

**UNITED STATES INFORMATION PERTAINING TO
THE TREATY ON THE
NON-PROLIFERATION OF NUCLEAR WEAPONS**

2010

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) entered into force on March 5, 1970. In 1995, the Parties indefinitely extended the Treaty, and in doing so also provided for a conference to review the operation of the Treaty every five years, with a view to assuring that the purposes and provisions of the NPT are being realized. From 3-28 May 2010, the NPT Parties will convene the Treaty's Eighth Review Conference.

The NPT is the only legally binding agreement that provides on a global basis a barrier to the spread of nuclear weapons and has the broadest support of any arms control agreement in history. The Treaty has three interrelated and interdependent objectives:

- To stop the further spread of nuclear weapons;
- To provide a sound basis for international cooperation in the peaceful uses of nuclear energy; and
- To commit all Parties to undertake negotiations in good faith on disarmament.

These objectives are embedded in the Treaty's three mutually reinforcing pillars.

This paper records U.S. actions in support of its obligation under the NPT, as well as U.S. efforts to strengthen the Treaty in all its aspects, during the period from 2000 to 2010. The United States has prepared this paper to assist the 2010 Review Conference in its efforts to review the operation of the NPT and to strengthen the Treaty.

I. PREVENTING THE FURTHER SPREAD OF NUCLEAR WEAPONS

Articles I and II of the NPT seek to prevent the further spread of nuclear weapons, thereby strengthening the security of all states. Article I requires each nuclear weapon State Party not to transfer nuclear weapons or other explosive devices to any other recipient and not in any way to assist, encourage or induce non-nuclear weapon states to manufacture or otherwise acquire such devices. Article II requires each non-nuclear weapon State Party not to acquire or exercise control over nuclear weapons or other explosive devices and not to seek or receive assistance in the manufacture of such devices.

Article III requires the non-nuclear weapon States Parties to enter into an agreement with the International Atomic Energy Agency (IAEA) setting out safeguards to be applied to the nuclear material in all peaceful nuclear activities. These “comprehensive safeguards” are intended to provide necessary assurance that nuclear materials in non-nuclear weapon states are not diverted from peaceful purposes to the development of nuclear explosive devices. In September 1997, the IAEA Board of Governors adopted the Model Additional Protocol, which provides the IAEA with additional tools to address diversion of declared as well as undeclared nuclear material. More than 120 states have signed an Additional Protocol (AP) with the Agency, and almost 100 have brought Protocols into force.

Article VII of the Treaty states: “[n]othing in this Treaty affects the right of any group of States to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories.” Five such treaties have been concluded.

Article IX prescribes the steps that a state must take to accede to the Treaty.

Article X outlines the requirements for a Party to withdraw from the Treaty.

A. Article I: The Non-Proliferation Commitment by Nuclear Weapon States Party

The United States takes seriously its Article I obligations as a Nuclear Weapon State to not transfer to any recipient whatsoever nuclear weapons or nuclear explosive devices or to assist or encourage any non-nuclear weapon state to manufacture or otherwise acquire nuclear explosive devices. Moreover, U.S. law,

policy and regulations are intended to prevent unauthorized transfers of nuclear equipment, material, and technology. The United States has established and implemented a comprehensive system of export controls for both nuclear and dual-use items and technology that could be used for nuclear explosive purposes. This system of export controls is designed to provide assurance that exports from the United States of nuclear facilities, equipment, material and technology, including nuclear-related dual-use items, are not diverted or misused for nuclear weapons activities. These controls include:

- U.S. Nuclear Regulatory Commission controls on exports of nuclear reactors, equipment, components and materials under the U.S. Atomic Energy Act, as amended (Act);
- U.S. Department of Energy controls on exports of nuclear technology transfers under the Act; and
- U.S. Department of Commerce controls on exports of nuclear-related dual-use commodities and technologies pursuant to the U.S. Nuclear Non-Proliferation Act of 1978.

The U.S. system of export controls is an essential element of U.S. compliance with its obligations under Article I of the NPT and also under UN Security Council Resolution 1540.

United Nations Security Council Resolution 1540 (2004)

In April 2004, the UN Security Council, acting under Chapter VII of the UN Charter, unanimously adopted Resolution 1540. UNSCR 1540 obligates all UN Member States to develop and enforce appropriate legal and regulatory measures against the proliferation of weapons of mass destruction (WMD) and their means of delivery. Specifically, Resolution 1540 requires states to refrain from providing support to non-state actors attempting to develop or in any way acquire WMD and their means of delivery; to adopt and enforce effective laws prohibiting non-state actors from engaging in such activities; and to take and enforce effective measures to establish domestic controls to prevent proliferation of WMD and their means of delivery. The resolution established a Committee to implement its measures and mandated reporting by Member States to the Committee on their implementation of the resolution. Subsequent resolutions have extended the Committee's mandate.

Resolution 1540's implementation has prompted significant, positive steps across the globe to prevent the development, use, and trafficking of WMD. Many Member States have undertaken measures to forge new working relationships among government entities, enhance regulatory frameworks, and expand their efforts to address the nexus between non-state actors and WMD. Resolution 1540 has led to the development of new assistance vehicles for empowering UN Member States to fulfill their obligations. Key international organizations, including the IAEA, have adopted portions of the mandate of UNSCR 1540 to guide their programs of work and to work in concert with the 1540 Committee and Member States. The United States helped initiate UNSCR 1540 and has taken a number of measures to advance its implementation.

- In accordance with UNSCR 1540, the United States completed its National Action Plan on May 31, 2006.
- The United States is working to meet its obligations under Resolution 1540. The United States has over many years has built an extensive legal and regulatory framework addressing many 1540 requirements and continues to strengthen that framework. For example, in June 2005, U.S. Executive Order 13382 froze the U.S. assets of individuals or entities designated as WMD proliferators and their supporters, and it prohibited U.S. persons from engaging in transactions with those individuals or entities.
- The United States has supported other states' efforts to implement Resolution 1540 in a variety of ways, including providing technical assistance and financial support. The United States spends more than \$2 billion annually on programs designed to assist other states in developing 1540-related capacities. The United States and other States have initiated an emerging process for matching requests for assistance with donors.

UN Security Council Resolution 1887(2009)

At a summit meeting chaired by President Obama on September 24, 2009, the United Nations Security Council unanimously adopted UNSCR 1887. The Resolution reaffirms that the proliferation of weapons of mass destruction and their means of delivery are threats to international peace and security and shows agreement on a broad range of actions to address nuclear proliferation.

The Resolution has specific relevance for the 2010 Review Conference. It calls for NPT Parties to cooperate so that the 2010 Review Conference results in a strengthened Treaty and sets realistic and achievable goals in all of the NPT's three pillars. It supports NPT universality and calls on all states to adhere to the NPT's terms. It makes clear the Council's intent to address immediately any notice of intent to withdraw from the Treaty and affirms that states will be held responsible for any violations of the NPT committed prior to their withdrawal from the Treaty. Further, the Resolution notes ongoing efforts in the NPT review process to identify mechanisms for responding collectively to any notification of withdrawal.

Many of the Resolution's provisions are relevant to Parties' discussions at the Review Conference as it supports:

- A revitalized commitment to work toward a world without nuclear weapons and further progress on nuclear arms reductions;
- Key nuclear disarmament-related agreements, including a new Strategic Arms Reduction Treaty (START), the Comprehensive Nuclear Test-Ban Treaty (CTBT), and a fissile material cut-off treaty (FMCT);
- Better security for nuclear materials to prevent their acquisition by terrorists;
- Addressing the current major challenges to the nonproliferation regime, including demanding full compliance with relevant Security Council resolutions and calling on states to find an early negotiated solution to cases of noncompliance;
- The IAEA's essential role in preventing nuclear proliferation and ensuring access to peaceful uses of nuclear energy under effective safeguards;
- Efforts to ensure the development of the peaceful uses of nuclear energy in a framework that reduces proliferation risk;
- The inalienable right of Parties to the NPT to develop research, production and use of nuclear energy for peaceful purposes in conformity with their nonproliferation obligations under the NPT;
- Measures to reduce the likelihood that a peaceful nuclear program can be diverted to a weapons program;

- Ensuring that the IAEA has the authority and resources necessary to carry out its mission to verify both the declared use of nuclear materials and facilities and the absence of undeclared activities and affirming the Council's resolve to support the IAEA's efforts in this regard;
- Calling for States' to conclude comprehensive safeguards agreements and Additional Protocols with the IAEA;
- Calling for States to share best practices with a view to improve safety standards and nuclear security practices and to raise standards of nuclear security to reduce the risk of terrorism;
- Encouraging IAEA work on multilateral approaches to the fuel cycle, including assurances of fuel supply to make it easier for countries to choose not to develop enrichment and reprocessing capabilities; and
- Strengthened implementation of Resolution 1540.

Global Initiative to Combat Nuclear Terrorism

The Global Initiative to Combat Nuclear Terrorism (GICNT) is an international partnership of 79 partner nations and 4 official observers. All partners have endorsed a set of core nuclear security principles encompassing the full spectrum of deterrence, prevention, detection, and response objectives. Through multilateral activities and exercises, partners share best practices and lessons learned in order to strengthen both individual and collective capabilities to combat the threat of nuclear terrorism. Since the inception of the GICNT, partners have conducted over thirty GICNT activities and five senior-level plenary meetings. These events have resulted in greater networking and transparency among the international community and in enhanced coordination within individual partner governments.

In response to President Obama's call for the GICNT to become a "durable international institution" (Prague speech, April 2009), the U.S. and Russian Co-Chairs are taking tangible steps to transform the GICNT into an action-oriented and institutionalized program. They have proposed revisions to the Terms of Reference document to give GICNT activities new momentum and enhance partner roles and implementation mechanisms. The proposal was discussed with

the Partnership in January 2010, and final adoption of the new document will be voted upon at the June 2010 Plenary Meeting in Abu Dhabi. Meanwhile, throughout the year the GICNT will conduct a series of activities focusing on nuclear forensics, nuclear detection, legal frameworks, and terrorist financing. The goal of these activities is to produce nuclear security core competency documents to assist the GICNT partners in implementing the Statement of Principles.

Amended Convention on the Physical Protection of Nuclear Material (CPPNM)

The Convention on the Physical Protection of Nuclear Material (CPPNM), which entered into force in 1987, provides obligatory physical protection standards for the international transport of nuclear material, but it did not cover domestic use, storage and transport unless related to international transport.

Beginning in the late 1990s, the United States led the initiative to expand the CPPNM to cover physical protection of nuclear material in domestic use, storage, and transport and of nuclear facilities. The 9/11 terrorist attacks, greater terrorist interest in acquiring nuclear material, and increased concerns about illicit trafficking in nuclear materials added urgency to the efforts to expand CPPNM.

The Amendment to the CPPNM, adopted on July 8, 2005 at a conference held under the auspices of the International Atomic Energy Agency (IAEA) in Vienna, is the result of those efforts. The Amendment significantly expands the scope of the original CPPNM and will, in effect, globalize U.S. physical protection practices. It establishes new international norms for physical protection of nuclear material and nuclear facilities and builds upon the penal regime provided for in the CPPNM by adding two new principal offenses – nuclear smuggling and sabotage of a nuclear facility – as well as certain ancillary offenses, which Parties must criminalize domestically.

The Amendment to the CPPNM will enter into force after two-thirds of the current 142 Parties to the CPPNM join the Amendment. President Bush submitted the CPPNM Amendment to the U.S. Senate on September 4, 2007, seeking the Senate's advice and consent to ratification. The Senate provided its advice and consent on September 25, 2008. Implementing legislation was forwarded to Congress on February 26, 2010.

INFCIRC/225 Revision

The Amended CPPNM established four objectives and 12 Fundamental Principles for a physical protection regime, but additional guidance is necessary. Since its publication by the IAEA in 1975, *The Physical Protection of Nuclear Material and Nuclear Facilities* (INFCIRC/225) and subsequent revisions have provided internationally recognized guidance for securing nuclear material. INFCIRC/225 was last revised in 1999 and requires updating once again to provide implementing guidance for the Amended Convention on the Physical Protection of Nuclear Material (CPPNM) and UNSCR 1540, and to address the current threat environment. Beginning in 1998, the IAEA has conducted a series of Consultants Meetings of Member State representatives to revise INFCIRC/225.

Following the July 2005 amendment to the CPPNM, the United States invited a workable number of other States (a “Core Group”) to join an effort to revise INFCIRC/225. In 2007, the United States and the Core States met with the Director of the IAEA Office of Nuclear Security and provided a first draft of a revised INFCIRC/225. The United States has continued to play an active leadership role in a series on IAEA Consultants Meetings and a Technical Meeting for INFCIRC/225 revision. In February 2010, Member States agreed on draft text, which has been circulated for a 120-day final Member State review before publication

Nuclear Security Summit

As the President stated in his Prague speech in April 2009, nuclear terrorism is the most immediate and extreme threat to global security. He announced that he would host a Nuclear Security Summit in 2010 in Washington, D.C. as part of his new initiative to secure all vulnerable nuclear materials within four years. The Summit was held April 12-13, 2010, with leaders of 47 states plus the United Nations, European Union, and the International Atomic Energy Agency (IAEA) participating. The purpose of the Summit was to discuss steps we can take collectively to secure nuclear materials and prevent acts of nuclear terrorism.

The Summit Communiqué accomplishes the following:

- Endorses President Obama's call to secure all vulnerable nuclear material in four years and pledges to work together toward this end;
- Calls for focused national efforts to improve security and accounting of nuclear materials and strengthen regulations -- with a special focus on plutonium and highly enriched uranium;
- Seeks consolidation of stocks of highly enriched uranium and plutonium and reduction in the use of highly enriched uranium;
- Promotes universality of key international treaties on nuclear security and nuclear terrorism;
- Notes the positive contributions of mechanisms such as the Global Initiative to Combat Nuclear Terrorism to build capacity among law enforcement, industry, and technical personnel;
- Calls for the IAEA to receive the resources it needs to develop security guidelines and provide advice to its members on how to implement them;
- Seeks to ensure that bilateral and multilateral security assistance would be applied where it can do the most good; and
- Encourages the nuclear industry to share best practices for nuclear security, making sure that security measures do not prevent countries from enjoying the benefits of peaceful nuclear energy.

B. Article II: U.S. Actions to Support Article II Obligations, Strengthening Compliance with the Treaty

The United States believes it is essential that all Parties fully comply with their obligations under the Treaty. Otherwise, the confidence in their security that the Treaty provides its Parties will be undermined, with negative consequences for the maintenance of international peace and security. Nearly all NPT Parties have

observed their Treaty obligations. Unfortunately, some Parties, including the Democratic Peoples Republic of Korea (DPRK) and Iran, have not complied with the Treaty's rules. NPT Parties which violate their Treaty obligations must come back into compliance and would remain responsible under international law for violations of the NPT even if subsequently withdrawing from the Treaty. The United States is committed to working diplomatically with others to resolve such compliance challenges as those posed by the actions of the DPRK and Iran.

DPRK

The United States has worked for years toward the resolution of concerns regarding DPRK's compliance with the NPT. In the last decade, our efforts have included bilateral and multilateral initiatives, support for the IAEA and UN Security Council actions, and implementation of UN and domestic sanctions to compel the DPRK to fulfill its nonproliferation obligations.

In January 2003, shortly after its December 2002 decision to expel IAEA inspectors and its announced intent to restart its nuclear facilities frozen under the 1994 Agreed Framework, the DPRK announced its intention to withdraw from the NPT.

In August 2003, the United States helped to initiate the Six-Party Talks, involving China, Russia, Japan, the Republic of Korea (ROK), the DPRK, and the United States. In the September 2005 Joint Statement of the Six-Party Talks, the Six Parties unanimously reaffirmed the goal of "the verifiable denuclearization of the Korean Peninsula in a peaceful manner," and the DPRK committed to returning, at an early date, to the NPT and to IAEA safeguards. In subsequent months, discussions on implementation of the Joint Statement continued, but progress was hindered by disagreements with the DPRK and a series of provocative steps by the DPRK.

In July 2006, North Korea test fired several ballistic missiles, including a Taepo Dong-2. The UN Security Council responded by unanimously adopting Resolution 1695 on July 15, which demands that the DPRK suspend all activities related to its ballistic missile program and reestablish existing commitments to a moratorium on missile launching. In October 2006, North Korea conducted a nuclear test. In response, the UN Security Council unanimously adopted Resolution 1718, under Chapter VII, condemning the nuclear test and demanding that North Korea return to the NPT and to IAEA safeguards.

In 2007, the Six Parties reached agreement on two key documents containing commitments of the DPRK on the shut down and disablement of the DPRK's core nuclear facilities under IAEA and U.S. monitoring, respectively, and a commitment by the DPRK to submit a declaration of its nuclear programs. Disablement activities commenced in late 2007.

In April 2009, North Korea launched another Taepo Dong-2, prompting the UN Security Council to issue a Presidential Statement condemning the launch as a violation of Resolution 1718. North Korea subsequently expelled U.S. and IAEA monitors from the country, announced its intention to withdraw from the Six-Party Talks, and announced its intent to reactivate its core nuclear facilities. In May 2009 the DPRK announced that it had conducted its second nuclear test.

On July 12, 2009 the UN Security Council unanimously adopted Resolution 1874 to address the threat posed by North Korea's nuclear and missile programs as well as its proliferation activities. The new measures under Resolution 1874 are also aimed at limiting North Korea's ability to further its nuclear, ballistic missile, and other WMD-related activities and preventing proliferation to and from North Korea.

The United States has taken concrete steps to implement Resolutions 1718 and 1874 fully and transparently, and to urge all UN Member States to do the same. As part of this effort, the United States has sought to strengthen its capabilities and those of its partner states to enforce UN sanctions on North Korea. In addition to UN sanctions, the United States has a number of laws that prohibit transfers to or acquisition from North Korea of equipment and technology that could be used in its nuclear, missile or other WMD programs.

The United States has been consulting closely with China, the Republic of Korea, Japan, and Russia on next steps in the Six-Party Talks. Based on these consultations, in December 2009 the U.S. Special Representative for North Korea Policy Stephen Bosworth led an interagency delegation to Pyongyang for extensive talks that took place within the context of the Six-Party Talks. The United States and North Korea agreed on the importance of the Six-Party Talks and the need to implement the 2005 Joint Statement, but did not agree on when and how it would return to denuclearization talks.

The United States continues to consult closely with our partners in the Six-Party Talks. There is broad consensus among the Five Parties that irreversible denuclearization remains the core objective and essential goal of our engagement

with North Korea; that the Six-Party Talks is the best mechanism for achieving denuclearization; and that we remain committed to the full and transparent implementation of UN Security Council Resolutions 1718 and 1874.

Our position remains the same: The United States will not accept North Korea as a nuclear weapon state. We remain committed to ensuring that the DPRK fulfills its commitments under the 2005 Joint Statement and its obligations under UN Security Council Resolutions 1718 and 1874, including returning, at an early date, to the NPT and IAEA safeguards.

Iran

The IAEA has been working to clarify the nature of Iran's nuclear program since 2002, when the existence of two nuclear sites under construction was revealed publicly. Since then, the IAEA Board of Governors has adopted ten resolutions on Iran that, among other things, have pointed to Iran's failure to report, as required, on its nuclear activities, failure to provide information to resolve questions about its past and current activities, failure to provide the IAEA full, unfettered access to information, individuals and facilities, and (after 2006) failure to suspend all enrichment-related, reprocessing and heavy water related activities, as directed by the UN Security Council and IAEA Board of Governors. In 2005, the IAEA Board found that Iran's actions constituted non-compliance under Article XII.C of the Agency's Statute because of its "many failures and breaches of its obligations to comply with its NPT Safeguards Agreement." As requested by the Board, in 2006, the IAEA Director General reported the IAEA reports and resolutions on Iran to the UN Security Council.

In response to the IAEA Board's report of noncompliance, the UN Security Council has adopted a Presidential Statement (S/PRST/2006, March 2006) and five resolutions on Iran: UNSCR 1696(July 2006), UNSCR 1737 (December 2006), UNSCR 1747 (March 2007), UNSCR 1803 (March 2008), and UNSCR 1835 (September 2008).

President Obama has made an unprecedented effort to engage Iran in an attempt to resolve the international community's concerns about its nuclear program. On October 1, 2009, Iran met with the P5+1 (United States, United Kingdom, France, Russia, China, and Germany) to discuss its nuclear program. At the meeting Iran agreed in principle to allow the IAEA access to a recently revealed nuclear facility near Qom and to support an IAEA proposal to refuel the Teheran Research Reactor (used for production of medical isotopes). To date, however, Iran has not provided

the IAEA with all requested access associated with Qom and has declined to proceed with the TRR.

From the beginning, President Obama has called on Iran to take constructive action and to fulfill its responsibilities under the NPT. He has called out two areas in particular. First, Iran must be transparent about its nuclear program and cooperate fully with the IAEA. Unfortunately, Iran's refusal to facilitate the IAEA's investigation in Iran and the revelation of a covert nuclear facility near Qom demonstrate that Iran has not taken this step. Second, Iran must take concrete steps to build confidence in the international community that its nuclear program is exclusively peaceful. The IAEA's February 2010 report states bluntly that "while the Agency continues to verify the non-diversion of declared nuclear material in Iran, Iran has not provided the necessary cooperation to permit the Agency to confirm that all nuclear material in Iran is in peaceful activities."

President Obama also made clear that while the United States is committed to serious and meaningful engagement with Iran on this issue, the United States will not negotiate indefinitely. The United States is prepared to increase pressure on Iran until it lives up to its international nuclear nonproliferation obligations.

C. Article III: Safeguards

1. IAEA Safeguards and the Additional Protocol

Article III requires that all non-nuclear weapon States Party to the NPT accept IAEA safeguards that are applied "to all source or special fissionable material in all peaceful nuclear activities" The model NPT-mandated safeguards agreement (also known as a comprehensive safeguards agreement) was established by INFCIRC/153 in 1972. The United States brought into force its voluntary NPT safeguards agreement with the IAEA in 1980.

It has become evident, however, that the comprehensive safeguards agreement, alone, is not adequate. For this reason, in 1997 IAEA Member States agreed on the model Additional Protocol (INFCIRC/540). The Additional Protocol gives the IAEA more tools for assuring the absence of undeclared activities. The Additional Protocol is especially important in cases of demonstrated or suspected noncompliance, but its fundamental value is that it serves as a confidence-building

measure for all states that have accepted it, thereby reinforcing international cooperation in peaceful uses that the NPT is intended to promote.

The United States brought the Additional Protocol into force in January 2009 and is now implementing it. The United States believes that all NPT Parties should conclude and bring into force the Additional Protocol and that a comprehensive safeguards agreement together with an Additional Protocol should be considered an essential standard for IAEA safeguards.

The IAEA safeguards system is now confronting a growing imbalance between workload and resources. As the demand for the application of nuclear energy has grown, throughout the world more nuclear materials and facilities are coming under IAEA safeguards. Additionally, the IAEA has the burden of safeguards investigations in Iran and Syria. At the same time, the IAEA budget has remained relatively static. The United States believes that the IAEA must receive the resources it needs to carry out its safeguards mission.

In his 2009 Prague speech, President Obama called for “more resources” for international inspections. Furthermore, President Obama’s message to the IAEA General Conference in September 2009 said: “We must ensure that the IAEA has the resources and authority it needs to verify that nuclear programs are peaceful, to facilitate access to a clean source of energy, and to improve the lives of citizens the world over - all without incurring new nuclear dangers.”

In addition to paying its regular assessments for IAEA safeguards, the United States has made major extra-budgetary contributions. For example, since 2000, the U.S. extra-budgetary contributions have been more than \$176 million for such activities as technical assistance to safeguards, safeguards equipment, the Safeguards Information System, safeguarding declared weapons-grade excess fissile material, environmental sample analysis, and other safeguards projects. Appendix A contains a detailed description of the U.S. Program of Technical Assistance to Safeguards.

The United States has developed several programs designed to provide support for IAEA safeguards.

In 2008, the National Nuclear Security Administration of the Department of Energy (DOE/NNSA) launched the **Next Generation Safeguards Initiative (NGSI)** to develop the technology, concepts and expertise necessary to strengthen the international safeguards system. The focus of NGSI is primarily on revitalizing

the U.S. capability to provide technical support. The five-year plan for NGSI, formulated in 2008, outlines goals, requirements, and projects for five NGSI elements: safeguards policies and authorities, advanced safeguards concepts and approaches, safeguards technology development, human resources development, and international safeguards infrastructure development.

The International Nuclear Safeguards and Engagement Program (INSEP), operated by the U.S. Department of Energy's National Nuclear Security Administration (DOE/NNSA), collaborates with international partners to strengthen international safeguards at all stages of nuclear development.

INSEP partners are selected based on the level of capability in existing civil nuclear programs, on jointly-determined technical needs within each country, and, in the case of infrastructure development engagement, on the credibility of their plans for a civil nuclear program. An essential goal of the partnership is to build long-term technical relationships that foster a sense of responsibility to the peaceful nuclear technology community and that encourage commitment to international nuclear nonproliferation objectives. In addition to this cooperation, INSEP also develops and tests next-generation safeguards technologies through collaborative technical projects with foreign partners and regional organizations to address the anticipated needs of the international community. INSEP partners on nuclear safeguards implementation and testing typically have considerable experience with nuclear power programs and often experience with advanced fuel-cycle facilities. INSEP nuclear safeguards engagement includes such topics as: nondestructive and destructive assay standards; safeguards data management; unattended and remote monitoring technologies; and virtual private networks. Altogether, INSEP has programs with 18 countries on safeguards and infrastructure development. Additional information can be found in Appendix A.

The United States has also been active in diplomacy to promote adherence to IAEA safeguards, including the Additional Protocol. The United States has actively and consistently supported strong resolutions at the IAEA General Conference that stress the importance of Agency safeguards. During 2004, when the United States held the G-8 Presidency, it led the G-8 effort to deliver high-level demarches to 72 countries that had not yet signed and brought into force comprehensive safeguards agreements and Additional Protocols.

2. Nuclear Exports and NPT Article III.2

Article III, paragraph 2 of the NPT performs a vital function in helping to ensure the peaceful use of nuclear material and equipment. This paragraph calls for the application of IAEA safeguards on nuclear exports to non-nuclear-weapon states.

Article III also serves an important function in laying out requirements for export controls and safeguards to ensure nuclear equipment and technology is not diverted for non-peaceful purposes. Appropriate physical security measures must also be part of an effective export control system and are called for in legally binding instruments such as Resolution 1540, as well as in non-binding arrangements as conditions of nuclear supply (i.e. in the Nuclear Suppliers Group Guidelines).

By interpreting and implementing Article III, paragraph 2, the Zangger Committee helps prevent the diversion of exported nuclear material and equipment from peaceful purposes to nuclear weapons or other nuclear explosive devices. In this manner, the Zangger Committee furthers the nonproliferation objectives of the Treaty and enhances the security of all states.

The purpose of the Nuclear Suppliers Group (NSG), which has 46 Participating Governments, is to prevent the proliferation of nuclear weapons through export controls on exports of nuclear and nuclear-related material, equipment, software and technology without hindering international cooperation on the peaceful uses of nuclear energy. The NSG has reaffirmed its 1992 decision requiring IAEA full-scope safeguards as a condition of nuclear supply to any non-nuclear weapon state. While an exception for India was adopted by the NSG in 2008, that exception was made subject to very strict and specific nonproliferation conditions that apply uniquely to India. The NSG has noted the need to balance proliferation concerns regarding the sensitive aspects of the nuclear fuel cycle with the growing demand for nuclear energy. The NSG also has taken note of the ongoing IAEA discussions regarding multilateral approaches to the nuclear fuel cycle.

D. Article VII: Regional Arrangements

The United States has long supported properly crafted nuclear-weapons-free zones (NWFZs). When rigorously implemented under appropriate conditions, the United States believes that NWFZs can contribute to regional and international peace, security and stability. These conditions include:

- The initiative for the creation of a nuclear weapons free zone comes from the states in the region concerned;
- All states whose participation is deemed important participate in the zone;
- The zone arrangement provides for adequate verification of compliance with the zone's provisions;
- The establishment of the zone does not disturb existing security arrangements to the detriment of regional and international security;
- The zone arrangement effectively prohibits the parties from developing or otherwise processing any nuclear explosive devices for whatever purpose;
- The zone arrangement does not seek to impose restrictions on the exercise of rights recognized under international law, particularly the high seas freedom of navigation and overflight, the right of innocent passage of territorial and archipelagic seas, the right of transit passage of international straits, and the right of archipelagic sea lanes passage of archipelagic waters;
- The establishment of the zone does not affect the existing rights of its parties under international law to grant or deny transit privileges, including port calls and overflights to other states.

NWFZs are not identical, but they usually contain prohibitions against the development, possession, stationing, transfer, testing and use of nuclear weapons within the zone. As such, they can provide valuable support to the NPT and the international nuclear nonproliferation regime.

The United States and other nuclear weapon states have been invited to adhere to protocols to each of the five NWFZs currently in force. Among other qualities, these protocols provide assurances to non-nuclear-weapon States Party to a zone against the threat or use of nuclear weapons against them.

The United States has signed and ratified the protocols to the Treaty of Tlatelolco, which created the NWFZ covering Latin America and the Caribbean. The United States has signed the protocols to the Treaty of Pelindaba, which covers Africa, and the Treaty of Rarotonga, which covers the South Pacific. In her statement to the NPT Review Conference on May 3, 2010, Secretary of State Clinton announced that the United States will seek U.S. Senate advice and consent to ratification of the protocols to the Treaties of Pelindaba and Rarotonga.

The Treaty of Bangkok, which covers Southeast Asia, and the Treaty of Semipalatinsk, which covers Central Asia, are also in force. The United States and other nuclear weapon states consulted closely with the parties to these treaties both before and after they were signed and entered into force. The United States continues to have significant concerns about both treaties, but we remain ready to discuss these concerns with the treaty parties at any time.

The United States believes that a Middle East free of all weapons of mass destruction and their delivery systems, as envisaged in the 1995 NPT Review and Extension Conference Middle East Resolution, is an achievable goal. The United States urges all states to take practical and concrete steps to remove the obstacles to accomplishing this goal.

E. Article IX: Adherence

The United States has been a Party to the NPT since the Treaty entered into force in 1970. The United States believes that all states not yet a party to the NPT should accede to the Treaty as non-nuclear-weapon states as soon as possible.

F. Article X: Withdrawal

Article X of the NPT states, “Each Party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country.” Article X outlines how and to whom the Party shall give notice of its intention to withdraw.

The United States does not aim in any way to amend the NPT or to limit the right to withdraw under Article X. Nonetheless, the United States, like many other NPT parties, has grown concerned with the prospect of potential abuse of the NPT’s

withdrawal provision, including by Parties which seek to withdraw from the NPT while in violation of its obligations. Also, like many other NPT parties, the United States has been working since the run-up to the 2005 NPT Review Conference to pursue measures, inside and outside NPT fora, to dissuade abuse of the withdrawal provision and, if necessary, to respond to a notice of withdrawal in a way that would help ensure maintenance of international peace and security.

UNSC Resolution 1887 made important contributions to the dialogue on withdrawal by:

- Reaffirming the UN Security Council's role in addressing a notice of intention to withdraw from the NPT;
- Reaffirming that a State remains responsible for Treaty violations committed prior to its withdrawal;
- Noting ongoing discussions on this topic among NPT Parties; and
- Encouraging UN Member States to exercise the right of a supplier state to require the return of supplied nuclear items and a requirement for safeguards on supplied items after termination of an NPT safeguards agreement.

Building on UNSC Resolution 1887 and the earlier work of concerned parties, the United States is pursuing specific measures to address withdrawal. The United States believes that the 2010 Review Conference should address the following four main objectives:

- The right of return of nuclear material provided to a withdrawing NPT Party prior to withdrawal and/or the continued application of safeguards after withdrawal from the NPT;
- Consultations with a withdrawing Party prior to their withdrawal;
- Verification, prior to the effective date of its withdrawal, that the withdrawing Party was in compliance with its comprehensive safeguards agreement (CSA) prior to the effective date of its withdrawal; and
- Restrictions on the future supply of nuclear material to a withdrawing Party once it has withdrawn.

II. Fostering Peaceful Uses: Articles IV and V

A. Introduction: Pursuing the Peaceful Atom

On December 8, 1953 U.S. President Dwight Eisenhower delivered a landmark speech to the UN General Assembly calling for the dedicated pursuit of peaceful applications of nuclear material and technology. Eisenhower noted that “the United States knows that peaceful power from atomic energy is no dream of the future.” He called for a mobilization of experts “to apply atomic energy to the needs of agriculture, medicine, and other peaceful activities.” “A special purpose,” he noted, “would be to provide abundant electrical energy in the power-starved areas of the world.”

President Eisenhower's “Atoms for Peace” speech reflected the growing realization in the early 1950s that although nuclear material and technology can be used to create the most destructive force ever devised by mankind, it also can be used for a vast array of peaceful applications that benefit mankind in many ways. The enduring challenge for all states is to ensure that humanity can continue to benefit from the peaceful atom while minimizing to the extent possible the prospect for nuclear materials to be used for non-peaceful explosive purposes..

The Peaceful Atom and Article IV

Article IV of the NPT reflects the inalienable right of NPT Parties to conduct research and pursue nuclear development for peaceful purposes without discrimination and in conformity with their nonproliferation Treaty obligations. Article IV also calls on all Parties to “facilitate . . . the fullest possible exchange of equipment, materials, and scientific and technical information” for such purposes. Finally, Article IV requires Parties in a position to do so to cooperate in developing peaceful nuclear applications, especially in non-nuclear-weapon states with “due consideration for the needs of developing areas of the world.”

Pursuing Article IV commitments

Over many years states have pursued nuclear cooperation pursuant to Article IV in a variety of ways. Through a vast web of bilateral arrangements states are engaged in nuclear exchange through both government-to-government agreements and also through commercial arrangements. Additional cooperation takes place at the multinational level, principally through regional arrangements and through the

International Atomic Energy Agency (IAEA). For the majority of NPT parties, the non-power applications of nuclear techniques in medicine, agriculture, basic industry, and environmental protection are priorities. Peaceful nuclear applications are vitally important to the social and economic development of many countries. They are likely to become even more important as challenges such as climate change, energy security, and the promotion of sustainable development have given rise to renewed interest in nuclear energy globally. For some NPT parties assistance in developing nuclear power programs is becoming a priority. For example, more than 60 countries have informed the IAEA of their interest in launching new nuclear power programs, and at least a dozen states have taken concrete steps towards such programs.

B. Bilateral Cooperation with the United States:

Agreements for Cooperation

The United States is a pioneer of civil nuclear cooperation. In the years following President Eisenhower's "Atoms for Peace" speech to the UN, the United States laid the foundation for civil nuclear cooperation between the United States and many other countries. By 1960, the United States had concluded nuclear cooperation agreements with more than 40 states. Currently, the United States has formal agreements that provide a framework for cooperation with nearly 50 states, plus the IAEA. In addition, U.S. technical agencies have in place cooperative arrangements with over 40 countries. The United States also has bilateral nuclear cooperation committees with Argentina, Brazil, Egypt, and the Republic of Korea. These Committees include, to varying degrees, exchanges on a broad range of nuclear policy issues and facilitate coordination projects in technology development, reactor and radioisotope safety, emergency management, security, and safeguards.

Cooperation with the Nuclear Regulatory Commission (NRC)

The NRC's legislatively-mandated international responsibilities are to license the export and import of nuclear materials and equipment, and to participate in activities that support U.S. Government compliance with international treaties and agreement obligations. The NRC has bilateral technical exchange agreements with nearly 40 countries, and, on a case-by-case basis that is subject to the availability of funding, considers assistance to other countries in areas such as development of national regulatory legislation, safety, safeguards, material accounting and control, physical protection, security, radiation protection, spent fuel and waste

management, decommissioning, nuclear safety research, and liability. The NRC also actively participates in the activities of such multinational organizations such as the IAEA and the Nuclear Energy Agency. Additional details on cooperation with the NRC, including a listing of recent examples, are provided in Appendix A.

International Nuclear Safeguards and Engagement Program (INSEP)

As described in Section I.C, the International Nuclear Safeguards and Engagement Program (INSEP), operated by the U.S. Department of Energy's National Nuclear Security Administration (DOE/NNSA), collaborates with international partners to strengthen international safeguards at all stages of nuclear development. Currently, INSEP has active technical arrangements on peaceful nuclear infrastructure with Algeria, Egypt, Libya, Morocco, Malaysia, Thailand, Indonesia, Vietnam, and the UAE. This cooperation includes technical support in the following areas: implementing a Comprehensive Safeguards Agreement and Additional Protocol; establishing the necessary legislation to support the effective implementation of international safeguards; radiation protection and health physics; reactor operations; environmental radiological surveillance; low- and intermediate-level radioactive waste management; and quality assurance/quality control. Ultimately, this cooperation helps ensure that the necessary training, equipment, and expertise are in place to allow for a safe, secure and peaceful nuclear power program that is fully compliant with international nonproliferation obligations.

Partnership for Nuclear Security (PNS)

The Partnership for Nuclear Security (PNS), operated by the U.S. Department of State's Office of Cooperative Threat Reduction, seeks to enhance global nuclear security through cooperative activities and engagement with the global nuclear technical community. PNS establishes sustainable linkages between nuclear experts and counterparts at United States and international institutions; engages nuclear scientists, engineers and technicians in collaborative research projects with United States and other counterparts; and provides opportunities for training to nuclear professionals through workshops, conferences, fellowship and exchange programs, and related activities. PNS seeks to raise awareness of governments and the nuclear technical community about the threat of proliferation; encourage effective nonproliferation practices and policies, specifically as applied to nuclear expertise; and improve nuclear security and related safety best practices.

U.S. commercial cooperation

In addition to government-to-government cooperation, a variety of different arrangements have been developed to cover other types of bilateral, generally commercial, cooperation. The U.S. nuclear industry is active in many NPT states not only in the supply of nuclear material and reactors, but also in project management, logistics, engineering and design, construction, specialty equipment manufacture, fuel services, consulting, and more. According to U.S. Census Bureau statistics, in 2009, the U.S. Government facilitated nuclear activities abroad totaling \$2.4 billion and nuclear imports totaling \$4.2 billion.

Tangible Examples of Bilateral Cooperation

Through these and other avenues of bilateral cooperation, U.S. experts are working closely with their counterparts from numerous NPT Parties on peaceful uses of nuclear energy, including developing and maintaining effective regulatory frameworks related to nuclear safety, security, and safeguards. Since 2000, NPT Parties have benefited from U.S. efforts to share U.S. nuclear technology, expertise, and experience in the following ways:

- PhD training of foreign nationals from more than 100 other NPT countries in nuclear physics, nuclear chemistry and nuclear engineering since 2000;
- Certification by the American Board of Nuclear Medicine of more than 180 medical doctors from 37 NPT parties in nuclear medicine;
- U.S. Nuclear Regulatory Commission (NRC) and Department of Energy (DOE) technical training missions overseas and hosting of foreign visitors at DOE and NRC facilities;
- Receipt by the Nuclear Regulatory Commission of foreign assignees and visitors from 42 countries;
- NRC staff travel to 21 countries on technical assistance missions to offer support on nuclear regulatory and safety matters;
- Visits by scientists and engineers from 116 countries to DOE facilities to receive training in the peaceful uses of nuclear energy; and

- Technical assistance missions overseas by DOE specialists in 114 countries.

C. U.S. Support for Peaceful Uses through the IAEA

In addition to its extensive bilateral nuclear cooperation, the United States pursues peaceful nuclear cooperation pursuant to Article IV through the Technical Cooperation program of the IAEA. The United States is the largest donor to the IAEA and its Technical Cooperation program. Extensive U.S. support has enabled more than 100 developing IAEA Member States to pursue the peaceful uses of nuclear material and technology in many fields, including improving the quality of health care and nutrition, managing water resources, building food security, promoting sustainable development, and promoting nuclear safety and security.

IAEA Peaceful Uses Initiative

On May 3, 2010, Secretary of State Clinton announced a campaign to raise \$100 million over the next five years to broaden access to peaceful uses of nuclear energy. The funds are to expand significantly access to projects sponsored by the IAEA that address peaceful applications of nuclear energy and important humanitarian purposes, such as cancer treatment and fighting infectious diseases, food and water security, and infrastructure development for the safe, secure use of civil nuclear power. These efforts will be aimed at assisting developing countries. The United States has pledged \$50 million to this effort and will work with others to meet the announced \$100 million target by the opening of the next NPT Review Conference, in 2015.

Technical Cooperation

The United States supports the IAEA's Technical Cooperation program in several ways. The first is through an annual voluntary pledge to the Technical Cooperation Fund (TCF), which supports the Department of Technical Cooperation's core projects. The second is through in-kind contributions in the form of services, such as fellowships and training, equipment, and experts. Additionally, extra-budgetary contributions may be made to Footnote A and other projects and programs.

The annual TCF budget is determined by informal consultations between donor and developing IAEA Member States to reach an agreement on annual targets.

The targets are apportioned among IAEA Member States, but are voluntary in nature, rather than being assessed. IAEA Member States are encouraged to pledge and pay their pledge in full. The United States provides approximately 25 percent of the total annual voluntary target. U.S. support to the TCF has been substantial, with over \$191.5 million in contributions from 2000 to 2009. U.S. pledges have had a demonstrably beneficial effect on the willingness of other IAEA Member States to support funding for the Technical Cooperation program.

The United States exercises discretion concerning the distribution of its in-kind and extra-budgetary contributions. While TCF resources can be distributed to all requesting eligible IAEA Member States, in-kind and extra-budgetary contributions support is given, on a preferential basis, to parties to the NPT and the Treaty of Tlatelolco. The United States contributions from 2000 to 2009 amounted to \$49.9 million and supported IAEA programs in the following areas:

- Footnote A projects and other non-safeguard programs;
- Training courses, technical support, and U.S.-placed IAEA fellowships; and
- Cost-free experts for Technical Cooperation and for other non-safeguard departments.

Footnote A Projects and Other Non-Safeguard Programs:

Footnote A Projects are those considered to be technically sound but are not funded by the TCF. Such projects are “footnoted” and made available for extra-budgetary funding (i.e., separate from the TCF) from donor IAEA Member States.

The United States has provided both financial contributions and in-kind assistance for new and on-going Footnote A projects during the period 2000-2009. These projects have benefited 57 countries in Africa, Asia, Europe, Latin America, and the Middle East. Footnote A projects range from strengthening regulatory infrastructures to spent-fuel management and disposition, from reactor conversion to the use of Sterile Insect Technique (SIT). A small sample of these projects include:

- Fully converting the TRIGA 14-MW core from HEU to LEU fuel (Romania);

- Promoting self assessment of regulatory infrastructures for safety and networking of regulatory bodies (countries in the African Region);
- Safely removing spent fuel from the Vinca RA Research Reactor (Serbia);
- Establishing a research reactor (Jordan);
- Enhancing the capabilities of national institutions supporting nuclear power development (China);
- Strengthening national infrastructures for the control of radiation sources (Vietnam).

The United States has supported several projects involving SIT including: SIT for Area-wide Tsetse and Trypanosomosis Management for countries in the African Region; Area-Wide Application of SIT for Medfly Control in Palestine; and Establishing and Maintaining Fruit Fly Free and Low Prevalence Areas in Central America, Panama and Belize, using SIT for countries in the Latin American Region. U.S. support has included financial contributions, the purchase of equipment, and the provision of personnel such as technical and managerial experts. The United States has contributed over \$3 million for the project to integrate SIT for tsetse fly eradication in Ethiopia. This program focuses on Ethiopia's lower Rift Valley. It will have a major impact on cattle production and effectively raise the standard of living for a large number of families who depend upon herding for their livelihood.

In the area of cancer therapy, the United States was the leading IAEA Member State in recognizing and supporting the Program of Action for Cancer Therapy (PACT) and its model for change. The United States contributed \$330,000 to launch PACT and a further \$500,000 in 2006. In addition, the United States contributed over \$365,000 in cost-free experts to PACT from 2004 to 2006, bringing contributions from the United States to almost \$1.2 million. The United States has also provided funds for the establishment of PACT's Regional Cancer Training Networks and a Virtual University for Cancer Control, which are regional centers for multidisciplinary cancer control training. The total cost of this project for three years is \$750,000. The first phase of implementation will include identification of training hubs and potential Centers of Excellence for Radiotherapy in Africa. This project will be implemented jointly between the PACT Program Office and the IAEA's Division of Human Health (NAHU).

Training Courses and Fellowships:

For many years the United States has hosted IAEA interregional training courses at Argonne National Laboratory near Chicago, Illinois. Over the past ten years Argonne has provided 50 courses in collaboration with the IAEA. Over 900 participants from more than 75 countries attended these courses, which range in duration from two to nine weeks. Areas of training include health, energy, hydrology, waste management, entomology, safety, food science and fuel management.

Between 2000 and 2009, over 690 professionals from more than 75 countries received fellowships to train for up to ten months at over 180 institutions and facilities in the United States. These fellowships were in fields as diverse as energy planning, nuclear engineering and technology, and nuclear safety and waste management. Other areas of study included nuclear applications in agriculture, medicine, industry, and the environment. The United States provides the administrative support necessary to place fellows and also provides stipends and travel expenses.

Cost-Free Experts

In-kind contributions also support requests from the IAEA for U.S. specialists in various technical fields. These individuals are provided at no cost to the IAEA. The cost-free experts (CFE) may work full or part-time in limited appointments for up to one year with the possibility of an extension. U.S.-sponsored cost-free experts use their expertise to support IAEA programs in nuclear safeguards, health, nuclear energy, nuclear safety, emergency preparedness, and institutional management.

Nuclear Safety

The United States was one of the original sponsors of the IAEA's Extraordinary Program on the Safety of Nuclear Installations in the South East Asia, Pacific, and Far East Countries (EPB), providing both funding and instructional support. The goal of this program is to develop nuclear safety infrastructure and promote information exchange among countries in the region that are building or considering developing nuclear power programs. The Asian Nuclear Safety Network was derived from the EPB in 2002 to combine, analyze and share nuclear safety information and practical experience among the participating countries.

This work is expected to facilitate sustainable regional cooperation and create networks and cyber communities among specialists in the region.

Nuclear Power Infrastructure

The United States strongly supported IAEA General Conference resolutions in 2006, 2007, and 2008, regarding the Agency's role in nuclear power development. The United States provides important financial and technical assistance to the IAEA's infrastructure development efforts and was a major supporter of the guidance document "Milestones in the Development of a National Infrastructure for Nuclear Power," which lists 19 infrastructure areas that a non-nuclear-weapon state should consider developing to facilitate its pursuit of civil nuclear power. This document now is regarded as the definitive international guidance for the development of national civil nuclear infrastructure. The United States has also supported related workshops for countries considering nuclear energy in 2008, 2009, and 2010.

D. U.S. Support of the Global Nuclear Energy Partnership (GNEP)

The United States was a driving force behind the establishment of the Global Nuclear Energy Partnership (GNEP), and continues to actively support its operations.

GNEP provides a forum for cooperation among participating states to explore mutually beneficial approaches to ensure the global use of nuclear energy for peaceful purposes proceeds in a manner that is efficient and meets the highest standards of safety, security, non-proliferation, and safeguards. Through its expert-level working groups, participating countries seek to explore mutually beneficial approaches that support international civil nuclear cooperation, including enhanced international collaboration on nuclear power infrastructure, and assurances of nuclear fuel supply and services for used nuclear fuel management. The Reliable Nuclear Fuel Services Working Group works to identify common interest among the participating countries and recommend practical measures for moving towards reliable comprehensive fuel service arrangements, including used fuel management. The Infrastructure Development Working Group focuses on developing and maintaining the infrastructure needed for a safe, secure, and safeguarded nuclear power program. It helps countries implement the guidance conveyed in the IAEA's document, *Milestones in the Development of a National*

Infrastructure for Nuclear Power and focuses on areas identified by the participants as top priorities including human resource development and radioactive waste management. INFEC seeks to complement, reinforce, and build upon existing international mechanisms and frameworks, including those of the IAEA.

E. Towards a New Framework for Civil Nuclear Cooperation

In his April 2009 speech at Prague, President Obama stated, “we should build a new framework for civil nuclear cooperation, including an international fuel bank, so that countries can access peaceful power without increasing the risks of proliferation. That must be the right of every nation that renounces nuclear weapons, especially developing countries embarking on peaceful programs.” The President made clear at Prague his view that, “no approach will succeed if it is based on the denial of rights to nations that play by the rules.”

Any successful, broadly supported approach must assure countries expanding or embarking on nuclear power programs that they will have reliable access to peaceful nuclear technologies and fuel services, and at the same time must serve the international community’s collective security interest in avoiding the spread of nuclear weapons production capability.

The establishment of fuel assurance mechanisms, such as an international fuel bank designed as a last resort option to supplement the well-functioning nuclear fuel market, will increase the security of fuel supply and thereby expand access to civil nuclear power while reducing the risk of nuclear weapons proliferation. The United States has strongly supported the development of such mechanisms. At the 2005 IAEA General Conference, the U. S. Secretary of Energy announced plans to downblend 17.4 metric tons of highly enriched uranium (HEU) excess to U.S. defense needs to low enriched uranium (LEU) to serve as a last resort fuel reserve thereby increasing the security of fuel supply for non-nuclear weapon states. This U.S. fuel reserve will complement an IAEA fuel bank initiative. The downblending should be completed in early 2011, thereby producing a reserve of low-enriched uranium equivalent to about five to six reactor core fuel reloads or eight to eleven years of fuel supply, valued at approximately \$800 million at current market rates.

Since 2005, about a dozen other fuel assurance mechanisms have been proposed, mostly designed to offer assurance of LEU supply – the “front end” of the nuclear

fuel cycle. The United States strongly supports the decision of the IAEA Board of Governors at its November 2009 meeting to establish the first international LEU reserve at Angarsk, Russia. On March 29, 2010, the IAEA Director General and Russian Director General of the State Atomic Energy Corporation signed the agreement. If a country with good nonproliferation credentials is denied access to its supply of fuel for non-commercial reasons, the IAEA Director General can call for the release of fuel to that NPT-compliant state from this reserve.

In September 2007, the nongovernmental organization Nuclear Threat Initiative (NTI) announced a \$50 million challenge grant for the establishment of an International Nuclear Fuel Bank (INFB) under IAEA auspices. One condition for the use of NTI's challenge funds has now been met: an additional contribution of over \$100 million from over 30 IAEA Member States, including a contribution of nearly \$50 million from the United States. The second and final condition, that the IAEA Board take affirmative action to establish the INFB, remains to be completed. Only through constructive cooperation can an operational mechanism be developed that is acceptable to all.

In addition to these efforts aimed at assured supply of low-enriched uranium fuel, the United States has begun an effort to broaden the scope of fuel assurances. We envision a global framework that could include an integrated commercial approach to fuel-cycle services, including the provision of fresh nuclear fuel and the associated management of used fuel. If successfully deployed, this global framework of "cradle-to-grave" fuel services could expand access to civil nuclear power by obviating the need for states to develop and deploy costly and complex fuel-cycle technologies.

Article V: Nuclear Explosions for Peaceful Purposes (PNEs)

Article V of the NPT provides that under appropriate international observation and through appropriate international procedures the potential benefits from nuclear explosions for peaceful purposes will be made available to NPT non-nuclear weapon states on a non-discriminatory basis. The United States has not conducted a PNE since 1973, having determined that PNEs are not technically or economically worthwhile undertakings. In addition, the United States regards such explosions as indistinguishable from military tests.

III. NEGOTIATIONS IN GOOD FAITH ON NUCLEAR AND NON-NUCLEAR DISARMAMENT

Article VI: Ending the Nuclear Arms Race, Nuclear Disarmament, and Promoting General and Complete Disarmament

The NPT is important in two ways to efforts to conclude and implement effective measures that can lead to nuclear disarmament and to general and complete disarmament. First, the NPT serves as the principal legal barrier to the spread of nuclear weapons. The Treaty is a critical element in sustaining disarmament progress because continuing proliferation undermines the basis for eliminating nuclear weapons. Second, Article VI specifically calls for progress on nuclear disarmament by stating that each of the Parties to the Treaty “undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.”

The United States places great importance on meeting its obligations under Article VI, recognizing also that nuclear disarmament progress which strengthens international stability and security also serves the security interests of the United States. Through negotiated agreements and through actions on its own, the United States is drawing down its deployed nuclear weapons and nuclear stockpile, reducing the role that nuclear weapons play in security policy, and removing from the stockpile excess highly enriched uranium and plutonium.

In his April 2009 speech in Prague, President Obama called the existence of thousands of nuclear weapons “the most dangerous legacy of the Cold War,” and he stated clearly that the United States is committed “to seek the peace and security of a world without nuclear weapons.” He spoke of concrete steps that the United States would take towards this goal, including:

- Reducing the role of nuclear weapons in national security strategy,
- Negotiation of a new Strategic Arms Reduction Treaty (START),
- Immediate and aggressive pursuit of ratification of the Comprehensive Nuclear Test-Ban Treaty (CTBT), and

- Negotiation of a treaty that will verifiably end the production of fissile materials intended for use in weapons (FMCT).

At the Sixth NPT Review Conference, in 2000, the United States, together with the other four NPT nuclear weapon states, reaffirmed its Article VI commitment to the elimination of nuclear weapons. President Obama's ambitious disarmament agenda has reinvigorated this commitment. In his Prague speech, President Obama acknowledged the responsibility of the United States to act, but he also noted the responsibility of others. "We cannot succeed in this endeavor alone," he said, "but we can lead it, we can start it."

We have started.

A. Strategic and Non-Strategic Nuclear Weapons

Treaties

Incorporating the vision of the 2001 Nuclear Posture Review, the United States and the Russian Federation in 2002 concluded and brought into force the **Strategic Offensive Reductions Treaty** (Moscow Treaty). According to Article I of this Treaty, by December 31, 2012 the United States and the Russian Federation will reduce and limit operationally deployed strategic nuclear warheads to 1700-2200 for each side. As of December 31, 2009, the United States had 1,968 operationally deployed strategic warheads. The Treaty remains in force until December 31, 2012 or until it is superseded by the New START Treaty.

Under the **Strategic Arms Reduction Treaty (START)**, which entered into force in December 1994, U.S. and Russian deployed strategic warheads were reduced from well over 10,000 each to 6,000 accountable warheads, with full reductions implemented, on schedule, at the end of 2001. START expired in December 2009.

On April 8, 2010 Presidents Obama and Medvedev signed a **New START Treaty** on strategic weapons to replace the previously expired START Treaty. When the New START Treaty is ratified by both sides and enters into force it will supersede the 2002 Moscow Treaty, which then will terminate. The Treaty's duration is ten years.

- The New START Treaty will limit each side to 1,550 deployed strategic warheads, which is approximately 30 percent lower than the upper limit of the 2002 Moscow Treaty and 74 percent lower than the limit of START.
- There will be a combined limit of 800 deployed and non-deployed ICBM launchers, SLBM launchers, and nuclear-capable heavy bombers.
- In addition, there is a separate limit of 700 deployed ICBMs, deployed SLBMs, and deployed nuclear-capable heavy bombers; this limit is less than half the corresponding strategic nuclear delivery vehicle limit of START.
- The New START treaty includes an effective verification regime that will help the United States and Russia build trust and reduce the risks of misunderstanding or surprise. Measures under the Treaty include on-site inspections and exhibitions, data exchanges and notifications related to strategic offensive arms and facilities covered by the Treaty, and provisions to facilitate the use of national technical means for treaty monitoring. To increase confidence and transparency, the Treaty also provides for the exchange of telemetry.

At the signing ceremony in Prague, President Obama noted that the conclusion of the New START Treaty “demonstrates the determination of the United States and Russia – the two nations that hold over 90 percent of the world’s nuclear weapons – to pursue responsible global leadership. Together, we are keeping our commitments under the Nuclear Non-Proliferation Treaty, which must be the foundation for global nonproliferation.” As the President observed, the New START Treaty is not the final arms control negotiation, but “will set the stage for further cuts.”

Nuclear Posture Review

The United States recently concluded the third Congressionally mandated Nuclear Posture Review (NPR). It is a key element of the U.S. Government’s comprehensive approach to advancing the President’s Prague agenda for reducing nuclear dangers and pursuing the peace and security of a world free of nuclear weapons. The NPR addressed the United States’ nuclear deterrence policy and strategy, and analyzed the role of nuclear weapons in our national security strategy, including the size and composition of nuclear forces necessary to support that strategy. The NPR outlined the U.S. approach for reducing the potential for nuclear conflict, enhancing strategic stability worldwide, ensuring the security of

our friends and allies and strengthens the global nuclear nonproliferation regime with the objective of creating the conditions that will allow us further to reduce numbers of nuclear weapons. As a result of the NPR, the United States will continue to take concrete steps to reduce the role and numbers of nuclear weapons in its national security strategy, in accordance with our long-term goal of a world free of nuclear weapons.

For the first time, the NPR places preventing nuclear proliferation and nuclear terrorism atop the U.S. agenda. It renews the U.S. commitment to hold fully accountable any state, terrorist group, or other non-state actor that supports or enables terrorist efforts to obtain or use weapons of mass destruction, whether by facilitating, financing, or providing expertise or safe haven for such efforts.

The NPR makes clear that the United States will not develop new nuclear warheads. There will be no nuclear testing. There will be no new military missions or new military capabilities for nuclear weapons.

The NPR strengthens the long-standing U.S. negative security assurance by stating: “The United States will not use or threaten to use nuclear weapons against non-nuclear weapons states that are party to the NPT and in compliance with their nonproliferation obligations.”

Stockpile and Weapons Reductions

In addition to implementing and seeking new agreements on nuclear weapons and fissile material, the United States continues to make extraordinary progress in reducing its stockpile of nuclear weapons, strategic delivery systems, fissile materials for use in weapons, and the associated nuclear weapons infrastructure.

Weapons and Delivery System Reductions

- By 2012, or earlier, the U.S. stockpile of strategic nuclear warheads will be reduced to nearly one-half from its 2001 level – and three-quarters from its 1990 level – resulting in the smallest stockpile since the 1950s.
- Since 1988 the United States has dismantled more than 13,000 nuclear warheads. The United States has reduced the number of operationally deployed nuclear weapons from approximately 10,000 in 1991 to approximately 2,000 as of December 31, 2009.

- The United States is already below the dramatic reductions in active stockpile levels that it had planned for the year 2010, and we now will retire an additional 15 percent of the U.S. stockpile below originally planned levels.
- The United States also has retired over 1,000 strategic ballistic missiles, including the most modern ICBM (the Peacekeeper), the Minuteman III ICBM, 350 heavy bombers, and 28 ballistic missile submarines. The reductions in heavy bombers include all 91 B1-B heavy bombers, which now are equipped solely for non-nuclear weapons.
- Twenty-eight ballistic missile submarines have been eliminated. Four modern Ohio-class ballistic missile submarines have been taken out of strategic service, carrying a total of 96 Trident missiles.
- The most dramatic U.S. stockpile reductions, in proportional terms, have been in non-strategic nuclear weapons. These reductions amount to nearly 90 percent of non-strategic nuclear weapons in NATO. The types of non-strategic nuclear weapons in Europe have been reduced from five to one, and storage sites in Europe have been reduced by 80 percent.
- Since 1992, the United States has cooperated with Russia and other states of the former Soviet Union through its Cooperative Threat Reduction program to eliminate a large amount of strategic offensive arms that had been accumulated by the Soviet Union.
- On May 3, 2010, the U.S. Government released newly declassified information on the U.S. nuclear warhead stockpile. Increasing transparency of global nuclear stockpiles is important to nonproliferation efforts, and to pursuing follow-on negotiations after the ratification and entry into force of the New START Treaty that cover all nuclear weapons: deployed and non-deployed, strategic and non-strategic.

Fissile Material Reductions

- In November 2005, the United States announced that in future decades it would remove an additional 200 metric tons (MT) of HEU from further use as fissile material in nuclear weapons. This is above and beyond the 174 MT of HEU removed from defense stocks in 1994. These HEU removals together will amount to the equivalent of approximately 11,500 nuclear weapons worth of material (according to IAEA equivalency figures).
- The United States and Russia have committed to down-blending more than 500 MT of HEU from Russia's dismantled nuclear weapons for use in U.S. civil power plants. More than 382 MT of this material has been downblended to date, enough for approximately 15,000 nuclear weapons.
- More than 17 metric tons of down-blended HEU is being set aside for a nuclear fuel reserve to support international efforts to provide states with a viable alternative to pursuing their own enrichment and reprocessing programs. Based on the IAEA definition of significant quantities of nuclear materials, this is enough material to produce more than 500 nuclear weapons.
- The United States has removed 61.5 MT of plutonium from defense stockpiles, of which at least 34 MT will be disposed under the Plutonium Management and Disposition Agreement (PMDA) by irradiating it as fuel in civil nuclear power plants. The United States also is cooperating with Russia to permanently dispose of 34 MT of Russian surplus weapon-grade plutonium similarly by irradiating it as fuel in nuclear reactors. On April 13, 2010 Secretary Clinton and Foreign Minister Lavrov signed a Protocol that amends and updates the 2000 Plutonium Management and Disposition Agreement in light of current conditions and nuclear power programs in each country. The monitoring and nonproliferation conditions of the Protocol contribute to the irreversibility of arms reductions and ensure that the United States and Russia will transparently dispose of such weapon-grade plutonium from their respective defense programs in a safe and transparent manner.

Comprehensive Nuclear Test-Ban Treaty

As President Obama stated in his speech in Prague in 2009, the United States supports the Comprehensive Nuclear Test-Ban Treaty (CTBT) and will “immediately and aggressively pursue” its ratification. The United States believes that the CTBT contributes to the global nonproliferation regime, strengthening the prospects for a peaceful, stable, and secure world.

The United States has not conducted a nuclear explosive test since September 1992 and has had a testing moratorium in place since October 1992. While working toward the entry into force of the CTBT, the United States reaffirms its nearly two-decade long moratorium on nuclear explosive testing and continues to call on all states publicly to declare similar moratoria of their own.

Since signing the CTBT in 1996, the United States has supported the development and deployment of the International Monitoring System, the infrastructure to support the operation and maintenance of these stations, and the infrastructure for transmitting, analyzing, and storing the data collected by the monitoring stations. Since early 2009, the United States has re-engaged in other activities of the CTBT Organization Preparatory Commission, such as activities related to developing its On-Site Inspection Program.

Fissile Material Cut-Off Treaty

To cut off the building blocks needed for nuclear weapons, President Obama said in Prague last year that one of the concrete steps the United States will take toward a world without nuclear weapons is to seek a new treaty that verifiably ends the production of fissile materials intended for use in nuclear weapons, a Fissile Material Cut-Off Treaty (FMCT). Last year, for the first time since 1998, the Conference on Disarmament reached consensus on a program of work that included a mandate for the negotiation of an FMCT. To date, however, the Conference on Disarmament has been unable to move forward on FMCT negotiations because of procedural obstacles. The United States will continue to seek ways of making progress on FMCT in the Conference on Disarmament and to begin negotiations on the basis agreed to in 2009.

Pending the successful negotiation and entry-into-force of an FMCT, the United States reaffirms its decades-long unilateral moratorium on the production of fissile material for nuclear warheads, and we continue to call on other states which have yet to do so publicly to join us in this moratorium.

B. Non-Nuclear Weapons

Biological Weapons

The United States ratified the Biological Weapons Convention (BWC) in 1972; it entered into force in 1975. The United States continues to work for the universalization of the BWC, and for full implementation and compliance by all Treaty Parties. The United States supported the 2006 decision by the Sixth BWC Review Conference to establish a BWC Implementation Support Unit to facilitate the work of BWC Parties in various mandated activities

The United States has contributed actively to the BWC Intersessional Work Program, initiated in 2002 following the Fifth BWC Review Conference, and extended and enhanced by the Sixth BWC Review Conference in 2006. Such work has focused on practical steps that BWC States Party can take to enhance BWC implementation and stem the threat from biological weapons. Issues have included national implementation measures, enhancing biosafety and pathogen security practices, encouraging professional responsibility among life scientists who work with dangerous pathogens, enhancing disease surveillance capacities, and developing capacities to mitigate and respond to suspicious outbreaks of disease and to allegations of biological weapons use. U.S. contributions to the Work Program have included planning for and participation in meetings, making our best experts available, and providing concrete assistance to a number of countries in meeting their own national obligations.

During 2009, the Work Program focused on assistance related to disease surveillance capacity-building. Disease, regardless of its cause, does not respect national borders. The United States has provided more than \$317 million in direct support, and an additional \$260 million in indirect support, to activities related to the implementation of the World Health Organization's International Health Regulations (IHRs), as revised in 2005. The 193 Parties to the IHRs have an obligation to reach a set standard for core capacities by 2012.

At the December 2009 meeting of BWC Parties, the United States launched a far-reaching Presidential policy initiative, the *National Strategy for Countering Biological Threats*. While the *Strategy* envisages comprehensive action by the United States and the other BWC Parties to mitigate the shared threat of biological weapons, its hallmark is that it reflects the first Government-wide effort by the United States aimed at preventing bio-threats.

The United States looks forward to working with other BWC Parties at their 2010 meeting, which will focus on the important issue of suspicious outbreaks of disease, allegations of the use of biological weapons, and related capacity-building. The United States also looks forward to participating in the Seventh BWC Review Conference in 2011.

Chemical Weapons

The United States has been a Party to the Chemical Weapons Convention (CWC), which established a ban on chemical weapons, since its entry into force in 1997. The United States and 187 other States Parties continue to work for universal membership in the CWC, and for full implementation and compliance by all Treaty Parties.

The United States is actively encouraging the seven remaining non-States Party to accede to the Convention as soon as possible. U.S. experts provide advice and technical assistance to other States Party in the areas of CWC-related legislation, setting up a National Authority, and Treaty implementation. The U.S. National Authority works closely with the Organization for the Prohibition of Chemical Weapons (OPCW), and bilaterally with States Parties, to provide training in these areas. The United States remains fully committed to the CWC, and is in compliance with its Treaty obligations. The United States continues destruction of its national CW stockpile. As part of our overall CW destruction effort, we expect to spend a total of \$32-34 billion dollars, which includes helping other possessor States Party to eliminate their CW stockpiles.

Conventional Armed Forces

Under the 1990 Treaty on Conventional Armed Forces in Europe (CFE), over 69,000 Cold War-era battle tanks, combat aircraft, and other major weapons have been eliminated in 30 countries from the Atlantic Ocean to the Ural Mountains in the Russian Federation. More than 6,000 on-site inspections have helped to build politico-military cooperation and openness in Europe. In 1999, the 30 CFE States Party concluded an “Agreement on Adaptation” to update the 1990 Treaty, in line with the current security environment in Europe. The United States and the great majority of Treaty Parties have made clear that we can ratify the adapted CFE Treaty, once Russia fulfills all of the commitments that it made at the time of signature, but some of those commitments remain unfulfilled. On December 12, 2007, Russia “suspended” its implementation of the current CFE Treaty; the

United States and NATO Allies since have engaged Russia in an intensive dialogue to address Moscow's concerns and the concerns of all other States Party.

This report will be posted at <http://www.state.gov/t/isn/npt/index.htm>

APPENDIX A – NUCLEAR REGULATORY COMMISSION, DEPARTMENT OF ENERGY BILATERAL COOPERATION

I. Nuclear Regulatory Commission

Historically, NRC's international cooperative efforts have focused on exchanges of information and best practices associated with operating nuclear power plants. Of nuclear power plants operating outside the United States, 60% to 65% are based on or are derived from U.S. technology, or dependent on supplies of U.S.-origin fuel, equipment, maintenance, technical expertise, and other support services. Today, however, the next generation of nuclear power plants to be built in the United States first will have been built and operated outside of the United States. This creates a framework where as much technology is flowing into the United States as is flowing out of the United States. Over the next 10 to 15 years, there is also the potential for an unprecedented expansion, over the next 10 to 15 years, in the global use of nuclear energy. In parallel, safety and security of nuclear and radioactive materials has become a high priority both domestically and for the international community. As a result, NRC's international program expects continued international engagement on issues associated with large, commercial nuclear power plants; and it is preparing for a significant increase in international engagement on issues associated with nuclear and radioactive materials as well as with small/medium reactors.

NRC's cooperative nuclear power activities include:

- Bilateral safety and security technical information exchanges;
- Information exchanges relating to first-of-a-kind construction of U.S.-origin nuclear reactors outside of the United States; and
- Hosting foreign assignees at NRC for on-the-job training, and placing NRC staff at foreign regulatory agencies.

NRC has seen a tremendous growth, over the past few years, in requests for provision of nuclear regulatory safety and security assistance. This primarily has involved oversight of radioactive materials, operating nuclear power plants, and the design, construction, commissioning and operation of new nuclear power plants.

In the area of regulation of radioactive sources, examples of assistance that NRC has provided include:

- Development of a national registry;
- Strengthening legal and technical bases; and
- Enhancing day-to-day oversight.

The goal of NRC's existing reactor-related assistance efforts is to enhance safety and security oversight of such reactors; this includes engagement with regulatory counterparts in countries that operate high-risk Soviet-designed reactors. Examples of assistance that NRC has provided include:

- Strengthening legal bases;
- Training on analytical tools; and
- Use of probabilistic risk assessment insights.

Since early 2007, NRC received requests from approximately 25 countries for assistance in developing the regulatory infrastructure needed for oversight of a nuclear power program. In response, NRC has developed, and currently is implementing, an integrated strategy for managing such requests, including pilot regulatory infrastructure development projects that provide information on critical infrastructure needed for a safe and secure nuclear power program. NRC staff have developed workshops which discuss such topics as:

- legal framework;
- organizational structure (structure, staffing, technical support);
- regulatory program (fundamentals of reactor safety, fundamentals of reactor regulations, requirements for siting, design, operation, and decommissioning); and
- training and qualification programs.

The NRC engages in a broad range of nuclear safety, security and emergency preparedness cooperation and assistance activities with foreign countries and other entities through bilateral arrangements (40 Arrangements for Cooperation with countries and two Arrangements with international organizations) and other exchange mechanisms (more than 100 research agreements). Cooperation generally is conducted with countries with mature regulatory programs, while assistance is offered to countries with new or less robust programs. In both cases, the NRC hosts assignees each year to provide on-the-job training.

Financial and Staff Contributions to International Organizations

An increase in Congressional funding has enabled NRC to initiate contributions to the IAEA's Department of Technical Cooperation for regional projects on regulatory approaches to radioactive source safety and security. NRC funding has supported workshops in a variety of countries. In addition, the NRC sends technical experts to participate in these activities. The NRC also has contributed a cost-free expert to the IAEA's Department of Nuclear Safety and Security to assist in new reactor safety and security regulatory infrastructure development needed for the design, construction and operation of new nuclear power plants, and has established a similar position at the OECD/Nuclear Energy Agency.

The NRC supports the IAEA's activities on the regulatory aspects of nuclear power program development. The NRC sends technical experts to draft IAEA guidance in this area; in particular, the NRC participated actively in the development of the *Milestones for the Introduction of Nuclear Power*.

Safety and Security of Imports and Exports

The NRC has principal responsibility within the U.S. Government for the licensing of imports and exports of civilian nuclear and radioactive material. As such, NRC has established a broad range of close contacts for cooperation worldwide under the auspices of the Code of Conduct for the Safety and Security of Radioactive Sources. The NRC has played a large role in encouraging countries to implement the Code, establish points of contact to approve material transfers, and to closely coordinate between the national regulatory body and other government agencies (e.g., customs and border patrol).

The NRC also is participating in U.S. Government-wide and worldwide efforts to address the issue of the security of supply of medical isotopes. This broad-ranging effort covers everything from the safety and operating status of current isotope production facilities, to consideration (and possible licensing) of new facilities in a variety of countries, to the safe and secure transport and use of the isotopes produced.

NRC Contributions to IAEA Safeguards

- Monthly report of export licenses handled by NRC;
- Monthly report of imports/exports of source material that has not reached the starting point of IAEA Safeguards;
- Yearly declaration of civilian plutonium holdings;
- Yearly USG voluntary declaration of americium and neptunium;
- Potential application of IAEA safeguards to a large gaseous centrifuge enrichment plant in the United States;
- 2009 International Safeguards Conference;
- Japan-IAEA Workshop on Advanced Safeguards Technology for the Future Nuclear Fuel;
- IAEA's International Training Course on Implementation of State Systems of Accounting for and Control of Nuclear Materials; and
- Application of IAEA safeguards on the down blending of high-enriched uranium in the United States.

II. Department of Energy Bilateral Cooperation (INSEP)

Under the Department of Energy's National Nuclear Security Administration, the International Nuclear Safeguards and Engagement Program (INSEP) collaborates with international partners to strengthen international safeguards at all stages of nuclear development. Through bilateral and regional technical engagement between U.S. National Laboratory personnel and their counterparts abroad, INSEP strengthens international safeguards at foreign nuclear facilities and builds safety, security, and nonproliferation infrastructures in states with credible plans for civil nuclear power. INSEP forms a key component of U.S. efforts around the globe to ensure that nuclear power is used only for peaceful purposes.

INSEP collaborates with countries in every region of the world and at every stage of nuclear development. Our partners are selected based on the level of capability in existing civil nuclear programs, on jointly-determined technical needs within each country; and, in the case of infrastructure development engagement, on the credibility of their plans for a civil nuclear program – whether focused on nuclear research or nuclear power. An essential goal of our partnerships is to build long-term technical relationships that foster a sense of responsibility to the peaceful nuclear technology community and that encourage commitment to international nuclear nonproliferation objectives. As a testament to this approach, INSEP has had numerous active cooperative partnerships that span decades.

Nuclear Safeguards Infrastructure Development Engagement

Faced with increasing energy needs, many developing countries are considering nuclear energy seriously for the first time. The nuclear fuel cycle experience for these countries is typically limited to research reactors used for radioisotope development and scientific research. As a result, they frequently have very limited safeguards and other nuclear infrastructure and may not be prepared to handle the quantities of nuclear material and technology that are necessary for a nuclear power program.

INSEP works with its partners at this level through technical engagement projects to develop critical nuclear infrastructure, including for effective nuclear materials safeguards.

These partnerships include a range of activities that cover all aspects of nuclear development and ensure that the necessary training, equipment, and expertise are in place to allow for a safe, secure and peaceful nuclear power program that is fully compliant with international nonproliferation norms. INSEP nuclear infrastructure engagement includes such topics as: nuclear legislative and regulatory effectiveness; state systems of accounting for and control of nuclear material (SSAC); IAEA Additional Protocol (AP) implementation; research reactor safety and operations; low and intermediate level radioactive waste management; and environmental surveillance.

Current Infrastructure Development Bilateral Partners Include:

- Algeria
- Egypt
- Indonesia
- Libya
- Mexico*
- Morocco
- Thailand
- Vietnam
- Malaysia
- UAE

*Active Arrangements but no ongoing work.

International Nuclear Safeguards Engagement

The global expansion of nuclear power and advances in nuclear technology create new challenges for international safeguards. In states with both nuclear programs and IAEA safeguards agreements, existing nuclear material accounting systems will become less effective and efficient over time and thus require consistent strengthening and testing to satisfy IAEA safeguards requirements. As

technological innovation in the nuclear field increases, new proliferation threats will emerge and IAEA responsibilities will expand. Innovation in safeguards technology commensurate with these changes is necessary to ease the burden on the IAEA and to ensure that nuclear power continues to be employed safely, securely and with appropriate adherence to nonproliferation principles.

INSEP increases the effectiveness and efficiency of safeguards in partner countries, and strengthens the nonproliferation community through development and improvement of SSACs. INSEP also develops and tests next-generation safeguards technologies through collaborative technical projects with foreign partners and regional organizations to address the anticipated needs of the international community. INSEP partners on nuclear safeguards implementation and testing typically have considerable experience with nuclear power programs and often some experience with advanced fuel cycle facilities. INSEP nuclear safeguards engagement includes such topics as: nondestructive and destructive assay systems for nuclear materials control and accounting; establishing safeguards standards; safeguards data management; unattended and remote monitoring technologies; and virtual private networks.

**APPENDIX B – PEACEFUL USES OF NUCLEAR ENERGY
AGGREGATES, 2000-2009**

**I. U.S. SUPPORT FOR IAEA TECHNICAL COOPERATION AND
OTHER PROGRAMS**

**A. U.S. VOLUNTARY CONTRIBUTIONS TO IAEA TECHNICAL
ASSISTANCE FUND**

Year	U.S. Pledged Amount (in USD)
2000	\$18,250,000
2001	\$18,250,000
2002	\$18,250,000
2003	\$18,562,467
2004	\$19,383,756
2005	\$19,144,625
2006	\$19,127,216
2007	\$19,775,000
2008	\$19,814,000
2009	\$20,950,000
Total	\$191,507,064

B. IAEA FOOTNOTE A PROJECTS AND OTHER PROGRAMS

1. U.S EXTRA-BUDGETARY FUNDING FOR IAEA FOOTNOTE A PROJECTS AND OTHER PROGRAMS

Year	U.S. Pledged Amount (in USD)	U.S. Disbursed Amount Including DOE and NRC funds for Footnote A projects (in USD)
2000	\$1,300,000	\$1,338,030
2001	\$1,200,000	\$1,665,380
2002	\$1,025,000	\$1,544,366
2003	\$625,033	\$2,243,307
2004	\$1,143,944	\$2,917,364
2005	\$931,375	\$2,454,326
2006	\$500,000	\$7,541,569
2007	\$400,000	\$2,019,088
2008	\$400,000	\$1,296,796
2009	\$900,000	\$2,023,200
Total	\$8,425,352	\$25,043,425

2. FOOTNOTE A PROJECTS: SUBJECT AND COUNTRY/REGION

- Repatriation, management and disposition of fresh and/or spent nuclear fuel from research reactors (Countries in the European Region);
- Full conversion of TRIGA 14-MW core from HEU to LEU fuel (Romania);
- Supporting the repatriation, management and disposal of fresh and/or spent nuclear fuel from research reactors (Countries in the European Region);
- Integrating Sterile Insect Technique for Tsetse eradication (Ethiopia);
- Strengthening national regulatory infrastructures for the control of radiation sources (Countries in African, European, and Latin American Regions);
- Safe removal of spent fuel of the Vinca RA Research Reactor (Serbia and Montenegro);

- Promoting self assessment of regulatory infrastructures for safety and networking of regulatory bodies in Africa;
- Safe removal of spent fuel of the Vinca RA Research Reactor (Serbia);
- Full conversion of the Maria Research Reactor core from Highly Enriched Uranium to Low Enriched Uranium (Poland);
- Thematic planning for Technical Cooperation projects (Countries in All Regions);
- Sterile Insect Technique for area-wide Tsetse and Trypanosomosis management (Countries in the African Region);
- Establishing a research reactor (Jordan);
- Enhancing the capabilities of national institutions supporting nuclear power development (China);
- Strengthening national infrastructures for the control of radiation sources (Vietnam);
- Area-wide application of the Sterile Insect Technique for Medfly control (Palestine);
- Support for nuclear safety review missions (Hungary);
- Strengthening the technical capacity of the regulatory body for radiation and nuclear safety (Vietnam); and
- Establishing and maintaining fruit fly free and low prevalence areas in Central America, Panama and Belize, using the Sterile Insect Technique (Countries in the Latin American Region).

3. COUNTRIES RECEIVING FOOTNOTE A FUNDING FROM THE UNITED STATES (2000-2009)

- Armenia
- Bangladesh
- Belarus
- Belize
- Bolivia
- Bosnia and Herzegovina
- Bulgaria
- Burkina Faso
- Chile
- China
- Costa Rica
- Czech Republic
- Dem. Rep. of Congo
- Dominican Rep.
- Egypt
- El Salvador
- Ethiopia
- Georgia
- Greece
- Guatemala
- Haiti
- Honduras
- Hungary
- Jamaica
- Jordan
- Kazakhstan
- Kenya
- Latvia
- Libya
- Lithuania
- Mali
- Mexico
- Mongolia
- Montenegro
- Morocco
- Namibia
- Nicaragua
- Nigeria
- Palestine
- Panama
- Peru
- Poland
- Portugal
- Romania
- Russia
- Serbia
- South Africa
- Sri Lanka
- Sudan
- Tanzania
- Turkey
- Uganda
- Ukraine
- United Arab Emirates
- Uzbekistan
- Vietnam
- Zimbabwe

4. SPECIFIC DATA 2000-2009

NOTE: Each list includes countries receiving U.S. extra-budgetary funding through national Footnote A projects only.

YEAR: 2000

Recipients of U.S.-Funded IAEA Footnote A Projects

- Armenia
- Bulgaria
- Costa Rica
- Ethiopia
- Ghana
- Jordan
- Mongolia
- Morocco
- Palestine
- Peru
- South Africa
- Vietnam

Total disbursement of U.S. extra-budgetary funds for Technical Cooperation:
\$1,338,030

Total U.S. disbursement for equipment: \$864,930

YEAR: 2001

Recipients of U.S.-Funded IAEA Footnote A Projects

- | | | |
|--------------|----------------------|----------------|
| ○ Armenia | ○ Dominican Republic | ○ Morocco |
| ○ Bangladesh | ○ Ethiopia | ○ Palestine |
| ○ Boliva | ○ Jordan | ○ South Africa |
| ○ Bulgaria | ○ Mongolia | ○ Vietnam |
| ○ Costa Rica | | |

Total disbursement of U.S. extra-budgetary funds for Technical Cooperation:
\$1,665,380

Total U.S. disbursement for equipment: \$1,393,795

YEAR: 2002

Recipients of U.S.-Funded IAEA Footnote A Projects

- | | | |
|------------|-------------|----------------|
| ○ Armenia | ○ Georgia | ○ South Africa |
| ○ Bulgaria | ○ Ghana | ○ Ukraine |
| ○ Ethiopia | ○ Lithuania | ○ Vietnam |

Total disbursement of U.S. extra-budgetary funds for Technical Cooperation:
\$1,544,365

Total U.S. disbursement for equipment: \$1,005,481

YEAR: 2003

Recipients of U.S.-Funded IAEA Footnote A Projects

- | | | |
|------------|-----------|-------------|
| ○ Armenia | ○ Georgia | ○ Lithuania |
| ○ Bolivia | ○ Ghana | ○ Morocco |
| ○ Bulgaria | ○ Hungary | ○ Ukraine |
| ○ Ethiopia | ○ Jamaica | ○ Vietnam |

Total disbursement of U.S. extra-budgetary funds for Technical Cooperation:
\$2,243,307

Total U.S. disbursement for equipment: \$1,752,486

YEAR: 2004

Recipients of U.S.-Funded IAEA Footnote A Projects

- Armenia
- Bolivia
- Bulgaria
- Ethiopia
- Georgia
- Ghana
- Hungary
- Jamaica
- Lithuania
- Morocco
- Romania
- Ukraine

Total disbursement of U.S. extra-budgetary funds for Technical Cooperation:
\$2,917,364

Total U.S. disbursement for equipment: 2,589,273

Year: 2005

Recipients of U.S.-Funded IAEA Footnote A Projects

- Armenia
- Bulgaria
- Ethiopia
- Hungary
- Jamaica
- Lithuania
- Romania
- Serbia and Montenegro
- Ukraine

Total disbursement of U.S. extra-budgetary funds for Technical Cooperation:
\$2,454,326

Total U.S. disbursement for equipment: \$2,194,917

Year: 2006

Recipients of U.S.-Funded IAEA Footnote A Projects

- Armenia
- Ethiopia
- Georgia
- Romania

Total disbursement of U.S. extra-budgetary funds for Technical Cooperation:
\$7,541,569

Total U.S. disbursement for equipment: \$7,287,476

Year: 2007

Recipients of U.S.-Funded IAEA Footnote A Projects

- Ethiopia
- Hungary
- Portugal
- Serbia and Montenegro
- Serbia

Total disbursement of U.S. extra-budgetary funds for Technical Cooperation:
\$2,019,087

Total U.S. disbursement for equipment: \$1,930,633

Year: 2008

Recipients of U.S.-Funded IAEA Footnote A Projects

- Bulgaria
- Ethiopia
- Poland
- Serbia

Total disbursement of U.S. extra-budgetary funds for Technical Cooperation:
\$1,296,796

Total U.S. disbursement for equipment: \$948,990

Year: 2009

Recipients of U.S.-Funded IAEA Footnote A Projects

- Ethiopia
- Hungary
- Serbia and Montenegro
- Serbia

Total disbursement of U.S. extra-budgetary funds for Technical Cooperation:
\$2,023,199

Total U.S. disbursement for equipment: \$1,416,812

APPENDIX C – U.S. PROGRAM OF TECHNICAL ASSISTANCE TO SAFEGUARDS

Historical Effort

The U.S. Program of Technical Assistance to Safeguards (POTAS) has contributed in many ways to the development and implementation of IAEA safeguards. In the early years, the emphasis was on research and development of equipment and safeguards approaches. Soon thereafter, POTAS added assistance in the areas of system studies, evaluation, computerized information treatment, training of IAEA staff and deployment of equipment for field use. However, the assistance provided by the U.S. Support Program (USSP) has changed with the evolving safeguards environment of today. As the methods used by proliferators have increased in technical sophistication, the IAEA has been forced to reevaluate their safeguards approaches and equipment to ensure both are still adequate and effective. New safeguards concepts and approaches must be developed in conjunction with new equipment and training courses to help ensure that the IAEA is properly equipped, informed, and knowledgeable.

To this end, the USSP has increased the amount of POTAS support given to the IAEA Department of Safeguards, over the years to a total of \$14.5 million for 2009. This sustained high level support for the IAEA Department of Safeguards emphasizes the U.S. commitment towards helping fulfill the IAEA's mission.

Equipment and Instruments

POTAS funding has had a major impact on the development, deployment, use and maintenance of equipment for the IAEA Department of Safeguards. Even though the technology is changing, the equipment used by the IAEA has not. Therefore, a large emphasis has been placed on providing new non-destructive analysis (NDA) equipment, containment and surveillance devices, and cost-free experts (CFEs) for the IAEA. Through many different POTAS tasks such as the new Universal NDA Data Acquisition Platform (UNAP), the capabilities of the IAEA are always being advanced to meet the increasingly sophisticated attempts by proliferators. Complementary to NDA, the USSP supports the development of many different containment and surveillance (C/S) tasks. The development of new COBRA (fiber optic) seals and the XCAM system to replace the aging DCM-14 system are two of the largest projects. Through the many different taskings currently accepted by the U.S. Support Program, the IAEA is able to pursue new equipment ideas better to help the inspectors carry out their work at facilities.

Some examples of the larger projects for technology and instrumentation supported by POTAS funding are:

- Development of a Universal NDA Data Acquisition Platform (UNAP) and a workshop on Universal Data Acquisition Platforms;
- Unattended and remote monitoring systems standardization and support;
- Development of a remotely monitored sealing array;
- Next generation camera module and server-based surveillance systems (XCAM); and
- CFE on unattended and remote monitoring system (UNARM) and NDA data acquisition.

In addition to providing the hardware and software for NDA and C/S, the USSP provides assistance in conducting equipment vulnerability assessments (VA) and the authentication and encryption (A/E) of data. These areas represent very new aspects of equipment development that have become increasingly important in recent years. These are areas where the USSP provides much needed support to allow the IAEA to build up an institutional knowledge base that can address these issues in the future as they become more common. Projects such as the vulnerability assessment of the ultra-sonic sealing bolt, the testing of secure communications for remote monitoring, and reflective particle tag technology show the continued dedication to the advancement of technologies which ensure the continuity of knowledge of material under safeguards, and provide assurances that data from NDA equipment is securely transmitted.

Concepts and Approaches

POTAS taskings for the study of concepts and approaches have assisted the IAEA in producing generic safeguards approaches and then evolving to facility-specific applications. This evolution corresponded to the IAEA's changing needs and permitted both generic and facility-specific problems to be addressed. At the same time, some problems which first arose in connection with specific facilities have been expanded into system studies which treated the problems explicitly and systematically. The current evolution of safeguards has demanded that sufficient attention be given to designing and implementing appropriate safeguard regimes that utilize the changes in data acquisition and technology. The USSP actively supports information-driven safeguards and safeguards by design through POTAS funding.

Important examples of this work include: an analysis of diversion paths and development of model safeguards approaches for the facility type; explanatory notes and examples of how the State should complete the IAEA's design information questionnaire; guidelines for practical implementation of elements of the State's System of Accounting and Control (SSAC) at particular facilities; and support for IAEA initiatives such as Safeguards by Design (SBD), and Information Driven Safeguards (IDS) by drafting important safeguards documents and the provision of a CFE.

In addition, system studies support to inspectors for implementation of complex safeguards approaches at certain major facilities were greatly assisted by CFEs with a direct and important impact on the effectiveness of safeguards at these facilities. The development of "Guidance for Designers and Operators on Design Features and Measures to Facilitate the Implementation of Safeguards at Future Nuclear Fuel Cycle Facilities" is an example of the proactive support that the USSP provides to the IAEA in accordance with their current safeguards approaches.

Human Resources

Human Resources is considered a high priority for the USSP which has made available to the IAEA substantial support in the form of CFEs, Junior Professional Officers (JPOs), and training courses. The combination of high quality personnel and training has enabled the IAEA to meet the challenges of attrition and a growing workload. In addition to the provision of CFEs and JPOs under POTAS funding, the USSP actively assists U.S. citizens in their application for, and transition into, regular staff positions at the IAEA. By providing the Department of Safeguards with important training course, and high quality CFEs, the USSP is able to help ensure that the critical mission of the IAEA is carried forward in the most efficient and successful way possible.

In general, the provision of CFEs is one of the key contributions by POTAS which has a major impact on the IAEA's performance. These CFEs are a diversified group of technical experts whose overall contributions are so significant that they deserve special mention. POTAS provides the right person, at the right time for important IAEA needs. Although they cannot carry out IAEA inspections under safeguards agreements, they are used by the IAEA to address important issues and often directly assist the inspectors in Vienna and in the field. This highly diversified group of technical experts cover a range of IAEA needs, including non-destructive assay (NDA) techniques, training, quality management,

safeguards concepts and approaches, data processing and acquisition, and software/hardware design and testing. In addition, many CFEs bring a wealth of industry and facility experience to the IAEA which allows for many of the CFEs to provide cross-cutting assistance across many topics. Due to the severe budget limitations that the IAEA faces, CFEs have proven indispensable in ensuring that critical support positions are filled and high priority tasks are given the necessary man power.

In addition to the personnel whom the USSP provides to the IAEA Department of Safeguards, training is funded under POTAS so that critical skills and knowledge are not lost due to attrition and lateral reassignments. Training at the IAEA is supported either through the provision of CFEs for the training of IAEA staff, direct assistance in the development of training courses, or technical assistance for specialized training courses on equipment and facility specific inspections. Some examples of how the USSP provides training assistance include: provision of a CFE for training on NDA; funding for training courses on enrichment technology, Additional Protocol activities, remote and unattended monitoring, and safeguards at research reactors; and assistance with the annual IAEA Introductory Course on Agency Safeguards (ICAS) course. All of the combined resources provided for training at the IAEA help to ensure that the IAEA Department of Safeguards maintains the critical skills and knowledge necessary to perform their mission.

IAEA Safeguard Information System (ISIS)

The USSP continues to assist the IAEA in achieving an integrated and efficient safeguards information infrastructure, including reliable and maintainable information systems, and effective tools and resources to collect and analyze safeguards-relevant information. The current IAEA information management system, known as ISIS, is outdated and utilizes obsolete components. Therefore, the USSP, among most other member state support programs, underwent a massive reengineering project to update the ISIS.

The IAEA is in the third and final phase of a project to re-engineer its obsolete ISIS to create an integrated, efficient, and secure safeguards information infrastructure. Phase III of the ISIS Re-engineering Project (IRP) is concerned with developing and implementing the safeguards application software, and with rolling out these systems as they are completed. The new ISIS will run in parallel with the current system, until the IRP project is complete. This work is managed by the IAEA and performed by the IAEA and its contractors. The USSP has

provided contractors and CFEs to assist the IAEA in the design, development, and implementation of the new ISIS.

In addition to the ISIS Re-engineering Project, the USSP has supported many other information management and analysis projects. The USSP is currently assisting the IAEA with the development of enhanced information analysis architecture. Project N-Vision will provide IAEA Safeguards with an advanced information portal. Currently, the IAEA uses many different software applications and databases, which are not integrated. N-Vision will address many challenges to IAEA Safeguards, including lack of secure access and navigation through all SG information, the high and increasing volume of information related to states' nuclear activities, limited human resources, and identifying patterns and inter-relationships in information.