Beyond Arms Control: Cooperative Nuclear Weapons Reductions – A New Paradigm to Roll Back Nuclear Weapons and Increase Security and Stability

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ABSTRACT
Arms control treaties have served admirably to control and limit nuclear weapons for several decades. The provisions and limits, however, have proven to be inflexible, often limited in scope to specific systems and countries, and difficult and time-consuming to negotiate. It is time for the nuclear weapons states to consider a new paradigm to incentivize reductions while building security and stability in a more enduring and expandable format. Previous nuclear weapons security cooperative efforts between the US and Russia under the Cooperative Threat Reduction (CTR) program demonstrated that countries can share data and access on nuclear warheads. Under a new cooperative forum to be established by the US and Russia and then expanded to include all five declared nuclear weapons states, a new paradigm can be envisioned that would allow for modernization as a trade-off for reductions and increases in security and stability measures. The nuclear weapons states should create an enduring forum to negotiate trade-off formulas and implement them through specific contracts to be managed as issues and technologies arise. As security and stability measures strengthen, the nuclear weapons states can increase incentives to roll back inventories on a continuous basis.

If the era of arms control treaties is drawing to a close, nuclear weapons states urgently need to find a new way to control and manage the risks posed by their nuclear arsenals. A new paradigm is needed to break the current impasse and inject fresh thinking and initiative into the challenges faced by nuclear weapons states caught in a cycle of continuously increasing their nuclear capabilities in a desperate effort to deter the other from using nuclear weapons in response to an inevitable crisis.

Based on previous successful cooperation between the US and Russia on nuclear weapons security under the Cooperative Threat Reduction program, it is possible to envision a new approach pursued by a standing commission of nuclear weapons experts from both sides to negotiate nuclear weapons reductions and enhanced security measures as trade-offs for modernization. In exchange for introducing new offensive capabilities, the parties would agree to reduce their overall arsenals under elimination contracts.

CONTACT William M. Moon moonwilliamm@gmail.com Independent Consultant, Lorton, VA, USA This article has been republished with minor changes. These changes do not impact the academic content of the article. © 2020 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group on behalf of the Nagasaki University. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.
negotiated and implemented by the standing commission, and funded by the parties in proportion to their current stockpiles as codified by the new START treaty. A new paradigm that goes beyond previous arms control agreements, to roll back nuclear weapons while increasing security and stability, should be pursued by establishing a standing US-Russian joint commission on nuclear weapons and expanded to include both tactical and strategic nuclear warheads, and all nuclear weapons states.

**Deterioration of the Classic Arms Control Regime**

Arms control treaties and negotiations have served as the centerpiece of U.S.-Russian relations since formal negotiations on Strategic Arms Limitations Talks began in 1969 (Federation of American Scientists 2020). Over five decades, US and Russian leaders and negotiators have engaged in periodic discussions addressing the constitution of their respective nuclear arsenals leading to a series of agreements and treaties to reduce and limit their nuclear inventories.

Further negotiations on future arms control treaties, however, are at a standstill. The traditional arms control process establishing specific numbers and reductions of nuclear weapons by designated delivery systems, counting rules, and complex verification procedures is rapidly fading into obscurity. The United States and Russia have been engaged in trading accusations of treaty violations and withdrawn from formal treaties. From the demise of the ABM Treaty in 2002, to the recent INF Treaty exit, to the potential dissolution of the Open Skies Treaty (Ignatius 2019), and the pending expiration of the New START Treaty in February 2021 that the U.S. has indicated no interest in renewing (Miller and Narang 2019), the future of arms control treaties appears dismal. “On its current path, the U.S.-Russia nuclear arms control regime likely will come to an end in 2021” (Pifer 2019).

The reasons for the current demise of arms control are wide and varied. The United States and Russia, to varying degrees, have both expressed frustration that other countries such as China remain outside the purview of the current arms control regime. Technology advancements have progressed with greater speed, making both parties lament the complex and lengthy negotiations and intrusive verification methods required by treaties that cannot keep up the pace. These trends have weakened the arms control regime and contributed to the erosion of support for formal arms control treaties on both sides. As a result, hopes for new treaties, and even for an extension of the New START treaty, are steadily diminishing. “Building tension on top of these deliberate decisions to expand the world’s nuclear weapons dangers, the state of arms control efforts to arrest and reverse this course currently looks bleak,” (Weber and Parthemore 2019, 455). For the past 50 years, arms control treaties provided a stage for the sides to find common ground to moderate and stabilize relations. Today, the weakened state of the arms control regime is instead contributing to a further decline in US-Russia relations (Pifer 2019).

**Nuclear Weapons Reductions and Nuclear Security under Cooperative Threat Reduction**

The history of US-Russian cooperation on nuclear weapons, however, is not limited to arms control treaties. From 1991–2013, the United States and Russia worked closely together to eliminate and secure thousands of Russian nuclear weapons at dozens of sites
across Russia. Under the Cooperative Threat Reduction (CTR) program, teams of US and Russian nuclear weapons and security experts worked together to drastically cut nuclear weapons delivery systems, reduce and consolidate nuclear weapons storage sites, and eliminate nuclear warheads beyond the limits established by formal arms control treaties (Harahan 2014).

CTR cooperation was directly responsible for the elimination of thousands of nuclear weapons, delivery systems and infrastructure (see Figure 1). CTR nuclear weapons eliminations were conducted in support of, and in accordance with the START and START II Treaties, but in many ways went beyond the treaty requirements. While treaty inspectors monitored the SS-20 and SS-25 nuclear weapons production facility in Votkinsk, Russia, for example, by guarding the perimeter and tracking all ingoing and outgoing traffic, CTR program managers and technical experts conducted visits inside the facility to verify the implementation and completion of the ICBM missile elimination work conducted under a negotiated U.S. contract. CTR went beyond assisting in dismantling missiles, launchers, and components required by the treaty. “CTR policy officials negotiated with Russian officials over the schedule for eliminations of the missiles and launchers” (Harahan 2014, 352). The program also worked to eliminate the solid rocket motors and excess infrastructure. For the SS-N-20 Submarine Launched Ballistic Missile (SLBM), CTR program managers even negotiated to eliminate the sophisticated guidance system by smashing them with a hammer. The CTR Strategic Offensive Arms Elimination (SOAE) program worked cooperatively with the Russian Federal Space Agency, the Strategic Rocket Forces, and the facilities associated with the production of Russian strategic nuclear weapons delivery systems to facilitate compliance with the relevant treaty provisions, exceeding requirements in terms of components and infrastructure eliminated, accelerated schedules, and site access and transparency involved in elimination operations.

Figure 1. Nuclear Weapons Reductions Attributed to the CTR Program 2012.
Source: Moon (2017).
The CTR Nuclear Safety & Security (NWS&S) program with Russia went even further beyond arms control treaties. Unlike treaties that use delivery systems as the treaty limited items and counting rules to account for deployed warheads, the CTR NWS&S program worked with the Russian Ministry of Defense’s 12\textsuperscript{th} Main Directorate to secure, consolidate, and facilitate elimination of non-deployed nuclear warheads associated with both strategic and non-strategic delivery systems. CTR program managers conducted technical visits to dozens of nuclear warhead storage sites containing thousands of tactical and strategic nuclear warheads in order to monitor the execution of over 2B USD worth of contracts to transport the nuclear weapons to elimination facilities and enhance the security of the remaining warheads destined for dismantlement. These sites were not identified in any treaty. In fact, the Russians considered the locations of the nuclear warhead storage sites to be classified, requiring the cooperative development of a numbering system for the sites so that US and Russian officials could communicate and track progress on individual sites without revealing classified information.

The CTR Nuclear Weapons Transportation (NWT) program was instrumental in encouraging the reduction of the Russian nuclear warhead inventory. As Russian delivery systems were being reduced in accordance with arms control treaties, the associated deployed warheads had to be sent back to nuclear weapons storage sites and eliminated. The NWT program provided secure railcars and paid for shipments to storage and elimination sites under a carefully constructed and negotiated procedure designed to ensure that U.S. assistance did not support the shipment of new warheads to deployed sites. While agreeing to provide secure railcars for warhead transportation, for example, CTR officials agreed that Russia would eliminate two older transport railcars for every new railcar provided, thus reducing the overall Russian warhead transportation capacity (Harahan 2014, 276).

CTR cooperation with Russia survived and flourished for over 21 years even though the NWS&S programs were much more intrusive and required greater site access than arms control treaties. In addition, CTR NWS&S cooperation directly addressed the security and elimination of nuclear warheads rather than delivery systems and counting rules. By 2013, CTR cooperation enabled the elimination of nearly all the delivery systems required for compliance with the New START treaty and provided enhanced physical security systems for Russian nuclear warhead storage and rail transfer points across the entire inventory. The CTR program played a significant role in enhancing strategic stability by supporting Russian sovereignty over its nuclear inventory while encouraging its security, consolidation, and reduction.

When the CTR Umbrella Agreement with Russia expired in 2013, U.S. offers to extend the agreement and continue cooperation on nuclear weapons were spurned by Russian officials, but for different reasons than those that are holding up arms control treaty progress today. One of the main reasons cited by the Russians was that they were no longer interested in continuing a program that was based on a donor-recipient relationship. The Russian economy rebounded from its desperate beginnings when the Soviet Union dissolved, enabling Russia to provide funding for its nuclear security needs. A Russian Foreign Ministry official told Kommersant that, “The agreement is discriminatory toward Russia and does not take into account the changes that have occurred since the moment of its signing during the early 1990s, which were very difficult for our country” (Digges 2012). “As matters stand, we do not need American money for it anymore,” said Vladimir Orlov, an analyst with the Center for Policy Studies in Russia (Nuclear Threat Initiative 2012).
From the Russian perspective, nuclear weapons cooperation had provided significant benefits, but having completed so much work together, the future benefits had greatly diminished in proportion to the intrusive site access requirements that remained. Even though the Russians were assuming a greater percentage of the financial burdens and cost sharing responsibilities for the elimination and security work through technical negotiations on joint requirements plans, the United States continued to benefit from the same level of site access. In 2012, the Russian Foreign Ministry noted the Nunn-Lugar program, “made America privy to too much ‘sensitive information’ about Russia’s nuclear arsenal” (Digges 2012). Russian interest in continued cooperation faded, but not because it was not viewed as beneficial, but because it failed to transition to a reciprocal and mutually beneficial arrangement. During the implementation of nuclear security enhancements across dozens of sites in Russia, at each site American technical experts were “granted three visits for outer observation of nuclear storage facilities: one before work begins, one when 50% of the security enhancements have been made, and one when completed” (Falgenhauer 2007). Russian visits to US nuclear weapons sites on the other hand were few and far between. The Chief of the 12th Main Directorate, General Lieutenant Verkhovtsev said that, “Americans are too shy to allow Russians to visit their nuclear storage facilities in return, because the security there is comparatively flimsy” (Falgenhauer 2007). Limited attempts to establish reciprocal and mutually beneficial site visits failed to take hold before the CTR agreement expired.

**Nuclear Modernization Programs Accelerating**

The U.S. Department of Defense 2018 Nuclear Posture Review (NPR) was issued in February 2018, citing an “unprecedented mix of threats” posed by new types of nuclear capabilities in the Russian and Chinese arsenals, North Korean pursuit of nuclear weapons, and, Iranian technical capability and capacity to build a nuclear weapon within a year (US Department of Defense 2018, V). The 2018 NPR introduced several new nuclear weapons capabilities to enhance the U.S. arsenal, including a new low-yield SLBM nuclear warhead, nuclear-armed submarine-based cruise missiles, and research on a new ground-launched cruise missile (US Department of Defense 2018, XII).

In March 2018, Russian President Putin announced a new series of nuclear weapons developments of their own, including a new nuclear-powered cruise missile, a nuclear-powered unmanned underwater delivery vehicle that could carry a nuclear warhead, and development and deployment of a new hypersonic glide vehicle for its ballistic missile fleet (Putin 2018). “For the first time ever – I want to emphasize this – for the first time in the history of nuclear missile weapons, including the Soviet period and modern times, we are not catching up with anyone, but, on the contrary, other leading states have yet to create the weapons that Russia already possesses” (Putin 2020).

US concerns regarding the Chinese nuclear stockpile also continue to grow rapidly. In a presentation to the Hudson Institute on 29 May 2019, DIA Director Lieutenant General Robert P. Ashley Jr. assessed that, “Over the next decade, China will likely at least double the size of its nuclear stockpile in the course of implementing the most rapid expansion and diversification of its nuclear arsenal in China’s history. Last year, China launched more ballistic missiles for testing and training than the rest of the world combined” (Ashley 2019).
Russia, China, and the United States are racing to build hypersonic weapons, “this new arms race promises to upend strategic calculations” (Stone 2020). Russia announced the first deployment of hypersonic ballistic missiles in December 2019 (RFE/RL 2019), while the U.S. is investing 1B USD annually in hypersonic weapons research (Stone 2020). China displayed its hypersonic-glide missile in a parade along Beijing’s Changan Avenue in October 2019 (Panda 2019). “Arms control treaties, however, are hardly in vogue these days. And with China, Russia, and the United States egging each other on with one high-profile test after another, the hypersonic arms race seems likely to accelerate” (Stone 2020).

Together, the deterioration of arms control, the expiration of cooperation on nuclear weapons security and eliminations, and an acceleration of new nuclear weapons developments portend a return to an unlimited and unmanaged arms race. “With all three countries modernizing their nuclear programs, and dim prospects for arms control, the risk of a great-power nuclear arms race is growing by the day. And unlike US-Soviet nuclear competition in the Cold War, today’s would be a three-way nuclear arms race, the likes of which the world has never seen” (Miller and Narang 2019).

Development of Alternative New Approaches to Manage and Reduce Nuclear Weapons is Urgently Needed

Current mechanisms to manage or cap the expansion of nuclear weapons inventories and the dangers they pose are nearing extinction. An extension of New START is the only prospect for maintaining any limits on nuclear weapons. Attempts to broaden discussion on nuclear weapons under Strategic Stability Talks between the U.S. and Russia have failed to gain traction with each side oscillating between tepid proposals to meet (Neuneck 2019, 432) and a series of postponed and canceled meetings. Progress has also been hampered by the differing views and understandings regarding the definition and scope of strategic stability and the issues to be addressed (Berls, Ratz, and Rose 2018).

In this current environment, new approaches are desperately needed to avoid a return to the Cold War arms race that could now include multiple entrants and threaten the foundation of the Non-Proliferation Treaty. “The world is at the start of a new nuclear arms race, with the demise of important arms control agreements and increasingly robust nuclear weapons modernization and expansion plans by multiple countries. As such, the international community is searching for new ideas that could help change this trajectory and reinvigorate arms control” (Weber and Parthemore 2019). In addition to the extension of New START as advocated by many across the arms control community (Gottemoeller 2019a), advocates are developing a number of new ideas and proposals. These include: proposals to limit and eliminate nuclear-armed cruise missiles (Weber and Parthemore 2019); development of a new pathway toward eventual nuclear disarmament designed to maximize strategic stability as reductions occur (Gower and OBE 2019; Neuneck 2019); “developing a revised conceptual framework for arms control and strategic stability that takes into account emerging technologies and additional strategic actors (Einhorn 2019); and, limits or even outright bans on “disruptive technologies” such as hypersonic weapons (Stone 2020). Another proposal calls for adapting the “Build-down” concept – first advanced by Alton Frye in 1983, allowing for modernization programs while seeking greater reductions in older systems at the same time (Krepon 2020b). “In essence the build down principle says that no new weapons should be deployed unless a larger number
of existing weapons are destroyed” (Frye 1983, 293). “The build down seeks not to prohibit modernization, but to regulate it.” (Frye 1983, 300).

Even President Trump has expressed concerns with an “uncontrollable arms race” (Haltiwanger 2019), while at the same time Russia has proposed extending New START (Reif and Bugos 2020). Whether these proposals are legitimate expressions of concern or tactics to dodge critics and position themselves as the more reasonable leader, such pronouncements provide an opening for new proposals and approaches. The challenge is to develop an approach that can overcome frustrations that both sides have had with previous arms control agreements while appealing to each country’s national interests.

**Common Interests in Managing Nuclear Weapons Competition**

After 50 years of arms control agreements and over 20 years of cooperation on nuclear weapons eliminations and nuclear security, the United States and Russia have a history of common interests in nuclear deterrence, nuclear stability, transparency, and managing nuclear weapons. Such interests demonstrate that it may still be possible for the sides to manage their nuclear weapons inventories on the basis of their mutual interests, and that such interests could contribute to building a new approach using their diplomatic and cooperative tool sets. Even though the sides have failed to agree on an approach to managing nuclear weapons in today’s fraught political environment, both remain reluctant to abandon the possibility of negotiations and neither are enthusiastic about pursuing non-constrained nuclear weapons development.

**A New Approach: Moving from Individual Arms Control Negotiations to a Standing Joint Organization to Address Nuclear Weapons Safety, Security, and Inventory**

New initiatives and proposals for arms control all require an agreement to establish an initial meeting or forum within which the sides can engage in discussions and negotiations. This first step has proven to be a huge obstacle that has become too difficult to overcome. Presidential summits between the United States and Russia have been relegated to side meetings of other ongoing international forums. The simple process of setting up meetings has become bogged down by the burdens and controversies surrounding numerous political issues. Arms control treaties, or any new proposals or approaches to nuclear weapons, don’t have the attraction they once had to drive the common interest in meeting that they once did. “The place to begin in resurrecting US-Russian arms control is to recreate serious bilateral strategic stability talks – not specific, one-off sessions in which delegations exchange familiar talking points on a narrow range of current topics but regular meetings … ” (Einhorn 2019).

A new approach is needed. Rather than pursuing specific proposals or individual treaties, the U.S. and Russia should establish a standing joint commission on nuclear weapons to provide an open forum for discussions on a wide range of issues including arms control, strategic stability, nuclear safety and security, and deterrence.

Previous arms control treaties such as INF and START included provisions to establish standing committees to enable ongoing discussions and negotiations on treaty
implementation. INF had the Special Verification Commission (SVC) and New START established the Bilateral Consultative Commission. These organizations met regularly to address issues ranging from administrative and procedural issues to concerns regarding treaty compliance. Concerns could be raised between the parties to resolve differences. Participants included negotiators and diplomats together with technical experts and scientist from both sides. Both sides recognized that such forums were essential to maintain the arms control process as technologies and processes evolved over time.

One of the greatest strengths to the durability of US-Russian cooperation on the CTR program was also the continuous and enduring technical discussions conducted during the implementation of the security and elimination agreements. Both sides supported these ongoing discussions – even during times of intense political differences. The common interest in technical discussions on both arms control treaties and CTR cooperation suggest that the United States and Russia may still harbor a mutual interest in establishing a forum to continue similar engagements today. Instead of establishing such forums for specific treaties or agreements, the sides may find it more palatable to establish an overall joint commission first, from which specific agreements may be generated.

The P5 organizational construct can provide the basis for establishing a joint commission to address nuclear weapons safety, security, and inventory discussions. “In 2007 the five recognized nuclear-weapon states convened for the first time to examine what nuclear transparency and confidence-building measures they could jointly pursue” (Berger and Chalmers 2014). The P5 is comprised of the five countries, the US, Russia, China, the UK, and France, acknowledged and recognized by the United Nations as nuclear weapons states. Despite the obvious common interests conferred on the P5 as nuclear powers, and the responsibilities of those countries as nuclear weapons states under the Non-Proliferation Treaty, the forum has not been utilized to take significant action on major nuclear weapons issues such as arms control, nuclear weapons competition and the arms race, nuclear stability, or deterrence. These issues have traditionally been addressed through bilateral arms control treaties between the two largest nuclear weapons states.

Given the deterioration of the current bilateral arms control regime, the United States and Russia should consider establishing a joint commission under the general auspices of the P5 forum. The charter for such a commission should refer to the United Nations charter recognizing the countries as acknowledged nuclear weapons states and note the commission’s role in supporting their responsibilities as nuclear weapons states under the NPT. These references would provide the commission with international credibility and recognition. This would enable and support establishment of the organization in order to consolidate arms control discussions together with key issues including nuclear safety and security, confidence-building measures, and nuclear stability. A Joint Nuclear Weapons Commission on Safety, Security, and Stability could satisfy a number of issues that the current arms control regime and strategic stability talks have failed to achieve. Among the advantages of a joint commission are:

- establishment of a permanent, standing forum for the sides to raise concerns;
- a technical forum that can be insulate nuclear weapons concerns from other ongoing political disagreements;
an opportunity for Presidents Trump and Putin to establish a legacy organization devoted to a just cause;

an ability to formulate and update the scope of discussions and negotiations in a more structured architecture to explore potential trade-offs and to allow more difficult issues to sit on the sidelines without being totally ignored. For example, ballistic missile defenses may be part of some discussions while excluded from others;

creating a productive forum to explicitly address P5 responsibilities to the NPT;

the flexibility and potential to expand to include other P5 members on particular issues.

During US-Russian discussions on the possible extension of the CTR agreement, the Russians often cited the need to re-establish a new foundation for cooperation to move away from the donor-recipient nature of CTR cooperation. In 2012, a Russian Foreign Ministry official noted that “Russia did not oppose such future cooperation” so long as it “gave both countries an equal footing” (Digges 2012). Follow-on discussions led the parties to negotiate a joint US and Russian agreement to conduct nuclear security activities under the Framework Agreement on a Multilateral Nuclear Environmental Programme in the Russian Federation (MNEPR) and a related bilateral Protocol (White House 2013). Despite the agreement, however, few activities materialized.

Given the previous decades of cooperation between the United States and Russia on nuclear weapons eliminations and nuclear weapons security, and a long history of arms control, a key question today is whether such cooperation could be reimagined to develop a bilateral, or even a multilateral, standing commission built to incentivize nuclear weapons reductions and minimize tactical and strategic nuclear weapons stockpiles while increasing their security and stability in a new cooperative venture that goes beyond traditional arms control limits.

For a number of reasons, a US and Russian agreement to establish a joint commission may be possible at this time, despite political tensions. Russia has increasingly looked to the establishment of international institutions to fortify its interests “over the past two decades, and especially after Russia’s invasion of Ukraine in 2014” (Stronsky and Sokolsky 2020). Moscow led the establishment of the Eurasian Economic Union (EAEU) in 2015, and as a founding member of the Shanghai Cooperation Organization (SCO) participated in its 17th summit in 2017. These international institutions, and to a lesser extent the BRICS group (Brazil, Russia, India, China and South Africa) provide Russia with opportunities to “highlight the importance of the United Nations and counter what it perceives as repeated Western efforts to skirt those norms, bolster its international standing. The influence of these institutions, however, should not be overstated. For Russia, their importance is more symbolic than substantive” (Stronsky and Sokolsky 2020). Establishment of a joint commission on nuclear weapons with the United States would raise Russia’s international standing even further.

Although these efforts have largely been intended to provide alternatives to US and Western dominated institutions, a joint commission with the U.S. on nuclear weapons would solidify Russia’s position as an equal partner with the United States and establish it

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1 Agreement signed 14 June 2013. The author represented DoD on the US delegation led by Ms. Rose Gottemoeller.
as a leader among nuclear weapons states. On the US side, President Trump has expressed interest in creating better relations with Russia, but has been unable to gain a foothold to make that happen. He and his administration have criticized arms control agreements as well as President Obama’s Nuclear Security Summit process, but establishment of a legacy joint commission on nuclear weapons dedicated to negotiations on nuclear security could be an attractive option by addressing this important issue in a way that sets it apart from his predecessors and the old Washington way of doing business. If Presidents Trump and Putin are interested in burnishing their status as world leaders and master negotiators and are seeking an issue that could form the basis of an historic summit, establishment of a standing joint commission to work cooperatively on nuclear weapons safety and security while exploring potential reduction trade-offs would provide that opportunity. And doing so as an offshoot of the established P5 structure would induce support from other P5 countries and parties to the NPT.

Scope of Operations and Discussions within a Standing Joint Commission on Nuclear Weapons

One key point of agreement between US and Russian experts responsible for nuclear weapons is that nuclear security is paramount. Whether one nuclear weapons state is perceived to have an advantage in numbers or capability of their inventory, experts on both sides agree that nuclear weapons must be secured to the maximum extent possible against threats posed by any state or non-state actor. Further, nuclear security experts agree on the need for continuous improvement and enhancements of nuclear weapons safety and security. As US and Russian technical teams worked together to enhance nuclear security under CTR, the sides were willing and interested in sharing best practices and were motivated to demonstrate processes, procedures, and technologies that provided the best possible security for their respective nuclear inventories. The sides even discussed and agreed on the concept that security would be enhanced through the elimination and consolidation of excess warheads. This mutual inclination to cooperate on enhancing the safety and security of nuclear weapons provides a strong foundation to establish a joint commission on nuclear weapons and provides an initial basis for discussions and the development of confidence building measures that are necessary to initiate discussions, negotiations, and potential trade-offs to incentivize nuclear weapons stockpile reductions. Technical experts understand that nuclear security can be greatly enhanced for a smaller stockpile and if nuclear weapons storage sites are consolidated and the number of sites reduced.

Rather than treating security and reductions as separate functions, a standing joint commission on nuclear weapons could serve as a forum to propose and develop new approaches to combine these functions together as trade-offs. A new nuclear weapons reduction methodology may be possible if it is fashioned from the previous US-Russian nuclear weapons security cooperation experience. When Russia needed to modernize its nuclear weapons transportation infrastructure to increase safety and security, they agreed to reduce their numbers and total capacity in exchange for enhanced safety and security. The 2 for 1 trade-off of warhead transport railcars engineered in a novel approach agreed between the US and Russian leaders of the CTR cooperation at the time, BG (ret) Thomas Kuenning of the US Department of Defense and Colonel General Igor Valynkin of the
Russian Ministry of Defense (Harahan 2014, 276) provides a good example of the kind of trade-off agreement that could be possible under a standing joint commission on nuclear weapons. The total capacity of the Russian nuclear weapons transport railcar inventory was drastically reduced while increasing overall security and reducing total warhead inventory.

The precedent of conducting trade-off negotiations under CTR could greatly expand arms control reduction trade-off discussions under a standing joint commission. Previous negotiations on current arms control agreements were conducted from the perspective of trade-offs between similar Russian and US weapons systems in order to derive equal capabilities associated with those nuclear weapons delivery systems. The variety, complexity, and continuous modernization of nuclear weapons delivery systems by the United States and Russia are creating increasing challenges in terms of agreeing on what constitutes equality across the respective nuclear weapons inventories. Instead of negotiating trade-offs by comparing and equating similar US and Russian systems, the sides should consider trading off planned modernization efforts with reductions in each of their respective inventories. Deployments of hypersonic capabilities, for example, could be traded off against reductions in total delivery systems. Such trade off discussions could provide the basis for bilateral cooperation that would increase stability and transparency if combined with complementary confidence-building measures. By establishing a joint US-Russian Commission on Nuclear Weapons the sides would have an enduring forum to introduce novel concepts that could provide opportunities for cooperative agreements that would be cemented within the organizational structure and operations.

As systems grow in complexity, and as more modifications are made to those systems, the sides often become increasingly concerned that such modifications provide the other with additional capability that can tip the balance and provide a significant balance to one side or the other. The traditional arms control approach provides little flexibility in terms of trade-offs and can drive difficult and lengthy negotiations. Negotiations theories and experimental tests suggest that greater success in terms of developing a win-win outcome are possible when trade-off possibilities and options are expanded. A potential “meta strategy” combining different negotiation tactics may “allow agents to improve the negotiation process and as a result, to obtain more satisfactory agreements” (Ros and Sierra 2006). By applying lessons learned from the CTR nuclear security program on trade-offs between providing enhanced security in return for reductions in capability and reductions in nuclear warheads, a nuclear weapons meta strategy may be developed involving trade-offs between modernization and warhead reductions as well as between US and Russian comparable systems. Such negotiations employing meta strategies would be difficult to employ for individual treaty negotiations, but could be explored in much more detail within a joint commission of dedicated technical personnel and policymakers.

One of the key characteristics of CTR technical discussions was that such exchanges were conducted between experts representing the highly regarded and mutually respected nuclear weapons communities and organizations for each country. The entire community was involved in technical discussions at one point or another, including senior military commanders, security experts, facility managers, base commanders, operators, trainers, and scientists. Discussions also included policymakers as well as contracting specialists and financial and budget experts. The focus of the discussions was on requirements, cost sharing, and implementation on how to secure the weapons, including facilitating reductions in the inventory in order to consolidate the number of
storage sites and reduce security requirements. A standing joint commission on nuclear weapons should include both permanent and detailed staff made up of security experts, military commanders, weapons experts, operators, negotiators, and administrative staff in order to implement a new approach to nuclear weapons in a post-arms control treaty environment within a standing joint commission on nuclear weapons.

Establishment of a Joint Commission for Nuclear Weapons Safety, Security, and Inventory

Another unique characteristic of CTR cooperation on nuclear security and nuclear weapons eliminations was that the work was conducted in accordance with specific negotiated contracts for each step of the work. Instead of trying to negotiate complex and comprehensive agreements, the sides were able to conduct their work “step-by-step” as each contract was agreed and negotiated. “Throughout the 23 years of CTR cooperation with the United States, Russian partners often repeated the mantra of ‘step-by-step’ progress whenever problems of difficulties arose” (Moon 2020). Through this approach, the sides achieved greater results and deeper cuts that went beyond those negotiated under formal treaties. They also achieved greater transparency and common understandings than was possible before or after the CTR cooperation came to a close. Many small agreements were easier to conclude than any one big agreement and were conducted in parallel with one another. While the sides discussed and negotiated a site access agreement for the nuclear weapons storage sites over the course of seven years, dozens of contracts were agreed and implemented on equipment procurements, deliveries, and training. The use of contracts to drive step-by-step progress and define required site access negated any perceptions that one side or the other won or lost the negotiations. There was no sense of a winner or loser, because signed contracts provided deliverables and “wins” for both sides. This approach may provide a joint commission greater opportunities to promote steady progress over time. “Small, more tailored arms control steps may be easier to develop than robust, complex treaties and therefore be faster in reducing specific nuclear weapons threats” (Weber and Parthemore 2019, 456).

Operations under a joint commission should seek to incorporate contracts as the currency of cooperation. Security enhancements and nuclear weapons reductions should be encouraged by the commission who would issue contracts with US and Russian facilities who would conduct the designated reduction operations. If each side offered a specified number of reductions as trade-offs for new deployments, the commission would issue contracts to execute those reductions and eliminations that would include the required access and verification requirements. Small, individual contracts, of limited duration and purpose should be used to achieve progress, and may supplement or replace complex agreements or treaties. Like any contracts negotiated for businesses and government work, they can and should be modified, extended, suspended, or canceled through further negotiations. A standing joint commission should include a staff of administrative and contracting specialists devoted to managing and executing the contracts.

During the course of implementing the CTR program, the Russian Federation largely adopted program management and contracting processes and procedures to execute nuclear security and elimination efforts as the CTR program completed its efforts and Russia assumed increasing responsibilities for these tasks. One of the most enduring
legacies of the CTR nuclear security program in Russia wasn’t the equipment or systems provided, but the nuclear security contracting and subcontracting community that spun off the former government organizations to implement these efforts under contract to the Russian government. Russia continues using contracts for its missile eliminations today, “Two missiles, currently stored at a military compound in Russia’s Urals, are set to be destroyed by the end of November, Interfax reported citing a contract for their dismantling” (Russia Today 2020). After so many years of cooperation, the United States and Russia have developed a common understanding and appreciation for managing nuclear weapons security and elimination efforts through the negotiation and implementation of contracts as the work is executed. The previous experience, common contracting approach, and the precedent of executing through contracts form the foundation for potential cooperative reductions under a new meta-negotiation forum within a standing joint commission.

If contracts are the mechanism to drive nuclear weapons reductions and security enhancements, then where would the funding come from and who would execute the contracts? The CTR program would not provide the right model for such a bilateral arrangement because the contracts and funding originated from the United States. For this purpose, a joint commission for nuclear weapons safety, security, and inventory would require its own budget and administrative support resources. Funding for the joint commission should be established through similar processes and procedures as were used to establish the International Atomic Energy Agency (IAEA) or the International Monetary Fund (IMF). The difference for a joint commission on nuclear weapons would be that instead of a large multilateral organization, it would start small, with the United States and Russia as the initial founding members.

A joint commission driven by contracts to eliminate, reduce, and secure nuclear weapons stockpiles would require the establishment of an initial endowment and annual dues that would be voluntarily contributed by each country in proportion to their acknowledged nuclear weapon stockpile. The sides could start with an agreement proportional to their respective stockpiles as currently codified by the New START treaty.

The funding required to establish a joint commission responsible for nuclear weapons reductions and nuclear security would be much smaller than one might expect. Funding for the Department of Defense’s (DOD’s) CTR program can provide some perspective. The entire program never crossed the 500M USD annual threshold, and the percentage devoted to nuclear weapons security and nuclear weapons eliminations was rarely more than half of the total budget. The Nuclear Security program in Russia was just over 2 USDB for the entire 23 year effort. That funding included comprehensive security systems procured, delivered, and installed for dozens of nuclear weapons storage sites. “Between FY1995 and FY2011, Congress appropriated around 840M USD for weapons storage security. Funding for this program peaked in FY2006, when the Bush Administration requested 74.1M USD for weapons storage security” (Nikitin and Woolf 2014). By the end of the program, security enhancements were under 50M USD annually.

U.S. costs for nuclear warhead dismantlements are currently a similar amount for FY20: “Funding for nuclear warhead dismantlements is cut 15% to 47.5M USD, (0.3%) of NNSA’s total nuclear weapons research and production budget, despite the fact that dismantlements save taxpayers’ money by permanently eliminating some fixed security costs. There are believed to be some 2,500 retired nuclear weapons awaiting dismantling,
but the necessary facilities are too busy performing Life Extension Programs” (Kovac 2019). If the U.S. and Russia were to pool their current budgets for nuclear warhead dismantlement and nuclear weapons elimination, it would be possible to establish an initial endowment of 100-250M USD with annual dues of approximately 100M USD that could be used to maintain and possibly accelerate nuclear warhead and nuclear weapons reduction programs. If the countries were to pool their resources for joint R&D on nuclear security, nuclear weapons elimination, and verification, they could possibly save money from their current budget. These funding levels are well within current budgets and would be used by the joint commission to accomplish the same work that is currently planned and funded, but would be executed through the joint organization that would increase cooperation, knowledge, and transparency.

Establishment of the initial endowment and base declarations would require an interesting and revealing negotiation. The sides would to decide whether to keep their declarations confidential or to make public declarations. The United States and Russia could initiate declarations based on current START declarations of deployed warheads as a way to get the negotiation started. Whatever the outcome of those discussions, one result would be to increase bilateral transparency, and among P5 members if and when additional nuclear weapons countries would be invited to join the forum at a future time. Higher declarations would convey a certain amount of status for the declaring party while requiring more substantial initial and annual contributions. On the other hand, the higher declarations would also establish a higher baseline of warheads from which the declaring country could potentially garner more security and elimination contracts from the joint commission endowment. Annual dues requirements would also convey on the parties based on their stockpiles in place each year. The more reductions in the stockpile, the more the annual dues requirements would be reduced. Thus, under a joint commission conducting trade-off negotiations, each side would have financial incentives to minimize and reduce their overall stockpile.

The sides would also have to negotiate and establish a tax/credit system as more trade-offs are developed and considered. Each verified warhead elimination would yield a substantial credit. Verified security upgrades could also qualify for credits. Modernization and increases to the stockpile would trigger a tax and increase annual dues requirements. The formulas for such a tax/credit system would require negotiations and could be subject to annual adjustments as agreed to by the parties. Such negotiations would open dialogue on potential future modernization and reduction plans in a way that would serve to build transparency and stability. Since the negotiated formulas apply to each country’s stockpile, the negotiations would not pose a win or lose outcome because the outcomes would not be determined until after the countries implement their stockpile activities after the formulas are devised. With the help of the technical staff of the forum, the formulas for taxes and credits should provide incentives to eliminate excess warheads, encourage consolidation and the elimination of excess storage sites, improve security at all locations and during transportation. For example, the formulas could establish different costs or taxes for deployed versus non-deployed warheads with corresponding credits for eliminating warheads from different parts of the stockpile.

Unlike arms control treaties that had difficulty dealing directly with nuclear warheads as the treaty limited item, the joint commission could peg contributions directly in accordance with nuclear warhead declarations. Larger declarations would require more substantial
contributions and would instill a higher status initially, but would also provide for greater opportunity to reap contracts for the elimination of excess nuclear weapons and to enhance security of the nuclear weapons stockpile. The sides could negotiate trade-offs involving actual warheads, delivery systems, or any combination of the two.

**Modernization Must be Part of the Bargain to Roll Back Nuclear Weapons Stockpiles**

The arms control regime survived for decades despite persistent opposition from advocates of increased nuclear weapons modernization and concerns with adequate verification. Throughout this period, the two domestic US camps representing the nuclear modernization and arms control communities have jockeyed for position while bargaining with each other to support their causes. This continuous interaction was clearly displayed on 17 June 2016 when “Senate Foreign Relations Committee Chairman Bob Corker (R-Tenn.) and Senate Armed Services Committee Chairman John McCain (R-Ariz.) wrote to Obama to warn him not to unravel their deal on nuclear modernization, which they said persuaded Congress to ratify New START” (Rogin 2016). Arms control advocates are not likely to stop nuclear weapons modernization, and some modernization efforts may be useful if they increase safety and security. By supporting the establishment of a joint commission on nuclear weapons, advocates of reductions and modernization can come together to consider balanced trade-offs under productive discussions that include technical experts. In this way, trade-off arrangements can be developed and designed to produce overall inventory reductions and increased security. The key would be to make sure that modernization efforts are offset by overall reductions in the total stockpile based on the values each country places on those modernization efforts.

**Expansion of the Bilateral Joint Commission to Include Other P5 Members and Other Nuclear Weapons Capable States**

The US and Russian governments, and arms control advocates and opponents alike, have been vocal in calling for expanding global participation in arms control. “‘We think, given the fact that China’s nuclear stockpile is estimated to double over the next ten years, now is the time to have that trilateral discussion,’ Robert Wood, U.S. disarmament ambassador, told reporters on the opening day of the U.N.-backed Conference on Disarmament in Geneva” (Farge 2020). Reportedly, the United States and Russia have discussed potential trilateral talks, “Russian Foreign Minister Sergei Lavrov said last week that Russia would take part in potential trilateral talks but that he ‘won’t force China to change’ its current position” (Farge 2020). Wood added, “Hopefully over time and through the influence of others besides the United States, they (China) will come to the table. We think it’s imperative for global security that the Chinese do that” (Farge 2020).

Arms control proponents have also called for including other nuclear weapons states in dialogue. “Future arms control regimes must include more countries,” and “the future of arms control must be more globalized than its past” (Weber and Parthemore 2019, 455). The Russian President also weighed in on this discussion during his annual address to the Federal Assembly, “It is the five nuclear powers that bear a special responsibility for
the conservation and sustainable development of humankind. These five nations should first of all start with measures to remove the prerequisites for a global war” (Putin 2020). Putin has also called for the five permanent members of the UN Security Council to conduct a summit in 2020 to address important global issues (Reuters 2020). He did not specifically propose addressing nuclear weapons issues for the summit, but it would provide a unique and valuable opportunity to do so.

Adding additional parties to arms control treaties as they have been negotiated in the past would prove difficult given the disparity in the size and structure of the nuclear weapons inventories of countries besides the United States and Russia. Expansion of a joint commission to include other P5 members under proportional costs and trade-offs, however, would provide a more appropriate methodology to expand participation. “Yet if more parties are involved in a particular agreement, it may take the form of a political agreement rather than a legally-binding treaty – at least at its inception. Future arms control constructs must focus on types of nuclear weapons or qualitative capabilities, and not focus solely on limiting numbers of nuclear weapons” (Weber and Parthemore 2019, 456).

By establishing a joint commission on nuclear weapons under the auspices of the P5, the parties can work together to expand participation to other P5 members by making financial contributions and trade-off discussions proportional to each country’s overall inventory. If the trade-offs are constructed in a manner that encourages reductions in exchange for modernization steps instead of attempting to negotiate limits based on comparing missile capabilities of the different countries, other P5 members can buy-in and even increase their focus and attention on key issues such as safety and security of their nuclear weapons stockpiles.

Countries would only be required to declare warheads that would be subject to elimination, there would be no requirement to declare the entire stockpile up front, though it would be encouraged. By focusing on voluntary nuclear warhead declarations, verification would only be required in connection with elimination activities, reducing initial site access concerns. Additional optional verification could be developed to enhance the system if P5 members were to agree to conduct annual national audits. In order to encourage the sides to accept measures such as challenge inspections, the contracts for conducting such inspections could be negotiated to be a substantial amount such that the challenged parties in the P5 would be incentivized to accept the challenge. Conversely, the challenging parties could be assessed a challenge fee such that they would be discouraged from issuing challenges unless they were confident in making a new discovery. Knowing the risks, such a system would discourage a potential party from trying to hide stockpiles of weapons or risk contract abrogation or pre-negotiated fines.

An expanded P5 commission on nuclear weapons safety, security, and inventory can be created to raise incentives to reduce nuclear weapons inventories while increasing the investments for acknowledged nuclear weapons states to secure and maintain weapons. This new methodology represents a significant paradigm shift from the traditional arms control approach, but offers the possibility to garner support from the nuclear weapons states who want to allow for modernization and increase security as well as the non-weapons states who want to see significant reductions and a stable and continuous process.

The P5 commission should be staffed by key technical members from the nuclear weapons states. For example, the US Office of the Secretary of Defense for Nuclear Matters, the 12th Main Directorate of the Russian Ministry of Defense, the Atomic
Weapons Establishment of the UK, the Chinese 2nd Artillery, 22 Base Organization, and the French Strategic Air Forces Command and Navy Strategic Nuclear Branch. These technical organizations have all cooperated with one another under other agreements and forums. The US, Russia, UK, and France worked together on cooperative threat reduction. The United States has also worked with China on a nuclear security. The Chinese PLA 2nd Artillery, 22 Base Organization is the primary custodian of the Chinese nuclear warhead stockpile (Stokes 2010). Although this organization has had little or no direct contact with the West, Russia’s 12th Main Directorate may have worked with them in the past, and China and Russia may have interests in common on nuclear security. Cooperation among these organizations would not be unprecedented, but would be enhanced and encouraged under an enduring forum through the auspices of the P5. In 2015, the Nuclear Threat Initiative recommended establishing a “multilateral technical level working group” to address military nuclear materials security, and “to provide a forum for communication between representatives of organizations responsible for the security of military materials in each of these countries. The working group would allow these organizations to exchange best practices, conduct training exercises, and share lessons learned related to military materials security” (NTI 2015). A P5 commission could expand further on this notion to include negotiations on trade-offs between modernization and reductions and enhanced security measures.

Such a forum could help build greater stability and security. The parties would gain considerable transparency under each contract negotiated and through each declaration. Modernization would be permitted, and may even be encouraged, if it includes enhanced safety and security. Modernization efforts may not be perceived as threatening if conducted against a backdrop of warhead reductions. As the parties work together in a forum that gives each side appropriate recognition of their nuclear weapons capabilities while rewarding each side for the more reductions and security enhancements it accomplishes, partnership and confidence building are increasingly possible.

The P5 forum would award contracts for warhead eliminations to the specific facilities in each country conducting the elimination. The P5 would be responsible for negotiating the exact amount for each elimination and the required verification or site access required as well. Since the contracts would be negotiated and implemented by the P5 forum, participating countries could use their planned elimination budgets to provide the initial funding to the endowment and the annual dues. In order to raise sufficient funding, the United States and Russia might also need to take funds from their current security budgets based on the premise that the funds would still be used for the same purpose under contract to the P5 implementing body managing the elimination and security contracts.

For each weapon eliminated, the country eliminating the weapon will receive payments under the negotiated contract from the endowment greater than the cost of adding a declared non-deployed warhead. This will incentivize the United States and Russia to rapidly eliminate excess stockpiles. The sides can negotiate the verification of warhead eliminations that could include a “black box” concept that entails observation and

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1 During technical discussions with the author under the CTR program, the Chief of the Russian 12th Main Directorate mentioned traveling to China at a time when personal overseas travel for 12th Main Directorate personnel was prohibited.
measurement of the warhead going in for dismantlement, and the observation and disposition of materials coming out the other side of the black box. This concept proved useful during CTR contract monitoring of rocket motor eliminations. Inspectors/verification authorities would come from P5 and/or other invited bilateral states.

Of course, participating countries will have to abide by certain requirements such as remaining as a party in good standing in the NPT and the CTBT, as agreed.

Potential Scope of the New Nuclear Warhead Reduction and Security Methodology

This paper is not intended to define all of the elements of a new methodology to reduce nuclear warheads and increase their security, nor provide a comprehensive formula of all of the potential trade-offs that may be possible within a standing joint commission. Instead, the purpose is to stimulate new thinking through the perspective of a new paradigm addressing the challenges posed by vast nuclear weapons inventories poised to deter or respond to crises and conflicts.

By combining the critical elements of arms control treaties and cooperative threat reductions and by including enhanced security, safety, and modernization, it is possible to imagine a broad scope of cooperative activities under a contract-based, incentivized methodology.

Joint cooperative activities to enhance nuclear security, under the peer-to-peer relationship generated by this new methodology, can be encouraged and can complement reduction incentives. Many activities and engagements that were discussed during CTR cooperation could be re-initiated, including:

- Mutually observable nuclear security exercise demonstrations, with more credits if introducing a new, improved security technology, process or procedure;
- Verified storage site eliminations to demonstrate consolidation or reduction, including agreement for follow-on visits;
- Nuclear security training for P5 members at joint centers of excellence;
- Joint manning of nuclear security centers of excellence;
- International security conferences with established gift baskets. (i.e. nuclear security summit follow-on);
- Nuclear security training for non-P5 members, perhaps through IAEA;
- Joint or shared R&D on Physical Security Technologies, Training Centers, Training programs;
- Operations Centers communications, Response Forces Centers communications;
- Development of shared international nuclear forensics data capabilities;
- Funds can be used and contracts established to support the safe storage, transport, and disposal of nuclear waste;
- Funds and contracts can be used to support and deposit materials in the nuclear fuel bank (Kazakhstan) and security of the bank;
- Funds can be used to develop an international response force to interdict, seek, and destroy loose material;
• Funds can be used to “embargo” certain materials and technologies to reduce the spread of capabilities on the weapons side, establish greater international controls all the way out to the mines;
• The P5 parties could work together to establish standards for material and facilities;
• P5 could develop an intelligence directorate to detect, monitor, and conduct surveillance on rogue materials, facilities, and states;
• Working together, the parties could build a response force and build authorities to disrupt supplies of materials and components to non-cooperative countries;
• The parties could develop improved containers for materials and components;
• The parties could develop improved safety protections for nuclear warheads including Permissive Action Links (PALs) to guard against detonation if a weapon is lost or stolen.

The scope of this new methodology could include a broad set of elimination activities. While it ought to focus initially on warhead eliminations, it could be extended to include delivery systems and components as well. In fact, the new methodology could be implemented in parallel with traditional arms control measures, including an extension of New START. This is not necessarily an alternative approach to arms control or CTR. This methodology can be pursued as an initial step toward longer term reductions. The efforts are compatible and mutually supporting. By establishing a continuous forum under the P5, the scope of activities can be expanded and extended as the process progresses.

**Arms Control Requires New Thinking**

“Arms control is an old behavior for which muscle memory is fading. Success requires new impulse buttressed by new thinking.” (Krepon 2020a)

The initial foundation to establish a new methodology under a joint commission and promote a new paradigm in thinking about nuclear weapons reductions and security would need to be generated by the United States and Russia. Previous successes between them in reaching arms control agreements and in cooperating on nuclear security of its most precious assets, nuclear warheads, provides evidence that agreements are possible. The United States and Russia may be more open to a “Build Down” approach today as well. “Given economic realities, the United States and the Russian Federation might well explicitly endorse this concept” (Krepon 2020b). As bilateral progress is achieved and demonstrated under a standing joint commission, the new paradigm could be extended to bring in China as well as the UK and France. Further expansion to include Pakistan, India, and Israel could follow as invited observers to the process. With such an expansion, it would increase the isolation of North Korea if they do not agree to any kind of denuclearization. Further, this forum could provide a basis to enforce and get support for implementation of a denuclearization agreement with North Korea if one can be achieved.

A standing organizational structure under a P5 forum would increase stability by integrating reduction incentives with security enhancements under an enduring and continuous process conducted by nuclear weapons technical experts. The time is ripe to consider new approaches based on previous experience and established institutions.
“There has been a certain maturation of the P5 process” (Gottemoeller 2019b). The need for steady, continuous dialogue on nuclear weapons issues is clear and present. Divisions between arms control advocates and nuclear modernization can and should be overcome to make progress to achieve stability. “Arms control is part of the spectrum of deterrence and defense” (Gottemoeller 2019b). The new paradigm would seek to encourage natural competition to turn toward improving security rather than increasing the nuclear warhead stockpile. Establishing an endowment and annual dues provides the commitment to the organization and its goals, while contracts provide currency to reward positive behaviors in the system.

This new paradigm should garner support from non-P5 members who would like to see reductions and enhanced security and may even wish to contribute to increase incentives. Germany and Japan, for example, contributed substantial resources to support CTR efforts in Russia to enhance security of nuclear warheads and materials. The new methodology and new thinking would increase stability in many other ways as well: by increasing transparency; partnership building; developing nuclear security camaraderie; and providing numerous other potential confidence building measures such as security demonstrations and exercises. Joint R&D Centers could be created under such incentives to test and display new security technologies being employed. The participants could work together to develop nonlethal protection technologies for transport trucks or develop technologies to counter drones that threaten nuclear storage sites or to develop drones to conduct surveillance.

The key to consideration of such a new paradigm addressing nuclear weapons is its potential attraction to both the modernization and traditional arms control communities. By negotiating trade-offs in a step-by-step contract negotiating process, each community can achieve its objectives because it allows for the introduction of new technologies while incentivizing reductions. Once the P5, or a similar standing forum starts to work together to establish greater oversight capabilities and technologies, participating countries will want to support the efforts to increase transparency of the rival’s stockpile. In the long term, maintaining nuclear weapons and associated facilities would become more and more expensive and participating countries will increasingly recognize the benefits of reducing and consolidating their stockpiles – especially as the system increases stability and confidence-building measures.

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**Notes on Contributor**

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