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Gambling on Armageddon

How US Nuclear Policies Are Undercutting Deterrence and Lowering the Threshold for Nuclear War

By Geoff Wilson, Christopher Preble, and Lucas Ruiz

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Cover photo: Castle Bravo, detonated in Marshall Islands in 1954, is the most powerful nuclear weapon ever detonated by the US (Source: NOAA).

February 2025

Gambling on Armageddon

How US Nuclear Policies Are Undercutting Deterrence and Lowering the Threshold for Nuclear War

Questioning the logic of U.S. nuclear weapons policy in the 21st Century

By Geoff Wilson, Christopher Preble, and Lucas Ruiz

China, Russia, and the United States have each embarked on a drastic overhaul of their nuclear weapons arsenals. Arms control and non-proliferation efforts have faltered while the few remaining agreements between the great powers slowly drift toward expiration. However, a new nuclear arms race is not inevitable and should not be treated as such. This report identifies and critiques the logic and trends underpinning the United States' nuclear modernization agenda and charts a path toward a more responsible strategy of nuclear deterrence.

Foreword

Confronting the New Nuclear Sword of Damocles

By Rep. John Tierney

The risks posed by the new global nuclear arms race are stark.

Driven by domestic politics, regional conflicts, international distrust, and parochial interests, the world's nuclear powers are rearming—and the threat of nuclear coercion has once again cast its shadow over our politics and international discourse. Regrettably, today the nightmare scenario of a nuclear war in our lifetimes—launched either through accident, miscalculation, or madness—is no longer unthinkable, and everyday Americans must confront the reality that they can no longer take their safety and security for granted.

In this inclusive composition, "Gambling on Armageddon," Geoff Wilson, Christopher Preble, and Lucas Ruiz describe the severe state of play concerning nuclear weapons policy in the United States, provide an informative sketch of how the current situation developed, and demonstrate why U.S. nuclear policy should not have to continue on this path going forward.

This extensive work gives those who have not had the time or inclination to follow this often-opaque policy issue a compelling snapshot of the U.S. arsenal's origin, development, and often questionable policy justification; it also provides seasoned analysts and policymakers with a single reference that invites a critical and fresh take on how the United States might proceed amidst such uncertain times.

In sum, the authors have done a service to the policymaking community in presenting crucial facts and a persuasive counterargument to the same, tired "spend-more" security argument. This is more important now than ever as the need for a saner approach to U.S. nuclear posture reaches a critical juncture in the international drive toward an arms race that is at once unwise, immoral, financially debilitating, and potentially ruinous.

Rep. John Tierney is executive director at the Center for Arms Control & Non-Proliferation and the Council for a Livable World. A former nine-term Congressman from Massachusetts (1997-2015), he served on the House Intelligence Committee and chaired the National Security and Foreign Affairs Subcommittee of the Government Oversight and Reform Committee.

Contents

Executive Summary

The United States has embarked on a path to modernize and expand its nuclear arsenal, at an estimated cost of $1.7 trillion over 30 years. This astronomical spending is unlikely to enhance Americans' security—and may well undermine it by accelerating a looming nuclear arms race.

Policies that sound tough, but undermine strategic stability, do not enhance national security. The decision to continue the current course is being driven by serious misconceptions about the importance of nuclear superiority. At best, current plans commit U.S. taxpayers to costly weapons programs, including the development of new tactical nuclear weapons that do little to further real deterrence. At worst, the drive for an "all-of-the-above" supremacy approach to U.S. nuclear strategy, with an increased focus on weapons meant to fight and "win" a nuclear war, will only stoke the fires of the global nuclear arms race while lowering the threshold for nuclear use. Ultimately, such policies would cast aside President Ronald Reagan's wise conclusion that "a nuclear war cannot be won and must never be fought." Thus, reversing these trends is essential to maintaining U.S. deterrence and global strategic stability while preventing a further slide toward nuclear misadventure, miscalculation, or madness.

This report focuses attention on the discrete capabilities required to sustain a credible nuclear deterrent. It considers the origins of the nuclear triad during the Cold War and explains why a similar posture is not fit for purpose in the contemporary era. Amidst severe fiscal constraints, including a massive and growing public debt, spending on nuclear weapons draws resources away from conventional forces and missions. The intercontinental ballistic missile (ICBM) leg of the nuclear triad is particularly ripe for scrutiny, especially because the Sentinel missile program is grossly overbudget and behind schedule.

Policymakers contemplating the various rationales offered in support of nuclear modernization should:

First, commit to a legitimate sole-purpose, "deterrence-first" nuclear approach, focused on a secure second-strike submarine capability during the next ten years;

Second, challenge the assumption that new tactical nuclear systems and platforms are needed because the advocates for these programs have failed to show how they enhance U.S. security and have ignored the discrimination and escalation risks; and

Finally, reaffirm the U.S. commitment to forego future explosive nuclear testing. A decision to break the current moratorium on explosive nuclear testing would give a green light to other nuclear weapons states to do the same, ceding a significant strategic advantage to U.S. rivals.

The United States—indeed, any country—has nothing to gain from a world where the risk of nuclear war has risen. Therefore, U.S. lawmakers should reject policies that might make that outcome more likely, especially if such policies are based on claims about the declining efficacy of nuclear deterrence in favor of a belief in the value of nuclear supremacy, a concept that has never been tested—and never should be.

The United States and the world came close to the brink of nuclear disaster on more than one occasion during the Cold War. Learning from that experience, U.S. policymakers should commit to preventing an unconstrained nuclear arms race that would do little to make Americans, U.S. allies, or the world, any safer.

Introduction

The world is caught in the throes of a new global nuclear arms race.

Every nuclear-armed nation is in the process of rapidly modernizing, expanding, and diversifying its nuclear arsenal.[1] In capitals across the globe, serious public debates are taking place regarding the role nuclear weapons might play in regional and global conflicts of the future. Meanwhile, several non-nuclear powers are publicly weighing whether they should consider abrogating their Non-Proliferation Treaty (NPT) commitments in favor of building their own deterrent in the face of rising great power tensions, outright nuclear coercion, regional conflict, and the erosion of global nuclear norms that have persisted since the end of the Second World War.

For its part, the United States is leading the charge in this effort. What in 2011 was initially pitched as a comparatively modest $214-billion, 10-year plan to modernize and refurbish U.S. nuclear delivery systems, warheads, and critical nuclear infrastructure has grown into at least a $1.7-trillion effort over 30 years to replace every single leg of the U.S. nuclear triad—that is, the strategic bombers, land-based ICBMs, and submarine-launched ballistic missiles (SLBMs) aboard nuclear-powered ballistic submarines (SSBNs) that comprise the "strategic" part of the U.S. nuclear arsenal—and to pave the way for a whole new generation of nuclear weapons through the development of new industrial capability.[2]

The projected cost of this effort is staggering. Yet the dollar amount, as well as the decision to proceed with the replacement of every leg of the triad simultaneously, which is driving these costs—has escaped close scrutiny. This lapse is doubly surprising given that triad modernization has resulted in significant, and thus far unresolved, issues of prioritization and oversight and risks destabilizing an already tense strategic environment.

According to the Congressional Budget Office, the total U.S. nuclear modernization enterprise is estimated to cost American taxpayers $75 billion annually between 2023 and 2032.[3] To put that figure into context, that is the equivalent of two Manhattan Projects, the four-year American program to build the world's first atomic bombs during World War II, every year during this nine-year period.[4] By contrast, adjusting for inflation to 2024 dollars, the Reagan administration spent just $70.5 billion on nuclear weapons during its entire eight years in office.[5]

Unfortunately, this massive influx in spending is coming at a time when many of the norms that once governed the actions of the world's nuclear-armed states have broken down.[6] Nuclear saber-rattling has become common, treaties have lapsed or been suspended, and regional wars between nuclear-armed and nonnuclear-armed states have erupted across the globe. Experts and political leaders have begun to publicly reconsider the utility and purpose of nuclear weapons, and many of our foundational beliefs concerning nuclear weapons, deterrence, and the commitment of nuclear-armed nations to their promises to reduce and eventually eliminate nuclear weapons from the globe.

This breakdown in norms, as well as global instability and expanding regional wars involving nuclear powers, has even caused some prominent leaders and experts to propose the adoption of certain Cold War-era nuclear warfighting strategies—ignoring President Reagan's famous dictum that "a nuclear war cannot be won and must never be fought."[7]

Seemingly oblivious to these warnings, experts and leaders on both sides of the U.S. political aisle have proposed that the United States adopt what they claim is a Reaganesque "peace-through-strength" strategy and increase yearly Pentagon spending on both conventional and nuclear weapons above already historic levels.[8] With "peace through strength" as a prevailing talking point, many in Washington focus primarily on whether the United States is spending *enough* on nuclear weapons, rather than whether the current record-setting nuclear budget will actually enhance U.S. national security.

Unfortunately, unlike in previous nuclear arms races, the drive for expanded systems and new nuclear weapons has not accompanied a commensurate diplomatic effort to curb new and destabilizing nuclear developments and deployments. Instead, global hostilities and domestic politics have led to the toppling or suspension of most of the world's remaining nuclear arms control treaties; now, for the first time in recent memory, the world faces an immediate future in which few arms control agreements remain.[9]

In the absence of arms control agreements, or even just a sustained effort to negotiate new ones, the world is now at a dangerous crossroads. Since the fall of the Soviet Union, nuclear powers and their leaders have approached nuclear weapons issues, ostensibly, from a standpoint of deterrence. The purpose of nuclear arsenals was to safeguard countries' sovereignty and ensure that any attempt by another nuclear nation to coerce or defeat a particular country through violence could be made too costly to be worth any potential gains.

> **U.S. nuclear modernization is estimated to cost American taxpayers $75 billion annually between 2023 and 2032—the equivalent of two Manhattan Projects per year.**

But this new arms race, abetted by the breakdown in international norms, parochial and political domestic interests, and the abandonment of the diplomatic processes that limited the deployment of destabilizing types of weapons, has driven the world back to a place where calls for new tactical, less-than-deterrent, or battlefield nuclear weapons are given serious consideration. A return to this warfighting paradigm should be seen as incredibly dangerous, however. Proponents of new systems with smaller warheads argue that they are more "usable" because they supposedly stay below the threshold that might trigger a full-scale nuclear retaliation, often characterized through the concept of mutually assured destruction. In a world where such "usable" systems are deployed by states that are increasingly at odds with one another, leaders might view nuclear weapons not as the final and unthinkable last resort in a conflict that has run out of control, but instead as practical, or even advantageous, tools in times of crisis.

Proposals for nuclear-warfighting weapons are not hypothetical. At least three new nonstrategic nuclear weapons—the sea-launched cruise missile (SLCM-N), the W76-2 low-yield Trident Submarine warhead, and the Long-Range Stand-Off Weapon (LRSO)—are currently working their way through the U.S. nuclear development and production pipeline, or have already been deployed alongside U.S. forces. Meanwhile, nuclear spending proponents and "peace-through-strength" advocates are calling for other escalatory steps, such as the development of new road-mobile U.S. ballistic missiles, the deployment of new tactical nuclear forces into the Indo-Pacific and European theaters, and even the full resumption of explosive U.S. nuclear testing.[10]

With the world already perched on the precipice of a dangerous global conflict and a new nuclear arms race, this paper addresses the following critical questions. First, do current and proposed U.S. policies actually reinforce U.S. nuclear deterrence? And second, is there a logical and realistic strategy behind the new nuclear arsenal that the United States is building at such great cost?

This report examines these questions by offering a brief examination of deterrence theory with a corresponding survey of how the U.S. nuclear arsenal evolved into its current form. It then evaluates current U.S. nuclear weapons proposals in terms of their overall deterrent effect and offers several rational alternatives that might be taken to mitigate nuclear risk, reduce budgetary waste, and increase fiscal accountability—while building a stronger national security policy and a more reliable deterrent. Ultimately, a failure to correct the course of current U.S. nuclear weapons plans might lead to the adoption of costly and destabilizing systems that could undermine U.S. deterrence, weaken U.S. national security, and even increase the likelihood of nuclear war.

IMAGE 1. President Ronald Reagan and Soviet General Secretary Mikhail Gorbachev signing the INF Treaty in the East Room of the White House. December 8, 1987.

"C44071-15A, President Reagan and Soviet General Secretary Gorbachev signing the INF Treaty in the East Room of the White House. 12/08/1987," Ronald Reagan Library, White House Photo Collection Gallery, Summits with Mikhail Gorbachev, Dec. 8, 1987, https://www.reaganlibrary.gov/archives/audiovisual/white-house-photo-collection-galleries/summits-mikhail-gorbachev.

Deterrence vs Superiority

It is paramount to distinguish between formal models of deterrence and the political catchphrase that the term has become. The term "deterrence" has been bandied about so much in modern political and ideological discourse that it has become diluted into a concept largely synonymous with "power projection," or a generalized idea of military strength. This has made deterrence both useful to those who want to sound tough on national security issues, as well as distasteful to those who are seeking a less militarized approach to foreign policy. However, deterrence is an essential term to use in the modern nuclear context, especially in a period when seemingly provocative and destabilizing nuclear weapons proposals are framed as "necessary" for ensuring deterrence capacity and credibility.

The authors of this report are principally concerned with the original, core concept of deterrence as a strategy designed to avoid or discourage open conflict through the outward projection of capability, preparedness, and resoluteness. Properly conceived, an effective deterrent raises the potential costs of a war to such a point that no rational actor would choose to initiate one.

Although deterrence and nuclear superiority are sometimes used interchangeably in contemporary political debate, the concept of deterrence stands in stark contrast to that of superiority, strategies concerned with the ability to fight, overpower, or coerce an opponent—often regardless of cost—due to significant advantage or power disparity. The former is aimed at discouraging an adversary from taking an action that threatens the deterring state's core interests—first and foremost attack on sovereign territory; the latter is aimed at forcing an adversary to take an action favored by the coercing state. Such demands, by their nature, encompass a much wider set of objectives than those of deterrence, many of which are not vital interests.

The nuclear weapons states have, perhaps partly as a matter of luck, so far managed to avoid what their predecessors in the pre-nuclear age could not—direct confrontations leading to full-scale war.[11] Deterrence strategies should be directed toward maintaining and extending this strategic stability and ensuring that all parties realize that any nuclear exchange, regardless of magnitude, is a critical error that no one will walk away from unscathed.

To be clear, this is not as simple as it sounds. Nuclear deterrence is, essentially, an unproven theory conceptualized by a group of game theorists during the early days of the Cold War that has been adapted and extended ever since. Nuclear weapons have not been used as retribution since 1945; thus the theory's effectiveness is a matter of speculation and supposition. Yet the logic of these theories—grounded in all parties' likely annihilation—seems to explain why. Deterrence hinges upon a fragile balance of terror. If the United States, or any other nuclear state for that matter, ever abandons the taboo of nuclear use—even in favor of a so-called "limited nuclear strike"—the stabilizing power of nuclear *deterrence* will most

likely be abandoned as well. Once Pandora's Box has been opened, there is no putting the horror of nuclear weapons use away again.

By contrast, nuclear weapons and strategies designed for superiority—in other words, those that prioritize the capability to overwhelm, disrupt, or disable an opponent's nuclear arsenal or defenses (a.k.a. "disarming" first strikes)—are often couched in the language of defense. Such weapons and doctrine, their advocates say, are needed to maintain parity in a multi-peer environment.[12] Proponents of nuclear superiority envision a world in which fighting and winning a nuclear war is not only possible, but perhaps even likely, and should thus be prepared for. They argue that achieving both technical and numerical nuclear superiority would ensure a favorable advantage that is presumed to reduce a state's expected costs in a nuclear war, increase its resolve, and provide it with coercive bargaining leverage.[13] The search for "parity," then, offers these advocates a useful euphemism to advance their goal of superiority. Under this rubric, they call for more, and new, nuclear weapons, fueling the arms race currently underway.[14]

The Deterrence Paradox

Fundamentally, however, rapid new nuclear weapons development is strategically destabilizing. Competitive decisions to innovate do not occur in a vacuum and nuclear rivals will respond to each other's actions. It is therefore unrealistic to think that any nuclear power would be willing to allow an opponent to develop new nuclear weapons and capabilities, thereby eroding confidence in their own deterrent, without responding in kind. As political scientist Arthur Lee Burns stated in 1957, "[new weapons] may cause the major contending powers to adopt new or radically extended strategies, calling in their turn for a complete reassessment of national interests, and of the value of resources, alliances, and conventional armaments."[15]

Suppose one nation learns that a rival is rapidly developing systems that could dominate, overwhelm, or defeat its defenses and immobilize or destroy the weapons that comprise its deterrent, those that are held in reserve to be used only in the direst circumstances. In that case, a competitive response dictates that the nation must do the same to offset any strategic advantage its rival might gain to maintain deterrent parity. At best, this is how arms races are sustained. At worst, it can drive nations into conflict.[16]

Deterrence theorists recognized this dichotomy between deterrence and superiority even at the beginning of the first nuclear age. As Bernard Brodie, one of the founding thinkers of modern deterrence theory, cautioned in 1959, "the capacity to deter is usually confused with the capacity to win a war," but "deterrence has always suggested something relative, not absolute." He ultimately concluded that deterrence "does not depend on superiority." Indeed, deterrence might even foster restraint and a willingness to negotiate, whereas a fixation on winning is likely to produce the opposite effect. "For the sake of deterrence," Brodie explained, "we want always to choose the less provocative of two policies, even if it may mean some sacrifice of efficiency. But if we were in fact interested primarily in winning and only secondarily in deterrence, we should be extremely loath to make any such sacrifices."[17]

Brodie's early appraisal of deterrence dynamics and the lure of trying to achieve superiority eerily foreshadowed the recurring debates surrounding U.S. nuclear strategy since the end of World War II—and which are prevalent again today. But much has transpired since Brodie first contemplated such things. In order to understand where we are now, we need to revisit how we got here.

A Brief History of the US Nuclear Triad

At the dawn of the first nuclear age, the United States had exclusive control over the greatest paradigm-shifting weapons ever developed. However, the development of that emerging arsenal into its current form today was not an intentional process guided by a clearheaded strategy. Indeed, it often had more to do with the competing interests of the uniformed service branches and political constituencies.

After the Soviet Union conducted its first successful nuclear test in August 1949, the United States lost its monopoly on nuclear weaponry, requiring a reconceptualization of the bomb's place in defense strategy. The U.S. Army and Navy were locked in an intellectual battle for their continued relevancy with a rising and newly independent U.S. Air Force (USAF), which had the only real-world experience deploying nuclear weapons in battle. Each of the services developed theories of nuclear use based on their strengths, doctrines, and parochial interests.

This fierce interservice rivalry eventually resulted in a triad of delivery vehicles. Debates ebbed and flowed between those advocating for a larger arsenal to bolster warfighting capacity and those who realized that even a single nuclear strike could initiate an irretrievable spiral toward a nuclear holocaust.[18] Under President Dwight D. Eisenhower's "New Look," the U.S. Air Force's share of the military budget rose to about 45% while the navy and army's collective share fell from 65% to 51%.[19] The resulting policy focus enshrined an approach of overwhelming nuclear response, "massive retaliation," to Russian aggression in Asia or Europe as the first nuclear doctrine.[20]

As the theoretical precursor of later nuclear deterrence theories, the "New Look" conceptualized nuclear weapons as both a deterrent, by threatening to use them in *response* to aggression, while also preserving a belief in the utility of nuclear weapons for warfighting.[21]

In the late 1950s, the navy leveraged the emergence of ballistic missile technology to argue for a survivable nuclear force. Recognizing the futility of fighting a nuclear war, the sea service, under the guidance of Chief of Naval Operations Admiral Arleigh Burke, developed "finite deterrence"—a policy that emphasized the minimal number of nuclear weapons needed to ensure a credible second-strike capability, while not depending on land-based delivery systems that were vulnerable to a disarming first strike.[22] Finite deterrence hinged on the theory that both the United States and the Soviet Union were afraid of nuclear war and were thus hesitant to initiate one, what Thomas Schelling called the "reciprocal fear of surprise attack."[23] The finite deterrence doctrine argued that SSBNs, with their inherent stealth and survivability, disincentivized a first strike that would most likely fail to eliminate all retaliatory forces, creating strategic stability at a lower cost. When the navy's Polaris SLBM program first deployed in 1960, it established the service's strategic position by creating the sea-based leg of the triad and enshrining a survivable second-strike capability as the crux of deterrence strategy.

IMAGE 2. In session at the Pentagon, 10 February 1960. They are (from left to right): General Lyman Lemnitzer, Chief of Staff, U.S. Army; Admiral Arleigh A. Burke, Chief of Naval Operations; General Nathan Twining, USAF, Chairman of the Joint Chiefs of Staff; General Thomas D. White, Chief of Staff, U.S. Air Force; and General David M. Shoup, Commandant, U.S. Marine Corps. Official U.S. Navy Photograph, now in the collections of the National Archives.

"USN 1047895 The Joint Chiefs of Staff," U.S. Naval History and Heritage Command, Pentagon, Arlington, Virginia, Feb. 10, 1960, https://www.history.navy.mil/our-collections/photography/us-people/b/burke-arleigh-a-1958-1961/usn-1047895.html.

Meanwhile, to regain lost ground in the defense budget, the army devised its "flexible response" doctrine. Based on the concern that a ground war with the Soviet Union in Europe was still possible, the flexible response doctrine emphasized a need to give the president a range of military options, both conventional and nuclear, that could be adapted for any situation.[24] Therefore, U.S. troops were deployed in Europe as a tripwire against a general Soviet invasion of any NATO territory. In that scenario, where Soviet conventional forces were seen as having a numerical advantage over NATO formations, flexible response envisioned that tactical nuclear weapons would level the playing field. This led to the development of a bewildering array of nuclear weapons that mirrored conventional archetypes, such as nuclear bazookas, anti-air missile batteries, artillery shells, and landmines. But the notion that most U.S. nuclear weapons earmarked for the defense of Europe would have been detonated on Western European soil was not an attractive prospect for U.S. allies.

Finally, air force officials unveiled their "counterforce" doctrine, which prioritized targeting the Soviet Union's nuclear and conventional forces while reserving a portion of the U.S. arsenal to threaten countervalue (city-targeting) strikes. This strategy allowed the USAF to develop a wide range of nuclear arms for use at any level of conflict, while still maintaining the primacy of its increasingly complex and costly strategic bomber programs, despite major advancements in ballistic missile technology.[25] Ultimately, though, these two strategies proved to be unwieldy. The countervalue strategy put the USAF in the uncomfortable role of justifying targeting millions of innocent civilians while still paying lip service to the Geneva Convention. Counterforce appeared out of step with the continued development of early

warning capabilities. Counterforce also necessitated the implementation of launch-on-warning doctrines for land-based forces. These changes were driven by a "use-it-or-lose-it" mindset in which vulnerable silo-based missiles are launched after receiving a warning of an incoming missile strike. As a practical matter, USAF missiles targeted against rival nuclear forces would most likely pass their rival missiles in midair (opponents having registered the launch) and ultimately land on missile fields or mobile launchers that had already fired their weapons.

The Triad Takes Shape

Ultimately, the U.S. government amalgamated the three parochial Cold War deterrence strategies, at least rhetorically, to establish the U.S. nuclear triad. Rather than reining in the U.S. nuclear enterprise, the Kennedy and Johnson administrations justified the force structure *ex post facto,* largely ensuring that parts of each doctrine survived despite changing tactics, technologies, budgets, and enemies. This helped to spur the development of redundant systems across services, even as the United States never fully committed to either a pure deterrence or offensive strategy.[26] Of greatest concern, the existence of a wide range of nuclear assets led to proposals of nuclear use amidst crises—bringing the world uncomfortably close to Armageddon on more than one occasion—when there were still nonnuclear or diplomatic options on the table. This "if-we-have-them, why-can't-we-use them?" mindset remains a significant challenge today and will be discussed later in this paper.

The triad continued under the administrations of Presidents Richard Nixon, Gerald Ford, and Jimmy Carter, despite a series of arms limitation treaties negotiated and signed during their tenures. President Reagan perhaps came closer than any of his predecessors in questioning the utility of nuclear arms. He reported "horror" during his first briefing on the nuclear war plans he might be required to authorize as president. Reagan's doubts deepened with the lessons learned from major wargames conducted during his administration, leading to a major reversal in his nuclear rhetoric and eventually a joint statement with his Soviet counterpart, Mikhail Gorbachev, that "a nuclear war cannot be won and must never be fought."[27]

President George H. W. Bush capitalized on this momentum through unilateral executive action with his Presidential Nuclear Initiatives (PNIs) of 1991. Through these unilateral executive actions, Bush Sr. ended the army's and Marine Corps' nuclear missions, withdrew many tactical nuclear weapons from Europe, and removed all nuclear weapons from the surface navy and attack submarine fleets. By taking a bold course of action and challenging the Russians to follow suit, President Bush seemed to be on course to dismantle the U.S. nuclear arsenal's warfighting elements, but this effort was cut short when Bush lost his bid for reelection.[28]

President Bill Clinton initiated the first Nuclear Posture Review in 1994. As chair of the review, Assistant Secretary of Defense for International Security Policy Ashton Carter focused on the secure second-strike capability as the fundamental guarantor of U.S. nuclear deterrence and sought to move the United States toward a sea-based monad.[29] Carter's plan was foiled, however, when triad proponents, led by Sen. Strom Thurmond (R-SC), rallied to save it.[30] Since that debate, the triad has been persistently touted as the optimal form of U.S. nuclear deterrence with few willing to scrutinize the assumptions underpinning it. Notably, when Ashton Carter became secretary of defense in the final two years of President Barack Obama's second term, he never publicly questioned the triad's strategic rationale.

The Current Program of Record

After the dissolution of the Soviet Union in December 1991 and the end of the Cold War, U.S. nuclear strategy and posture seemed to proceed on autopilot. The adversary the triad was formulated to deter no longer existed, leaving it without a clearly defined *raison d'être*. Strategic bombers were moved off alert, plutonium pit production (the creation of nuclear bomb cores) stopped, global nuclear weapons testing ended—with a few notable exceptions from states that are not signatories to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)—and the United States and Russia ratified a series of strategic arms reduction treaties that limited the number of warheads and bombs that each country could deploy.[31]

U.S. nuclear forces had little role to play in the post-9/11 wars and the Global War on Terror. This led to a critical state of laxity within parts of the force. Reports of flagging morale and discipline rose,[32] shocking errors and mistakes were made,[33] and significant questions began to arise regarding the role of nuclear arms in U.S. national security. Were they unusable—or even a vulnerability—in deterring or defeating nonstate actors and terrorist organizations?

Aside from concerns about the proliferation of nuclear technology within the so-called "axis of evil"—Iran, North Korea, and Iraq—the global security environment during the early 21st century overwhelmingly focused on the threat of terrorism, not nuclear arms racing. Indeed, the United States' and Russia's ratification of the landmark New Strategic Arms Reduction Treaty (New START) in 2010 seemed to continue a decades-long trend toward global nuclear arms reduction.[34]

But even so, the triad survived.

The Influence of Politics and Parochialism on Nuclear Strategy

Ironically, in an effort to find U.S. Senate support for the ratification of New START, the Obama administration agreed to invest a comparatively modest $214 billion into new nuclear weapons programs, originally billed as a "modernization" plan to update aging elements of the triad.[35] But once the doors had opened to modernizing some elements of the arsenal, groups with vested interests began lobbying for more money for additional weapons and new nuclear missions.

The ossification of U.S. nuclear strategy during the Cold War into separate, service-oriented, strategies for nuclear use (i.e., counterforce, finite deterrence, and flexible response), ensured that the wasteful and contradictory "belt-and-suspenders" approach to nuclear posture remained in place. And, more important, this posture was poised to expand when the budgetary floodgates reopened.

IMAGE 3. Air Force Senior Airman Aric Desantiago and Airman 1st Class Glenn McCray perform maintenance on a Minuteman III weapon system at a launch facility in Colorado on February 12, 2024.

Air Force Senior Airman Sarah Post, "Weapon Work," U.S. Air Force, Colorado, United States, Feb. 12, 2024, https://www.defense.gov/Multimedia/Photos/igphoto/2003401235/.

Ultimately, lawmakers decided on a simultaneous approach to completely overhaul all three legs of the nuclear triad within the same 30-year period. The air force championed the need for both new stealthy radar-penetrating bombers to carry new stealthy radar-penetrating nuclear cruise missiles, as well as new silo-based ICBMs fixed throughout the American Mid- and Mountain West. Meanwhile, the navy called for a whole new fleet of stealthy, secure second-strike SSBNs to patrol the world's oceans. Moreover, the national security establishment has now dusted off old nuclear supremacy talking points, opening the modernization effort up to a new host of lower-yield, tactical nuclear weapons that will blur the line between U.S. strategic and conventional forces.

Evidence of domestic politics and parochialism driving at least part of the triad modernization debate can be seen in the fact that there had been some discussion over the years about reducing the nuclear triad down to a dyad by cutting the land-based ballistic missile force. [36] Yet, much has changed following Sen. Thurmond's objections during the Clinton administration. The idea of cutting the ICBM leg of the triad is now perceived as particularly unpopular among key constituencies in Colorado, Montana, Nebraska, North Dakota, and Wyoming—the states that host ICBMs. Congressional resistance to eliminating the ICBM leg of the triad has combined with corporate opportunism; defense contractors are suddenly gleeful about the prospect of developing the first new U.S. ICBMs since 1970. Ironically, then, the signing of a verifiable arms control treaty that would have allowed the United States to significantly reduce its number of deployed ICBMs instead somehow became a reason for U.S. taxpayers to shell out more than $140 billion to build an entire new generation of land-based missiles.[37] New START should have provided real room for lawmakers to make responsible reductions to at least one leg of the triad, if not all three; instead, it created an opportunity to spend more money on redundant nuclear capabilities.

More Spending Yields Poor Results

All told, triad modernization entails three major new strategic nuclear weapons programs: the development of the Sentinel ICBM, *Columbia*-class SSBN, and B-21 bomber, which is designed to carry both conventional and nuclear weapons. All these programs are now significantly behind schedule and straining the national defense budget.

The Sentinel missile alone is 81% over budget and years behind schedule, triggering a "critical" Nunn-McCurdy breach that forced the Pentagon to publicly justify its continued development to Congress.[38] Meanwhile, the lead *Columbia*-class SSBN is anticipated to be finished between 12 and 16 months behind schedule and hundreds of millions of dollars over budget. Ultimately, the prospects for both programs are only expected to worsen as supply chain issues and skilled worker shortages continue to impact production timelines.[39]

IMAGE 4. The B-21 Raider continues flight testing at Northrop Grumman's manufacturing facility on Edwards Air Force Base, Calif.

"The B-21 Raider," U.S. Air Force, Northrop Grumman manufacturing facility on Edwards Air Force Base, California, https://www.af.mil/News/Photos/igphoto/2003472725/.

The B-21 bomber program, the specific, per-unit costs of which remain classified, was originally pitched to Congress in 2014 with a total topline price tag of $55 billion.[40] At the time, Air Force Chief of Staff Gen. Mark Welsh said that he had high confidence in the air force's cost estimate because he controlled the requirements for the new aircraft and was comfortable saying "no" to, "all kinds of people wanting to add new things to this bomber." Despite Welsh's assurances, however, the estimated cost of the B-21 program has grown from $55 billion to $203 billion.[41]

But Congress's determination to spend a generation's worth of wealth in order to update older "legacy" triad systems and weapons leads to an equally important follow-on question: If the United States is willing to invest many hundreds of billions of dollars into developing new nuclear weapons that will be in the arsenal for at least the next half-century, how will the new weapons be supplied, maintained, and upgraded—especially given ballooning costs, significant industry disruptions, and reliability problems that are likely to be created by introducing so many new systems at once?

A Lack of Accountability Regarding New and Future Weapons

Perhaps the best way to measure the scope and scale of the new nuclear arms race is to consider the industrial preparation to develop and maintain an entirely new generation of U.S. nuclear weapons and warheads.

Within the current program of record, the United States is already updating the factories and laboratories where the peach-sized plutonium bomb cores—or "pits"—are made, in order to meet a legislative mandate to build 80 new plutonium pits a year by 2030.[42] This, more than any other indicator, demonstrates the United States' commitment to a future with nuclear weapons as a central pillar of its foreign policy, and one concerned more with superiority than deterrence.

The United States already maintains thousands of plutonium cores in storage just in case it should suddenly need to build more bombs; yet current plans assume that the United States should be producing new cores, for new weapons, based on new designs, at a rate of almost 100 a year. The addition of as many as 1,000 new nuclear bomb cores during the next ten years would represent a dramatic expansion of the U.S. arsenal.

That effort goes hand in hand with plans to build the first new generation of U.S. nuclear warheads since the 1980s.[43] The moves to produce these warheads, including the W93 nuclear warhead meant to be carried aboard U.S. and UK nuclear submarines, as well as recent proposals to modify existing warheads (such as the W76-2 and B61-13) to carry out new missions, has occurred with little strategic discussion or public debate.

Unfortunately, much like the triad modernization program, these new warhead initiatives have encountered many problems. The Government Accountability Office (GAO) has issued repeated warnings about the serious lack of accountability in the U.S. nuclear weapons enterprise, noting that the National Nuclear Security Administration (NNSA), the office within the Department of Energy in charge of building and maintaining the actual warheads and fissile material that comprise the U.S. nuclear arsenal, has failed to provide a realistic program cost and meet production schedules. According to a 2024 GAO report, the NNSA has failed to even develop "cost estimates that cover the full life cycle of [modernization] program activities."[44] According to a 2023 GAO report focusing on the NNSA's major industrial efforts, including the National Labs and plutonium production facilities, "NNSA's major projects collectively exceeded their cost estimates by over $2 billion. They also surpassed their collective schedules by almost 10 years."[45]

This incredible lack of program oversight and accountability has not stopped calls to increase NNSA's nuclear weapons budget, however. NNSA's total funding increased by $5 billion from 2021 to 2024, most of which can be accounted for by new nuclear weapons activities alone, which grew by $4 billion during the same period.[46]

At this point, it is not unreasonable to wonder whether the United States will need to conduct new explosive nuclear testing in the coming decades because military commanders are unlikely to be comfortable with a deterrent based on entirely new and untested technology.[47] Indeed, there have already been congressional attempts to prepare the Nevada Test Site for a resumption of explosive nuclear testing, and several former Trump administration officials have put forward proposals to prepare to resume explosive nuclear testing during the second Trump administration.[48]

Needless to say, a return of explosive nuclear testing by the world's major nuclear powers, and the likely negative follow-on effects it would have across many fields, would be incredibly dangerous and destabilizing for Americans, U.S. allies, and the world. But even putting most of these normative concerns aside, from a purely interests-based standpoint, a resumption of U.S. explosive nuclear testing benefits the United States little, while giving up a significant strategic advantage. This is because much of the relative strength of the U.S. nuclear arsenal rests in its reliability compared to that of other nuclear powers.

IMAGE 5. The Ronald Reagan Ballistic Missile Defense Test Site tracks an unarmed Minuteman III intercontinental ballistic missile launch from Vandenberg Air Force Base, California, November 5, 2024, during Air Force Global Strike Command's Glory Trip-251 operational test.

United States Army, "Starry Streak," U.S. Air Force, Ronald Reagan Ballistic Missile Defense Test Site, Vandenberg Air Force Base, California, November 5, 2024, https://www.defense.gov/Multimedia/Photos/igphoto/2003591076/.

U.S. nuclear weapons have been tested more than those of any other nation. U.S. commanders know how U.S. nuclear weapons work, and—more important—that they will work, with a high degree of confidence. Breaking the current moratorium on explosive nuclear testing would open the door for other nuclear weapons states to develop new nuclear weapons that would require explosive nuclear tests. This would not only cede a significant strategic advantage to the United States' nuclear rivals but would simultaneously stoke the nuclear arms race that U.S. taxpayers and the national security establishment are already struggling to account for domestically.[49]

> **A return of explosive nuclear testing by the world's major nuclear powers would be incredibly dangerous and destabilizing for Americans, U.S. allies, and the world.**

Any one of these new nuclear weapons programs could be seen as a significant departure from how most contemporary U.S. leaders have, at least publicly, sought to reduce the role that nuclear weapons play in U.S. national security policy. The decision to pursue nuclear weapons programs all at once, alongside a new drive for tactical nuclear weapons, and at staggering cost, should be viewed as nothing less than a total reversal of the U.S. NPT commitments to reduce the relevance of nuclear weapons in global affairs and eventually work toward their elimination. Instead, it represents a major shift away from a deterrence-based nuclear policy, to one hoping to build nuclear superiority at every level of the U.S. nuclear weapons enterprise.

But the debate is still far from over.

The "Necessary-But-Not-Sufficient" Mindset

Although the $1.7 trillion modernization plan is already well under way, it has not ended calls for even more programs and more funding from key sectors of the national security establishment.

Notably, following the Biden administration's pullout from Afghanistan in 2021, those advocating boosts in defense spending and parochial interests rushed to justify nearly $1 trillion in annual defense spending—a 40% real increase since 2000.[50] National security hawks quickly pivoted to focus on China as an emerging global power, or what former Secretary of Defense Lloyd Austin labeled the "pacing challenge" for U.S. defense policy.[51] The rise of Chinese President Xi Jinping coincided with a serious buildup of the People's Liberation Army's (PLA's) conventional and nuclear arsenals and increasingly assertive behavior in East Asia. The China challenge is the dominant narrative within the U.S. national security discourse.[52]

Mirroring the logic that gave rise to the Cold War and the first nuclear arms race, American policymakers' fixation on the perceived threat that China poses to U.S. national interests and the very fabric of American society has facilitated a new militarization of U.S. foreign policy. This situation has only worsened with the Russia-Ukraine War, which some have suggested is a failure of Western deterrence and points to the need to overhaul American commitments and capabilities.[53] Factions within the national security establishment have altered the United States' perception of deterrence as dependent on strategic superiority.[54]

Moving the Goalposts

Proponents of nuclear superiority have also altered the purpose of U.S. nuclear modernization efforts first initiated under President Obama. Originally offered as a compromise to modestly upgrade nuclear forces while diplomats pursued further strategic reductions, today's nuclear development program has been refocused on creating a nuclear arsenal meant to directly confront nuclear rivals—and, if necessary, fight and win a nuclear war. For instance, former Trump National Security Advisor Robert O'Brien recently wrote, "The United States has to maintain technical and numerical superiority to the combined Chinese and Russian nuclear stockpiles. To do so, Washington must test new nuclear weapons for reliability and safety in the real world for the first time since 1992—not just by using computer models."[55]

IMAGE 6. An unarmed Trident II (D5LE) missile launches from the Ohio-class ballistic missile submarine USS Maine (SSBN 741) off the coast of San Diego, California, Feb. 12, 2020.

MC2 Thomas Gooley, "USS Maine Successfully Tests Trident II D5LE Missile," U.S. Navy, San Diego, California, February 12, 2020, https://www.pacom.mil/Media/Photos/igphoto/2002249405/.

Despite the United States' having already committed to spending $1.7 trillion on nuclear modernization during the next 30 years, nuclear weapons advocates claim this is not nearly enough. For example, former Sen. Jon Kyl (R-AZ) and former NNSA Deputy Administrator Madelyn Creedon, who together chaired the Congressional Commission on the Strategic Posture of the United States, have argued: "The U.S. nuclear modernization programs underway are critical and necessary, but no longer adequate to deter the increased challenges from Beijing, Moscow, and the possibility of engaging both simultaneously."[56] Central to this belief is a strange new claim that the 1,670 strategic nuclear warheads that the United States maintains ready to launch at a moment's notice are, somehow, not enough to deter the United States' nuclear peers.[57]

Testifying several times before Congress between 2021 and 2022 as the head of U.S. Strategic Command, Adm. Charles Richard shocked many when he intimated that the United States may not have enough nuclear forces to deter both China and Russia at the same time.[58] This statement seemed directly at odds with the contemporary understanding of U.S. deterrent posture, indirectly criticized the New START Treaty (which limited the United States and Russian strategic nuclear deployments to 1,550 warheads), and provided a rationale for boosting nuclear weapons spending.

If 1,670 deployed strategic warheads, many hundreds of which are constantly forward deployed and in range of their targets around the world, are not enough to ensure a credible and devastating—almost

certainly world-ending—nuclear response, then what would be? This line of reasoning has opened the floodgates to profligate nuclear spending: If the current force is not enough to ensure deterrence, then there is no objective marker for what might be.

Policymaking Without Considering the Costs

Nuclear spending proponents have championed the recent Congressional Strategic Posture Commission report that, among other escalatory steps, recommends: uploading more than one nuclear warhead onto U.S. ICBMs;[59] increasing the planned purchase of 100 B-21 nuclear bombers (and the tanker aircraft needed to service them); increasing the purchase of planned *Columbia*-class SSBNs; developing new road-mobile ICBMs; and introducing new tactical nuclear forces to be deployed in the Indo-Pacific and European theaters.[60]

The plans for this new class of tactical "theatre" weapons are consistent with rhetoric that departs from a secure second-strike posture and instead pushes for a nuclear warfighting strategy. For example, the Strategic Posture Commission explains that "U.S. theater nuclear force posture should be urgently modified in order to provide the President a range of militarily effective nuclear response options to deter or *counter* [emphasis added] Chinese or Russian limited nuclear use in theater."[61]

But although many policymakers and others have called for increasing current nuclear spending, no serious debate has occurred about where that money would come from. When members of the Congressional Strategic Posture Commission were questioned by Sen. Roger Wicker (R-MS) about how the United States would pay for their proposed expansive changes to U.S. nuclear forces, former Sen. Kyl said that the commissioners had deliberately not speculated on that during the production of the report.[62] After being pressed for a response by Sen. Wicker, Sen. Kyl said,

> ***"The number one priority for our national security is our strategic deterrent, and the nuclear [arsenal] underpins that. If it is the number one priority, whatever funds are available, that should have first call on those funds...So that is my guiding principle in backing my fellow commissioners in saying that we wanted to recommend to you what we thought was essential, and that you would find a way to be able to support that financially."***[63]

But proposing an open-ended commitment to further wide-ranging weapons development, of some indefinite number, on top of the current 30-year modernization plan—without giving any consideration to even the most basic cost/benefit analysis—is folly.

In 2024, payments on the national debt surpassed U.S. defense spending, a potentially ominous portent given calls to increase other spending while continuing to cut taxes.[64] Such fiscal considerations should be seriously weighed against any potential marginal deterrence benefits that may result from successfully deploying another category of theatre weapons systems a decade or more from now, especially when the United States already maintains a credible nuclear deterrent capable of ending all human civilization on the planet.

Escalation Control, "Limited" Nuclear Strikes, and Redefining US Nuclear Strategy

The justifications for increased spending on nuclear modernization to pursue strategic superiority, which would supposedly strengthen deterrence, do not hold up.

If Americans should have learned one lesson from the Cold War, where the U.S. arsenal alone reached a peak of some 31,255 nuclear warheads, it should have been that merely possessing *more weapons* did not equate to *greater security.*[65] Achieving nuclear superiority might sound appealing in congressional testimony, on the campaign trail, or within the bounds of a book, but underneath the surface-level "strong-on-defense" talking points lurks the truth that an overwhelmingly favorable nuclear balance is a chimera. Pursuing such a course risks ruin. If, for example, such buildups stimulate the deep-seated insecurities of the United States's nuclear peers who could see an incentive to accelerate their own arms-racing behavior, this will only further roil an already deeply unsettled geopolitical environment and ultimately undermine U.S. national security.

This is of particular importance when it comes to the potentially large-scale return of tactical nuclear forces to the U.S. arsenal. Proponents of these types of weapons envision a world in which tailored options for limited nuclear use in theatre-scale conventional conflicts in Europe and Asia are essential to U.S. military operations. These warfighting strategies call for the development of new weapons, as discussed throughout this paper. This would necessitate breaking the nuclear use taboo and yet assumes that that can be done without escalating a conflict with China or Russia to a general nuclear exchange.

And that is an irresponsible assumption to make.

The Myth of Escalation Control

The core concept of nuclear deterrence holds that the threat of unacceptable losses created by a nuclear response will outweigh any potential gains made by deploying a "limited" nuclear strike in the first place. That basic calculus—the threat of general nuclear war—is what has kept the world's nuclear-armed nations from using even a single nuclear weapon against one another, no matter how small or limited, in all the wars and crises of the last 75 years.

That is why this class of weapons is so incredibly dangerous.[66] Since they are often described as being smaller and less destructive than the strategic nuclear arms that comprise the majority of the U.S. arsenal, the new weapons risk appearing to seem more "usable." Given that they are traditionally meant to be deployed alongside conventional forces, their mere possession can be seen as increasing the likelihood of their use under pressure or in crises.[67]

The belief that these weapons are somehow more useful or controllable just because they have a smaller explosive yield is deeply misguided. Quite the contrary, deterrence hinges on the belief that nuclear weapons use is unthinkable in all but the most catastrophic of circumstances: when the very survival of the state is at stake. Efforts to lower the bar for nuclear use—or to even envision some scenario in which a crisis with a nuclear rival might be contained by using a limited nuclear strike—is folly.

President Reagan's secretary of state, George Schultz, underscored this when he testified before the Senate Armed Services Committee in 2018:

> ***"The idea of a low-yield nuclear weapon is kind of a mirage. It is a nuclear weapon. It has all kinds of aspects to it. Even a low-yield weapon would have huge damage immediately and radiation and so on. It invites escalation. So, my own opinion is I hate to see people start figuring out how they can use nuclear weapons—that is what it amounts to—because their use is so potentially devastating. You get an escalation going and a nuclear exchange going, and it can be ruinous to the world very easily."***[68]

Forcing an adversary to critically analyze whether they are under a small nuclear attack or a large nuclear attack and expecting them to choose a discriminate response in the few minutes between the detection of any launch and its impact is illogical. And, regardless of the attacker's intent, providing any *casus belli* for nuclear response and escalation allows for an all-too-real road to Armageddon.

A critical study has borne this out. The Reagan administration tested the viability of limited nuclear strikes that were already built into the U.S. war plan with its 1983 Proud Prophet war game. Using actual top-secret plans overseen by real administration officials and military leaders in the chain of command, Proud Prophet probably was one of the most realistic wargames ever conducted by the U.S. government, according to nuclear historian and Reagan administration advisor Paul Bracken.[69] In the game, U.S. and NATO nuclear strikes were used to try and "escalate to de-escalate" a looming conventional conflict from turning into a general war between Soviet and NATO forces. U.S. strategy at the time called for the deployment of limited nuclear strikes to halt Soviet forces and signal that the United States was willing to further escalate unless Soviet leaders agreed to pause hostilities and negotiate a cease-fire.[70] Much like modern versions of such theories, Bracken explains, "U.S. logic here was that further escalation to attacks on cities would make the Soviet Leaders understand that they couldn't win."[71]

Although such limited warfighting strategies had been intended to limit escalation and prevent a general nuclear war, that is not how the situation played out when there were human beings making the decisions while under pressure and in a competitive environment. According to Bracken:

> ***"The Soviet Union team interpreted the nuclear strikes as an attack on their nation, their way of life, and their honor. So they responded with an enormous nuclear salvo at the United States. The United States retaliated in kind. The result was a catastrophe that made all the wars of the past five hundred years pale in comparison. A half billion human beings were killed in the initial exchanges and at least that many more would have died from radiation and starvation. NATO was gone. So was a good part of Europe, the United States, and the Soviet Union.[72]"***

Especially important here is the fact that "this game went nuclear," Bracken observed years later, "not because [Defense] Secretary [Caspar] Weinberger and the chairman of the Joint Chiefs were crazy but because they faithfully implemented the prevailing U.S. strategy."[73] Once the taboo for nuclear use had broken down, it was much easier to escalate from battlefield to strategic nuclear weapons than prevailing theories had assumed. Indeed, despite the "escalate-to-deescalate" logic, escalation control proved impossible once deterrence had broken down and nuclear weapons were suddenly "usable."

"Usable" Nuclear Weapons vs. Reality

The grave implications of uncontrolled escalation once the nuclear threshold has been crossed is further demonstrated throughout modern U.S. history by the fact that though there have been plans drawn up to use nuclear weapons in every American conflict since World War II—up to and including the first Gulf War—they have thus far never been needed. Whether or not these were offered as tactical opportunities, options for option's sake, or as a means to keep the United States' significant tactical nuclear forces relevant in an era defined largely by low-intensity conflict is largely inconsequential. What is important is that no matter how bad a tactical or strategic situation was on the ground, wise strategists always realized that the costs and risks of using even one of these weapons far outweighed their potential tactical benefit.

Nuclear weapons remained holstered even in those moments when U.S. forces were at significant risk of being defeated or even outright destroyed. In the battle for the Chosin Reservoir during the Korean War, for example, UN forces, including the entire U.S. 1st Marine Division, were assaulted by a Chinese force that outnumbered them by as much as four to one. Although that might seem like a prime opportunity for a limited nuclear strike (certainly of the sort that modern proponents would envision), Washington viewed such an action as too extreme—even though the United States maintained near-total nuclear superiority around the globe.[74]

The Discrimination Problem

If any further reason is needed to doubt the utility of these kinds of nonstrategic nuclear weapons, a final concern is that they also undermine the credibility of conventional U.S. forces. Several current and planned designs pose a significant discrimination problem to enemy leaders, create uncertainty around U.S. missile launches, and force rivals to constantly evaluate whether they are under a conventional or nuclear attack.

This is a significant problem for the LRSO and SLCM-N because both are based on the conventional U.S. cruise missile platform, one of the most ubiquitous weapons in the United States' conventional arsenal. Therefore, if the United States finds itself in a conflict with Russia or China, the leaders of those countries will have to ascertain whether any U.S. cruise missile launch is carrying a conventional or nuclear payload—and do so while under attack and extreme pressure to act. In such a scenario, the likelihood of a nuclear response, even against a conventional attack, rises sharply.

Systems that blur the line between strategic and tactical nuclear forces are perhaps even more dangerous. For instance, should the United States decide to launch a single low-yield W76-2 warhead from an *Ohio* or future *Columbia*-class ballistic missile submarine, an adversary might well assume it was under

attack from a 90-455kt nuclear weapon, not an 8kt one, because that is the primary warhead yield of the Trident missile system upon which the W76-2 is fitted.[75] When facing an early warning report describing an inbound Trident missile attack, adversaries would not be incentivized to wait and see what kind of warhead detonates at the missile's terminus if they are instead worried that they are facing a general attack meant to disable their own nuclear forces. Under such "use-it-or-lose-it pressure," what may have been intended as a limited nuclear strike could quickly escalate into a general nuclear war.

IMAGE 7. The Ohio-class ballistic missile submarine USS Wyoming (SSBN 742) pulls into Naval Station Norfolk in Norfolk, Virginia, in support of USSTRATCOM Component Commanders Conference, February 2, 2024.

Petty Officer 1st Class Cameron Stoner, "USS Wyoming (SSBN 742)," U.S. Navy, Naval Station Norfolk, Norfolk, Virginia, February 2, 2024, https://www.navy.mil/Resources/Photo-Gallery/igphoto/2003388416/.

Furthermore, imagining a coercive or "limited" role for these weapons would undercut the United States' overall deterrent posture. The *Ohio* (and future *Columbia*) submarines are meant to serve as the secure second-strike force, the bedrock foundation of America's most essential deterrent capability. Even if one accepts the notion that there might be a use for a limited U.S. nuclear strike on some hypothetical target, launching a weapon from one of these submarines confuses the matter—and even risks the discovery and destruction of America's deterrent strike force by using these nuclear weapons for missions unrelated to strategic deterrence.[76]

Throwing away more precious resources to pursue a strategy of nuclear overmatch, especially at the nonstrategic level, would be inherently destabilizing and potentially put the United States on a path toward some form of uncontrollable nuclear exchange, especially during periods of crisis, instability, or conflict.

Stabilizing Nuclear Policies in a Destabilized World

In a period where even the most optimistic observers admit that many of the old norms and values that once governed international relations and nuclear stability have eroded or fallen away altogether, it is critical to ensure that the U.S. nuclear arsenal is postured in such a way as to promote stability and reduce uncertainty.

The authors of this report suggest the following:

First, U.S. lawmakers should commit the United States to a legitimate sole-purpose, "deterrence-first" nuclear approach, focused on a secure second-strike submarine capability during the next ten years. All new nuclear weapons programs should be judged against President Reagan's statement that "a nuclear war cannot be won and must never be fought." Current modernization plans that go beyond a strategy of nuclear deterrence—one that aims to avoid or discourage open conflict by raising the potential costs of war to such a point that no rational actor would choose to initiate it—should be canceled or postponed. Clarity of purpose is of critical importance when it comes to prioritizing efforts among competing legs of the strategic nuclear triad. Prioritization is essential to ensuring that programs with soaring costs or built around untested assumptions about their possible uses are subjected to close scrutiny.

The Sentinel ICBM, in particular, is a grotesque acquisition blunder. Its costs have already ballooned over 80% since it was initially pitched to Congress during the Obama administration, and few believe that it will cost less than the new projected costs. Revelations in 2024 from the Pentagon, air force, and prime defense contractor Northrop Grumman have shown that initial plans were unrealistic; updating the silo infrastructure might now have to expand to include digging and building entirely new silos in as many as five states. According to Bill LaPlante, the Pentagon's chief weapons buyer, the air force is looking for ways to "reduce the Sentinel project's complexity," but those decisions are unlikely before 2026.[77]

Moreover, the air force has admitted that it might have to reopen the contract to new subcontractors, "when it has a clearer idea of when the major construction work will begin."[78] This delay probably ensures that the USAF will have to extend the life of the current Minuteman III ICBMs while simultaneously developing the Sentinel, an option that the air force repeatedly said was impossible while it was lobbying Congress to build the Sentinel in the first place.

Ultimately, ICBMs are relatively less important for deterrence than other delivery vehicles. Their locations are all known to nuclear rivals, and their ballistic trajectories, mostly over the North Pole, make them only usable against targets in Russia. Given that deterrence relies on credibility—not supremacy—the navy's SSBN fleet could maintain deterrence against multiple targets while lowering overall costs and logistical burdens.

In a similar vein, current U.S. plans to expand upon production of new plutonium pits and next-generation warhead development, in anticipation of a future expansion of the global nuclear arms race, should be reevaluated given their ballooning costs and potentially destabilizing nature.[79] It will matter little if the Pentagon launches a dozen or a hundred new nuclear weapons programs if most are unlikely to be completed in a timely fashion and do not add to the credibility of the U.S. deterrent.

This concern should be familiar to every American taxpayer, given the fact that the last 20 years of conventional weapon systems development, for programs such as the F-35 Joint Strike Fighter, *Zumwalt*-class destroyer, and the littoral combat ship have been seriously over budget and behind schedule and have all failed to deliver the capabilities that were promised.[80] The fact that the national security establishment is focusing so many resources and finite industrial capacity on new nuclear systems that are costly, redundant, and of limited deterrent value suggests that valuable resources are being siphoned off from other vital national security priorities that would do more to make the United States and its allies safer during a time of real uncertainty.[81]

Therefore, funds currently earmarked for the Sentinel should be reprioritized to systems necessary for real deterrence, that is, critically, the navy's SSBN fleet underpinning the United States' secure second-strike force. If resources must be reallocated from one nuclear program to another, finite deterrence needs to be prioritized.

Second, U.S. lawmakers should eliminate new tactical nuclear systems that pose a discrimination problem to potential nuclear rivals. In a world that is seemingly becoming more dangerous, with trust among the major powers near all-time lows, the United States must draw a line between its nuclear and nonnuclear forces. This is especially true when it comes to arming one of the most ubiquitous weapons in the U.S. conventional arsenal, the cruise missile, with a nuclear warhead. If U.S. adversaries cannot tell the difference between a nuclear-armed cruise missile and a conventionally armed cruise missile on a radar screen, the world risks sleepwalking into a general nuclear war in any conflict involving the launch of a U.S. cruise missile. This is crucial in complex theatres such as the Indo-Pacific, where commanders have already voiced concerns about "eroding conventional deterrence" alongside the need to do "everything possible to deter conflict."[82]

By eliminating proposed new dual-use weapons programs such as the SLCM-N and LRSO, the United States could take a major step toward lowering the long-term prospects of both accidental and escalatory nuclear war, save money, and strengthen global strategic stability. Moreover, cutting these still-hypothetical programs would not undermine the U.S. nuclear deterrent; their future development and deployment, however, could make the world a much more dangerous and destabilizing place for American service personnel across the globe.

Furthermore, especially in the case of the SLCM, returning these weapons at scale to the arsenal poses a significant number of problems for U.S. forces around the globe and here at home. Putting nuclear weapons on conventional U.S. navy ships will require burdensome additional maintenance, training, and security to those ships and their crews while also reducing the SLCMs' effectiveness in their primary conventional missions; the SLCM-Ns will take up space that would have otherwise been earmarked for conventional cruise missiles.[83] Likewise, any incident, accident, or collision at sea—which are not an infrequent occurrence even in the age of advanced sensors—could be greatly inflamed by the presence of U.S. nuclear weapons aboard ship.[84] As nuclear weapons expert Hans Kristensen noted in his report

on such incidents during the Cold War, "deploying nuclear weapons on ships and submarines…created unique risks of accidents and incidents. Because warships sometimes collide, catch fire, or even sink… dozens of nuclear weapons [have been] lost at sea over the decades."[85]

Although nuclear supremacy proponents might claim that these nuclear cruise missiles are "essential" for the future of the U.S. deterrent, they have not made a compelling case for how, where, and why such weapons need to be deployed and what costs those deployments might impose on U.S. forces that are already struggling to accomplish their critical conventional missions despite more than 20 years of growing defense budgets.

The U.S. risks little by keeping nuclear cruise missiles relegated to history books. The United States can build a safer future by ensuring that these weapons go no further than the design phase. The reduction of such "more usable" nuclear weapons might even serve as a starting point for future arms control initiatives with nuclear peers further down the line.[86]

Finally, the incoming Trump administration should publicly recommit the United States to conducting no future explosive nuclear testing; a resumption of explosive nuclear testing would dramatically undercut U.S. national security objectives. No one benefits from escalating global tensions, and a shortsighted decision to restart U.S. explosive nuclear testing for the first time since 1992 would result in the breaking of one of the last global nuclear taboos and probably lead to the even greater breakdown of international norms.[87]

Likewise, a resumption of U.S. explosive nuclear testing benefits the United States little—and could even be a strategic liability. The fact that U.S. nuclear weapons have been tested more than those of any other nation gives U.S. forces a serious advantage. American military leaders know that U.S. nuclear weapons work. Moreover, the United States has already spent billions of dollars on its stockpile stewardship program, which aims to maintain readiness and reliability throughout the nuclear force—without the need for explosive nuclear testing.[88] As former Secretary of Energy Ernest Moniz put it in 2022:

> ***"Advances in the U.S. Stockpile Stewardship Program (SSP), which uses science-based assessments of nuclear weapons without the need for explosive testing, ensure that the United States can be more confident than ever in the safety, reliability, and effectiveness of its nuclear stockpile. Every U.S. president since President Clinton has determined through the SSP—rightly—that resuming explosive nuclear testing is scientifically and technically unnecessary."***[89]

By breaking the current moratorium on explosive nuclear testing, U.S. leaders would give a green light to other nuclear weapons states that might want to develop new nuclear weapons that would require similar types of testing. This would not only cede a significant strategic advantage to the United States' rivals but would simultaneously stoke a nuclear arms race that the U.S. national security establishment is already struggling to pay for and manage. It should also be noted, that while this paper is primarily concerned with analyzing issues from a hard-security lens, the prospect of renewed explosive nuclear testing at the Nevada Test Site, could have a major humanitarian impact on the health and safety of millions of U.S. citizens in the American Southwest, at a time when the United States has still failed to fully deal with the destructive domestic legacy of the last nuclear arms race.

Ultimately though, a unilateral decision to resume U.S. explosive nuclear testing would undoubtably have far-reaching effects. It would represent a concrete end to any notion of U.S. nuclear restraint or that the United States still holds some sort of moral high ground regarding nuclear issues when compared to its nuclear rivals. An explosive breakdown of one of the last nuclear taboos might even put the final nail in the coffin of the NPT while setting off a cascade of nuclear weapons program breakouts across the globe.

> **Focusing on shortsighted policies that sound tough but undermine strategic stability does not enhance national security.**

This is no time for sloppy thinking or political games. U.S. policymakers need to be laser-focused on measures to enhance national security. Focusing on shortsighted policies that sound tough but undermine strategic stability does not enhance national security. At best, current plans commit U.S. taxpayers to costly weapons that drive defense contractor profits while doing little to further real deterrence. At worst, the drive for an "all-of-the-above" supremacy approach to U.S. nuclear strategy, with an increased focus on weapons meant to fight and "win" a nuclear war, will only stoke the fires of the global nuclear arms race while lowering the threshold for nuclear use worldwide. Reversing these trends is essential to maintaining U.S. deterrence and global strategic stability while preventing a further slide toward nuclear misadventure, miscalculation, or madness.

The United States—indeed, any country—has nothing to gain from a world where the risk of nuclear war is rising. Thus, U.S. lawmakers should reject policies that might make that outcome more likely, especially if they are based on claims about the declining efficacy of nuclear deterrence in favor of a belief in the value of nuclear supremacy, a concept that has never been tested—and never should be.

The United States and the former Soviet Union came close to the brink of nuclear disaster during the Cold War. U.S. policymakers should be in no hurry to return to the same flawed policies of that age while stoking an unconstrained nuclear arms race that is spending generational wealth on new weapons that will do little to make Americans, U.S. allies, or the world any safer.

Endnotes

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