



Fall 2014

# Highlights

## Former Nonproliferation Graduate Fellow Served at U.S. Mission



BY CORNELIA BRIM

Imagine the managerial dilemma of trying to find a temporary replacement to manage one of your busiest portfolios on less than a month's notice. Earlier this fiscal year at the U.S. Mission to International Organizations in Vienna (UNVIE), a critical staff member was going on short-term leave. Her duties implementing U.S. Government policy and guidance related to nuclear security and serving as the U.S. liaison with the International Atomic Energy Agency (IAEA) would be unfilled unless UNVIE could find a temporary replacement.

When UNVIE turned to the National Nuclear Security Administration (NNSA)'s Office of Nonproliferation and International Security (NIS) to help fill this position, NIS recommended Rosalyn Leitch, a Security Specialist at Pacific Northwest National Laboratory (PNNL) and former Nonproliferation Graduate Fellow with NIS. Because of her background and experience working with IAEA nuclear security issues, Leitch was able to transition seamlessly into the role of UNVIE Acting Nuclear Security Attaché from November 2013 through February 2014.

The Office of Nonproliferation and International Security's International Nuclear Former Nonproliferation Graduate Fellow, Page 3...

## NIS Leads International Workshop to Strengthen Nuclear Safeguards Regime



BY JESSICA WILBOURNE AND SEAN DUNLOP



Mark Killinger of Pacific Northwest National Laboratory assists Zambian participants with an exercise using Protocol Reporter, the IAEA software used to prepare and submit Additional Protocol declarations.

The National Nuclear Security Administration (NNSA)'s Office of Nonproliferation and International Security (NIS) recently concluded a five-day workshop aimed at strengthening the ability of countries to ensure that civilian nuclear material is not being used for the illicit manufacture of nuclear weapons. NIS's International Nuclear Safeguards Engagement Program (INSEP) conducted its 2nd International Workshop on Additional Protocol Implementation from August 4-8, 2014. The

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### From the Editor:

Each year, NIS sponsors or provides trainers for courses and workshops that reach an astonishing number of people around the globe. In FY 2014 alone, NIS courses or trainers engaged more than 4,000 people representing more than 120 countries. In this issue of *Highlights*, learn about the International Nuclear Safeguards Engagement Program's 2nd International Workshop on Additional Protocol Implementation (page 1) and training that the Seismic Cooperation Program is doing in Kazakhstan (page 6). Similar to a training program, the *Handbook for the Australia Group Common Control Lists* that NIS helped develop also will benefit a wide variety of stakeholders (page 4).

The *Highlights* staff is pleased to announce that the National Nuclear Security Administration's Office of Defense Nuclear Nonproliferation will be launching a news bulletin in FY 2015 as a future source of nuclear nonproliferation news.

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NIS Bookshelf

## NIS Leads International Workshop – CONTINUED

workshop—hosted by Argonne National Laboratory—brought together government officials and technical specialists from 14 countries to build capacity for the effective implementation of additional protocols to safeguards agreements between States and the International Atomic Energy Agency (IAEA).



Participants from Tunisia and Senegal work directly with Tim Hasty of Savannah River National Laboratory.

Promoting effective implementation of the Additional Protocol (AP) is a critical step in strengthening the international nonproliferation regime. The AP expands the IAEA's ability to ensure the absence of undeclared nuclear activities and materials that potentially could be used to manufacture nuclear weapons. The AP requires countries to provide expanded declarations to the IAEA, including information regarding certain nuclear fuel cycle research and development activities not involving nuclear material, buildings on sites surrounding nuclear facilities, certain nuclear fuel-cycle related manufacturing and assembly activities, uranium mines, and exports of certain nuclear-related equipment. The IAEA also must be provided with complementary access to an expanded set of locations to resolve questions about the correctness or completeness of a State's declaration or resolve inconsistencies relating to the declaration.

At NIS's international workshop, experts from five of the U.S. National Laboratories, the IAEA, and the Verification, Research, Training and Information Centre (VERTIC) presented information and led practical, interactive exercises for nearly 30 participants from Belarus, Burma, Cambodia, Cameroon, Côte d'Ivoire, Ghana, Honduras, Kuwait, Laos, Senegal, Tunisia, and Zambia. Representatives from Morocco and Indonesia shared their experiences with bringing their APs into force and establishing processes for implementation. Partner countries and the IAEA consistently express how valuable hands-on activities and peer-to-peer interaction are during safeguards training courses, so INSEP strives to design its engagement activities with that in mind.

The workshop covered topics including enhancing safeguards-related laws and regulations, submitting initial and subsequent declarations to the IAEA, and preparing for complementary access visits. Participants also were able to spend time meeting bilaterally with INSEP staff to discuss specific needs related to

## NIS Leads International Workshop – CONTINUED

bringing their APs into force, preparing for implementation, and identifying organizations and training events that could help them meet their needs.

The IAEA expects approximately 30 new countries to initiate nuclear power programs in the coming years, increasing the burden on an already strained safeguards system. These “newcomer” countries require capable safeguards infrastructure and the related expertise to manage nuclear material and technology associated with the development of a nuclear power program. A number of these countries require legislative and technical support to prepare the procedures necessary to provide timely, correct, and complete declarations pursuant to the AP, and INSEP has cooperated with a number of partner countries to strengthen their AP implementation.

INSEP is an integral part of NNSA’s Next Generation Safeguards Initiative, a multiyear program launched in 2008 to develop the policies, concepts, technologies, expertise, and safeguards infrastructure necessary to strengthen and sustain the international safeguards system as it evolves to meet new challenges. To facilitate the safe, secure, and peaceful global expansion of nuclear energy, INSEP cooperates with more than 25 bilateral and regional partners on more than 100 technical projects to strengthen the international safeguards system.



*The workshop’s 30 participants included government officials and technical specialists from Belarus, Burma, Cambodia, Cameroon, Côte d’Ivoire, Ghana, Honduras, Kuwait, Laos, Senegal, Tunisia, and Zambia.*

*Jessica Wilbourne is an NNSA Graduate Fellow for NIS supporting INSEP. Previously, she interned at Lawrence Livermore National Laboratory and was a Graduate Student Associate of the Center for International Trade and Security at the University of Georgia.*

*Sean Dunlop is a program analyst supporting INSEP within the NIS Office of Nuclear Safeguards and Security. He is a graduate of the Monterey Institute of International Studies and has held various positions within the Department of Energy since 2010.*

## Former Nonproliferation Graduate Fellow – CONTINUED



*Vienna International Center*

Security Program provides in-kind support for IAEA’s Division of Nuclear Security by funding U.S. subject matter experts to assist the IAEA in developing and implementing nuclear security technical and policy guidance and teaching IAEA courses related to nuclear security.

“As a Nonproliferation Graduate Fellow with NIS from 2012–2013, I had the opportunity to travel to Vienna and meet the staff at the U.S. Mission. Through my work for NIS, I learned the structure and processes of the IAEA’s Division of Nuclear Security and was able to transition smoothly into the role at UNVIE as a result.” Leitch’s ability to execute the necessary duties of the position upon her arrival is a testament to how well the NNSA helps build capacity of next-generation experts in the area of nonproliferation and international security.

During her fellowship with NIS, Leitch became well acquainted with the interagency coordination needed to achieve the NIS International Nuclear Security program mission, which aims to ensure the security of U.S.-obligated nuclear material at foreign facilities and engage domestic and international partners to strengthen the physical protection of all nuclear material and nuclear facilities. Her support for the program’s strategic planning and coordination with the IAEA on nuclear security issues and activities prepared her well.

## Former Nonproliferation Graduate Fellow – CONTINUED

Leitch characterizes herself as detail-oriented, responsive, and flexible—all important qualities to manage the busy portfolio she oversaw at UNVIE. In her capacity as Nuclear Security Attaché, she held one of four UNVIE positions funded by the U.S. Department of Energy. Although her duties varied from one day to the next, Leitch routinely coordinated and collaborated with the U.S. Government and IAEA, represented the U.S. Government at IAEA meetings related to nuclear security and reported back to her U.S. Government counterparts, coordinated U.S. nominations and participation in IAEA events and activities related to nuclear security, and helped ensure that U.S. participants in IAEA events obtained the proper country clearances and export licenses. Serving as Nuclear Security Attaché was a challenging experience, but Leitch emphasized that it was an honor and privilege and she appreciated the positive team dynamic, strong work ethic, and professional attitude of the UNVIE staff with whom she worked.

Back at PNNL, Leitch continues to support NIS engagement with the IAEA as she coordinates nominations of U.S. experts to participate in IAEA activities related to nuclear security and participates in IAEA consultancy meetings.



From left to right: UNVIE colleagues Janet Heilig, Rosalyn Leitch, Sarah Boyke, and Casey Deering (Permanent Nuclear Security Attaché at UNVIE)

*Cornelia Brim is a senior communications specialist at PNNL with more than 20 years' experience providing communications support in areas of national security, nuclear energy, environmental management, and fundamental science.*

## NIS Develops Handbook for the Australia Group Common Control Lists

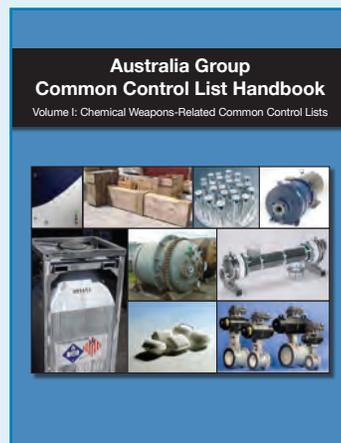


BY JULIE CARRERA, ANDREW CASTIGLIONI, EMILY ROSENBLUM, KELLIE BOLLING, AND WILLIAM RHODES

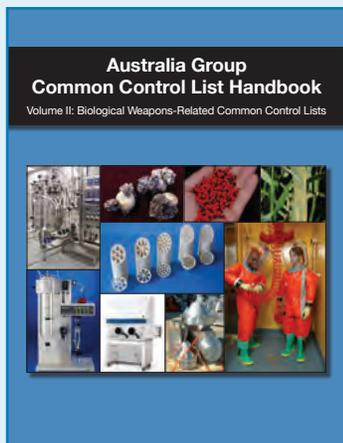
The Australia Group (AG) is a multilateral export-control arrangement which seeks to ensure that exports of materials, equipment, and technology do not contribute to the development of chemical weapons (CW) or biological weapons (BW). The National Nuclear Security Administration (NNSA)'s Office of Nonproliferation and International Security (NIS) plays a pivotal role on the U.S. Delegation to the AG, by supplying experts from the Export Control Review and Compliance - Interdiction (ECRC-I) team who provide invaluable chemical and biological expertise to inform decision-making on CW- and BW-related export controls. At the June 2014 AG Plenary in Paris, the ECRC-I team presented the *Australia Group Common Control List Handbook* they developed during FY 2013–2014. Jointly funded by NIS and the Department of State's Export Control and Related Border Security (EXBS) Program, the *Handbook* covers every chemical and biological commodity found on the five AG Common Control Lists (CCLs).

The AG, founded in 1985, includes 41 member countries and the European Commission. In addition, increasing numbers of AG non-member countries fully or partially incorporate the AG CCLs into their national export-control regulations, particularly in the wake of the United Nations (UN) Security Council Resolution 1540 mandate for all UN member states to have nonproliferation export controls. In order to enhance the implementation of export controls on AG items by AG members and non-members alike, the *Handbook* was developed for worldwide distribution with consideration for the needs of a wide variety of stakeholders. Beneficiaries of the *Handbook* include enforcement officers charged with identifying dual-use materials and equipment in cargo shipments; trade-control officials evaluating the legitimacy of transfers of these items; technology holders complying with related export controls; and experts in technical advisory roles in their respective national export-control systems.

The *Handbook* is divided into two volumes according to the threat posed by items on a particular CCL:



- Volume I: Chemical Weapons-Related Common Control Lists
  - ◆ Chemical Weapons Precursors
  - ◆ Dual-Use Chemical Manufacturing Facilities and Equipment and Related Technology and Software



- Volume II: Biological Weapons-Related Common Control Lists
  - ◆ Human and Animal Pathogens and Toxins
  - ◆ Plant Pathogens
  - ◆ Dual-Use Biological Equipment and Related Technology and Software

Chapters within each section provide overviews of the appearance, key features, uses, and global producers of

each listed item. Brief introductions to dual-use technology also are included to provide context for the chemicals, pathogens, and equipment discussed, and additional supporting information can be found in the appendices to both volumes. The electronic versions of the *Handbook* are internally hyperlinked to help users navigate the sizeable amount of information, and links are provided to technical terms defined in the glossary and to related sections of the *Handbook*. External hyperlinks to key reference materials also are included. The *Handbook* boasts approximately 600 pages of technical content, over 3,500 hyperlinks, and 280 images. The ECRC-I team incorporated comments and received approval from interagency AG Technical Working Group partners at Departments of State, Commerce, and Defense, as part of the development process.

The *Handbook* received an overwhelmingly positive response on the floor of the AG Plenary. Numerous Heads of Delegation congratulated the United States on the achievement and stated their intent to use the *Handbook* in training and outreach efforts. The AG Chair recognized the *Handbook* as a timely, pertinent, and practical contribution to understanding the technical side of the AG's work and enhancing non-proliferation dialogues. One Head of Delegation noted he was certain that the AG would look back and wonder how it managed for 29 years without such a resource. In

addition, the *Handbook* was featured in the AG Plenary press release, which noted that participants "welcomed a comprehensive handbook on the identification of Australia Group listed items prepared by the United States." The *Handbook* is posted on the AG's website (<http://www.australiagroup.net/en/controllisthandbooks.html>) for the benefit of export-control officials around the world.

*Julie Carrera is a principal nonproliferation specialist at Argonne National Laboratory. She has used her expertise in chemistry to support NIS export control programs for over a decade.*

*Andrew Castiglioni is a nonproliferation technical specialist at Argonne National Laboratory. He has provided biological expertise to support NIS export control programs for the past four years.*

*Emily Rosenblum is a nonproliferation technical associate at Argonne National Laboratory. She recently began using her expertise in microbiology to support NIS export control programs.*

*Kellie Bolling provides NIS headquarters support to the Export Control Review and Compliance - Interdiction Team. She is a graduate of the 2013 NNSA Nonproliferation Graduate Fellowship Program.*

*Bill Rhodes has been the Department of Energy's representative on the U.S. delegation to the AG for the past six years.*

# NNSA, CTBTO Conduct Nuclear Explosion Monitoring Workshop for the Caucasus and Central Asia



BY BILL WANDERER

Seismological and radionuclide experts from the Caucasus and Central Asia participated in a National Data Center (NDC) Development Workshop and Seismic Monitoring Training in Almaty, Kazakhstan from July 7–11, 2014, marking the first NDC outreach in the region. The National Nuclear Security Administration's (NNSA) Office of Nonproliferation and International Security's (NIS) Seismic Cooperation Program (SCP) and the Provisional Technical Secretariat (PTS) of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) jointly organized the workshop and training. The Institute of Geophysical Research of the Republic of Kazakhstan hosted the events, which were jointly funded by the CTBTO and the U.S. Department of State's Bureau of Arms Control, Verification and Compliance through U.S. Voluntary Contributions to the PTS.

U.S. Consul General Theresa Grecik, CTBTO International Data Centre (IDC) Capacity Building and Training Section Chief Martin Kalinowski, and Kazakhstan NDC Head Natalya Mikhailova delivered opening remarks at the workshop, which was attended by over 40 experts from Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. The three-day workshop featured presentations by PTS Capacity Building and Training Section staff, experts from Lawrence Livermore National Laboratory (LLNL), and representatives from each participating state. The content of the workshop aimed to build the technical capacity of each participating state's NDC to more effectively monitor for nuclear explosions in support of the Comprehensive Nuclear-Test-Ban Treaty (CTBT).

The NDCs operated by CTBT signatory states are a critical element of the CTBT monitoring and verification system. NDC functions may include transmitting CTBT International Monitoring System (IMS) data to the CTBTO's IDC in Vienna, Austria and receiving compiled data and data bulletins from the IDC. When complete, the IMS will be a global network of 337 seismic, infrasound, hydroacoustic, and radionuclide monitoring stations—as well as radionuclide laboratories—that provide continuous monitoring for the CTBTO and CTBT signatory states. Today, the IMS is more than 85 percent complete. NDC analysts evaluate IMS data and national network data to verify the absence of nuclear explosions. The Almaty workshop also highlighted the civil and scientific benefits of IMS data available to each signatory state through the IDC, as well as the benefits of regional data sharing.



*Reviewing old analog seismograms during the tour of the Medeu seismological installation.*

The two-day training course for seismological experts followed the workshop and featured presentations by LLNL scientists on techniques for analyzing waveform monitoring data, including the LLNL-developed regional seismic travel time (RSTT) model. The RSTT software package is used to improve event location and includes a computerized representation of three-dimensional seismic wave speed for the earth's crust and shallow mantle, as well as a computer code to calculate travel times for waves that are commonly used to locate events. The training culminated in hands-on exercises where all participants practiced RSTT event location and magnitude determination techniques using regional waveform data. The training highlighted the tools that are available through the IDC's "NDC in a box" software package at no cost to state signatories.

Outside of the classroom, training participants toured the NDC of the Republic of Kazakhstan, a regional leader in nuclear explosion monitoring. In addition, the Seismological Experimental Methodical Expedition of the Republic of Kazakhstan hosted a visit to the Medeu seismological installation in Almaty.

Course evaluations were positive, indicating that participants gained resources and insight benefitting both specific national nuclear explosion monitoring capabilities and broad civil and scientific applications.

*Bill Wanderer is the manager of the NIS Seismic Cooperation Program. He is a graduate of the University of Chicago and previously supported the NIS Highly Enriched Uranium Transparency Program. He joined NNSA in 2004.*