Deter and Downsize: A Paradigm Shift for Nuclear Arms Control

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Nuclear arms control needs a new paradigm. The current approach, focused on deployed strategic nuclear "delivery ... forged during a Cold War standoff between two heavily armed superpower rivals, the United States and the Soviet Union. This approach deserves recognition for playing an important role in limiting and ultimately contributing to the reduction of their respective deployed nuclear forces, but it is unable to address the nuclear competition within the present geostrategic environment, where multiple states view nuclear forces as critically important to their long-term security. If nuclear arms control is to play a key role in preventing friction between nuclear powers and reducing nuclear risks in the 21st century, there needs to be a shift in focus and an expansion in participants.

The importance of developing new ideas is urgent due to the lack of agreements or confidence-building measures between most of these nuclear states and the poor health and uncertain future of U.S.-Russian nuclear arms control. The latter two countries remain the only states to negotiate and implement agreements limiting their strategic nuclear delivery vehicles.

In an era of renewed arms competition by major powers across multiple domains, Washington and Moscow deserve credit for their continued willingness to exchange information on and allow on-site inspections of their most powerful military forces. The Intermediate-Range Nuclear Forces (INF) Treaty, however, is on life support, with the United States and Russia charging each other with...
willfully violating the 1987 accord. Implementation of the 2011 New Strategic Arms Reduction Treaty (New START) continues to proceed relatively smoothly, but it has a built-in expiration date, either ending in 2021 or, if Washington and Moscow choose to exercise the accord’s one-time five-year extension, in 2026.

Nuclear arms control negotiations can take years to reach an agreement, particularly when diplomatic relations are poor. The clock is ticking on nuclear arms control, and the time to develop new approaches is now.

Cold War Arms Control

The expiration of New START will likely mark the end of an arms control epoch. The treaty may represent the last in a series of agreements stretching back to 1972 that sought to achieve a balance between U.S. and Russian deployed, strategic nuclear delivery vehicles.

During the Cold War, U.S. policymakers and strategists viewed nuclear forces as essential to deterring the Soviet Union; but many became concerned that the risks and costs of an unbridled nuclear arms race could lead to national bankruptcy, a superpower nuclear war, or both. As each side developed large and diverse arsenals, there was also an awareness that the size, structure, posture, and transparency (or lack thereof) of these forces could play a significant, perhaps decisive role in catalyzing future nuclear crises.

This led U.S. strategists and policymakers to conclude that the best means of addressing nuclear risk during an era of superpower competition was reaching agreements under which each side would limit and balance its deployed strategic offensive and defensive forces, that is, the nuclear triad of land-, sea-, and air-based weapons and anti-ballistic missiles.

Recognizing that trust was absent between the two parties, negotiators sought to develop verification regimes for prospective arms control agreements that could walk a fine line between granting enough transparency to determine compliance or detect militarily significant cheating while not revealing so much information that one or both sides felt less secure. The challenges implicit to building trust between rivals further bolstered the case for focusing on deployed strategic delivery vehicles. Long-range bombers, nuclear-capable submarines, and ICBMs were relatively large objects; and satellite imagery, readily available to both sides by the late 1960s, could identify and track their numbers in the field.

Cold War negotiators settled on “attributing” weapons to these systems, i.e., assigning a default number commensurate with the system’s maximum capability to deliver nuclear weapons, rather than attempting to develop intrusive measures to directly count the exact number of warheads or bombs loaded on a strategic delivery vehicle under inspection, which would have been difficult for either side to accept at the time. After the end of the Cold War, both sides sought to develop approaches to count actual weapons in the stockpile, agreeing in principle in 1997 that this would be a key goal of “START III” talks, but these efforts ultimately did not bear fruit.

Deterrence calculations and verification considerations thus informed an approach to arms control that concentrated on limiting deployed strategic delivery vehicles and their attributed, rather than actual, complement of weapons. This left most of the weapons in both sides’ active arsenals and overall stockpiles untouched, including any strategic nuclear weapons not currently in the field and all tactical nuclear weapons. With New START cut largely from the same cloth as the Strategic Arms Reduction Treaty, which entered into force in 1994 but was negotiated during the late Cold War period, U.S.-Russian nuclear arms control treaties and their verification regimes have primarily focused on the strategic platforms that deliver nuclear weapons, rather than the weapons themselves.

To anyone not deeply familiar with this topic, it may come as a surprise that nuclear arms control treaties have never expressly required or provided procedures for counting or reducing the overall U.S. or Russian nuclear weapon stockpiles. This is not a criticism of past agreements, which implemented innovative concepts in an effort to slow and stabilize a breakneck nuclear arms competition between two superpowers. The nature of contemporary nuclear risk and competition,
however, has changed, and nuclear arms control should adapt with it.

In addition, with more than 30 years of experience in on-site inspections under their respective belts, the United States and Russia can change the arms control status quo by leveraging important lessons learned regarding managed access and operational security. This hands-on experience has enabled both sides to accept more intrusive verification measures with New START, including procedures likely unacceptable to both sides during the Cold War. The treaty began an important shift away from a pure attribution approach; both parties now report the actual numbers of weapons loaded on ballistic missiles, and inspectors can verify that number on specific missiles as part of the treaty’s “Type One” inspections. New START and its continuing implementation demonstrate that familiarity with verification processes can open the door for increased intrusiveness from agreement to agreement.

**Framework for Future Talks**

The previous focus on achieving a fine-tuned deterrence balance between the U.S. and Russian fleets of strategic nuclear delivery vehicles sought to eliminate any incentive for either Cold War superpower to launch a sudden, massive nuclear first strike. The nature of contemporary nuclear risk, however, has evolved.

In dealing with Russia, for example, the United States must remain vigilant with regard to the existential threat posed by its strategic nuclear forces, although potential scenarios of brinkmanship and escalation are far more likely to involve Russia’s tactical nuclear systems and regional objectives. In terms of an arms race, the risk of instability and war is higher with regard to the nuclear competitions and ambitions of other actors. Future nuclear arms control agreements require a framework flexible enough to address the risks and costs of the present era, in which nine states field nuclear forces.

One avenue for future nuclear arms control talks is a “deter and downsize” approach. Future negotiations, at first between the United States and Russia, later including other nuclear states, should shift from attempting to orchestrate a numerical balance between strategic delivery vehicles to a slow but steady reduction of states’ total nuclear weapons stockpiles. This framework would allow states to meet their security needs, as each one can continue to field a robust deterrent in the form of strategic delivery vehicles of its choosing, while committing to reducing nuclear weapons.

Two assessments are central to this proposed shift. First, nuclear weapons stockpiles have a lesser deterrence value than deployed nuclear-capable delivery vehicles, primarily because a significant portion of the nuclear weapons in the world remains a stored, recessed, potential threat, as opposed to a direct, immediate, front-line threat, such as operational systems. Second, if the stockpiles of the nine current nuclear states remain indefinitely unlimited and opaque, this absence of restraints or constraints will pose increasing risks and costs that are likely to affect all nuclear states. For example, not all nuclear states have the stringent safety and security standards of the United States. This raises the possibility that accidents, incidents, theft, or terrorism could affect one or more stockpiles, with likely direct and second-order effects for other nuclear states.

Arms control efforts should reflect these dynamics. The nine current nuclear states, for the foreseeable future, will continue to field delivery vehicles for the purpose of nuclear deterrence, and they will resist significant constraints or reductions on these forces. Importantly, however, these forces can deter adversaries regardless of their specific weapons load-out because the numbers of weapons on any given system and their destructive yields will be unknown to other states. Indeed, the numbers of weapons mated to delivery systems does not necessarily need to be high for the purposes of stable deterrence, which is far more dependent on other factors, such as the ability of these systems to successfully avoid or survive an enemy attack. U.S. long-range bombers deter adversaries, for example, because they are capable of striking distant targets, however defended; the specific number of nuclear weapons carried by any given bomber is less of a consideration because it can only be assumed, not determined, by the other party.

In short, it is delivery vehicles rather than stockpiles that deter. Accordingly, a future nuclear arms control framework could double down on this form of deterrence, dispensing with further limits or
required reductions to delivery systems while committing all parties to a slow but steady downsizing of nuclear weapons stockpiles. Some might object to negotiations that do not aim to drive down the numbers of U.S. and Russian strategic nuclear delivery systems, but the global strategic balance has long ceased to hinge on the balance between the U.S. and Russian strategic nuclear triads and is dependent on a much broader suite of nuclear and non-nuclear capabilities fielded by multiple actors. Moreover, the United States under the limits established by New START can retain a nuclear force capable of imposing unacceptable costs against any opponent, however equipped or configured, for the foreseeable future.

Should current modernization plans for the U.S. nuclear deterrent move forward as planned, the United States will field a diverse, flexible force that can continue to contribute to regional and global stability by responding to changes in strategy, force structure, posture, and “MIRVing” by other nuclear states, whether big or small. The highly capable U.S. delivery systems representing the next generation of nuclear-capable forces will be designed, for example, to defeat current and future air defenses and other means by which adversaries attempt to deny access to airspace and sea lanes. These nuclear-capable forces will continue to deploy regionally and operate globally, preventing potential adversaries from realizing diplomatic or strategic gains by rattling nuclear sabers or developing new systems.

Although nuclear deterrence vested in delivery systems can provide significant stability between most of the current nuclear states—North Korea is considered a separate “hard case”—nuclear stockpiles (deployed weapons, stored weapons, and weapons awaiting dismantlement) pose a number of potential security and stability challenges that arms control should seek to corral. The U.S. arsenal is highly secure and deliberately engineered to be fail safe, but these safeguards cannot be assumed for all nuclear states. Above all, nuclear weapons themselves—not delivery vehicles, all of which are potentially dual capable and thus are not purely nuclear threats—should be identified as the destructive agents that negotiations should seek to limit and reduce.

A compelling argument can be made to nuclear states that have not previously engaged in nuclear arms control negotiations or participated in agreements that the deter-and-downsize approach is viable for addressing key elements of nuclear risk. The framework proposed does not expressly limit or prevent these states from developing what they view as high-value, high-prestige delivery systems, for example, ICBM programs that may be directly or closely related to space launch efforts. Moreover, if successful, it will help lower or cap the number of actual nuclear weapons available for employment against them by potential adversaries. Furthermore, some form of participation within future multilateral nuclear arms control negotiations, even if initially only at an observer level, can help facilitate future separate but related talks between certain nuclear states on related matters such as nuclear confidence-building measures.

**Stockpile Reductions**

We propose that a deter-and-downsize agreement apply graduated, percentage-based reductions to participants’ total nuclear stockpiles, perhaps 20 percent every 10 years. This would commit each participating state-party to engage in significant reductions of stockpiles weapons but over a period of time long enough to carefully plan and execute the processes required to disassemble the weapons safely and securely, monitor compliance by the other party or parties, and continually assess if further implementation of the agreement remains in the national interest. Moreover, the initial cut for the United States and Russia would focus on weapons already in the dismantlement queue and long-term storage. Indeed, the United States is already steadily reducing a backlog of long-retired weapons.
This proposed pace of reductions is also reasonable in the context of historical stockpile reductions in the United States and Russia. Based on unclassified numbers, since its Cold War peak, the United States has reduced its total nuclear weapons stockpile at a pace roughly equivalent to 34 percent every 10 years. For Russia, there has been an estimated stockpile reduction of roughly 50 percent every 10 years since its peak, albeit more quickly in the first 10 years and a little slower in the following 20 years. Although these calculations are based on unclassified estimates, they provides enough context to suggest that 20 percent reductions every 10 years is not overly ambitious.

Other nuclear states have argued that they will not join a future nuclear arms control arrangement until the United States and Russia are at lower numbers. A future pact can be designed to allow for different levels of state engagement, building toward full participation in inspections and reductions. A crawl-walk-run approach would benefit states that have never participated in nuclear arms control agreements; early steps could include sending observers to a treaty review conference or on-site inspections, for example, along with other initiatives to become familiar with relevant treaty processes.

Verification of a total stockpile approach would require future negotiators to break new ground, but some current initiatives and a number of past practices from earlier treaties can provide building blocks for a new regime. We propose a three-part approach, with an information exchange and inspection regime tailored to each of the major phases within the life cycle of a finished nuclear weapon: production, deployment, storage, and dismantlement. The parties should begin with an initial exchange of information based on these categories at entry into force, including numbers and locations of weapons, and update that data quarterly or semi-annually. Notifications reporting any significant changes in numbers of weapons by location, such as 10 or 20 percent, could supplement these regular data exchanges. This approach would replace the current New START practice of an annual data exchange and notifications solely reporting on deployed weapons, providing a regular accounting process for total stockpiles that would also offer greater transparency on nuclear weapons movements that could cause concern and potentially undermine stability.

Designing Inspections

The structure of the data exchange should be complemented by the inspection framework. Although
a weapons-focused arms control treaty would necessitate an intrusive inspection regime to verify compliance, New START already has established a precedent for inspectors to get very close to weapons loaded on delivery vehicles. Developing an inspection protocol for deployed weapons can build on the current treaty’s Type One inspections, which currently allow inspectors to view bomb bays and missile front sections, albeit with weapons shrouded, and verify the number of deployed nuclear weapons.

A second type of inspection would concentrate on stored weapons. These inspections would take a holistic view of sites similar to that employed by the inspection regimes established by the Chemical Weapons Convention (CWC) and the International Atomic Energy Agency’s additional protocol agreements. Both implement verification regimes permitting close inspection and investigation of sensitive areas. The CWC “challenge inspection,” for example, allows the inspecting party to monitor all of the inspected facility’s entry points for the full duration of the inspection to ensure no attempts are made to surreptitiously remove weapons from the site. This second type of inspection may be conducted less frequently than those of deployed weapons; each individual state-party would commit to hosting at least one of these inspections in any given treaty year, and all parties would further agree to an annual meeting to collectively determine whether more frequent inspections were necessary. By deliberately limiting the number and frequency of inspection team visits to storage sites, this approach encourages states to store weapons away from the delivery vehicles, which are located at bases that are significantly more likely to be subject to on-site inspections. When inspections of storage areas do occur, however, they will provide an accurate count of these nondeployed weapons.

The third type of inspection would focus on production and dismantlement facilities. Verifying production and dismantlement of nuclear weapons poses difficult questions because states are loath to provide any insight into highly classified information such as weapons designs. Work has advanced, however, on monitoring and tracking weapons, including a recent project sponsored by the U.S. Department of State’s Key Verification Assets Fund aimed at studying the possible future development of a smart, sensing skin for weapons storage canisters, which could record any tampering with the canister or removal of its weapon, among other data.

This and other technical advances could provide a systematic picture of the movement of weapons across the life cycle up to the threshold of dismantlement. Although weapons production and dismantlement would remain hidden from view, if a state had high confidence in the movement of the weapon and were allowed to monitor and measure each facility’s “output” (completed weapons from a production facility or fissile material and perhaps certain parts of the weapon’s assembly from a dismantlement facility), this may provide sufficient confidence that a weapon was assembled or taken apart.

Moving arms control to a total stockpile approach and reducing this stockpile would require the United States and Russia to move out of a comfort zone established by years of implementing treaties centered on strategic delivery vehicles. A deter-and-downsize framework, however, opens up a conversation on how these states can meet security requirements while working to reduce their nuclear weapons stockpiles slowly but steadily. In time, this approach can include other states that are determined to field a nuclear deterrent force but can buy into efforts to reduce overall global nuclear risks.

ENDNOTES


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https://www.state.gov/t/avc/newstart/c52405.htm; AVC, “Verification,” April 8, 2010,

Generation of Treaty Negotiations...and Treaty Negotiators,” in Project on Nuclear Issues: A
Collection of Papers From the 2015 Conference Series, ed. Sarah Minot (June 2016), https://csis-

5. “MIRV” is an acronym for multiple independently targetable re-entry vehicle, i.e., several
independent nuclear weapons placed on a single delivery vehicle, with each one capable of striking a
different target. The ability to successfully develop this capability is considered a significant step in
the maturation of a national nuclear weapons program and can significantly complicate adversary
defense planning. “MIRVing” refers to the practice of placing multiple weapons on a single delivery
system.

6. “Current modernization plans” refer to plans to field the Columbia-class submarines, the B-21
bomber, the Ground Based Strategic Deterrent (replacement for the Minuteman III intercontinental
ballistic missile), the long-range standoff cruise missile, and the nuclear-capable F-35 and the
National Nuclear Security Administration’s “3+2” approach on nuclear warheads.

https://www.defense.gov/Portals/1/features/defenseReviews/NPR/10-05-03_Fact_Sheet_US_Nuclear_T
ransparency_FINAL_w_Date.pdf; “Fact Sheet: Transparency in the U.S. Nuclear Weapons Stockpile,”

8. Michael Krepon “Worth the Wait,” Arms Control Wonk, August 31, 2012,

9. The Model Additional Protocol provides International Atomic Energy Agency (IAEA) inspectors
“complementary access” to suspect sites to “assure the absence of undeclared nuclear material and
activities.” IAEA, “Model Additional Protocol to the Agreement(s) Between State(s) and the
International Atomic Energy Agency for the Application of Safeguards,” INFCIRC/540, September
1997, art. 4(a)i. In addition to directly inspecting sites, inspectors can collect environmental samples
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https://www.iaea.org/newscenter/news/swipe-check-collecting-and-analysing-environmental-samples-
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