

National Progress Report: United States of America

March 31, 2016

Since the 2014 Nuclear Security Summit, the United States has strengthened nuclear security implementation and built up the global nuclear security architecture by ...

...Strengthening Nuclear and Other Radioactive Material Security

- The United States provided updates on security of military material and measures to secure other nuclear materials through United Nations National Security Council (UNSCR) 1540 reporting processes on March 23, 2016.
- The United States assessed and verified through inspection activities that operating nuclear power plants are implementing cyber security regulatory requirements in accordance with their cyber security plans. In addition, the program is designed to identify lessons learned throughout the process and implement improvements as needed.*
- The United States is conducting rulemaking for civilian fuel cycle as well as research and test reactor security, to translate case-by-case exceptions into a generically applicable rule. Activities have begun to incorporate the material attractiveness concept into rulemaking to make graded security regulations more informed by risk.
- The United States has worked to mitigate the risks associated with malicious insiders at nuclear facilities and is helping develop or enhance human reliability programs in 24 countries.
- The United States hosted the following P-3, expert-level security information exchanges:
 1. In 2014, to discuss an “enterprise approach” to vulnerability assessments and including peer review of the Y-12 Security Complex vulnerability assessment.*
 2. In 2014, on transportation security best practices, held at Sandia National Laboratory.*
 3. In 2015, to discuss security challenges with unmanned aerial vehicles at nuclear sites and exchanging best practices and lessons learned.*
- The United States conducted more than 300 nuclear and radiological security workshops and 12 weapons of mass destruction (WMD) counterterrorism tabletop exercises with key

international partners, strengthening nuclear security culture and enhancing capabilities related to physical protection, insider threat, transportation security, guard and response force activities, emergency response, crisis coordination, and computer security.*

- Consistent with the 2014 Gift Basket on Radiological Security, operators/managers of 82% of buildings containing Category 1 sources have volunteered to institute additional best practices published by the NRC.*
- United States instituted a Memorandum of Understanding among U.S. agencies to enhance cooperation on radioactive materials transportation security.
- The United States has recovered over 51,000 U.S.-origin sources (over 1.1 million curies) domestically, including 12,958 sources since March, 2014, and repatriated over 2,900 (over 63,000 curies) U.S.-origin sources, including 367 sources since March, 2014.*
- Working with our international partners, the United States has enhanced radiological security at 115 buildings in 34 countries since March 2014.*
- *The United States is conducting a “lessons learned” project for drills based on hostile action to share with stakeholders and make publically available to facilitate enhancing nuclear power plant emergency response in the unlikely event of a hostile action.**
- *The United States is conducting an assessment of the effectiveness of physical security requirements for radioactive materials which includes an internal and external review, baselining against international standards, and outreach to stakeholders.**
- *The United States will provide international partners specialized training for radiation emergency responder operations for nuclear security at major public events and support partners operations during events.**

...Minimizing Nuclear and other Radioactive Materials

- The United States disposed of five metric tons of weapons-usable highly enriched uranium (HEU) domestically, bringing the total to more than 150 metric tons of material surplus to the U.S. nuclear weapons program that has been dispositioned.*
- The United States has decreased its national inventory of HEU from 740.7 metric tons in 1996 to 585.6 metric tons in 2013, a decrease of more than 20%.
- The United States, working with other countries, removed or confirmed the disposition of more than 250 kilograms of nuclear material, resulting in three additional countries becoming HEU-free. This was enabled by the use of modified casks for unique fuel designs.*The

United States supported the downblending of 780 kg of excess weapons-usable non-U.S. HEU.*

- Consistent with its national security requirements and in recognition of the international benefits to minimizing the use of HEU globally, the United States continues to investigate the viability of using low enriched uranium (LEU) in naval reactor cores. The United States concluded that the potential exists to develop an advanced fuel system that could increase uranium loading beyond what is practical today while meeting the rigorous performance requirements for naval reactors.
- The United States ensures that inventories of HEU allocated for use in manufacturing naval reactor cores are based on clearly defined U.S. Navy requirements.
- The United States established a pilot production line for high-density LEU fuel to support the conversion of the remaining high performance research reactors in the United States and abroad from the use of HEU fuel.
- The United States makes LEU available, through lease contracts, for irradiation for the domestic production of Mo-99 for medical uses.*
- The United States remains fully committed to the U.S.-Russia Plutonium Management and Disposition Agreement, and to meeting its obligation to verifiably dispose of no less than 34 metric tons of excess weapon-grade plutonium under the agreement, and to cooperate with Russia in these undertakings.
- The United States participates in experts' group exchanges to explore HEU minimization efforts and plutonium management.*
- The United States, in partnership with France, established an International Ad Hoc Working Group on Alternatives to High-Activity Radiological Sources.
- *The United States will demonstrate commercial capability to produce the medical isotope molybdenum-99 in the United States using non-HEU technologies in 2016.*
- *The United States will continue to develop initiatives for reducing the number of vulnerable high activity radioactive sources through continued research and development on non-radioisotopic alternative technologies, international workshops and collaboration, and direct site engagement.**
- *In an effort to promote permanent risk reduction, the United States will partner with industry to replace 34 cesium-137 blood irradiators with non-radioisotopic alternative technologies by 2020.*

- *Consistent with legislation, the United States will consider initiating a program of work to develop LEU fuel for use in naval reactor cores.*

...Countering Nuclear Smuggling

- The United States supports the expansion and acceleration of international capabilities to arrest nuclear smugglers, seize illicit nuclear material, investigate illicit nuclear trafficking, and effectively prosecute perpetrators.
- The United States' Nuclear Forensics Public Affairs Guide is available as a model of how to organize and coordinate national efforts to communicate nuclear forensics information with the public in an effective and timely manner.
- The United States' National Nuclear Forensics Expertise Development Program continued to transfer knowledge to the next generation and sustain nuclear expertise, facilitating the hiring of an additional 17 Ph.D. scientists into the nuclear forensics workforce and exceeding the program goal with a total of 41 new scientists added since 2008.
- The United States strengthened its domestic nuclear detection architecture by training over 7,500 state and local first responders and law enforcement officials in nuclear detection operations and conducting over 300 exercises, assessments, and deployments to enhance federal, state, local and tribal agencies' readiness to combat nuclear terrorism.*
- The United States has executed over 120 comprehensive evaluations and demonstrations of new technologies to enhance capabilities to detect and identify nuclear or other radioactive material out of regulatory control.
- The United States developed a library of technical guides on installing, operating, and maintaining radiation detection systems.
- Since March 2014, the United States provided 58 reports on domestic detection events involving material outside of regulatory control to the IAEA's Incident and Trafficking Database program.
- The United States worked bilaterally through Countering Nuclear Smuggling Joint Action Plans with 14 international partners to strengthen capabilities to prevent, detect, and respond to nuclear and radioactive material smuggling.*
- The United States strengthened the capability of partners in 55 key countries by conducting over 310 training courses, workshops, and field training exercises in radiation detection system operation and response since March 2014.*

- The United States worked bilaterally with 45 countries to assess and implement improvements in the operation of radiation detection systems deployed to counter nuclear smuggling.*
- The United States equipped 49 fixed sites worldwide with radiation detection systems, deployed 44 mobile and man-portable radiation detection systems to 24 countries, and transitioned another 106 radiation detection systems to partner country responsibility since the end of March 2014. The United States also enhanced the capability of seven partners to deter, detect, and interdict attempts to traffic WMD and related materials across unstable or threatened land borders by providing equipment, training, and sustainment capabilities. *
- The United States equipped eight additional international partners with radiation detection systems, which can be deployed in mobile, boat or aerial platforms to search, locate, identify and/or characterize nuclear material.*
- The United States strengthened the maritime domain awareness capabilities of five partners to prevent the proliferation of WMD materials through and near their national waters through provision of equipment, training, command and control centers, and vessel sustainment facilities.
- The United States conducted 17 training courses with key international partners, designed to strengthen global capabilities for identifying, characterizing, interdicting and responding to incidents involving nuclear or radiological material which bolsters nations' overall response capabilities and contribute to the integration of nuclear safety and nuclear security.*
- The United States has developed six new Certified Reference Materials, along with the UK, France and Sweden, for use by the international community to support accurate and legally defensible forensic analyses of nuclear and other radioactive materials. Eleven additional reference materials are currently in progress.*
- The United States facilitated a second multilateral exercise on national nuclear forensics libraries with more than 186 experts from 28 countries and three international organizations (International Atomic Energy Agency (IAEA), INTERPOL, and European Commission).*
- *The United States will provide assistance to countries contending with a threat of nuclear terrorism and encourages such requests.**
- *The United States will accept and process official queries of its National Nuclear Forensics Library through its National Point-of-Contact to determine whether nuclear or other radioactive material outside of regulatory control may have originated in the U.S.**

- *The United States plans to initiate work in North Africa to reduce the threat of non-state actor acquisition or proliferation of WMD and related materials across unstable borders.**
- *The United States will develop and implement an expert testimony training program for nuclear forensic scientists to develop good practices for how to describe nuclear forensics conclusions in judicial proceedings and convey highly technical results to a non-technical audience.**
- *The United States will convene a third multilateral exercise on national nuclear forensics libraries.**

...Supporting Multilateral Instruments

- The United States deposited instruments of ratification for the 2005 Amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM/A) on July 31, 2015 and International Convention for the Suppression of Acts of Nuclear Terrorism on September 30, 2015.
- The United States deposited instruments of ratification for the 2005 Protocol to the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation on August 28, 2015.
- The United States is carrying out joint R&D with Sweden on the characterization of top priority Certified Reference Materials.*
- *The United States will provide an updated report to the IAEA, in accordance with Article 14.1 of the CPPNM/A, within two months after its entry into force.*

...Collaborating with International Organizations

- The United States contributed an additional \$17.5M to the IAEA's Nuclear Security Fund in 2014 and \$13M in 2015 and *expects to provide similar support in 2016 and beyond.**
- The United States collaborated with the IAEA in conducting 12 training courses designed to strengthen global capabilities for identifying, characterizing, interdicting and responding to incidents involving nuclear or radiological material; medical management of radiation injuries; and managing the consequences resulting from a release of such material.*
- The United States provided continued support, review, and participation toward the development and revision of IAEA Nuclear Security Series guidance documents to include active participation in the IAEA Nuclear Security Guidance Committee. *

- The United States provides financial, technical and human resources to the IAEA's efforts relating to nuclear material accounting and control, mitigation of insider threats, cyber security, physical protection, transportation security, nuclear security culture, securing nuclear materials out of regulatory control, sustainability of nuclear security system, identifying unique technical solutions to nuclear forensics issues, and developing non-isotopic technologies to radiological sources.
- The United States, through the IAEA Contact Experts' Group, collaborated with international partners on secure shipments of four highly enriched spent nuclear submarine cores within Russia for more secure storage or down blending.
- The United States is supporting the strengthening of the IAEA Division of Nuclear Security through development of eLearning modules to expand and sustain nuclear security training efforts.*
- The United States funds international organizations that contribute to the objectives of the Nuclear Security Summit, including Security Council Committee Established Pursuant to Resolution 1540, INTERPOL, the Global Initiative to Combat Nuclear Terrorism (GICNT), Global Partnership, UNODC, UNODA, and other relevant organizations and initiatives.
- The United States supports the 1540 Committee's effort to increase global implementation of the resolution through submitting a report on U.S. Effective Practices on UNSCR 1540 Implementation in 2014, continuing to strengthen its measures to implement the resolution, as described in its 2015 submission of an updated matrix of all U.S. actions to implement fully UNSCR 1540, and integrating UNSCR 1540 into U.S. assistance programs and its work with international organizations.*
- The United States has continued to provide both funding and the provision of subject matter experts to support INTERPOL's Radiological and Nuclear Terrorism Prevention Unit and its events, noting its central role in providing investigative support and coordinating law enforcement aspects of addressing criminal and terrorist offences involving nuclear or other radioactive materials.
- The United States continued to co-chair the GICNT with Russia, which builds partner capacity to prevent, detect, and respond to acts of nuclear terrorism.
- The United States continued to collaborate with partners under the Global Partnership on projects and other activities for securing nuclear and radiological materials, contributing to the objectives of the Nuclear Security Summit.

- *The United States will continue to provide technical, financial, and subject matter expert support to the IAEA and other international organizations, including activities supporting the Action Plans endorsed at the 2016 Nuclear Security Summit.*
- *The United States will continue to partner with states on nuclear security training courses, engage Centers of Excellence and Nuclear Security Support Centers, support cyber security efforts and training as it relates to nuclear security, and work to exchange and develop best practices related to the physical protection of high activity radioactive sources, as well as assist other than high income countries to upgrade physical protection systems at facilities with materials of concern.**

...Partnering with External Stakeholders

- The United States supported World Institute for Nuclear Security-led best practices workshops on security exercises on insider threat identification and mitigation, effective integration of cyber security and physical protection, and nuclear material control and accountancy.*
- The United States supported development of World Institute for Nuclear Security guides on Developing a Security Strategy for Armed Response, Crisis Management and Decision Making, National-Level Material Accounting and Tracking, Managing Internal Threats, Security Exercises, Security of IT and IC Systems at Nuclear Facilities, and Data Analytics for Nuclear Security.*
- The United States worked with international manufacturers of high-activity sealed source devices to perform voluntary assessments of the vulnerability to source theft.*
- The United States shares information bilaterally on actual nuclear forensic investigations and publishes the results of new techniques and methodologies applicable to nuclear forensic science.*