led conventional forces will be of crucial importance in deterring aggression and nuclear blackmail. American theater-range nuclear systems in theater will increase and diversify in storage sites with newer NATO members that abut Russian territory hosting and being prepared to deliver U.S. nuclear weapons as part of the NATO DCA mission. This diversification of basing will create additional targeting challenges for Russia, denying it the ability to concentrate large strikes on suspected nuclear weapons sites.

Although B-61 gravity bombs will remain a key part of NATO's theater deterrent in the coming decades, NATO will also field a modern standoff, maneuverable theater-range nuclear-armed missile that is far more survivable against enemy air defenses. NATO's nuclear forces will hold Russian leadership, strategic forces, war-supporting industry, and associated internal security forces and command and control forces at risk, while forward deployed conventional forces will deny Russian conventional attacks any operational benefits. By developing a modern, integrated air and missile defense architecture in Europe, NATO will mitigate Russia's long-range precision strike capabilities and limit the nuclear threat to much of Europe.

No coalition can defeat a unified NATO. A unified Alliance that is armed and resourced appropriately and takes security challenges seriously is more than enough to deter Russian adventurism and nuclear blackmail—even as the United States focuses on its primary adversary: China.

A Tailored Deterrence Strategy for North Korea. North Korea remains the world's largest open-air prison, run by one of the most reclusive and brutal families in recent memory. It is a regime that engages in assassination, counterfeiting, cybercrimes, and murder for hire. It has

clandestine chemical and biological weapons capabilities that are almost assuredly meant to target the people of South Korea.

While North Korea's conventional capabilities have languished in comparison to those in the United States, South Korea, and Japan, its missile and nuclear forces continue to advance and modernize at a steady pace. North Korea openly and regularly threatens the United States, South Korea, and Japan with nuclear strikes. And while a complete, verifiable, and irreversible nuclear-free Korean Peninsula is a long-standing U.S. goal, the United States accepts that for the time being, North Korea will retain its nuclear capabilities and that this may not change until the Kim regime is relegated to the ash heap of history.

Survival of the Kim regime is of paramount importance to North Korea's leaders and is what they ultimately value. History shows that the Kim family is willing to sacrifice untold numbers of innocent civilians to maintain its grip on power.

The United States will therefore continue to field capabilities that can hold at risk the Kim family, key regime control nodes such as internal security forces, and North Korea's own nuclear capabilities. Given that North Korea houses many of these components in hardened and deeply buried targets, the United States will field the requisite capabilities to hold such targets at risk. The United States will also pursue further integration and expansion of missile defenses with Japan and South Korea as a means to intercept missile threats. In addition, the United States retains the right and capabilities to engage North Korean missile threats prior to launch in a situation in which it has sufficient warning of a North Korean strategic attack.

The United States will expand its bilateral and multilateral consultative dialogues with South Korea and Japan. Such discussions will include the implications of the reintroduction of U.S. non-strategic nuclear weapons into theater and the potential for storage of said munitions within allied bases within the theater.

Ultimately, the Kim family must understand that any use of nuclear weapons by North Korea will result in the destruction of their regime.

Tailored Deterrence Strategies for Other Actors. While China, Russia, and North Korea are the United States' nuclear-armed adversaries, the United States must nevertheless deter non-nuclear-armed actors from carrying out strategic attacks.

Iran is the most serious non-nuclear-armed actor challenging American interests and is the world's primary state sponsor of terrorism. Its sponsorship of Hamas, Hezbollah, and the Houthis—all of which are conducting operations at the bidding of Tehran—has spread havoc across the

Middle East and the Red Sea. It continues to develop and employ cruise and ballistic missiles against our allies in the Middle East—most concertedly against Israel.

Finally, Iran continues to pursue nuclear weapons through its enrichment of uranium to levels unneeded for any purpose other than for military application. It is not in America's—or the world's—interest for Iran to become a nuclear weapon state. The United States will therefore field the capabilities needed—and reserves the right—to destroy Iran's nuclear capabilities. Iran must also understand that the United States will carry out strategic responses if the regime in Tehran attempts to carry out non-nuclear strategic attacks on the United States or its key allies.

Enhanced Global Posture

While the United States, in coordination with its allies, must take steps to strengthen deterrence and shrink the deterrence gap, building more capabilities is not sufficient to address the problems that face us. Global posture must change as part of a broad strategic reset. To this end, the United States, working with its allies in Asia and Europe, will reexamine the forward stationing of non-strategic nuclear weapons in both theaters to help stabilize the deteriorating security environments. The United States will also examine the return to intermittent "strip alerts" for our strategic bomber forces, establish a new U.S.-based and globally deployable DCA squadron, and develop procedures for the regular movement of road-mobile ICBMs.

Updating NATO's Nuclear Posture. During the Cold War, the United States had nuclear weapons stationed on the front lines. In addition to ground-launched systems stationed in Germany, the United States forward deployed fighter-bombers certified to carry nuclear gravity bombs. The United States also trained allied pilots and certified allied aircraft to carry and employ U.S. nuclear weapons in the event that NATO found itself in a nuclear conflict with the Warsaw Pact. The mission of such aircraft and munitions was to deter and, failing that, rapidly defeat Warsaw Pact aggression against NATO members. Today, NATO maintains a residual nuclear capability of U.S. and allied fighter-bombers prepared to employ nuclear weapons.

However, what was forward deployed and near the NATO borders in 1989 is today in the center of NATO, and the nuclear gravity bombs and nuclear-capable aircraft remain in the same bases where they were stationed when the Berlin Wall fell. Germany and Italy, which were on the front lines of the Cold War, are today upwards of 1,000 nautical miles or more from the Russian threat to NATO. Fighter-bombers that would carry nuclear weapons would almost certainly have to conduct an aerial refueling as part of the employment of a nuclear weapon against non-NATO targets.

Additionally, there is a growing risk of nuclear "haves" and "have-nots" within NATO, with only those allies that were part of NATO during the Cold War participating in the nuclear DCA mission while newer member countries, which are now the front lines of the Alliance and arguably most at risk of Russian aggression, are relegated to non-DCA status.

In view of Russia's attempts at nuclear coercion and even nuclear blackmail against Ukraine and against NATO member states, it is time to reexamine the utility of a Cold War nuclear force posture and particularly Cold War–era basing.

Accordingly, the United States, in concert with its allies, will examine the forward deployment of nuclear-capable fighters and the storage of nuclear gravity bombs. This examination will include the training of new DCA pilots in new NATO DCA-participating nations, to include those nations currently defending NATO's borders from potential Russian aggression, such as Poland and Finland. The United States and its NATO allies will also examine the utility and implications of diversifying the Alliance's nuclear arsenal within Europe to include not only nuclear gravity bombs, but also long-range air-launched nuclear cruise missiles stationed in Europe.

While updating NATO's deterrence posture may be expensive, it is necessary as part of a 21st century deterrence posture that is both credible and effective at deterring Russian aggression.

Forward Stationing Non-Strategic Nuclear Weapons in Asia. At the end of the Cold War, the United States unilaterally removed its non-strategic nuclear weapons from Asia as part of the Presidential Nuclear Initiatives. In the 2010s, the United States officially retired the TLAM-N, the final nuclear system that was seen by many allies as the "Asian" deterrence capability.

While the development of the SLCM-N is a good step toward providing a theater-range nuclear deterrent in the Western Pacific, allies in Korea and increasingly Japan are questioning the viability of America's extended deterrent commitments. Such questions could cause those nations to seek indigenous nuclear weapons capabilities. Further, the continued expansion of both Chinese and North Korean nuclear weapons could further destabilize an already tense region.

The United States will therefore discuss with our allies in Korea the reopening of nuclear weapons storage sites on the Korean Peninsula and potentially forward deploying NSNW to Korea. Such a move is not taken lightly, but given that the United States and its allies have attempted for two decades to engage in denuclearization discussions with North Korea only to be rewarded with continued threats of nuclear holocaust against the United States, South Korea, and Japan, it is time for a different approach.

Updating America's Nuclear Posture at Home. In addition to updating its nuclear posture in Europe and Asia to reflect the changed global security environment, the United States will take steps at home.

The Air Force will regularly conduct strip alert exercises so that nuclear-capable bombers are ready to execute deterrence operations at a moment's notice. The Air Force will also certify an additional squadron of U.S.-based F-35s as nuclear capable. This additional squadron will be globally deployable and ready to conduct deterrence operations from allied nations or oversees American territory on order. Finally, the Air Force will

develop the tactics, techniques, and procedures needed to enable exercises for road-mobile Sentinel operations.

While these actions represent an increase in nuclear deterrence activities from levels over the past 30 years, they nevertheless constitute a deterrence posture that is more relaxed than the posture the United States maintained throughout most of the Cold War.

Prospects for Arms Control and Nonproliferation and the Role of Extended Deterrence

For more than half a century, arms control—both treaty-based and non-treaty-based confidence-building and risk-reduction measures—and nonproliferation have been vital components of America's national security framework as well as its deterrence architecture.

Treaty-based nuclear arms control can be a stabilizing factor in international security. Transparency measures, data exchanges, and human interactions can serve to increase trust and clarify misunderstandings between nuclear powers, and the reduction of fielded nuclear capabilities and limitations on types of nuclear testing can likewise be stabilizing, particularly during times of crisis.

Unfortunately, because of Russia's repeated treaty violations and China's refusal to engage in meaningful dialogues on strategic stability, the United States will soon enter a period in which there are no significant nuclear arms control treaties in place. It is for this reason—as well as the deteriorating global security environment—that the United States must revitalize its strategic arsenal for the 21st century.

Prospects for Nuclear Arms Control. Given Russian violations of the INF Treaty and the Conventional Forces in Europe Treaty, its suspension of the New START treaty, and its refusal to discuss reductions of or caps on non-strategic nuclear weapons, the prospects for arms control are dim. Ronald Reagan's maxim "trust but verify" cannot be implemented while Russia wages a brutal war of conquest in Ukraine and engages in nearly weekly nuclear threats against the West, and because Russia's treaty violations have created a situation in which one side has adhered to treaty limitations and the other side has not, American policymakers and lawmakers will be loath to support yet another nuclear arms control treaty with Vladimir Putin.

The United States welcomes the opportunity for dialogue with both Russia and China as a way to strengthen strategic stability and hopes that China—despite refusing to engage in any kind of meaningful arms control discussions for the past half-century—will accept American invitations to engage in meaningful strategic stability discussions.

All Americans look forward to a day when nuclear weapons are no longer necessary—but for the near future, the United States acknowledges that the prospects for treaty-based arms control and non-treaty-based risk-reduction measures are indeed dim.

Reality of Arms Control and Nuclear Nonproliferation. While the United States embraces the Nuclear Nonproliferation Treaty and will always

champion nonproliferation efforts, it rejects the Treaty for the Prohibition of Nuclear Weapons and will not seek ratification of the Comprehensive Test Ban Treaty. Neither of these treaties is in America's interests given the ongoing global nuclear expansion and increasing willingness of autocrats to attack American interests. However, as the United States builds new nuclear weapons, it will do so in a way that seeks to minimize the need for any kind of critical nuclear testing.

At the same time, the United States will be ready for future arms control agreements once the security environment has changed and treaty-based arms control and meaningful and mutually beneficial risk reduction measures are possible. To this end, the United States will be prepared to develop and conduct future inspection, monitoring, and verification technologies and procedures. However, for the time being, treaty-based arms control will be a secondary concern: Our primary concern must be the need to field capable strategies, postures, and capabilities that can ensure a credible deterrent.

Modernizing and expanding the American nuclear arsenal to meet U.S. deterrence requirements is the only way the United States can then enter into arms control agreements, as the United States first needs to field an arsenal that can bring the adversaries to the negotiating table. Further, the United States cannot evaluate an arms control proposal or framework without first knowing what our nation needs to stabilize the global security environment and what will deter our various adversaries. Nor can future arms control agreements be limited to systems that are defined by ranges or types of nuclear weapons; future arms control treaties of necessity will consider all nuclear systems, from ICBMs to short-range and low-yield systems.

This is not to say that the goal of an American nuclear expansion is simply to build bargaining chips that can be negotiated away. The goal is to obtain the forces and capabilities that the United States needs to achieve *all* the roles of nuclear weapons in pursuit of its and its allies' security. But it cannot be ignored that a secondary benefit of this drive for security through an expanded and diversified arsenal is that it provides something that is currently missing: a reason for Russia and China to negotiate arms control treaties.

Until the United States gets to that point, all non-treaty-based arms control activities, including confidence-building measures, strategic dialogues, data exchanges, and site visits, should be considered on a case-by-case basis and be done only in a way that ensures reciprocity. It gains the United States nothing (and almost certainly undercuts our position) to show Russians and Chinese America's test facilities, missile silos, etc. or give them data if they fail to reciprocate such actions.

Finally, the United States will pursue treaty-based options to prohibit nuclear weapons and fractional orbital bombardment systems in space. Our adversaries must know that the placement of such systems in orbit is unacceptable to the United States and that the United States reserves the right to preemptively destroy any platforms that can deliver a strategic attack on the United States or its allies from orbit.

The Role of Extended Deterrence and Nonproliferation. A robust and credible nuclear deterrent, coupled with forward deployment of nuclear weapons in Europe and Asia, has gone far to dissuade allied states from developing indigenous nuclear capabilities.

The decision to redeploy non-strategic nuclear weapons forward to key allies whose territory is close to the territory of nuclear-armed autocrats should be made not only for purposes of deterrence and military utility, as critically important as they are, but also as a nonproliferation tool meant to prevent further proliferation.

The United States must always remember that the greatest tool of nonproliferation is the American nuclear umbrella and the stabilizing force it plays—both among adversaries and among allies. The United States will therefore maintain its extended deterrence commitments to its allies in NATO, Japan, Korea, and Australia.

The Role of Missile Defense

Just as arms control is a component of deterrence and strategic stability, so is missile defense. The United States will therefore continue to develop an integrated missile defense architecture that will both reduce limited missile threats posed by rogue, nuclear-armed autocrats and address threats posed by America's nuclear peers.

Missile Defense in America's Deterrence Architecture. The United States for years has fielded a modest missile defense architecture capable of intercepting limited ballistic strikes on the North American homeland. As articulated in the 2025 *Missile Defense Review*, the United States will move away from a limited missile defense mission that focuses on rogue actors and focus more on limiting the ability of actors—particularly nuclear peers in Beijing and Moscow—to carry out low-escalation pathway strikes on the American homeland.

A low-escalation pathway is one in which an adversary believes it can carry out a handful (fewer than a dozen) low-yield nuclear strikes against purely military targets in North America during a high-intensity military conflict. The goal of such limited strikes would be to demonstrate to the United States that our adversaries are willing to strike our homeland and destroy so many critical military targets that it will be difficult for the United States to continue to prosecute the war.

Ideally, such a pathway would be damaging enough to convince Washington of the adversary's commitment and will, do enough damage to make the strikes operationally relevant, but keep the threshold of pain low enough that a massive retaliation from America's nuclear arsenal is far from a foregone conclusion. Therefore, by keeping the number of strikes limited to fewer than a dozen warheads, an adversary country might be tempted into believing that it can achieve victory in a conflict with the United States without losing its regime.

Fielding a credible integrated missile defense architecture that can intercept upwards of 100 inbound threats would present our adversaries with the prospect of having to launch more than 100 warheads at North America in order to overwhelm American missile defenses and achieve a limited effect of fewer than 12 nuclear detonations.

While autocrats in Beijing, Moscow, and Pyongyang might be tempted to employ 12 nuclear weapons against targets in the United States in a high-risk scenario—and it would be very high-risk indeed, for the United States would almost assuredly respond with its own nuclear arsenal), they would be almost assuredly unwilling to employ more than 100 nuclear weapons against the American homeland solely for limited aims. Such an attack—even

if unsuccessful due to an effective integrated missile defense architecture—would surely trigger an overwhelming response from the United States.

In this sense, a credible missile defense architecture becomes stabilizing as it removes the incentives for an adversary to risk what it perceives to be a low-escalation-pathway attack on the American homeland.

Components of an Integrated Missile Defense Architecture. An integrated missile defense architecture has three principal components: an underlayer, ground-based interceptors, and an overlayer. This integrated missile defense architecture will be part of an integrated constellation of interceptors at home and overseas and will be coordinated and commanded by a single missile defense commander.

Underlayer. The United States will field a missile defense underlayer of terminal high altitude air defense (THAAD), Patriots, and AEGIS capabilities at key sites, to include Washington, DC, and key military installations in the United States and overseas. This underlayer will intercept threats at high-value sites that are most likely to be targeted by enemy missile threats. Due to the range of these systems, the underlayer is unable to defend more than a limited area. For this reason, it will be deployed to protect key sites.

Ground-Based Interceptors. The United States currently fields 44 ground-based interceptors (GBIs) in Alaska and California. These are scheduled to be augmented by around 20 far more capable next-generation interceptors (NGI). GBIs are capable of intercepting threats that are exoatmospheric and moving at high velocity.

The United States will expand the number of GBIs to roughly 100, partly by replacing existing GBIs with NGIs. The United States will also open a third or even a fourth site to host these additional interceptors on the East Coast.

In addition, the United States will field a global hyperglide vehicle defense capability. Such a capability will be effective not only against a variety of cruise missiles, but also against hypersonic threats that could target fixed or mobile targets.

Overlayer. The United States will field a space-based overlayer that includes sensors and interceptors that can track and destroy threats in the boost phase. Such interceptors—be they energy-based or kinetic interceptors—will be purely defensive in nature and able to destroy enemy missiles only in the boost phase.

Taken together, an integrated missile defense architecture strengthens America's ability to deter adversaries from escalating to the nuclear threshold by convincing them that the United States is able to deny them the ability to escalate their way out of a conflict. In this sense, missile defense can play a key role in our nation's deterrence posture.

FIGURE 1

A Layered Missile Defense System

To more effectively defend the U.S. against missile attacks, key sites should be protected with an integrated defense system that consists of multiple layers of protection. If one layer is unable to neutralize a threat, another layer can be deployed. Here is how such a system might look.

1 OVERLAYER:
Networked Satellites

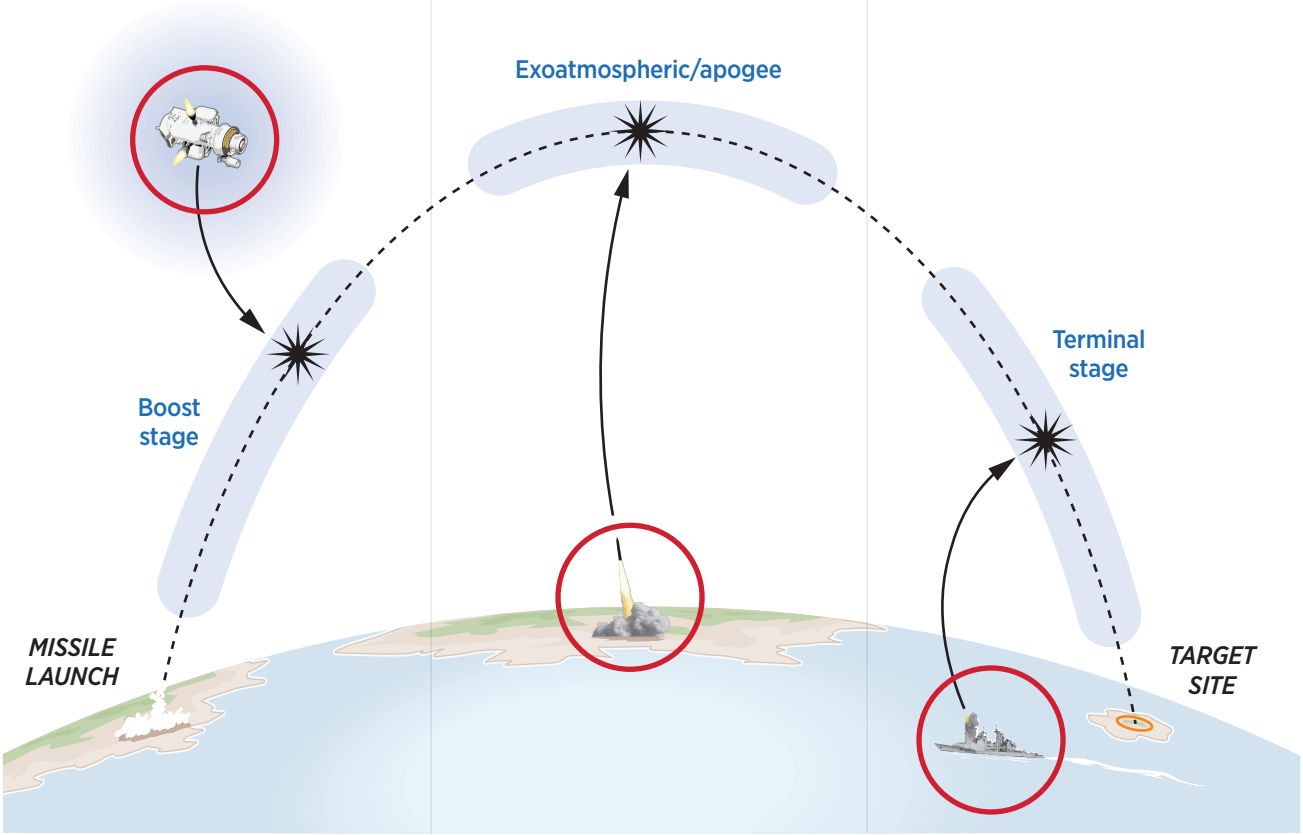
A network of 1,000 satellites would share launch and targeting data with each other and the command center. Satellites would engage targets with kinetic, non-explosive kill vehicles while the missile is still in boost phase.

2 CURRENT LAYER:
Ground-Based Interceptors

Missiles that exit the atmosphere, or are near apogee, would be targeted by the current arsenal of ground-based interceptors and next-generation interceptors stationed in Alaska and on the East and West Coasts of the U.S.

3 UNDERLAYER:
Short-Range Missile Defenses

Incoming missiles at their terminal phase would be targeted by existing systems, such as Patriot PAC-3, Aegis Afloat, and THAAD. These systems would be positioned near key locations, such as bases, ports, and command centers.



SOURCE: Authors' analysis.

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The Role of the Nuclear Enterprise Infrastructure

More than 20 years ago, the Administration of President George W. Bush established the National Nuclear Security Administration within the Department of Energy to ensure the ability of the United States to maintain and produce nuclear warheads in a timely fashion. The NNSA is responsible for America's nuclear weapons infrastructure; is responsive to military-generated warhead requirements; and oversees the assessment, design development, production, test, and research programs that respond to DOD warhead requirements.

The NNSA must focus on the mission of designing and building nuclear warheads above all else, even at the cost of other no doubt worthy efforts within the NNSA or the Department of Energy. The fact is that the NNSA is taking too long to produce warheads at scale and putting our nation at risk in the process.

Recalibrating Where and How the NNSA Accepts Risk. Construction of the Rocky Flats, Colorado, plutonium facility began in 1952. By 1954, Rocky Flats was producing plutonium pits. By 1962, our nation was producing more than 6,000 nuclear warheads a year. In comparison, as of the spring of 2024, the United States had built roughly a dozen new plutonium pits and no new nuclear warheads despite being in year 14 of the 2010 nuclear modernization program. Considering that China is building more than 100 new nuclear warheads a year—every year—the NNSA has to do better: It must change its culture and go on a "wartime footing."

A wartime footing means that the United States will produce nuclear weapons at scale before the end of the 2020s. To do so, the Department of Energy will reinterpret safety and environmental regulations. This is not to say that the Department of Energy will work recklessly or without concern for the environment or for the safety of the NNSA workforce, but overly onerous interpretations of regulations have created an environment in which little if any progress is made in the production of plutonium pits or warheads at scale. In some cases, adherence to safety and environmental regulations has created an environment in which, at best, things are done at a glacial pace. At worst, it has created paralysis.

As a consequence, the United States is accepting greater strategic risk—that is, the risk that we will not field the arsenal that is necessary to deter nuclear aggression by our adversaries—in order to reduce the risk of industrial accidents within our nuclear enterprise.

The President and—by delegated authorities—the Secretary of Energy and the NNSA Administrator can waive regulations. The Secretary of Energy and the NNSA Administrator will develop expedited timelines for facilities construction and other contracts, direct the use of expedited hiring authorities, use Defense Production Act funding to give loans and equipment to contractors, and pay bonuses for expedited performance of construction to accelerate warhead production.

The President will also issue an executive order exempting the NNSA from Department of Energy bureaucratic processes and policies below the Secretary level. This will help to jump-start the production complex, remove unnecessary distractions, and focus all resources on building U.S. nuclear weapons.

To reiterate, the NNSA will not engage in reckless or unsafe behavior—but it will take the prudent steps that are needed to balance strategic risk against tactical, industrial risks.

The United States must field an effective, responsive, and resilient nuclear weapons infrastructure to demonstrate to allies and adversaries alike that U.S. nuclear weapons can deter, assure, and hedge against adverse developments. Failure to field such an infrastructure could have dire ramifications.

The Nuclear Enterprise Workforce. The nuclear enterprise workforce consists of the skilled people who design, develop, and produce nuclear warheads according to military requirements and who sustain the nuclear stockpile to ensure its continued safety, security, and effectiveness. They also extend the life of nuclear warheads and design, develop, and produce new nuclear weapons.

The workforce also assesses and certifies that the reliability of the nuclear stockpile can be assured in the absence of nuclear testing and maintains a nuclear test capability that can be employed if testing becomes necessary. It provides an effective response to technical problems with a warhead or to adverse global security developments that call for force augmentation by uploading reserve nuclear warheads onto existing systems.

America's nuclear enterprise workforce is without peer. They must understand the importance of and the stakes involved in their work. They must be empowered to build the arsenal of the 21st century without being hamstrung by bureaucratic and regulatory paralysis.

The NNSA's Role in Building the Arsenal of the 21st Century. While North Korea can illicitly produce nuclear warheads and China is building 100 new nuclear weapons a year, the United States does not have the sustained plutonium pit manufacturing capability that it needs to avoid

stockpile ageout, support life-extension programs, and prepare for future uncertainty. Plutonium pits are critical components of every nuclear warhead, and nearly all current stockpile pits were produced between 1978 and 1989. Today, the NNSA's limited ability to produce plutonium pits is creating a strategic risk for the United States.

To avoid age-related risks, the DOD requires NNSA to produce at least 80 plutonium pits per year by 2030 and 200 a year by 2035. U.S. production of tritium, a critical material for nuclear weapons, is now insufficient to meet the needs of the forthcoming U.S. nuclear force.

The NNSA will rapidly prototype, develop options for modifying warheads to increase flexibility and responsiveness, revitalize retired warheads and components to augment the future hedge stockpile, and survey past and extant warhead designs so that it can better understand what can be certified without resuming full-scale nuclear testing.

Along with its nuclear weapon development and production infrastructure, the NNSA will maintain the capability to resume underground nuclear explosive testing within six months if called upon to do so.

The NNSA will sustain and deliver on time the warheads needed to support both strategic and non-strategic nuclear capabilities by building the W93 at scale by fiscal year (FY) 2026; synchronizing the NNSA's W80-4 life extension with the DOD's LRSO program; completing the W80-4 LEP by FY 2031; and exploring future ballistic missile warhead requirements based on the threats and vulnerabilities of potential adversaries, including the possibility of common Air Force–Navy reentry systems.

The United States will field the necessary capability, capacity, and responsiveness of the nuclear weapons infrastructure and support the skills of the nuclear enterprise workforce by:

- **Providing** the enduring capability and capacity to produce plutonium pits at a rate of at least 80 pits per year by 2030 and 200 per year by 2035.

- **Ensuring** that current plans to reconstitute the U.S. capability to produce lithium compounds are sufficient to meet military requirements.

- **Ensuring** the reactor capacity needed to produce an adequate supply of tritium to meet military requirements.

- **Developing** an NNSA integrated program timeline that accelerates production capacity to modernization and hedging requirements.

- **Developing** a plan to revitalize the ability to model nuclear effects without the need for testing and modernize test facilities so that they can be used if actual tests become necessary.

To ensure that forward progress is being made, the NNSA Administrator will provide monthly briefings to the President on the status of these efforts. In addition, the NNSA will provide its budget requests separately from the Department of Energy.

Immediate Next Steps

It will take years for many of the foregoing programs to mature, but the United States does not have years to address the existing—and growing—deterrence gap. This Nuclear Posture Review therefore directs the U.S. government to take the following steps that can be implemented immediately as stopgap measures until the new programs of record bear fruit.

Guidance for the Department of Defense. The Department of the Air Force, in coordination with the NNSA, will upload additional nuclear warheads from the ready reserve stockpile onto the existing Minuteman III ICBM force so that each ICBM carries between one and three nuclear warheads.

The Department of Defense, in coordination with the NNSA, will put existing warheads from the ready reserve stockpile onto existing conventional cruise missiles, to include Tomahawk Land Attack Missiles, Joint Air to Surface Standoff Missiles, and Long-Range Anti-Ship Missiles, until LRSO, SLCM-N, and the nuclear anti-ship missile are produced at scale.

The Secretary of Defense and the Secretary of Energy will provide reports specifying how they will move nuclear warheads from storage onto existing capabilities within 90 days.

In the medium term, the United States will initiate programs of record for an intermediate-range ballistic missile; an intermediate-range, mobile ground-launched land attack nuclear cruise missile; and a nuclear variant of the developing hypersonic land-attack systems. Additionally, the Department of Defense and Department of State will initiate strategic dialogues with the governments of Korea, Poland, and Finland to discuss the possible building of nuclear storage sites in those nations.

Guidance for the Department of Energy. In addition to the actions supporting immediate nuclear upload, the Department of Energy will conduct an immediate analysis, due no later than 180 days from the issuing of this Nuclear Posture Review, outlining the various ways that 80 plutonium pits and nuclear warheads can be produced per year by 2030 and 200 can be produced per year by 2035. It will also produce new guidance on how it will reinterpret environmental and safety regulations to ensure that the NNSA is able to produce the materials it needs at scale in a timely fashion without unduly sacrificing safety or security.

Guidance for the Department of State. The Department of State will examine the requirements for arms control in a period of stabilized global security when arms control discussions can be resumed. The current environment is one in which our adversaries have abandoned nuclear coercion

and blackmail and are not poised to invade their neighbors. The Department of State, in coordination with the Department of Defense, will identify specific military capabilities and numbers along with a corresponding strategic employment strategy to stabilize the global security environment.

This analysis of the future of arms control must consider the global security environment and examine arms control treaties and confidence-building and risk-reduction measures. It will emphasize potential breakthroughs in remote monitoring technologies, remote inspections, and improvements in verification procedures.

Conclusion

As noted at the beginning of this Nuclear Posture Review, the stakes are nothing less than America's global interest and, more important, the welfare of the American people and continuation of the American constitutional republic.

A credible nuclear deterrent is not cheap—but it is far cheaper than fighting a nuclear war, even if the United States were to "win" such a war. The goal is not to fight such a war, but to deter the war from unfolding in the first place.

Failing to deter the autocrats in Beijing and Moscow means that they will become increasingly emboldened. They will become increasingly threatening and, in the absence of a credible American deterrent, increasingly likely to use nuclear coercion to achieve their goals, not only against their neighbors, but against America's allies—and, potentially, the United States itself.

The United States will not let such a world come about. Instead, the United States will build and field the arsenal that is needed to keep the American people safe for the next half-century.

It cannot do anything else.

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