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Focusing the Message: Immediate Priorities for US-Russian Arms Control

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Introduction: A Menu for Arms Control

Following the Geneva Summit between Russian President Vladimir Putin and US President Joe Biden on 16 June 2021, high-level diplomats from the United States and Russia began a series of meetings to discuss future arms control and risk reduction measures as part of a broader integrated bilateral Strategic Stability Dialogue.[1]

The extension of the 2010 New Strategic Arms Reduction Treaty (New START) for an additional five years until 2026 was a major success. However, further strides are required to secure legally-binding, follow-on arrangements that would build on previous arms control experience and introduce an array of trust and confidence-building measures, as well as required monitoring, detection and verification measures. It is vital that a reasonable scope is established early on for future negotiations on those arrangements, which may result from the Strategic Stability Dialogue.

Both the United States and Russia have expressed their willingness to negotiate reductions in other weapon systems alongside strategic nuclear weapons. However, it appears that they have different understandings of what those systems should be, which can become a major hurdle in the negotiation process.

Summary

- As arms control discussions commence in the US-Russia Strategic Stability Dialogue, Russia and United States should consider whether a single new arms control agreement / arrangement would be desirable, or rather if a framework of interrelated agreements / arrangements would be more conducive to success in future negotiations.
- In addition to strategic offensive arms, three interrelated issue areas, distinct from one another but connected by technical and political considerations, should be considered as priorities: long-range precision-guided weapons, missile defense systems, and non-strategic nuclear weapons.
- This paper contains an analysis of each of these three areas, including how they undermine strategic stability and present challenges to future negotiations, as well as recommendations for mitigating associated risks.

In fall of 2020, President Putin noted that Moscow sent a proposal to Washington to establish a new "security equation,"[2] which would cover "the entire spectrum of both nuclear and non-nuclear offensive and defensive arms that are designed to address strategic tasks."[3] It appears that as of now, it serves more as a conceptual guideline for future negotiations than a ready-made checklist of items. The items that Russia identifies as meriting discussion, other than strategic nuclear weapons, include anti-ballistic missile defense systems and long-range precision-guided conventional weapons. The prevention of an arms race in outer space is also high on the agenda for Russia.

US Secretary of State Antony Blinken stated on February 3, 2021, that the United States would be pursuing arms control "that addresses all Russian nuclear weapons."[4] Under Secretary of State for Arms Control and International Security Bonnie Jenkins later noted that the United States will seek to capture new kinds of intercontinental-range delivery systems, retain limits on intercontinental ballistic missiles, submarine-launched ballistic missiles and heavy bombers already covered by New START and, as expressed by Secretary Blinken, to address all nuclear warheads, including those not previously limited such as non-strategic nuclear weapons.[5] This ostensibly includes new weapon systems unveiled in Putin's 2018 address to the Federal Assembly that are not covered by the New START Treaty.[6]

Reconciling these two approaches will be the first obstacle to a series of US-Russian negotiation on future arms control measures. Should the two sides succeed in this regard, they will have a large menu of options from which to choose in terms of the focus of negotiations.

Given the plethora of options, it would be useful to decide from the outset whether a new arms control deal would consist of a single treaty or a package of agreements.

Given the plethora of options, it would be useful to decide from the outset whether a new arms control deal would consist of a single treaty or a package of agreements.[7] Russian Deputy Foreign Minister Sergey Ryabkov suggested the adoption of a "package of interlinked agreements that could have a different status from one another, if necessary."[8] Establishing separate dedicated negotiating tracks for each weapon system or category of systems might help negotiations on a follow-on treaty to New START to proceed. There is precedent for this. The United States and USSR launched the Nuclear and Space Talks in 1985 with three veins of negotiation: strategic offensive weapons, intermediate-range nuclear forces, and defense and space weapons.[9] When the INF and START I Treaties were complete, the negotiating tracks were delinked, but the model itself is not entirely new.

However, this approach does not guarantee that negotiations will make progress. Even if different kinds of weapon systems are discussed separately, the two sides may still view them as a complex set of interdependent issues. The failed nexus between offensive and defensive systems, which has been of great importance to Russia in recent decades, vividly demonstrates that disagreements on a particular aspect of US-Russian strategic relations can have a direct impact on the success of other arms control efforts. Therefore, should the United States and Russia opt to go for a package of smaller agreements, they must think carefully about the interrelation between the systems covered by those agreements and how that will affect strategic stability. Should the Strategic Stability Dialogue prove a successful format, it may be desirable for the United States and Russia to continue to utilize it as an overarching mechanism through which to facilitate negotiations between different tracks.

Curating the Smörgåsbord: Priorities for Negotiations

While devising the new US-Russian arms control framework, the two countries should first and foremost address major issues hindering progress in bilateral relations. Several of the primary concerns of both sides include long-range precision-

guided weapons, missile defense systems, and non-strategic nuclear weapons. As noted above, each side has its own concerns related to each of these categories and reconciling those disparate concerns will be important.

a) New Long-Range Precision-Guided Weapons

Since the height of the Cold War, the United States and Russia (the Soviet Union) have been working on ways to conduct precision strikes in limited regional contexts to minimize casualties and facilitate operations on the ground. Although precision-guided weapons are not inherently "wrong" in their own right, modern technologies have made them more problematic. Both the United States and Russia are developing new long-range precision-guided systems, which have reshaped the global strategic landscape in the 21st Century. There are several reasons why such weapons should be incorporated into future arms control agreements.

First, these weapon systems have begun to have a notably negative influence on strategic stability resulting from their technical characteristics. The flat trajectory of long-range hypersonic weapons severely complicates the early warning of an attack, reducing the response time and potentially pushing both the United States and Russia into making worst-case assumptions about each other's behavior. Moreover, the development of long-range conventional weapons exacerbates payload ambiguity. In other words, the defender may mistake a conventional strike for a nuclear one, which would lead to dangerous and unpredictable consequences.

Second, long-range weapons have become an integral part of the modern strategic discourse, which implies that associated fears and hopes sway Moscow's and Washington's strategies and doctrines.[10] For example, President Putin has expressed concerns about the possibility of a "disarming first strike, including one with the use of high-precision long-range non-nuclear weapons comparable in their effect to nuclear weapons," which is construed as a non-nuclear way to either destroy or diminish Russia's nuclear potential.[11]

Third, the United States and Russia have been able to achieve varying levels of success in the development of long-range hypersonic weapons, which increases the risk of an unchecked arms race. Russia's new Avangard and Kinzhal hypersonic systems are already in service[12] and the US Air Force continues to test hypersonic missiles.[13] While these tests have had very limited success thus far, the recent test of the Hypersonic Air-breathing Weapon Concept (HAWC) by the United States in September 2021 may be indicative of a trend reversal.[14]

Although both the United States and Russia began to pursue new long-range capabilities, the two countries' motivations for this differ. The United States' quest for new long-range missiles was initially meant to provide advantages for US military operations against distant or remote targets. This motivation was later compounded by anti-access/area denial concerns in East Asia and in Russia's European neighborhood. Washington's pursuit of long-range precision-guided capabilities has culminated in hypersonic weapon programs derived from the Conventional Prompt Global Strike (CPGS) effort of the 2000s. At the time of writing, none of the US hypersonic weapon programs have yet resulted in the operational deployment of a significant hypersonic force, though a number of research and development contracts have been concluded to this end (including the HAWC) and some designs are slotted for deployment in the foreseeable future.[15]

Some of Russia's new long-range weapons, including hypersonic weapons, have already become a reality. In his 2018 Presidential Address to the Federal Assembly President Putin unveiled new dual-capable weapon systems that were developed as a response to the United States' unilateral withdrawal from the Anti-Ballistic Missile (ABM) Treaty.[16] Of the six new Russian capabilities, two could be counted as strategic nuclear weapons and thus fit within the existing New START limits. Those are Sarmat, an intercontinental ballistic missile that is slated to replace the Voevoda heavy missile in Russia's strategic forces, and the Avangard hypersonic glide vehicle that uses an ICBM booster.[17] Other weapon systems — Kinzhal (high-precision hypersonic aircraft missile system), Burevestnik (nuclear-powered cruise missile), Poseidon (unmanned underwater vehicle), and Peresvet (mobile laser weapon) — do not fit New START's

definition for a strategic delivery vehicle and have no direct US analogues. Burevestnik and Poseidon are said to be still under development.[18] These systems have a potential to be a strong bargaining chip in arms control negotiations, though according to some experts are not likely to be produced in large quantities in the immediate future and thus are likely to have only modest effects on strategic stability for the time being.[19]

Although it might be desirable to prohibit newly developed long-range conventional weapons, and conceivably others in this category, a total ban is hardly feasible. Moscow views long-range conventional capabilities as a tool of missile defense penetration. Therefore, it is possible that Russia would forgo its hypersonic capabilities only if the United States gave up (rather than limit) its missile defense capabilities. Washington is pursuing long-range conventional weapons to augment its military capabilities in remote parts of the world, enhancing its ability to strike distant targets quickly. As such, getting Washington to abandon long-range conventional capabilities amid China's rise also presents challenges. In view of these considerations, a more modest and focused agenda is called for.

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The first thing the United States and Russia should agree to in the short term to is a moratorium on equipping hypersonic and probably other non-ballistic new types of long-range weapon systems with nuclear payloads. In the long term a total ban on such practice should be considered. As noted earlier, hypersonic weapons are highly destabilizing due to their technical characteristics. If either Russia or the United States detects a long-range hypersonic missile several minutes before the missile reaches its target in the context of ambiguity, the defender may initiate a nuclear response even if the missile carries a conventional payload. If all long-range weapons with a non-ballistic trajectory are shown to carry solely non-nuclear payloads, unnecessary escalation in the event of a crisis can be avoided.

However, differences between divergent kinds of trajectories should not be the only chance to distinguish between nuclear and conventional weapons. Another way to hedge against escalation risks associated with emerging long-range missile technologies is limiting the co-deployment of nuclear and conventional weapons. If both the United States and Russia know for sure that some military sites are free of nuclear weapons, they might be more likely to refrain from nuclear retaliation in case they ever receive a notification of a missile being launched form those sites.

Barriers to Implementation

Two recommendations are proposed in this section: (1) prohibiting the deployment of nuclear payloads on non-ballistic long-range weapon systems; and (2) storing long-range weapons equipped with nuclear payloads separately from those with conventional payloads. As the United States and Russia move to discuss potential verification of such steps, the following should be kept in mind.

Verifying a prohibition on nuclear payloads paired with non-ballistic long-range weapon systems would likely require an on-site inspection regime, which would utilize radiation measurements on randomly selected warheads to ensure that the payload is not nuclear in nature. This would likely have to be done with a combination of information barriers, classic detection techniques such as neutron counting (already used for New START verification) and other techniques. While other radiation detection techniques are under development, techniques not previously used in arms control verification would have to be authenticated jointly by scientists from both sides in order to ensure that the resultant data does not threaten to expose classified or confidential information about the weapons themselves.

A move to separate nuclear-equipped from conventional-equipped systems could be verified using these same principles. Given that the sides could potentially offer the facilities housing only conventional weapons for verification, noting the facilities housing nuclear-armed weapons would require more effort in terms of managed access. In both cases, managed access to facilities where weapons are stored would be a challenge, having less to do with verification and more to do with the current lack of trust between the two countries.

b) Missile Defenses

The missile defense debate has raged since the height of the Cold War, notably aggravated by US President Ronald Reagan's Strategic Defense Initiative (SDI). While President Reagan purportedly sought a missile defense capability with the aim to continue reductions on offensive weapons, it had the unintended consequence of signaling to the Soviet Union that the United States was trying to undermine the strategic balance between the two countries' offensive capabilities.[20] The United States exacerbated this concern in 2002 by withdrawing from the ABM Treaty, thus removing all agreed-to limitations on missile defense systems.

The discussion of missile defense is sure to come up in the course of the US-Russia Strategic Stability Dialogue, with Russia seeking limitations on it, probably resembling the limitations set out in the ABM Treaty.[21] Such limits would be a positive step for an agreement or framework of agreements. Despite a sizable budget allocated to the US Missile Defense Agency ($9.187 billion in fiscal year 2021), testing the systems that the United States has developed reveal only about 50% efficacy in highly structured flight tests – when the origin, target and trajectory of the incoming dummy missile are all known.[22] In 2016, the US Government Accountability Office noted that flight testing from missile defense systems "was insufficient to demonstrate that an operationally useful defense capability exists."[23]

Meanwhile, Russia continues to find US missile defense deeply destabilizing for its security interests, in particular the deployment of the Aegis Ashore missile defense system at NATO military bases in Romania and Poland, ostensibly to deter missile attacks from outside the Euro-Atlantic area. Russia considers the system as dual offensive-defensive capable, based on the Mk 41 launcher having been used for both Aegis interceptors and Tomahawk cruise missiles. Moreover, regardless of the system's actual efficacy, the

existence of such systems deployed near Russian territory exacerbates deep-seeded fears in Moscow since the days of Reagan's SDI that ballistic missile defense could undermine Russia's strategic deterrent, even if not immediately. While the system continues to be deployed in Europe, it will pose a challenge to arms control negotiations.

Two things could be done to address this challenge. To begin with, the United States could find it in its interest to limit missile defense in exchange for concessions on Russian non-strategic nuclear weapons. Restrictions on missile defense can be both quantitative and region-specific in nature. They do not necessarily need to be ambitious, but they should signal Washington's willingness to address Moscow's concerns. Even if the two parties only agree to introduce a quantitative ceiling on the number of strategic interceptors that is unlikely to be exceeded in the foreseeable future regardless (let us say 100 or 200 interceptors, depending on the system), Russia's fear of America's potential invulnerability may be considerably reduced.

In addition, the United States could work with Russia on ways to assure Russian security officials that its missile defense capabilities are not meant to counter Russia (indeed, a large-scale attack would overwhelm even an effective missile defense system regardless). The United States has made such a claim in the past. However, Washington's assurances have been insufficient to alleviate Russian concerns that missile defenses may weaken Russia's second-strike capabilities and that the launchers can fire offensive Tomahawk missiles. An arrangement for annual inspections on Aegis Ashore sites may prove helpful; in return, U.S. inspectors might be provided access to Iskander sites in Western Russia.

Barriers to Implementation

The two recommendations posed in this section include: (1) limiting missile defense quantitatively in terms of the number of launchers and interceptors and in terms of geographic placement, potentially in concert with addressing non-strategic nuclear weapons; and (2) working to reduce Russia's concerns that US missile defense is meant to limit Russia's offensive capabilities. These recommendations could be pursued in tandem.

There is precedent for the verification of missile defense systems through the ABM Treaty, which permitted the use of national technical means for monitoring compliance (in particular satellite imagery) and notably prohibited the interference with national technical means of the other party. If this method was to be chosen to augment on-site inspections for monitoring of future limits on ABM systems, the question of anti-satellite capabilities would likely factor into its perceived viability as a verification tool. One solution to this would be for the United States and Russia to jointly develop and authenticate the technology (presumably the satellite camera and associated equipment) and maintain joint custody over it.

Reducing Russia's concerns that US missile defense is a threat to Russian national security poses larger challenges, as Russian concerns about missile defense run deep. As noted above, recycling previous rhetoric that the systems are not meant to counter Russia will not work, in particular as Iran – the country the defense systems are ostensibly meant to counter – does not currently possess missile technology sufficient to reach the continental United States. This paper does not offer specific recommendations on how to verify the intent of the missile defense systems, as it is clear that this problem is of a political nature more than a technical one.

Another factor to consider is that proposals for Russian on-site inspections of Aegis Ashore system in Europe might be opposed by countries who currently host it. Therefore, the United States might be forced into parallel negotiation tracks – one with Russia and another with Romania and Poland – which could prolong negotiations on a follow-on to New START.

c) Non-Strategic Nuclear Weapons

The definition of non-strategic nuclear weapons – sometimes referred to as short- and intermediate-range or tactical nuclear weapons – is a matter of some debate. Before the demise of the Intermediate-Range Nuclear Forces (INF) Treaty, the term "non-strategic nuclear weapons" was mostly used to refer to nuclear weapons covered neither by the INF Treaty (range between 500 and 5,500 kilometers) nor by strategic arms control treaties, such as the SALT and START agreements (range > 5,500 kilometers). However, Russia and the United States regard the range of 5,500 kilometers as the "strategic threshold," which means that all weapon systems with ranges falling below this threshold can conceivably be defined as non-strategic. Although the authors prefer and use the traditional definition, some of our recommendations in this section may also be applicable to INF-range systems.

With respect to range, non-strategic nuclear weapons are considered destabilizing because they are more "usable" in a short-range battlefield situation. One can argue that non-strategic nuclear weapons are relics of the Cold War born from the mistaken idea that because of the super powers' differing distances from Europe one side could use shorter-range or lower-yield nuclear weapons on the battlefield without provoking a strategic nuclear response. While the "usability" of tactical nuclear weapons as compared to strategic-range nuclear weapons, such as intercontinental ballistic missiles, can be contested, this issue has cropped up repeatedly in the US-Russia context.

The United States has pressed Moscow on non-strategic nuclear weapons with comparable intensity as Russia's insistence on addressing missile defense. It is unlikely that one would come without the other, so in this regard it may be desirable to include both classes of systems in future negotiations.

Another challenge to including non-strategic nuclear weapons in an arms control treaty is the prevailing belief in Moscow that Russia needs non-strategic nuclear weapons to be able to balance US conventional programs such as Prompt Global Strike.[24] In this regard, Moscow might be unwilling to discuss non-strategic nuclear arms if its fears of conventional inferiority are not also addressed.

Previous steps to limit non-strategic nuclear weapons, which primarily include the Presidential Nuclear Initiatives of the 1990s, were unilateral in nature and neither verified nor codified.[25] Although they were incredibly successful, non-binding measures are not a viable solution in the modern context of renewed great power rivalry. The United States and Russia could shed light on their non-strategic nuclear capabilities to make a potential binding agreement more likely.

> *A positive first step would be for both parties to disclose to each other detailed information about the number and locations of non-strategic stockpiles.*

A positive first step would be for both parties to disclose to each other detailed information about the number and locations of non-strategic stockpiles. Although it can be assumed that intelligence services are equipped to assess the counterpart's non-strategic nuclear capabilities, the lack of consistent official information can be an obstacle to arms control and disarmament efforts. On October 5, 2021, the U.S. State Department disclosed "newly declassified information on the U.S. nuclear weapons stockpile" including information about non-strategic nuclear weapons, which might prompt Moscow to do the same.[26] Greater transparency on stockpiles can send a positive signal to the international community that Moscow and Washington are committed to their NPT obligations and potentially lead to more fruitful discussions at the forthcoming Tenth NPT Review Conference. In order for the warheads to be measured and confirmed, parties would need to provide direct access to their storage facilities. There are several techniques for warhead confirmation that are under various stages of research, including zero-knowledge protocols, that could be a way for the parties to protect their sensitive military information. [27]

After the capabilities to be negotiated have been defined, Moscow and Washington could agree to impose legal limits on non-strategic nuclear arms. Contrary to the established practice, those limits should not be confined to quantitative restrictions on stockpiles but should also include qualitative considerations. In particular, the United States and Russia may negotiate a "usability threshold" that should never be crossed. The definition of a "usability threshold" would need to be explored in more detail by US and Russian negotiators and could include consideration of yield or the basing mode of the delivery vehicle. This measure would be instrumental in preempting further development of low-yield nuclear warheads, which are purportedly intended to raise the nuclear threshold and the credibility of deterrence[28] but in fact make nuclear escalation more likely.

> *The United States and Russia may negotiate a "usability threshold" that should never be crossed. The definition of a "usability threshold" would need to be explored in more detail by US and Russian negotiators and could include consideration of yield or the basing mode of the delivery vehicle.*

Barriers to Implementation

This section contains two recommendations: (1) disclosing the number and locations of stockpiles of non-strategic nuclear weapons pursuant to legally binding, quantitative and qualitative limits on them; (2) establishing a "usability threshold," which would seek to define and limit or prohibit qualitative aspects of non-strategic nuclear weapons (like speed and stealth) that make the risk of nuclear escalation more acute.

A disclosure on US and Russian stockpiles by itself would not pose technical challenges. It could serve as a confidence-building measure that would be a positive step towards negotiating legally binding limits. Verifying that negotiated limits are being observed, however, would pose significant challenges related to managed access in storage facilities and protection of classified for confidential information about the weapons themselves. As with verification of long-range precision-guided weapons, such a regime for non-strategic nuclear weapons would likely require on-site inspections and creative use of classic and emerging radiation detection technologies. The same challenges are present for the "usability threshold."

In this regard, re-establishing working-level technical cooperation between national laboratories and national academies of science to develop a regime of technically solid and jointly authenticated verification techniques would be a positive step. In the case of the "usability threshold," this work would likely have to be preceded by a working level discussion of which qualitative aspects would constitute a more "usable" weapon such that the scientists would have a concrete goal to verify.

Looking Ahead: A Drive Towards Optimism

The United States and Russia have rich experience in adapting arms control to different kinds of threats and new security realities. Given that the US-Russia Strategic Dialogue continues and remains meaningful, negotiating a legally binding treaty or framework of treaties should be well within the realm of possibility. In order to achieve that, the two states will need to formulate mutually acceptable and verifiable measures to control and ideally reduce the number of relevant weapon systems. It is understood that this will likely be a difficult process that will entail political compromises on both sides and will also require full or partial resolution of outstanding mutual grievances related to arms control and international security issues.

To this end, the United States and Russia should:

- define and limit novel nuclear armed, long-range weapon systems;
- store novel long-range weapons equipped with nuclear payloads separately from those with conventional payloads;
- limit missile defense quantitatively in terms of the number of launchers and interceptors, as well as in terms of geographic placement, potentially in concert with addressing non-strategic nuclear weapons;
- work to address Russia's concerns that US missile defense is meant to limit Russia's offensive capabilities;
- disclose the number and locations of stockpiles of non-strategic nuclear weapons pursuant to legally binding, quantitative and qualitative limits on them; and
- establish a "usability threshold," which would seek to define and limit or prohibit qualitative aspects, in addition to quantitative aspects, of non-strategic nuclear weapons that make the risk of nuclear escalation more acute.

If both parties display the necessary political will, the time until the next US president takes office should be sufficient to agree on a set of binding arms control measures that will help strengthen international security and reduce the risk of nuclear war.

Endnotes

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The ABM Treaty prohibited: Missile defenses that can protect all U.S. or Soviet/Russian territory against strategic ballistic missiles; Establishing a base for a nationwide defense against strategic ballistic missiles; Development, testing, or deployment of sea-, air-, space-, or mobile land-based ABM systems or components; Development, testing, or deployment of strategic missile interceptor launchers that can fire more than one interceptor at a time or are capable of rapid reload; Upgrading existing non-ABM missiles, launchers, or radars to have ABM capabilities and testing existing missiles, launchers, or radars in an ABM mode; Deployment of radars capable of early warning of strategic ballistic missile attack anywhere other than on the periphery of U.S. or Soviet/Russian territory and oriented outward; Deployment of ABM radars capable of tracking and discriminating incoming strategic targets and guiding defensive interceptors, except within a 150-kilometer radius of the one permitted defense; Transfer or deployment of ABM systems or components outside U.S. and Soviet/Russian territory. For more information, see Arms Control Association, "The Anti-Ballistic Missile (ABM) Treaty at a Glace." Available at: https://www.armscontrol.org/factsheets/abmtreaty.

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23 "Missile Defense: Assessment of DOD's Reports on Status of Efforts and Options for Improving Homeland Missile Defense," Government Accountability Office, https://www.gao.gov/products/gao-16-254r.

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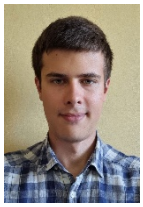
26 U.S. Department of State, "Transparency in the U.S. Nuclear Weapons Stockpile," October 5, 2021. Available at: https://www.state.gov/transparency-in-the-u-s-nuclear-weapons-stockpile/.

27 "Nuclear Proliferation and Arms Control Monitoring, Detection, and Verification. A National Security Priority: Interim Report (2021)," The National Academies of Sciences, Engineering, and Medicine, https://www.nap.edu/catalog/26088/nuclear-proliferation-and-arms-control-monitoring-detection-and-verification-a.

28 See "Nuclear Posture Review 2018" (Washington, DC: Department of Defense, Office of the Secretary of Defense, February 2018).

About the Authors



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About the Young Deep Cuts Commission

The Young Deep Cuts Commission (YDCC) is a group of twelve young arms control experts from Germany, Russia, and the United States with diverse academic and professional backgrounds. The Young Commissioners develop fresh ideas to strengthen and revitalize nuclear arms control and disarmament. YDCC is part of the Deep Cuts project, an independent, nongovernmental initiative, which provides decision-makers as well as the interested public with concrete policy options based on realistic analysis.

For further information please go to
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