

STEPS TO PREVENT NUCLEAR TERRORISM:

RECOMMENDATIONS BASED ON THE
U.S.-RUSSIA JOINT THREAT ASSESSMENT



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for Science and International Affairs



**INSTITUTE FOR U.S. AND
CANADIAN STUDIES**

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ABOUT STEPS TO PREVENT NUCLEAR TERRORISM: RECOMMENDATIONS BASED ON THE U.S.-RUSSIA JOINT THREAT ASSESSMENT

“Steps to Prevent Nuclear Terrorism: Recommendations Based on the U.S.-Russia Joint Threat Assessment” is a collaborative project of Harvard University’s Belfer Center for Science and International Affairs and Institute for U.S. and Canadian Studies of the Russian Academy of Sciences.

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TABLE OF CONTENTS

FOREWORD BY ELBE GROUP 1

**STEPS TO PREVENT NUCLEAR TERRORISM:
RECOMMENDATIONS BASED ON THE U.S.-RUSSIA JOINT THREAT ASSESSMENT..... 3**

I. INTRODUCTION 3

II. LEGAL, DIPLOMATIC, AND POLICY FRAMEWORKS FOR COOPERATION 6

III. COOPERATION THROUGH EXPERIENCE, EXERCISES, AND PLANNING..... 17

IV. RECOMMENDATIONS 19

V. MAPS OF U.S. AND RUSSIAN GOVERNMENTS’ RESPONSE TO THREAT
OF NUCLEAR TERRORISM 23

Foreword by the Elbe Group

Russia and the U.S. have done much to strengthen global capabilities in preventing, detecting and responding to acts of nuclear terrorism including forming a Global Initiative to Combat Nuclear Terrorism. But determining the next steps that countries could take against this threat has been a difficult and labor-intensive process. Fresh ideas and mutual trust are lacking. This is why in October 2010 a small group of senior, retired general officers from U.S. and Russian military and intelligence agencies formed the Elbe Group.

The purpose of the Elbe Group, named after the river where American and Russian forces met at the end of World War II, is to establish an open and continuous channel of communication on sensitive issues. The group is unique in that it brings together former leaders and members of the CIA and FSB, DIA and GRU, and the armed forces and internal security forces.

The first issues on the agenda of the Elbe group were relevant aspects of countering the threat of nuclear terrorism — a problem that combines the scale of Cold War-era nuclear catastrophe and the unpredictability of threats of international terrorism of the 21st century.

In 2011, the Elbe Group participated in a joint project of the Harvard Kennedy School's Belfer Center for Science and International Affairs and the Russian Academy of Science's Institute for U.S. and Canadian Studies on the joint U.S.-Russian assessment of the threat of nuclear terrorism. The unclassified report detailed a set of factors and trends leading to the growth of the threat of nuclear terrorism and formulated recommendations on effective measures to counteract it.

In the opinion of the Elbe Group, the nuclear security summits in Washington and Seoul brought to the attention of the heads of states, the international community and the public at large the need of an adequate assessment of the threat of nuclear terrorism and of taking effective measures to counteract it.

It is obvious that, as the two leading nuclear powers in the world, Russia and the United States have a special responsibility to prevent nuclear and other radioactive materials from falling into the hands of terrorists.

The governments of our countries could jointly take the following steps in this direction in cooperation:

- To develop an assessment of the threat from nuclear terrorism to create a basis at an appropriate level for a common understanding of the threat and its various dimensions.
- To define countering of nuclear terrorism as a “problematic domain” — recognizing that an effective regime for physical nuclear security should be treated as a cross-cutting issue requiring clearly defined powers and responsibilities within the governments. Effectiveness of government efforts to prevent acts of nuclear terrorism should be increased through clarification of the structure of this problematic domain.

- To increase coordination between special services in the interest of providing better warning about terrorist threats with an emphasis on preventing acts of nuclear terrorism within the framework of existing bilateral and multilateral instruments.
- The catastrophe at Fukushima was the result of a sudden natural disaster, but a similar event could happen again as the result of actions by intruders. There is a need to build on the existing international instruments for warning, interdiction and consequence management of such acts in nation-states.
- To continue to provide comprehensive assistance and to allocate resources to establish, maintain and sustain an effective regime of nuclear security globally and in nation states.

There are, of course, issues over which the members of the Elbe Group disagree but all agree that preventing nuclear terrorism is one of the priorities for joint action by our two countries.

Vigorous and diligent efforts to confront common threats could facilitate development of trust-based relations between the United States and Russia making it easier to agree on other sensitive issues.

Steps to Prevent Nuclear Terrorism: Recommendations Based on the U.S.-Russia Joint Threat Assessment

I. Introduction

In 2011, Harvard's Belfer Center for Science and International Affairs and the Russian Academy of Sciences' Institute for U.S. and Canadian Studies published "The U.S. – Russia Joint Threat Assessment on Nuclear Terrorism." The assessment analyzed the means, motives, and access of would-be nuclear terrorists, and concluded that the threat of nuclear terrorism is urgent and real.

The Washington and Seoul Nuclear Security Summits in 2010 and 2012 established and demonstrated a consensus among political leaders from around the world that nuclear terrorism poses a serious threat to the peace, security, and prosperity of our planet. For any country, a terrorist attack with a nuclear device would be an immediate and catastrophic disaster, and the negative effects would reverberate around the world far beyond the location and moment of the detonation.

Preventing a nuclear terrorist attack requires international cooperation to secure nuclear materials, especially among those states producing nuclear materials and weapons. As the world's two greatest nuclear powers, the United States and Russia have the greatest experience and capabilities in securing nuclear materials and plants and, therefore, share a special responsibility to lead international efforts to prevent terrorists from seizing such materials and plants.

The depth of convergence between U.S. and Russian vital national interests on the issue of nuclear security is best illustrated by the fact that bilateral cooperation on this issue has continued uninterrupted for more than two decades, even when relations between the two countries occasionally became frosty, as in the aftermath of the August 2008 war in Georgia.

Russia and the United States have strong incentives to forge a close and trusting partnership to prevent nuclear terrorism and have made enormous progress in securing fissile material both at home and in partnership with other countries. However, to meet the evolving threat posed by those individuals intent upon using nuclear weapons for terrorist purposes, the United States and Russia need to deepen and broaden their cooperation.

The 2011 "U.S. - Russia Joint Threat Assessment" offered both specific conclusions about the nature of the threat and general observations about how it might be addressed. This report builds on that foundation and analyzes the existing framework for action, cites gaps and deficiencies, and makes specific recommendations for improvement.

"The U.S. – Russia Joint Threat Assessment on Nuclear Terrorism" (The 2011 report executive summary):

- Nuclear terrorism is a real and urgent threat. Urgent actions are required to reduce the risk.

The risk is driven by the rise of terrorists who seek to inflict unlimited damage, many of whom have sought justification for their plans in radical interpretations of Islam; by the spread of information about the decades-old technology of nuclear weapons; by the increased availability of weapons-usable nuclear materials; and by globalization, which makes it easier to move people, technologies, and materials across the world.

- Making a crude nuclear bomb would not be easy, but is potentially within the capabilities of a technically sophisticated terrorist group, as numerous government studies have confirmed. Detonating a stolen nuclear weapon would likely be difficult for terrorists to accomplish, if the weapon was equipped with modern technical safeguards (such as the electronic locks known as Permissive Action Links, or PALs). Terrorists could, however, cut open a stolen nuclear weapon and make use of its nuclear material for a bomb of their own.
- The nuclear material for a bomb is small and difficult to detect, making it a major challenge to stop nuclear smuggling or to recover nuclear material after it has been stolen. Hence, a primary focus in reducing the risk must be to keep nuclear material and nuclear weapons from being stolen by continually improving their security, as agreed at the Nuclear Security Summit in Washington in April 2010.
- Al-Qaeda has sought nuclear weapons for almost two decades. The group has repeatedly attempted to purchase stolen nuclear material or nuclear weapons, and has repeatedly attempted to recruit nuclear expertise. Al-Qaeda reportedly conducted tests of conventional explosives for its nuclear program in the desert in Afghanistan. The group's nuclear ambitions continued after its dispersal following the fall of the Taliban regime in Afghanistan. Recent writings from top al-Qaeda leadership are focused on justifying the mass slaughter of civilians, including the use of weapons of mass destruction, and are in all likelihood intended to provide a formal religious justification for nuclear use.
- While there are significant gaps in coverage of the group's activities, al-Qaeda appears to have been frustrated thus far in acquiring a nuclear capability; it is unclear whether the group has acquired weapons-usable nuclear material or the expertise needed to make such material into a bomb. Furthermore, pressure from a broad range of counter-terrorist actions probably has reduced the group's ability to manage large, complex projects, but has not eliminated the danger. However, there is no sign the group has abandoned its nuclear ambitions. On the contrary, leadership statements as recently as 2008 indicate that the intention to acquire and use nuclear weapons is as strong as ever.
- Terrorist groups from the North Caucasus have in the past planned to seize a nuclear submarine armed with nuclear weapons; have carried out reconnaissance on nuclear weapon storage sites; and have repeatedly threatened to sabotage nuclear facilities or to use radiological "dirty bombs." In recent years, these groups have become more focused on an extreme Islamic objective which might be seen as justifying the use of nuclear weapons. These groups' capabilities to manage large, complex projects have also been reduced by counter-terrorist actions, though they have demonstrated a continuing ability to launch devastating attacks in Moscow and elsewhere in the Russian heartland.

- The Japanese terror cult Aum Shinrikyo pursued nuclear weapons in the early 1990s, but appears to have abandoned this interest. Few other groups have shown sustained interest in acquiring nuclear weapons. There is precedent to suggest that extremist groups such as Lashkar-e-Taiba or Jaish-e-Mohammed might cooperate with al-Qaeda (or that al-Qaeda and North Caucasus groups might cooperate) in pursuit of a nuclear bomb, as the Indonesian group Jemaah Islamiya (JI) rendered substantial assistance to al-Qaeda's anthrax project from roughly 1998 to 2001.
- Cooperation between Russia and the United States, the two countries with the largest nuclear stockpiles and the most extensive experience in cooperation to improve nuclear security and interdict nuclear smuggling, is particularly important in reducing the danger nuclear terrorism could pose to the security of those two countries and the world.
- International intelligence and law-enforcement cooperation targeted on countering nuclear smuggling and identifying and stopping terrorist nuclear plots are also important steps to reduce the danger of nuclear terrorism.

“The U.S. – Russia Joint Threat Assessment on Nuclear Terrorism” (the 2011 report recommendations):

- Nuclear terrorism must be addressed as part of a broader phenomenon of terrorism and extremism. Al-Qaeda and other groups draw motivation for the pursuit of WMD from the belief that escalating the conflict by inflicting mass casualties is necessary to win a perceived “clash of civilizations” between Islam and the West.
- The United States and Russia must lead international efforts to encourage states to cooperate more closely to ensure terrorists do not succeed in acquiring nuclear weapons-usable material. These efforts should be closely coordinated with the United Nations (UN) and the International Atomic Energy Agency (IAEA). Despite the fact that nuclear security continues to improve globally, due in part to increased investments in material, personnel, and control and accounting procedures, urgent work remains to be done to fully secure all nuclear weapons-usable materials. All stocks of nuclear weapons, HEU, and plutonium must be protected against all plausible terrorist and criminal threats, and the number of locations where these stocks exist must be reduced as much as practicable.
- The image of one of the most senior scientists in Pakistan's nuclear weapons program drawing an improvised nuclear device for Osama bin Laden serves as a jarring reminder of the importance of continuing to eliminate al-Qaeda's senior leadership. The killing of Osama bin Laden is likely to damage al-Qaeda's ability to pull off a large scale WMD attack, to the extent such a plan may not have matured and there are few high level leaders in the group with the known interest in planning such attacks. But, these remaining few leaders can still serve as the key drivers of al-Qaeda's nuclear ambitions, and therefore capturing or killing them would be an important victory in the campaign to prevent

nuclear terrorism.

- Senior leaders should encourage and support enhanced intelligence and law-enforcement cooperation between Russia and the United States, particularly in resolving past, present, and future cases of weapons-usable nuclear material found outside of state control.
- U.S.-Russian international leadership is critical in supporting the roles of intelligence and law enforcement, the IAEA, and international police organizations as appropriate.
- International cooperation should encourage the development of national and jointly tailored intelligence tradecraft to detect and neutralize any existing or prospective terrorist nuclear plot, thereby strengthening interdiction and attribution, nuclear exercise cooperation, and contingency planning. Special attention should be paid to cooperation between the law-enforcement and security services of those Islamic states which are fighting terrorist organizations and constraining the actions of Islamic extremists.
- The insights into al-Qaeda's strategic and operational thinking afforded by *Exoneration* and other discourses must be exploited to prepare for future terrorist attacks. Counterterrorism strategies too often depend on current trends shaping al-Qaeda's status and activities. This is a prescription for being once again surprised by the unanticipated

II. Legal, Diplomatic, and Policy Frameworks for Cooperation

Currently legal and political bases for cooperation between Russia and the United States in the prevention of nuclear terrorism consist of bilateral and multilateral treaty instruments, multilateral cooperative initiatives, UN Security Council resolutions, as well as national legislation and policies of the two countries.

Multilateral Legal, Organizational, and Political Mechanisms

The most significant of these international treaty instruments include the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the Convention on the Physical Protection of Nuclear Material (with its 2005 amendment), and the International Convention for the Suppression of Acts of Nuclear Terrorism. Legally binding UN Security Council Resolutions also bear on the matter, including: UNSCRs 1373 (2001) and 1540 (2004). UNSCR 1887 (2009) is also highly relevant, though it does not establish legally binding obligations.

The IAEA plays a critical role in maintaining the nuclear security regime. The agency develops recommendations and standards, reviews nuclear security measures, develops suggestions for improvement and coordination of the efforts of donor states, responds to requests of states needing assistance, conducts training and workshops, and maintains information for use by member states, such as the Illicit Trafficking Database (ITDB). The IAEA meeting on nuclear security in July 2013 and the subsequent meetings thereafter will provide an important platform for

international discussion of nuclear security issues.

The United States, Russia and other states make voluntary contributions to the IAEA Nuclear Security Fund, provide experts for evaluation of nuclear security measures and training workshops, and more.

In the multilateral political format, the existing international mechanisms help shape and strengthen the international effort to prevent nuclear terrorism. First of all these include:

- The 2010 and 2012 Nuclear Security Summits;
- The Proliferation Security Initiative (PSI);
- The Global Initiative to Combat Nuclear Terrorism (GICNT);
- Cooperation in the Financial Action Task Force (FATF);
- Law enforcement efforts coordinated by Interpol;
- International exchanges of best practices, including exchanges conducted under the aegis of the World Institute of Nuclear Security (WINS) and others;

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) entered into force on March 5, 1970. It is the main legal instrument for controlling proliferation of nuclear weapons. The treaty, however, does not include any provisions specifically focused on preventing nuclear terrorism or ensuring effective security for nuclear weapons and materials.

The Convention on the Physical Protection of Nuclear Material (CPPNM) entered into force on February 8, 1987. Since then, 145 countries have joined this legally binding agreement. The CPPNM sets minimum standards for security of nuclear material in international transport; calls for cooperation among parties in the event of any theft of nuclear material; requires all parties to ensure that their laws impose appropriate penalties for nuclear theft and terrorism crimes; and gives each party jurisdiction to prosecute such criminals who may be captured on their territory.

A 2005 amendment expanded the scope of the convention to the storage, use, and transport of nuclear materials *within* countries. It also established measures to protect nuclear materials and nuclear facilities against sabotage; expanded opportunities for co-operation involving information subject to confidentiality; and defined objectives and fundamental principles of physical protection. For the amendment to come into force, two-thirds of signatories need to ratify it. So far, 97 countries have ratified the amendment. The communique from the 2012 Seoul Nuclear Security Summit calls on countries to expedite ratification of the amendment to bring it into force by 2014.

Also in 2005, the United Nations General Assembly adopted the International Convention for the Suppression of Acts of Nuclear Terrorism. Proposed by Russia to strengthen international law designed to counter terrorist threats, the April 2005 pact became the first UN convention aimed at preventing WMD terrorist attacks. The convention governs international cooperation in the investigation of acts of nuclear terrorism. It also requires punishment of those involved in such acts. It is aimed at preventing, combating, and investigating terrorist acts involving not only nuclear, but also radioactive materials as well as devices that are made with these materials.

Although Russia and the United States were among the first countries to have signed the convention, as of mid-2012, the United States had not yet ratified it, though Congress was debating the necessary legislation. As the United States signed the convention, it has an obligation under international law to refrain from any action inconsistent with the object and purpose of the document.

Resolution 1373 of UN Security Council was adopted September 28, 2001 (following the terrorist attacks in the United States on September 11, 2001). Its provisions are mandatory for all UN member states under Article VII of the UN Charter. The purpose of the resolution is to strengthen international cooperation and national mechanisms to prevent and suppress the financing and preparation of any acts of terrorism. Of the 20 measures prescribed in the resolution, the most relevant in the context of cooperation between Russia and the United States in the prevention of nuclear terrorism, are the following:

- take the necessary steps to prevent the commission of terrorist acts, including by provision of early warning to other states by exchange of information, Paragraph 2 (b);
- prevent those who finance, plan, facilitate or commit terrorist acts from using their respective territories for those purposes against other states or their citizens, Paragraph 2 (d);
- afford one another the greatest measure of assistance in connection with criminal investigations or criminal proceedings relating to the financing or support of terrorist acts, including assistance in obtaining evidence in their possession necessary for the proceedings, Paragraph 2 (f);
- exchange information in accordance with international and domestic law and cooperate on administrative and judicial matters to prevent the commission of terrorist acts, Paragraph 3 (b).
- establish a committee to oversee implementation of the resolution, Paragraph 6.

Resolution 1540 of UN Security Council was adopted on 28 April 2004. Like Resolution 1373, it is binding on all UN member states, including those who remain outside the NPT and other relevant nonproliferation treaties. The Security Council sought to create an effective barrier to prevent trade in weapons of mass destruction by non-state actors, especially with terrorist organizations. It also oversees its execution, establishing the 1540 Committee, and requires all states to report on the steps they have taken or plan to take to implement Resolution 1540.

In the context of cooperation between Russia and the United States in the prevention of nuclear terrorism three mandates of Resolution 1540 are particularly salient. The Security Council decided that:

- [A]ll states shall refrain from providing any form of support to non-State actors that attempt to develop, acquire, manufacture, possess, transport, transfer or use nuclear,

chemical or biological weapons and their means of delivery;

- [A]ll states shall take and enforce effective measures to establish domestic controls to prevent the proliferation of nuclear, chemical, or biological weapons and their means of delivery, including by establishing appropriate controls over related materials and to this end shall:
 - (a) Develop and maintain appropriate effective measures to account for and secure such items in production, use, storage or transport;
 - (b) Develop and maintain appropriate effective physical protection measures;
 - (c) Develop and maintain appropriate effective border controls and law enforcement efforts to detect, deter, prevent and combat, including through international cooperation when necessary, the illicit trafficking and brokering in such items in accordance with their national legal authorities and legislation and consistent with international law;
 - (d) Establish, develop, review and maintain appropriate effective national export and trans-shipment controls over such items, including appropriate laws and regulations to control export, transit, trans-shipment and re-export and controls on providing funds and services related to such export and trans-shipment such as financing, and transporting that would contribute to proliferation, as well as establishing end-user controls; and establishing and enforcing appropriate criminal or civil penalties for violations of such export control laws and regulations.

The resolution also called on UN member states to cooperate in the efforts mandated above.

Resolution 1887 of UN Security Council was adopted on September 24, 2009, and provides political support to a broad range of nonproliferation and nuclear security measures, and calls on all states to cooperate to strengthen the global effort to stop the spread of weapons of mass destruction to additional states or to terrorist groups.

In the context of cooperation between Russia and the United States in the prevention of nuclear terrorism the following paragraphs of Resolution 1887 are relevant:

- 24. Calls upon member states to share best practices with a view to improved safety standards and nuclear security practices and raise standards of nuclear security to reduce the risk of nuclear terrorism, with the aim of securing all vulnerable nuclear material from such risks within four years;
- 25. Calls upon all states to manage responsibly and minimize to the greatest extent that is technically and economically feasible the use of highly enriched uranium for civilian purposes, including by working to convert research reactors and radioisotope production processes to the use of low enriched uranium fuels and targets;
- 28. Declares its resolve to monitor closely any situations involving the proliferation of nuclear weapons, their means of delivery or related material, including to or by non-state actors as they are defined in resolution 1540 (2004), and, as appropriate, to take such measures as may be necessary to ensure the maintenance of international peace and security.

Non-binding Multilateral Mechanisms

PSI is a voluntary initiative that was launched by U.S. President George W. Bush on May 31, 2003, at an international meeting in Krakow, Poland. It is aimed at countering the proliferation of weapons of mass destruction (WMD), their means of delivery, and related materials by either states or non-state actors. PSI formed a set of “principles of interdiction,” which, although not legally binding, still provide a practical basis for combating proliferation of WMD through disrupting illegal routes for supply of components, equipment and technology used in production of such weapons. More than 90 countries are now participants in PSI.

Like PSI, GICNT is a voluntary initiative, launched jointly by Russian President Vladimir Putin and U.S. President George Bush in June 2006 at the summit of the G-8 in St. Petersburg. It is aimed at preventing terrorists from obtaining nuclear and radiological materials and related technologies. Russia and the United States co-chair the initiative. GICNT partners have developed principles of implementation that are applied to ensure the effectiveness of measures to combat illicit trafficking in nuclear and radioactive materials. They include commitments to:

- Develop, if necessary, and improve accounting, control and physical protection for nuclear and other radioactive materials and substances (Principle 1);
- Enhance security of civilian nuclear facilities (Principle 2);
- Promote information sharing pertaining to the suppression of acts of nuclear terrorism and their facilitation, taking appropriate measures consistent with their national law and international obligations to protect the confidentiality of any information, which they exchange in confidence (Principle 8).

Since July 2006, more than 80 nations have joined the U.S. and Russia as members of the Initiative.

Both Russia and the United States are also members of the Global Partnership against the Spread of Weapons and Materials of Mass Destruction that was established at the G-8 Kananaskis Summit in June 2002. At that summit G-8 leaders pledged to spend \$20 billion over the following decade to assist Russia and the other states in securing or eliminating chemical, biological, and nuclear weapons. In June 2010, the United States and Russia joined other G-8 leaders in extending the group’s Global Partnership against WMD for another ten years, with the U.S. pledging an additional \$10 billion for the program. The Global Partnership has now extended its mission worldwide, with a priority on helping states around the world meet their UNSCR 1540 obligations to put in place effective anti-proliferation controls, including effective security and accounting for any nuclear weapons or materials they may have.

IAEA recommendations on physical protection of nuclear materials and nuclear facilities were first published in 1972. They were developed on the basis of the experience of states that use nuclear energy for peaceful purposes, and contain voluntary guidelines for physical protection of nuclear materials and nuclear facilities. The latest, fifth version of the recommendations can be

found in the IAEA document INFCIRC/225/Rev.5 (2011), also known as “Guidelines for Nuclear Security” (Nuclear Security Series No.13). The fifth revision makes clear that all states should put in place rules that require operators handling Category I nuclear materials to protect them against a specified set of threats known as the Design Basis Threat (DBT); it greatly expands the recommended steps to prevent sabotage of nuclear facilities, and taking into the account the possibility of suicidal terrorists, it modifies the previous recommendations that much less security is needed for fissile material that is mildly radioactive.

Thus INFCIRC/225/Rev.5, significantly expands recommended measures for ensuring physical protection of nuclear materials and facilities in member states for the sake of maintaining the international regime of nuclear security.

Of all the provisions of the INFCIRC/225/Rev.5 document, those in Articles 3.31-3.33 of the International Cooperation and Assistance section are most relevant to cooperation in preventing illicit trafficking in nuclear materials. In particular, Article 3.33 states that in the event of unauthorized removal, sabotage or serious threat of such action the state shall as soon as possible provide the necessary information to other states that may be affected.

The IAEA provides a wide range of services to member states on request, including international peer reviews of nuclear security arrangements and a wide range of training and workshops. The most important of these services in the sphere of nuclear security are the International Physical Protection Advisory Service (IPPAS), which reviews the physical protection at a particular site designated by the requesting state, along with the broader system of nuclear security rules and procedures in that country, and the International Nuclear Security Advisory Service (INServ), which provides a broader overview of nuclear security activities in a state, identifying areas that may need improvement or more in-depth review. In recent years even advanced nuclear states have found that they can benefit from these services, and at the 2010 Nuclear Security Summit, the United States, Great Britain, and France all announced that they were hosting IPPAS reviews of their physical protection arrangements. When analysis of the results of visits by experts suggests that improvements are necessary, the IAEA works with donor states as needed to arrange funding; in some cases, the IAEA funds some upgrades itself.

The communique of the nuclear security summit, which was adopted on April 13, 2010 by leaders of 47 countries, includes an appeal for strengthening of nuclear security and preventing nuclear terrorism. The document noted responsible national actions and sustained and effective international cooperation are required to succeed. The signatories joined U.S. President Barack Obama’s call to secure all vulnerable nuclear materials within four years, and urged all states to agree to work together as an international community to advance nuclear security, requesting and providing assistance as needed. They also pledged to prevent non-state actors from gaining access to information and technologies needed to use nuclear material for malicious purposes.

At the summit, the 47 heads of states also recognized the need to strengthen cooperation at bilateral, regional and multilateral levels in order to develop nuclear security culture and effectively prevent and respond to incidents involving illicit trafficking of nuclear material. The leaders agreed to exchange information and practices through bilateral and multilateral mechanisms

in such areas as nuclear detection, forensic examination, enforcement, and development of new technologies. The communiqué pointed out that measures designed to advance security of nuclear material are also relevant for security of other radioactive materials.

The second Nuclear Security Summit was held in Seoul in March 2012. It again focused on core issues, including building a global nuclear security architecture, the role of the IAEA, nuclear materials, radioactive sources, nuclear security and safety interaction, transportation security, combating illicit trafficking, nuclear forensics, nuclear security culture, information security, and international cooperation.

More than 50 heads of state issued a joint communique pledging to strengthen nuclear security, reduce the threat of nuclear terrorism, and prevent unauthorized acquisition of nuclear materials. The participants agreed to continue the four-year effort securing and accounting for all vulnerable nuclear material by 2014. The Seoul Communique noted the relationship between nuclear security and nuclear safety, which was highlighted by the Fukushima accident in March 2011; it also called for robust efforts to improve both safety and security.

The Seoul Summit advanced the international regime of nuclear security. A number of countries, such as Ukraine, announced that they had eliminated weapons-usable nuclear material from their territory or that they were going to get rid of particular stocks before the next summit in 2014.

There were, however, disappointments too, as there were fewer new commitments than in 2012. The United States and Russia issued statements that in essence said “what we are doing is what we ought to be doing.” They committed to nothing to reduce their respective nuclear weapons arsenals or weapons material or even to upgrade security in their own countries.

Bilateral Statements and Agreements

In the bilateral realm, three U.S.-Russian joint statements should be noted: February 24, 2005, by Presidents Bush and Putin on the Bratislava Initiative to complete physical security upgrades at nuclear sites in Russia; July 15, 2006 by Presidents Bush and Putin on the Global Initiative to Combat Nuclear Terrorism (GICNT); and June 24, 2010 on cooperation in combating terrorism, by Presidents Barack Obama and Dmitry Medvedev.

The February 24, 2005 Joint Statement on the Bratislava Initiative committed the two countries to expanding and accelerating the scope of actions to improve physical security at nuclear sites within Russia, and to completing the effort by the end of 2008. Based on this agreement, Russia and the United States developed a detailed work program and established clear deadlines and lines of accountability and authority ensure that the work was completed properly and on time.

The July 15, 2006 Joint Statement on the Global Initiative to Combat Nuclear Terrorism launched the effort described above. The June 24, 2010 Joint Statement on Counterterrorism affirmed the two countries’ support for the GICNT.

The Treaty on Mutual Legal Assistance in Criminal Matters was highlighted in the Joint Statement by Presidents Bush and Putin at the summit in London on May 24, 2002. The declaration welcomed the entry of the treaty into force and noted that this accord would intensify cooperation in combating international organized crime. It also said that Russia and the United States will step up joint efforts in dealing with new global challenges of the twenty-first century, including the fight against threats of international terrorism and the proliferation of WMD, and that, to this end, Russia and the United States reaffirm their commitment to work together both on bilateral and multilateral basis.

The 123 Agreement on peaceful nuclear cooperation entered into force on January 12, 2011. The agreement establishes a framework for civil nuclear cooperation between Russia and the United States. Several aspects of the 123 Agreement are also relevant to cooperation on nonproliferation, including responding to illicit nuclear material trafficking attempts. In particular, Article 11 of the Agreement enables information sharing and coordination between regulatory authorities responsible for nuclear security. Article 6 of the Agreement spells out restrictions that may be imposed on cooperation. In particular, it says “This Agreement does not require the transfer of any information that the Parties are not permitted to transfer under their respective national laws and regulations, or whose transfer is inconsistent with international agreements to which the United States of America or the Russian Federation is party.”

A broad and enormously productive range of activities to prevent nuclear terrorism by the United States and Russia was governed by the Cooperative Threat Reduction (CTR) umbrella agreement (the 1992 Agreement between the Russian Federation and the United States of America on Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation), which was subsequently extended twice. Under that agreement, the United States and Russia worked together to secure fissile material in former Soviet states, replace obsolete and dangerous plutonium production reactors with fossil fuel power plants, and install radiation detectors at ports, airports, and border crossings to deter illicit trafficking in nuclear materials. The CTR umbrella agreement expired in June 2013, and has been replaced by an agreement that has a narrower scope in Russia, but allows the signatories to cooperate in assisting third countries to strengthen nuclear security. It remains to be seen, however, exactly what activities will be pursued under the new agreement.

A 2004 agreement enables U.S. and Russian cooperation to refuel reactors using highly enriched uranium with low enriched uranium and repatriate fresh and spent fuel to secure storage. The two nations have also conducted an ongoing dialogue regarding reduction and consolidation of stockpiles of fissile material. Physical security upgrades at Russian nuclear weapons and material storage sites are virtually complete, although future work is necessary to sustain those improvements, and all nuclear complexes must work continually to improve their security cultures.

As part of this effort, U.S. and Russian nuclear security experts have held a series of workshops to exchange best practices in particular areas, with some of these workshops including British experts as well. They have also established cooperative programs to strengthen nuclear security regulations, train appropriate personnel, and strengthen nuclear security culture. To broaden such

efforts worldwide, the United States backed the formation of the World Institute for Nuclear Security, which is organized to share and promote best practices among countries through workshops and manuals. Over its short history, the World Institute for Nuclear Security (WINS) has grown to hundreds of members in dozens of countries, but so far Russia has not participated in its activities.

In the June 24, 2010 statement Presidents Medvedev and Obama stressed the particular importance of further enhancing cooperation in the fight against terrorism through cooperation in such fields as law enforcement, transportation security, intelligence sharing, terrorist financing, anti-terrorism technology, as well as in international fora. The Presidents reaffirmed their countries' common understanding of threats to global security posed by terrorism, and a willingness to continue to seek new methods of strengthening international security, based on the existing U.S.-Russian anti-terrorism partnership, whose formation is driven largely by the U.S.-Russia Bilateral Presidential Commission's Working Group on Counter-Terrorism. While quite general, this agreement evinces a willingness by both Russia and the United States to expand cooperation in this realm. President Putin reaffirmed Russia's commitment to cooperation with the United States in the sphere of nuclear security. Putin and Obama issued a joint statement during their first presidential meeting on June 18, 2012 to declare that they "agree to redouble bilateral efforts to improve nuclear security, counter nuclear smuggling, and combat nuclear terrorism."

National Legal and Policy Mechanisms

Both Russia and the United States have promulgated legislation regulating the international cooperation of each country in the prevention of nuclear terrorism. Russia established 2006 Federal Law N. 35-FZ "On Combating Terrorism," while the United States has the Atomic Energy Act of 1954 and a variety of criminal laws relating to terrorism. The 2006 law states that the Russian Federation in accordance with international treaties of the Russian Federation shall cooperate in combating terrorism with foreign states, their law enforcement agencies and special services, as well as international organizations. This provision gives wide powers to the Government of Russia to use different mechanisms for international cooperation in preventing nuclear terrorism. The Atomic Energy Act establishes responsibility for security and accounting of U.S. nuclear weapons and materials, and institutes harsh penalties for any acts of nuclear theft, terrorism, or illicit trafficking in nuclear materials. It also creates the process for establishing 123 Agreements described above.

In addition to national legislation, the international aspects of combating nuclear terrorism are reflected in a number of policy documents adopted by Russia and the United States in recent years.

In 2009-2013, Russia adopted three basic doctrinal documents: the National Security Strategy of the Russian Federation Until 2020 (approved on May 12, 2009), the Military Doctrine of Russian Federation (approved on February 5, 2010), and the Foreign Policy Concept of the Russian Federation (approved on February 12, 2013). All the three documents refer to combating terrorism.

The international aspects of combating terrorism are best reflected in the Foreign Policy Concept of the Russian Federation. Section II of the concept refers to international terrorism as a major transborder challenge of modern times. Section III of the concept says that the Russian Federation “comes out in favor of strengthening nuclear safety and security worldwide, in particular supports strengthening international legal mechanism in the fields of nuclear safety and prevention of nuclear terrorist attacks.” This section also notes that Russia “views combating international terrorism as a crucial domestic and foreign policy task.” The concept states that this fight should be put on the international legal framework and conducted in compliance with the UN Charter.

Russia’s National Security Strategy also recognizes the need for international cooperation in countering terrorism, and particularly emphasizes the role of the U.S.-Russian cooperation. Strengthening counterterrorism cooperation between Russia and the United States is regarded as one of the priorities of bilateral relations, according to the strategy.

The Military Doctrine of the Russian Federation, however, contains no references to international cooperation in combating terrorism. On the doctrine’s list of major military threats, the spread of international terrorism is only number 10. This does not reflect Russia’s recent experience, as in the 21st century, Russia has been subjected to many terrorist acts with grave consequences and terrorism in fact became the main threat to national security.

The latest U.S. Nuclear Posture Review was released on April 10, 2010. This review contains new assessments of nuclear threats to the United States. For the first time, the review cited nuclear terrorism and nuclear proliferation as preeminent threats to U.S. security within the nuclear realm. Moreover, the document contains a detailed program of actions to counter the threat in the four spheres:

- active implementation of the Prague initiatives announced by President Barack Obama in April 2009 which are designed to secure all vulnerable nuclear materials worldwide within four years;
- accelerating efforts to convert or close research reactors using highly enriched uranium fuel and to repatriate fresh and spent fuel for secure storage in the United States or Russia;
- strengthening national and international capacity to disrupt opportunities for illicit trafficking in nuclear materials, equipment, and technologies and to intercept such trafficking. In this sphere the United States intends to contribute to strengthening of national and multilateral regimes of export and border controls, as well as to financial and other mechanisms designed to combat the illegal trade in nuclear materials, equipment and technology; and,
- affirmation that the U.S. is determined to hold accountable any country, terrorist group or other non-state actors that facilitate efforts by terrorists to acquire or use WMD. To this

end, nuclear forensics is to be developed.

The National Security Strategy of the United States, which was adopted on May 28, 2010, differs substantially from its 2006 predecessor as it puts greater emphasis on nuclear terrorism and distinguishes states from terrorists. “The danger of nuclear terrorism is the greatest threat to global security. Terrorist organizations, including al-Qaeda, have engaged in efforts to develop and acquire WMD—and if successful, they are likely to use them,” according to the document. The document states that there is no greater threat to the American people than weapons of mass destruction, particularly the danger posed by the pursuit of nuclear weapons by violent extremists and their proliferation to additional states.

That the U.S. government has defined nuclear terrorism as a major threat to the country’s national security and subordinated other nuclear threats to it, is significant. It increases the imperative for international (including U.S.-Russian) cooperation in countering the nuclear terrorism threat.

The analysis of the legal frameworks and policies of the United States, Russia, and other states in the sphere of nuclear security suggests several conclusions:

- A broad and robust legal and policy framework for U.S.-Russian cooperation and mutual assistance in prevention of nuclear terrorism has been developed.
- This cooperative framework is threatened by the expiration of several U.S.-Russian agreements, e.g. the Warhead Safety and Security Exchange Agreement (expired), the Agreement Concerning the Disposition Of Highly Enriched Uranium Extracted From Nuclear Weapons and the Agreement on Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation (expired, but replaced by a new Agreement).
- Most of the established international and national legal instruments include provisions that enable Russia and the United States to work closely together in responding to the threat of nuclear terrorism, but at the same time exchange of sensitive information may be subject to certain restrictions.
- Russia and the United States have assumed legal obligations in several joint and multilateral documents and launched or joined initiatives to combat the threat of nuclear terrorism. Effective implementation of these commitments and initiatives is not only in the interest of both countries, but also significantly strengthens international security, minimizing risk of nuclear attacks by terrorist groups.
- While the United States and Russia are generally active participants in the international nuclear security regime, these mechanisms are deficient in one or more of the following areas: universality, enforceability, verification, and specificity.

The existing potential for formation of a full-fledged U.S.-Russian partnership in prevention of nuclear terrorism remains underutilized, resulting in lack of development of joint structures that

could work closely and on an ongoing basis to develop practical procedures and mechanisms for responding to crises.

III. Cooperation Through Experience, Exercises, and Planning

Experience

Despite the impressive array of mechanisms established to combat nuclear terrorism, several serious problems persist, requiring relentless attention and actions by the United States, Russia, and other nations.

These include continuing nuclear security vulnerabilities in some countries and the continued incidents of illicit trafficking in nuclear materials, and other radioactive materials. Despite the mandates of UNSCR 1540, some countries have not yet adopted a system of strict criminal punishment for crimes committed in violation of nonproliferation and nuclear security conventions and instruments. A strict system of criminal prosecution, as well as international cooperation to find and punish the offenders, is needed to deter potential theft of nuclear materials or illicit trafficking in such materials.

The problem of accounting and control over nuclear materials, and radioactive sources is yet to be solved by a number of countries. Even in the United States and Russia, there is more to be done to ensure that nuclear weapons and the materials needed to make them are effectively and sustainably secured against the full spectrum of potential adversary threats.

According to the International Atomic Energy Agency and media reporting, over the past twenty years there have been a score of cases in which weapons-grade fissile material has been seized outside regulatory control. Such material has been seized in separate incidents in 2003, 2006, 2010, and 2011 in Georgia and Moldova. While none of these seizures involved enough material to fabricate nuclear explosive devices, they are significant for two reasons. First, in many of the cases, the individuals involved claimed that the material was a sample of a large quantity available for purchase—material that might still be on the market and available to terrorists. Second, the availability of material for trafficking is conclusive proof of nuclear security vulnerabilities. Yet in all but one of the score of cases in which weapons grade fissile material was seized, most of the following facts remain unknown to the international community: where the material was stolen from; who stole it; who abetted them; how the theft was accomplished; and where the material was headed. It is evident that security improvements undertaken at hundreds of nuclear facilities around the world have lowered probability of theft of nuclear materials. At the same time until the reasons, nature, and extent of these nuclear security failures are fully understood, we cannot be fully confident of the security measures now in place.

Exercises and Planning

The acquired real-life experience is not the only means to improve U.S. and Russian capacity to prevent nuclear terrorism. Prospects for development and implementation of joint activities in Russia and the United States to counter the threat of nuclear terrorism can also be discerned from recent bilateral modeling of the situation with the interception of contraband nuclear material.

Participants of two U.S.-Russia Security programs at Harvard in 2010 completed case studies that required attendees to play out a hypothetical scenario in which they had to interdict terrorist nuclear explosive devices headed for the United States or Russia. In their group presentations, participants, who came from senior echelons of the two countries' military establishments, unanimously settled on nuclear terrorism as a matter of urgent concern requiring both immediate and deep U.S.-Russian cooperation. The participating flag officers developed concrete joint action plans on how to solve the task of interdicting the terrorist nuclear devices en route to their countries and on how the United States and Russia could cooperate to prevent nuclear terrorism in the longer run.

U.S. and Russian experts also played out an interception of contraband nuclear material during a tabletop exercise in Moscow in 2011. The event, which was managed jointly by former foreign minister of Russia Igor Ivanov and former U.S. senator Sam Nunn, was attended by Russian and American experts who had previously held high government positions and have extensive experience in law enforcement, the military, customs, international diplomacy, and cooperation with the media. The participating specialists were well versed in the political and technical aspects of nuclear security.

The purpose of this simulation was to determine the readiness of Russia and the United States to respond jointly to the nuclear crisis, to understand the problems identified by the scenario, and to develop practical recommendations for improving and strengthening cooperation to combat the threat of nuclear terrorism.

Participants tackled a plausible scenario requiring them to intercept two separate batches of illicitly trafficked HEU, one of which was en route to the United States. The exercise focused on challenges that the governments of Russia and the United States would encounter if coordinating a joint response to such a crisis. The exercise highlighted differences in approaches between the Russian and American officials, both in political and practical terms. These differences were due to cultural factors, different perceptions of the threat of nuclear terrorism, as well as different approaches to interaction with the media and the public. For example, experts from Russia initially preferred more restrained and cautious steps, whereas their American counterparts at once perceived the situation as a full-blown nuclear crisis. On the U.S. side, policy and operational coordination would be led by the White House, while in Russia, such efforts would be managed by the National Anti-Terrorism Committee under the direct supervision of the Director of the Federal Security Service (FSB).

The exercises also revealed that standard operating procedures for cooperation between Russia

and the United States to counter the threat of nuclear terrorism either do not exist or are insufficient. This could seriously hamper cooperation in the event of a real nuclear crisis. Hence, it may be appropriate to create a bilateral inter-agency task force to strengthen mechanisms for bilateral cooperation to counter the threat of nuclear terrorism.

The exercise also revealed that determining the origin of illegally trafficked nuclear material would require the United States and Russia to exchange highly sensitive information, including laboratory data on intercepted nuclear materials and samples. Again, the simulation revealed that there were neither procedures nor guidelines for such exchanges. There is clearly a need for such standards to be established. Russia and the United States could form a joint technical working subgroup on nuclear forensics and a subgroup on countering of nuclear terrorism- within the framework of the the U.S.-Russia Bilateral Presidential Commission's high-level inter-governmental Nuclear Energy and Nuclear Security Working Group, which would greatly simplify the process of determining the origin of illegally trafficked nuclear material. The absence of such procedures hinders achievement of results in investigating the origin of fissile material seized outside regulatory control.

The exercises also highlighted the fact that the existing differences in approaches of the U.S. and Russian governments towards public information and relations can pose serious issues in the case of a real nuclear crisis, which could lead to a loss of public confidence, the spread of rumors and, consequently, panic. A Russian-American subgroup on countering nuclear terrorism could explore approaches towards informing the public in emergency situations. This subgroup could develop a general-purpose communication strategy and determine when to report to the public in such situations.

The aforementioned Working Group on Nuclear Energy and Nuclear Security held its first meeting in Washington, DC on September 28-29, 2009. At that meeting the group adopted its first Action Plan that provides for implementation of the Joint Statement on nuclear cooperation that the U.S. and Russian presidents signed on July 6, 2009 in the following 13 areas: accounting, control and physical protection of nuclear materials, nuclear fuel return, conversion of reactors, consolidation and conversion of nuclear materials, plutonium disposal, combating of illicit trafficking of nuclear materials; international safeguards system, export controls, ending production of weapons-grade plutonium; emergency response, the global initiative to combat nuclear terrorism, bilateral cooperation between Russia and United States in the field of civil nuclear energy, international cooperation framework in the field of civil nuclear energy.

IV. Recommendations

Building on the general approaches recommended in the 2011 “U.S. – Russia Joint Threat Assessment on Nuclear Terrorism,” we recommend the following proposals for action that will improve the ability of the United States and Russia to detect, prevent, disrupt, and manage consequences of acts of nuclear terrorism:

Joint Actions

- Within the framework of the U.S.-Russia Bilateral Presidential Commission's Nuclear Energy and Nuclear Security Working Group, the United States and Russia should create subgroups, led by high-ranking government officials on each side that would:
 1. organize and oversee implementation of specific steps in nuclear security, intelligence, law enforcement, emergency response, and other areas that the two countries can take to reduce the risk of nuclear terrorism act. An agenda could be laid out within six months and submitted for approval by the two Presidents;
 2. coordinate actions by the United States and Russia in the event of a crisis involving a credible nuclear terrorist threat. This subgroup could include representative of diplomatic , military and intelligence communities. These individuals could meet semi-annually to coordinate operating procedures and plan exercises to test the cooperative approaches. As a first step, the subgroup could explore the lessons from the bilateral exercises as well as from other exercises of higher level officials and exercises conducted within framework of the initiatives;
 3. develop guidelines and procedures, initially, for the sharing of information and analysis relevant to the task of nuclear forensics. In a second phase, the nuclear forensics subgroup could examine instances of seized fissile material to determine the origins of the material and begin an examination of lessons to be learned from the case, with a view to preventing future theft of nuclear material. For tracking down nuclear terrorism and illicit trafficking in nuclear materials the subgroups should include representatives of the intelligence communities as well as experts on nuclear explosive devices, terrorist groups, and illicit trafficking, and pursue an integrated approach, developing and pursuing leads in the aforementioned areas.

Members of these subgroups could meet regularly, and share as much information as possible, while complying with confidentiality requirements. These teams could subsequently consider whether to merge their efforts, and how to involve other countries in these joint efforts.

Parallel Actions

- The United States and Russia should each commit to continually improving their nuclear security practices, searching for and correcting vulnerabilities and strengthening the appropriate security architecture as threats change. In particular:
 1. taking action to ensure that all our stocks of nuclear weapons, highly enriched uranium, and separated plutonium meet the standards of security at all times, having effective protection against the full range of potential outsider and insider threats;

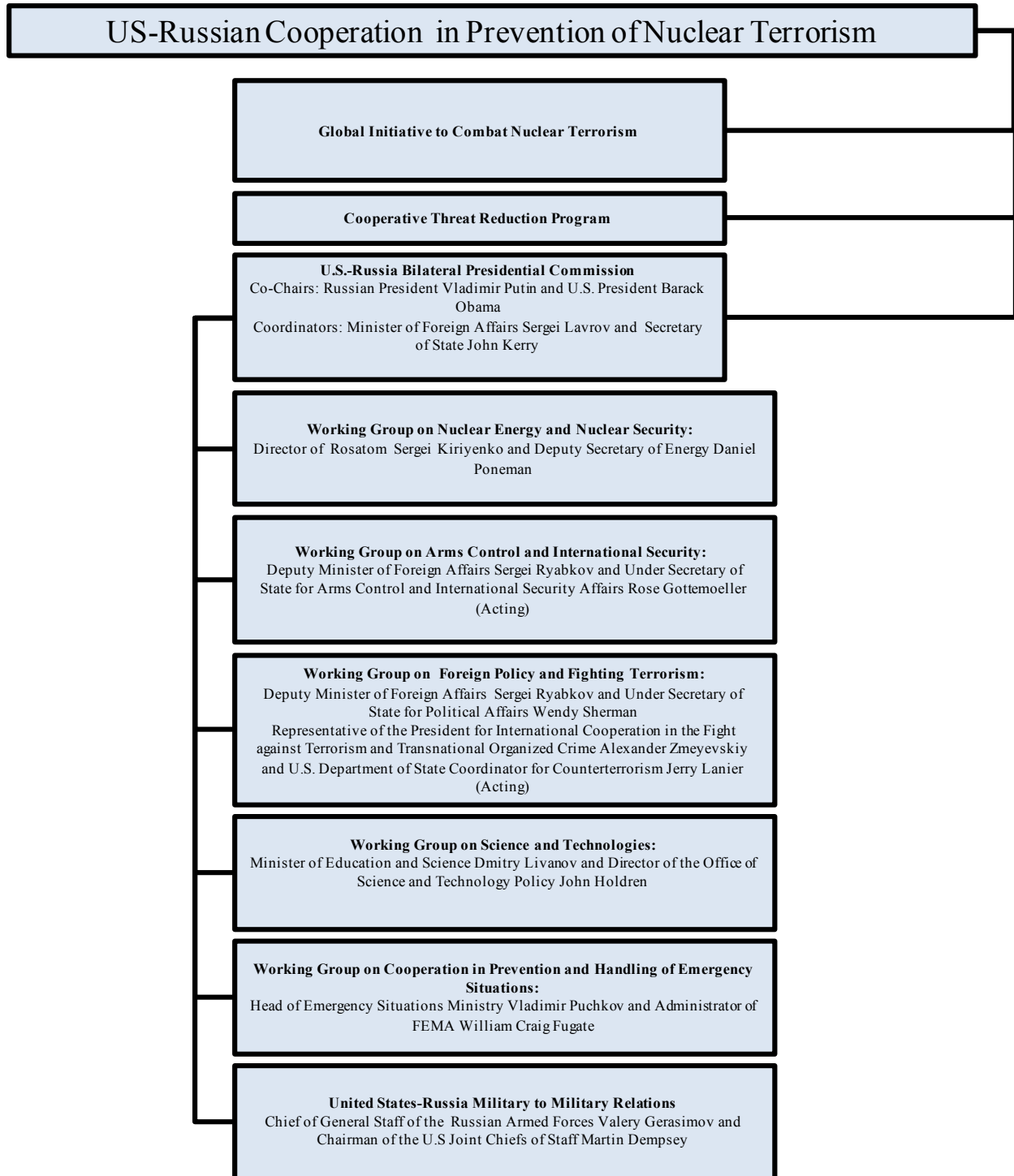
2. ensuring that all our nuclear weapons, highly enriched uranium, and separated plutonium are effectively controlled and accounted for in order to immediately detect attempts to steal them, including annual, measured inventories of weapons-usable materials;
3. stipulating appropriate funding to ensure that every facility and transporter handling these stocks has the financial and personnel resources required to provide effective security and accounting for these stocks;
4. establishing programs to ensure that each organization managing these stocks has an effective security culture;
5. continuing to exchange best practices in nuclear security, including utilizing potential of the World Institute for Nuclear Security;
6. ensuring that each site and transport facility where these stocks exist has professional and appropriately paid, trained, and equipped guard forces capable, in cooperation with off-site responders, of preventing all credible threats to these stocks;
7. taking action to reduce the number of locations where nuclear weapons, highly enriched uranium, and plutonium exist to the absolute minimum required to support the ongoing military and civilian uses of these stocks. Explore possibility of ending civilian use of HEU, including production of medical isotopes;
8. achieving effective regulatory enforcement of rules that will ensure that all operators establish and maintain nuclear security and accounting systems that are effective at all times;
9. developing and implementing approaches to build international confidence without compromising sensitive information.

Actions with Other Nations

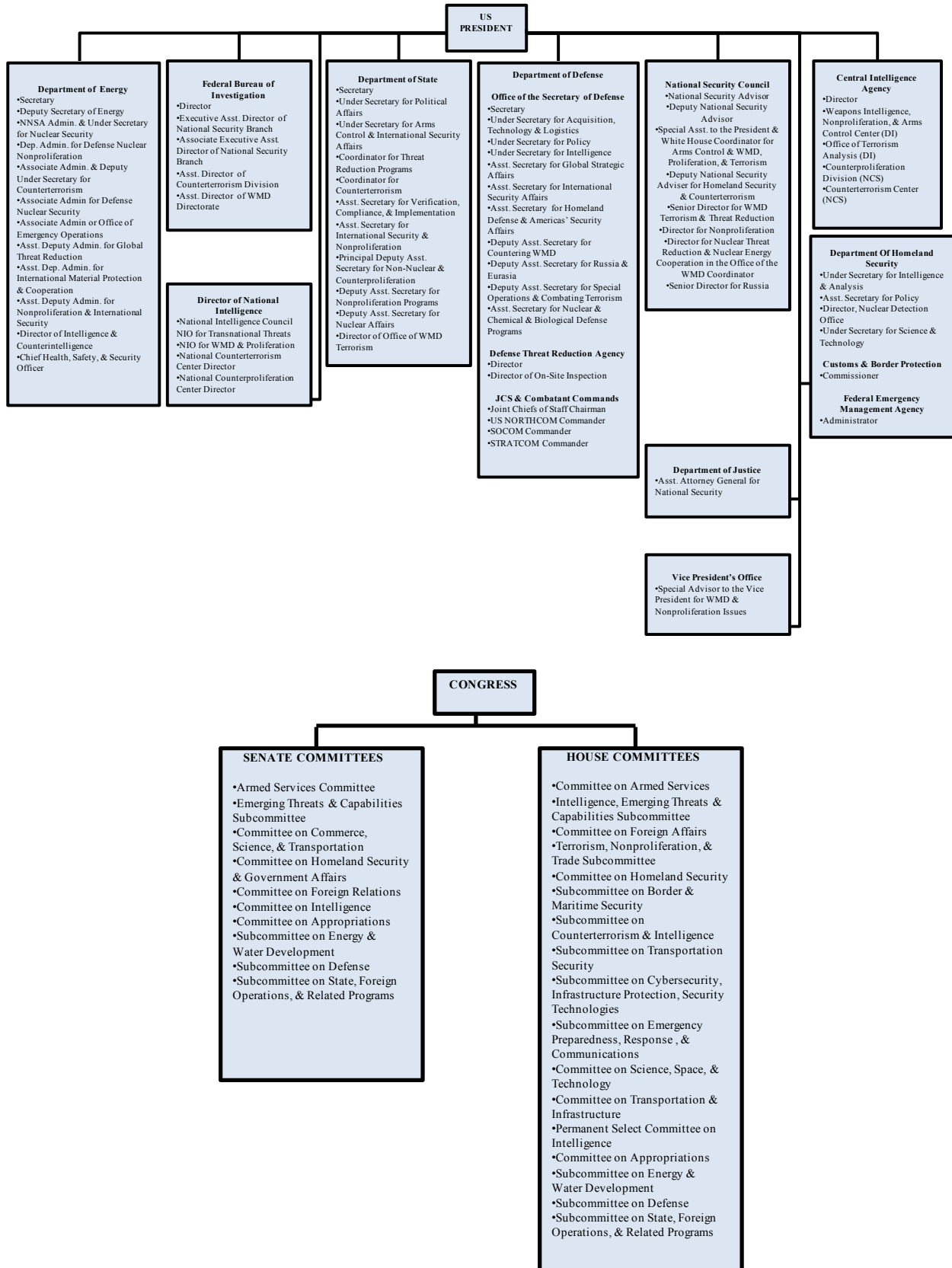
- Drawing on their experience enhancing nuclear security under Cooperative Threat Reduction programs, the United States and Russia should exercise leadership in the nuclear sphere, working together to involve other countries in efforts to ensure high level of nuclear security, including to establish groups of countries that will take measures together to strengthen the level of nuclear security within the framework for preparation of the next Nuclear Security Summit in the Netherlands in 2014. Specific actions could include:
 - supporting the central role of the International Atomic Energy Agency in providing nuclear security guidance, review, and assistance to countries around the world, and the need to fund its Office of Nuclear Security appropriately;
 - working with other interested countries, develop mutually agreeable approaches to strengthening the global nuclear security framework, including development of approaches to continuation of the discussion of nuclear security after the summits end,

- and seeking as wide as possible adherence to the standards outlined above;
- striving to reach agreements extending legal frameworks for continued cooperation on nuclear security, nuclear disarmament verification, consolidation of nuclear materials, nuclear forensics, safety of nuclear weapons, and other cooperative areas of mutual interest;
 - coordinating efforts in the sphere of national legislation in criminal prosecution for crimes committed in violations of the provisions of conventions and international instruments on nonproliferation and nuclear security.

V. U.S. and Russian Government Agencies Involved in Countering Threat of Nuclear Terrorism



Map of US Government's Organizational Response to Nuclear Terrorism Threat



Map of Russian Government's Organizational Response to Nuclear Terrorism Threat

