

POLICY *dialogue* BRIEF



Strengthening International Nuclear Security Cooperation

Bilateral and multilateral cooperation play critical roles in ensuring that states keep nuclear weapons and weapons-usable materials out of the hands of terrorists. Two successful, although very different, cases of such cooperation involve the United States and Russia and the United States and China. For over two decades, the United States and Russia worked together to establish effective, modern nuclear security and accounting systems. US cooperation with China has been nearly as long, though more limited. Over that time, security in all three countries has improved because of independent and cooperative efforts.

There are, however, major challenges ahead that require new and creative approaches to cooperation. The conflict in Ukraine and broad political differences have caused the United States to systematically cut off a range of military and civilian cooperative activities with Russia while seeking to preserve arms control and nuclear security cooperation. For similar reasons, as well as long-standing unresolved issues related to the inequity of nuclear security cooperation, Russia has declined additional support in this area from the United States after 2014. Also, Russia has announced that it will not participate in the US-led 2016 Nuclear Security Summit. In China, past US spying accusations, a shared view that the United States should not be paying for security upgrades in a country with a strong and growing economy, and Chinese concerns about US experts visiting sensitive Chinese facilities have constrained the expansion of cooperation.

From October 15 to 17, 2014, the Stanley Foundation, in collaboration with the team from the Project on Managing the Atom, Belfer Center for Science and International Affairs at Harvard Kennedy School, convened a group of experts and policymakers from the United States and abroad to address these issues at its 55th annual Strategy for Peace Conference. The group, chaired by Professor Matthew Bunn, discussed ways to overcome challenges to nuclear security cooperation faced by the United States, Russia, and China, and next steps to ensure that countries put in place effective and sustainable nuclear security measures with strong security cultures.

The objectives of the roundtable were to identify the potential of and constraints on nuclear security cooperation and to develop options for action. As part of the discussion, the group assessed what strategies

**55th Annual
Strategy for Peace
Conference**

**Sponsored by
The Stanley Foundation**

October 15-17, 2014

**Airlie Center
Warrenton, Virginia**

This brief summarizes the primary findings of the conference as interpreted by rapporteur Nickolas Roth.

Conference participants neither reviewed nor approved this brief. Therefore, it should not be assumed that every participant subscribes to all of its recommendations, observations, and conclusions.

are most effective for strengthening and sustaining physical security and security culture at the operator and organizational levels; whether cooperation to strengthen security was still in the interests of all countries and to what extent; what approaches would best help facilitate cooperation; and whether there are new avenues of cooperation that should be considered. The group also examined ways to identify and incentivize domestic nuclear security champions in these countries.

This policy brief, written by Nickolas Roth, outlines lessons about challenges from past nuclear security cooperation and outstanding issues that the United States, Russia, and China still need to address. It also identifies options for action for strengthening US cooperation with Russia and China, respectively, and for strengthening nuclear security overall.

Lessons From Past Nuclear Security Cooperation

Those involved in cooperation with Russia, China, and other countries have learned important lessons about what is and is not effective for strengthening nuclear security. These lessons can be applied to future work. The roundtable focused on the following lessons regarding effective nuclear security:

- Effective security is not a stable end state or a job that is “done” at a particular moment but rather one that requires continuous striving for excellence.
- Effective security is 80 percent culture and 20 percent equipment, as one participant put it.¹
- Ensuring that security is sustainable—through budgetary support, appropriate training, regulatory oversight, clear incentives, and regular assessment and testing—is key.
- Differing contextual cultures and comparative advantages between organizations and countries must be taken into account. For example, in one country, technology may be expensive and labor cheap, while in another the reverse might be true.
- Strong support from top political authorities, including setting benchmarks and deadlines and identifying officials responsible for overseeing progress, contributes to maintaining momentum.
- Trust and personal relationships between cooperating experts and operators are indispensable. This is not something that happens overnight.
- It is possible to share security best practices without disclosing sensitive information.

Crosscutting Issues for Cooperation With Russia and China

The basic purpose of nuclear security cooperation is for states to achieve effective and sustainable security for all nuclear weapons and weapons-usable materials (and any other facilities and materials they consider important to protect). This involves protecting all nuclear weapons and weapons-usable materials against the full range of threats that their intelligence assessments deem to be credible.

Participants also agreed that some of the components of effective nuclear security are a strong security culture, appropriate use of technology, well-trained and well-motivated personnel, and a roadmap indicating how security practices fit together. Some participants emphasized the importance of strong and independent regulation of nuclear security, while others argued that an approach focused on complying with rules would never lead to good security.

A number of mechanisms for cooperation are useful for different purposes. In particular, institutions like centers of excellence have significant potential for facilitating discussions, training, best-practice exchanges, and testing, and as potential champions for strengthened and sustained nuclear security.

The group discussed the role access to nuclear sites plays in cooperation. In US-Russian cooperation, the United States has often insisted on on-site visits to ensure that US-funded work had been done as agreed. These visits are valuable because they provide an on-the-ground feel for the situation at a facility and opportunities for discussions with facility staff (including in identifying additional issues and vulnerabilities to be addressed). There was general agreement, however, that Russian officials have never liked this aspect of cooperation and the current political environment in Russia made such visits difficult.

Some participants thought a more reciprocal approach, in which Russian experts would get similar access to US facilities, might be more politically acceptable, while others argued the US government should downplay the site-access question in US-Russian discussions, at least until overall relations improve. Participants agreed that if the only need was to confirm that equipment had been installed as agreed by the United States and Russia, various nonaccess assurances might be effective.

In China, cooperation so far has only involved a few visits to sites with weapons-usable material. Most participants expected that to continue, with a great deal of the cooperation focusing on the Chinese Center of Excellence (COE) on nuclear security, which is slated to open in 2015. But some argued that expanded site visits would be useful and should be pursued, perhaps starting with nonsensitive sites.

In the cases of both Russia and China, participants agreed that there should be engagement on nuclear security at the political, organizational, and working levels, although different types of cooperation warrant engagement with each of these constituencies at different times.

Participants identified a number of bilateral, multilateral, and informal mechanisms for encouraging cooperation. These included the International Atomic Energy Agency (IAEA), the Global Initiative to Combat Nuclear Terrorism, the United Kingdom-US-Russia trilateral discussions, the P5 process, universities, and expert conferences.

Finally, some participants argued that Russia and China should consider increasing their investments in research and development related to nuclear security. Russia should also join the new initiative on strengthening nuclear security implementation that 35 other countries announced at the 2014 Nuclear Security Summit. This includes incorporating the principles and guidelines of the IAEA regarding nuclear security into its national laws and allowing teams of international experts to periodically evaluate its security procedures.

Motivating Countries

Participants discussed how states could exercise greater leadership on nuclear security and promote cooperation. Opinions differed on what expectations should be.

Some participants argued that there was a common interest in preventing the theft of nuclear material but that a lot of countries do not perceive that common interest. Many countries are complacent, thinking nuclear terrorism is someone else's problem. For a number of countries, nuclear security is just one of many issues to worry about—it's not a priority.

In fact, some participants thought it may be rational for other countries to invest less in security than it would be for the United States. The United States might be making a mistake in crafting policy that assumes that wealthy countries can be convinced to invest as much in nuclear security as the United States prefers. This implies that the United States might have to fund certain aspects of nuclear security in other countries whether or not they can afford to pay for it themselves.

Another participant argued that even if nuclear security is not a great concern at the moment, a number of states are increasingly coming to understand the threat. Not only did the leaders at the nuclear security summits agree that the nuclear terrorism threat was real, but many countries in recent years have taken action to strengthen their nuclear security rules and approaches.

One problem with convincing people of the importance of nuclear security is that there is an anxiety about not saying anything that might help terrorists carry out a nuclear plot. Some participants argued that terrorists already know a great deal, given how much information is publicly available. Hence, they argued, the important thing is to relay key elements of the threat to policymakers so they can take action.

Despite complications in making the case for strengthening nuclear security, participants generally agreed that the US government and US experts should continue to make the case that nuclear and radiological terrorism are real threats with potentially huge consequences. The messaging needs to make clear that such attacks could have reverberating global effects and should not be considered as threats only to a few likely target countries.

The basic purpose of nuclear security cooperation is for states to achieve effective and sustainable security for all nuclear weapons and weapons-usable materials.

Additionally, there needs to be a better understanding of what motivates states. Commercial interests are among the most profound driving forces. Some participants argued that the international community should try to leverage states' commercial motivations to encourage good behavior, for example, by including stronger physical protection requirements or more checking of compliance with those commitments in nuclear cooperation agreements.

Russia²

For 20 years, the United States has supported upgrades for nuclear security in Russia. Over that time, the effectiveness of nuclear security in Russia has improved dramatically, though some significant weaknesses remain. In Russia, cooperation to date has focused largely on US financing and inspection of Russian-designed and installed improvements to security and accounting equipment at military and civilian nuclear sites. It also has included training, regulatory development, improving security culture, ensuring sustainability, exchanging best practices, and consolidating and eliminating stocks of highly enriched uranium (HEU).

In recent years, Russia has demonstrated diminishing interest in cooperation in its current form. In 2013, the Cooperative Threat Reduction (CTR) agreement that had provided the umbrella for nuclear security and a broad range of other work expired and was replaced with a more limited cooperation agreement, a protocol to the Multilateral Nuclear Environmental Programme in the Russian Federation (MNEPR).

Russia considered the MNEPR provisions on matters such as liability and taxes less offensive to its sovereignty than those of the CTR agreement. The MNEPR protocol, however, did not include the Russian Ministry of Defense, bringing to an end all cooperation with the ministry, including all cooperation to sustain and further improve security measures for nuclear warheads. The MNEPR protocol covered only nuclear security, not the much broader agenda that had been covered under the CTR agreement, but it did provide specific legal cover for some nuclear security work that had never had an explicit agreement before, such as work on consolidating stocks to fewer locations.

Unfortunately, the transition from one agreement to another involved many months of bureaucratic delays in negotiating new (and more limited) access arrangements, modifying contracts, and the like. As this was under way, the Russian political attitude toward this cooperation was becoming more and more negative—a trend accelerated by the 2014 conflict over Ukraine. Most current contracts for US-funded nuclear security upgrades in Russia include no work after 2014, and because of the conflict in Ukraine, broader political differences, and long-standing

unresolved issues related to nuclear security cooperation between the two countries, Russia's state nuclear corporation, ROSATOM, has indicated it does not intend to enter into agreements for any additional work under the MNEPR framework.³

Despite this disappointing trend, participants generally agreed that the two countries can still benefit from cooperation with each other, including sustaining security upgrades at nuclear facilities, strengthening security culture, strengthening regulations and enforcement, augmenting protection against insider threats, and exchanging best practices. It is essential that all stakeholders interested in continuing cooperation communicate about nuclear security on multiple levels and find areas of cooperation that would be mutually satisfactory and favorable.

One participant argued that one of the best, most enduring results of nuclear security cooperation between the United States and Russia was the creation of a nuclear security industry in Russia. When cooperation began, there was only one state-sponsored physical-protection company. Now, dozens of small companies compete for the nuclear security market and develop new technologies. One participant wondered whether it would be possible for Russia to export expertise. This is something Russians at the working level would likely be interested in but have not figured out how to do. Another participant argued that there have been more successful programs that resulted in technology exports, such as Second Line of Defense.⁴

Several participants questioned the viability of the US approach of cutting off cooperation Russia favors (such as in nuclear energy and science) while hoping Russia will continue cooperation the US favors (such as in nuclear security).

One issue discussed that is important in Russia—particularly if cooperation with the United States ends—was sustainability of security upgrades. One participant noted that in Russia, the concept of sustainability means repairing equipment, maintenance, buying spare parts, and replacement of equipment (paid for by the United States). The US concept of sustainability focuses more on an approach to material, protection, control, and accounting systems—including procedures and personnel—that emphasizes sustaining and continuously improving nuclear security to address evolving threats.

One participant argued that when discussing sustainability, there is a need to speak to security-system managers and analysts, who have a broader view of systems at sites. Security culture was also identified as an essential aspect of sustainability. It is important to look at what motivates and enables workers and to ensure that they are capable of providing adequate security. If Moscow does decide to end cooperation on strengthening security at Russian

nuclear security facilities, Washington should still identify areas where the two countries can work together to strengthen and sustain nuclear security in Russia and around the world.

Participants agreed that communications on the material, protection, control, and accounting program should continue. This includes project team meetings to discuss existing plans or new activities. ROSATOM and US Department of Energy leadership should continue to communicate to ensure that nuclear security remains a priority in broader bilateral discussions. Despite their differences, political leaders in the United States and Russia have an interest in nuclear security.

Participants agreed that US and Russian political leaders should continue to publicly affirm their commitment to nuclear security and the idea of cooperation—though this may be unlikely until relations improve. While experts at nuclear sites in Russia still support cooperation, Russia’s political leaders are not as enthusiastic. One participant argued that Russia’s intent to limit or cut off cooperation is the result of political intervention and that sometimes it might be better for things to “fly below the radar” of political leadership. Another argued that this was no longer possible on this topic.

Participants discussed a variety of approaches that might make agreement on and successful implementation of continued cooperation more likely. These included:

- A genuinely equal approach, with ideas and resources from both sides, and both sides playing a central part in the conversation about what needs to be done to strengthen security and why.
- Expanded efforts to build understanding of the threat, including through documenting real cases where thieves or terrorists overcame security measures (at nuclear and nonnuclear facilities).
- Resuming US-Russian cooperation on nuclear energy, nuclear safety, and fundamental science, and embedding nuclear security in that broader rubric (as well as building relationships through that other cooperation).

If nuclear security cooperation continues, the United States and Russia will probably need to find new ways of working together based on a more equal partnership. Some ways to do this include:

- Continuing workshops and best-practice exchanges. These have proven very useful in exploring issues such as insider protection, vulnerability assessment, design basis threat methodology, performance testing, and others. They can also sustain relationships among American and Russian nuclear security experts.
- Continuing work on sustaining security upgrades at nuclear facilities, strengthening security culture, strengthening regulations and enforcement, augmenting protection against insider threats, exchanging best practices, and providing training. A number of participants emphasized the value of each of these areas. Though one participant argued that regulations and standards rarely lead to good security, others argued that effective regulation is essential to sustainability, as most nuclear managers will not invest in expensive security measures unless required to do so.
- Continuing work on conversion of HEU-fueled research reactors.

ROSATOM and US Department of Energy leadership should continue to communicate, to ensure that nuclear security remains a priority in broader bilateral discussions.

- Engaging in joint nuclear security research and development projects, which could develop new technologies and approaches useful to both sides and might create opportunities to visit sites where the work is being done.
- Expanding joint work in third countries. Some activities could include helping countries develop a nuclear security infrastructure, which would include creating institutions, developing regulations, training personnel through US and Russian training centers and instructors, developing domestic training capabilities, and supporting nuclear security planning. This could also include sharing best practices with third countries regarding design basis threat development and vulnerability analysis; evaluating systems effectiveness and performance testing; protective force operations; review of material, protection, control, and accounting sections of reports volunteered by the state; and oversight of nuclear security. The first step could be implementing a pilot joint assistance project to test and refine assistance approaches. Belarus was suggested as a possible test candidate.
- Exploring possibilities for reciprocal experts' consultations at nuclear sites.
- Furthering cooperation on preparedness for emergency response.
- Establishing a sustainability awareness program that emphasizes sustainability principles for managers and security-system analysts.

China⁵

Although the scope of US-Chinese cooperation has been more limited, the United States and China have actively engaged in civilian nuclear cooperation since the 1990s, particularly on nuclear security in civilian facilities and organizations. This cooperation has included a broad series of best-practice exchanges.

Cooperation between the United States and China has included visits to different US facilities to observe nuclear security and accounting approaches; in-depth training and workshops on topics that include approaches to protecting against insider threats, the design of physical protection systems, and steps to strengthen security culture; a joint demonstration of material, protection, and accounting technology; work to strengthen security and accounting regulations and inspections in China; and, most recently, construction of a Chinese COE on nuclear security. Since cooperation began, the quality of nuclear security in China has improved significantly. Participants agreed that nuclear security cooperation between the United States and China has been successful but that there is much more the two countries could accomplish.

To date, most Chinese experts have not seen nuclear terrorism as a serious risk to China. This includes a large number of senior nuclear experts who are complacent about the threat. It also includes managers and employees at nuclear plants who do not accept the importance of strict material protection, control, and accounting systems. But with increased domestic terrorism, increased corruption, and China's rising global role, some Chinese analysts are expressing greater concern about nuclear and radiological terrorism dangers.

Participants thought that demonstrating strong nuclear security was one way for China to show leadership and its role as a responsible stakeholder while simultaneously improving its relationship with the United States.

Although the ultimate goal for nuclear security cooperation should be for the two countries to work together on improving civilian and military nuclear security, less is known about the security of Chinese nuclear weapons and nuclear material for military purposes. Part of the reason for this is that lab-to-lab cooperation was shut down after the 1999 Cox Committee report alleged Chinese espionage at US nuclear weapons labs. Since then, the two countries have not engaged in direct cooperation on nuclear security and control related to nuclear weapons, though experts from China's defense sector have participated in workshops on a range of nuclear security topics and presumably have brought those ideas to China's military nuclear facilities.

Participants identified the following possibilities for strengthening nuclear security cooperation between the United States and China:

- Best-practice exchanges, technical cooperation, and research and development projects through the Chinese COE. Participants argued that the COE was likely to be the focus of continuing cooperation and might become a domestic champion for improving nuclear security. This cooperation should be based on a true partnership instead of a donor-recipient relationship. It should also be sensitive to China's apprehension regarding disclosure of certain types of information. Both sides need to build confidence that they are addressing nuclear security concerns without revealing state secrets.
- Continued cooperation through the Chinese Atomic Energy Authority (CAEA), in which Chinese participants in the military and civilian sectors can take part. (Participants argued that rather than trying to explicitly restart cooperation labeled lab-to-lab, participants from US and Chinese labs could take part in projects and discussions at the COE or through the CAEA.)
- Identifying what worked with nuclear security cooperation in Russia and applying it to cooperation in China.

- Identifying opportunities for strengthening military nuclear security between the United States and China. This might begin with exchanges on topics such as application of modern seals techniques and continuous remote monitoring approaches for the storage of nuclear warheads and sensitive nuclear materials; tracking and monitoring techniques for shipments of fissile materials; and safety and security measures protecting nuclear weapons and nuclear materials.
- Continuing discussions and best-practice exchanges on the design basis threat approach, force-on-force exercises, modern material protection, control and accounting at China's pilot reprocessing facility, and strengthening security culture at each site.
- Using the COE to facilitate training and exchanges of best practices for domestic guards and security personnel and those from other countries in the Asia-Pacific region.

Participants identified the following possibilities for strengthening nuclear security in China:

- Adopting a national-level design basis threat requiring that all Chinese facilities with the potential for catastrophic theft or sabotage are protected against the full spectrum of plausible adversary threats.
- Implementing realistic testing of nuclear security performance, including force-on-force exercises at all nuclear facilities with nuclear weapons, HEU, or separated plutonium (or a major sabotage concern). This should include realistic vulnerability assessments at all facilities, envisioning the various means to get in and get material, and how security measures might be overcome.
- Improving security and accounting at bulk processing facilities. One participant argued that an area of weakness in nuclear security is China's plan to move forward with a commercial reprocessing program. The large quantities of plutonium that come with reprocessing would significantly increase security vulnerabilities in China.
- Increasing investment in research and development related to nuclear security.
- Joining the new initiative on strengthening nuclear security implementation that 35 other countries pledged to join at the 2014 Nuclear Security Summit. This includes incorporating the principles and guidelines of the IAEA regarding nuclear security into its national laws and allowing teams of international experts to periodically evaluate its security procedures.
- Updating old and outdated regulations. The most recent available regulations are the 1987 Regulations for Control of Nuclear Materials and the 1990 Rules for Implementation of Regulations on Nuclear Materials Control.

Recommendations for Strengthening Nuclear Security Cooperation

The following recommendations could be applied to nuclear security in the United States, Russia, China, or any facility with nuclear weapons or weapons-usable material. Participants looked at best practices, security culture, insider threats, and sustainability.

Nuclear security cooperation between the United States and China has been successful but there is much more the two countries could accomplish.

1. Best Practices for Effective Regulation, Inspection, Testing, and Assessment

- **Work to ensure that states appropriately require operators to protect against the full spectrum of plausible threats** and have appropriate approaches to vulnerability assessment and performance testing (including force-on-force exercises) to ensure that those performance objectives are being met.
- **Create a pilot project or best-practices exchange** to understand the balance between performance-based and compliance-based regulations and identify proposals for broad implementation.
- **Develop performance-testing tools and practices** that take into account not only physical protection against outsider threats but also protection against insider threats, including materials control and accounting.
- **Consider activities for building regulatory capacity** to inspect, enforce, and educate, including possibly a systemic process to share regulatory best practices.
- **Share and adopt best practices** with nations through bilateral and international cooperation and organizations like the World Institute for Nuclear Security.

2. Strategies for Creating a Strong Security Culture

- **Establish comprehensive security-culture programs** that require each operator handling nuclear weapons or weapons usable material to have a program in place to assess and improve its security culture.
- **Provide constant and continual messaging from top institutional and political levels** emphasizing that security is an important enterprise, reinforcing a culture of continuous improvement, and engaging everyone within the organization.
- **Develop techniques to effectively motivate people** by giving them a sense of purpose. This includes developing incentives for good behavior, particularly for finding vulnerabilities and proposing realistic ways to fix them; helping people realize that security is empowering to the mission, not detrimental; encouraging feedback and participation in improving security; and encouraging ongoing discussions.
- **Provide training** for everyone, but especially managers, who should be the security role models for the entire nuclear enterprise. Training should cover not only needed skills but also the scope of the threat to nuclear facilities and should emphasize how nuclear security contributes to the health of the entire nuclear enterprise.

- **Design security-culture programs** so they engage the enterprise as a whole. The nuclear enterprise should have someone at the senior level who is responsible for reporting on the nuclear security program; for private companies, the board of directors should be regularly informed and take responsibility for overseeing an effective program.
- **Share best practices** between facilities or countries on a bilateral or multilateral basis. Centers of excellence are one mechanism for sharing information in this area.
- **Understand and accept individual security responsibility.** Through incentive structures and training, nuclear facility managers must make clear that nuclear security is everyone's responsibility, not just the job of the security force.
- **Address complacency among senior nuclear experts and within the nuclear industry** by having detailed discussions about the threat of nuclear terrorism; conducting regular trainings about the importance of nuclear security; and giving staff specific incentives to find ways to improve security. This should include threat briefings and intelligence sharing. A program should be established to measure and improve security culture.

3. Approaches to Effective Protection Against Insider Threats

- **Conduct background checks and psychological testing** on employees who will have access to sensitive equipment, material, or facilities.
- **Provide protection and incentives for employees** who report suspicious activities.
- **Establish disgruntlement-mitigation programs and employee-assistance programs.** Research indicates that low-cost approaches in which managers listen to, validate, and empathize with employees who have complaints greatly reduce employee disgruntlement. Employee-assistance programs can help employees who are beginning to have mental health issues and, by framing reporting as helping a colleague, can encourage employees to report behavior that may indicate an issue.
- **Provide briefings and training** that ensure that those involved in nuclear security have a realistic picture of the threat (including of potential insider adversaries).
- **Ensure that material control and accounting systems** are effective enough to be able to detect and localize the loss of a significant quantity of nuclear material.

- **Ensure that interactions between insiders and items to be protected are carefully monitored.** Two-person or three-person rule, security cameras, vaults, and alarms are all crucial elements of such monitoring.
- **Limit the number of people who have access to nuclear weapons and materials,** and the occasions on which they have access, to the minimum necessary. Weapons and materials should be kept in secure vaults to which few have access (and none have unmonitored access) whenever they are not in use.
- **Ensure that all pathways out of the material areas, the building, and the facility are monitored** so that removal of a nuclear weapon or weapons-usable material would be detected. Portal monitors at every exit are one important element of such an approach.
- **Use and improve research-based practices** to ensure that the latest strategies and techniques for security are being applied.

4. Ideas for Incentivizing Sustainable Security at the Operator and State Levels

- **Work with members of the Nuclear Suppliers Group** to persuade other participants to carry out visits to confirm that recipients have adequate physical protection in place, as the United States does.
- **Create an overarching standard** designed to help organizations ensure they are using best practices for nuclear security (similar to the ISO 9000 series for quality management).⁶ This could allow a variety of incentives to be targeted to certified firms, from lower insurance rates to preferential procurement from them.
- **Create rewards for finding vulnerabilities** and proposing means to fix them, rather than ignoring or punishing people within organizations who speak up about vulnerabilities.
- **Establish graded security requirements** so that sites that eliminated their weapons-usable material or held it in much less attractive forms would have reduced security costs, giving them incentives to move in that direction.

Looking Ahead

Establishing effective and sustainable nuclear security is essential for reducing the risk of nuclear terrorism. While every country with nuclear weapons, weapons-usable nuclear materials, or major nuclear facilities that might be sabotaged bears ultimate responsibility for securing these stocks and facilities, international cooperation can help in very important ways. But given the secretive nature of nuclear programs, distrust between countries, and domestic and international political impediments, achieving detailed, transparent, and sustainable cooperation is difficult.

Despite the uncertainty about the future of nuclear security cooperation, the United States and Russia should still do significant work together. This will not be easy. Relations between Washington and Moscow are at their lowest point since the Cold War. Somehow, at the political level, they need to see past their differences and embrace the idea that the threat of nuclear terrorism requires cooperation. Putting aside differences to address nuclear threats was commonplace during the Cold War. If President Kennedy and Premier Khrushchev

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As the relationship between the United States and Russia becomes more difficult, opportunities for strengthening US-Chinese nuclear security cooperation appear to be expanding. The opening of the Chinese COE in 2015 has the potential to be an important catalyst for furthering this work.

Ensuring that cooperation continues in any of these countries will require continuous engagement and support at the site, organization, and national levels. It will require understanding of different cultures, patience, and avoiding rushes to judgment. Although nuclear security is an immediate threat, the process of building the relationships, institutions, practices, and trust to address it can only be accomplished over time.

Endnotes

- ¹ The participant was referencing a quote by General Eugene Habiger, former commander of US strategic forces and former director of security and emergency operations at the US Department of Energy.
- ² This section draws from "Current Challenges in U.S.-Russian Nuclear Security Cooperation," a paper by Dmitry Kovchegin prepared for the Strengthening International Cooperation on Nuclear Materials Security roundtable, Stanley Foundation 55th Strategy for Peace Conference, October 15–17, 2014, Airlie Center, Warrenton, Virginia.
- ³ After the Stanley meeting, Russia announced that it was backing out of the 2016 Nuclear Security Summit. Because it occurred after the meeting, this was not part of the discussion.
- ⁴ Second Line of Defense is a US Department of Energy program that helps countries develop capacity and commitment to detect, deter, and interdict the illicit trafficking of nuclear weapons-usable material and other radioactive materials by providing radiation detectors and training to monitor ports and border crossings.
- ⁵ This section draws from "Strengthening U.S.-Chinese Nuclear Security Cooperation: Challenges and Solutions," a paper by Hui Zhang prepared for the Strengthening International Cooperation on Nuclear Materials Security roundtable, Stanley Foundation 55th Strategy for Peace Conference, October 15–17, 2014, Airlie Center, Warrenton, Virginia.
- ⁶ ISO 9000 refers to a set of quality management and assurance standards that companies have adopted around the world.

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