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Next Gen Safeguards Professional Network

Final Report 2014

Albuquerque and Los Alamos, New Mexico

March 10-13, 2014

Los Alamos NATIONAL LABORATORY EST. 1943

Sandia National Laboratories

Next Gen
Safeguards
Professional
Network

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Report on the March 2014 Meeting of the Next Generation Safeguards Professional Network (NGSPN)

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April 16, 2014

Introduction

This report summarizes the 2014 Next Generation Safeguards Professional Network (NGSPN) meeting held at Sandia and Los Alamos National Laboratories. The meeting comprised two days at each laboratory and included facility tours, technology demonstrations, presentations, and networking opportunities to strengthen expertise in nuclear safeguards and nonproliferation.

Historically, NGSPN was launched in 2009 and provides a mechanism for young safeguards professionals to connect and foster professional and personal relationships and to cultivate collaborative research and development efforts. Guidelines for members include full-time employment in nuclear safeguards for 5 years or less or full-time employment in a safeguards-related field, with an interest in shifting focus to nuclear safeguards related work. Membership in NGSPN is free to interested participants; however financial support for members attending NGSPN workshops is provided by their home organization. NGSPN workshops are opportunities to expand the network and facilitate knowledge transfer by visiting various relevant nuclear facilities and organizations, instilling awareness of facility capabilities and expertise while also providing hands-on experience with safeguards challenges. Additionally, there is time set aside for socializing and for participants to discuss their current work, interests, and experiences. The goal is toward developing professional bonds, and identifying areas of common interest and potential avenues for future collaboration.

Next Generation Safeguards Professional Network

In 2007, the Department of Energy (DOE) National Nuclear Security Administration (NNSA) identified several challenges and opportunities focused on the current and future impact of expanding mission needs on international safeguards infrastructure, technologies, and human capital. One such challenge was the need for DOE/NNSA to establish a new initiative to spawn renewed interests and development in the nuclear enterprise.

To foster this renewed interest and development, DOE/NNSA created the Next Generation Safeguards Initiative (NGSI) to strengthen and promote international nuclear safeguards. NGSI has a mission to utilize domestic technical expertise and international cooperation to develop and promote the technologies and human capital necessary to detect and deter nuclear proliferation. To meet the challenges associated with the mission, NGSI established the following program elements:

- **Policy and Outreach** – support IAEA safeguards policy and outreach by promoting universal adoption of safeguards agreements, supporting state-level

safeguards evaluation and implementation, and by assessing options for enhanced information sharing.

- **Concepts and Approaches** – application of a system-level approach to safeguards and promotion of safeguards by design for newly developed nuclear fuel cycle facilities.
- **Technology Development** – development of technologies to address the efficient implementation of safeguards at declared facilities and the improved capability to detect undeclared facilities.
- **Human Resources** – the recruitment, training and retention of international safeguards professionals to replace capabilities lost due to retirement of current safeguards professionals**.**
- **Infrastructure Development** – development of the institutional capacities, human capital, and infrastructure necessary to apply efficient and effective safeguards to nuclear fuel cycle facilities worldwide.

Efforts in these focus areas are designed to sustain United States (U.S.) leadership in safeguards policy and technology and invigorate the international safeguards community to continue their commitment to the nonproliferation of nuclear weapons.

NGSPN was developed within the context of the *Human Resources* and *Infrastructure Development* focus areas of NGSI. Objectives include:

- Provide a mechanism for young safeguards professionals to connect and foster professional and personal relationships;
- Share information on events, developments, and opportunities of safeguards importance;
- Provide a forum to cultivate collaborative research and development efforts between young and mid-career safeguards professionals;
- Facilitate knowledge transfer and retention by visiting various relevant nuclear facilities and organizations, instilling awareness of facility capabilities and expertise while also providing hands-on experience; and
- Act as a collective voice, representing the interests of the international community of young and mid-career safeguards professionals.

As a member, young and mid-career professionals have access to the NGSPN Members' Directory[1], receive invitations to participate in network events, forums, and discussions.

Previous NGSPN Meetings

1 See NGSPN Wiki, http://ngspn.wikispaces.com

The initial NGSPN meeting was held at Oak Ridge National Laboratory (ORNL) in October 2009 with 22 participants. At the conclusion of the meeting attendees voiced opinions asking for longer meetings, increased facilitation of knowledge transfer from today's safeguards experts, and more facility tours showing the real world application of safeguards. Participants agreed that the diversity of attendees (policy and technical backgrounds) was a strength that the network should capitalize on and support by allowing participants time to discuss their current safeguards-related work.

In September 2010, the second meeting of the NGSPN took place at Savannah River National Laboratory (SRNL). Expanding upon the foundation laid at the inaugural meeting, the second meeting was longer and the 17 attendees included previous and new attendees from national laboratories, commercial industries, and academia. Participants learned of SRNL safeguards capabilities and visited multiple facilities related to the nuclear fuel cycle located in the region. Suggestions from participants attending this meeting included expansion of NGSPN membership beyond government organizations to the commercial nuclear industry and academia.

The third NGSPN meeting was held at Pacific Northwest National Laboratory (PNNL) from September 20 – 23, 2011. Representing both policy and technical backgrounds, the 13 attendees came from laboratories across the DOE Complex and the NNSA. One of the stated goals of the network is to facilitate knowledge transfer and retention from the current to next generation of safeguards professionals. The focus of the meeting at PNNL was to provide the opportunity for the participants to interact with resident world-renowned experts, and introduce them to the unique facilities and capabilities housed at PNNL. Due to the nature of PNNL's relationship with the Hanford site, the theme surrounding the meeting focused on the nuclear fuel cycle. Over the three-and-a-half day long workshop, participants received a variety of presentations and tours that introduced attendees to each step of the nuclear fuel cycle and related safeguards technology and policy challenges.

Los Alamos and Sandia National Laboratories hosted the fourth NGSPN meeting in 2014. Over the four-day meeting, the 17 participants visited facilities that play a vital role in cooperation with the international safeguards community, physical protection as a key component of safeguards, nuclear forensics, process controls and nuclear materials control and accounting. They received presentations and technology demonstrations from experts in safeguards instrumentation, treaty verification, cryptography, remote monitoring, geospatial information analysis and chemical and biological threat reduction. They also visited a commercial manufacturer of instruments for the detection, identification and measurement of nuclear materials in a variety of locations and configurations. Participants had ample opportunities for social and professional networking during working lunches and informal evening activities. These included a dinner lecture on the history of the nuclear weapons complex and international nuclear safeguards. The Sandia-Los Alamos NGSPN meeting is discussed in more detail below.

The 2014 NGSPN Meeting at Sandia and Los Alamos

Participants

Seventeen research associates, post-docs and early career staff from across the U.S. nuclear complex attended the 2014 NGSPN meeting. They are listed below along with their affiliation and professional discipline.

Jennifer Dahnke – NNSA HQ (NA-241), Physics, Russian, International Relations
Brent Beatty – ORNL – Nuclear Engineering
Michael Fensin – LANL – Nuclear Engineering
Ernest Gitau (Travis) - PNNL – Nuclear Engineering, Nonproliferation
Jose Gomera – BNL – Nuclear Engineering
Denise Lee – ORNL – Nuclear Engineering
Valerie Lewis– PNNL – Nuclear Nonproliferation and Terrorism Studies
Michael McDaniel – SNL – Information Science, Computational Models
Sarah Marie Poe – BNL - Nuclear Nonproliferation and Terrorism Studies
Christopher Ryan – LLNL – Nuclear Engineering
Amanda Rynes – INL – International Relations
Jennifer Steeb – ANL – Analytical Chemistry
Alison Tamasi – LANL – Analytical Chemistry
J'Tia Taylor – ANL – Nuclear Engineering
Maikael Thomas – SNL – Electrical Engineering
Jason Wilson– SRS – Physics, Nuclear Engineering

Given their diverse expertise, which ranged from nuclear engineering and chemistry to nonproliferation studies and international relations, it was a challenge to design activities that were appealing and accessible to all participants. However the response to briefings was positive and lively question and answer sessions followed all presentations and tours at both Sandia and Los Alamos.

Laboratories and Facilities

The participants benefitted from the opportunity to visit two national laboratories during the NGSPN meeting. Each lab tailored the NGSPN activities to their respective strengths while also demonstrating the great breadth of nuclear safeguards-related work that occurs at both. In addition, the participants were provided with guided tours of several unique facilities and production areas. All of the participants valued highly the chance to see and walk though plants, labs and experimental facilities that play vital roles in nuclear nonproliferation, safeguards and security. Our guides answered many

questions and participants were able to gain new perspectives and context regarding a broad range of nuclear operations.
At Sandia, participants were welcomed by Global Security and Cooperation Center Director Rodney Wilson on Monday, March 10. They were also introduced to the nuclear safeguards and security capabilities at SNL. In particular, participants heard presentations and participated in activities related to containment and surveillance (C/S), cryptography, geospatial information tools, intrusion/detection technologies, and information assurance. Examples of safeguards technology were introduced including the Remotely Monitored Sealing Array (RMSA), the Enhanced Data Authentication System (EDAS), on-site inspection and continuous monitoring technologies, the Augmented Computer Exercise for Inspection Training (ACE-IT), radiological monitoring technologies, access control, and tracking systems. SNL also provided presentations on other nonproliferation programs the lab is heavily engaged in, including nuclear infrastructure development in the Middle East, and Chemical and Biological threat reduction.

As a complement to the presentations and activities at SNL, participants were taken on two tours. The first was of the Integrated Security Facility (ISF) in Tech Area V used to provide training to international partners on physical protection and nuclear safety, security, and safeguards (3S). The second tour was of SNL's Technology, Training and Demonstration (TTD) Area, an exhibition space with technology developed or applied by SNL and commercial vendors to address issues in nonproliferation, counterterrorism, international security and arms control.

Before going to Los Alamos, participants were introduced to Aquila, an Albuquerque-based commercial vendor that has been involved in the development and deployment of international nuclear safeguards technologies since the 1970s. The visit consisted of an overview of the company and a lab tour where techniques such as additive manufacturing are used to do rapid prototyping of safeguards technologies. In general, the visit to Aquila was an interesting link between the R&D conducted at the labs and the commercialization process of nuclear safeguards technologies.

At Los Alamos the NGSPN agenda focused on international safeguards implementation and technology, highlighting LANL expertise in nuclear materials measurement and verification systems. Safeguards topics discussed included the "safeguards by design" campaign and the application of safeguards technology. Examples of safeguards technology were introduced including an advanced uranium enrichment monitor, micro-calorimetry techniques, neutron detection and the use of nuclear material measurements for arms control verification.

This safeguards theme was accompanied by visits to two unique LANL facilities that support both the U.S. nuclear stockpile stewardship program and nonproliferation/ counterterrorism efforts. First, the NGSPN attendees received presentations on LANL's plutonium science strategy and an orientation to the TA-55 plutonium facility. The group

then took a guided tour of the facility and its several process areas. Work on converting former weapons components to plutonium oxide to comply with the U.S.-Russian Plutonium Disposition Agreement was described along with measurement and process controls that can be relevant to safeguards of large-throughput nuclear facilities.

The second major tour was of LANL's Dual-Axis Radiographic Hydrodynamic Test Facility (DARHT). DARHT consists of two large x-ray machines that produce freeze-frame radiographs (high-powered x-ray images) of materials that implode at speeds greater than 10,000 miles an hour. The images of hydrodynamic tests at DARHT help improve and verify computer models of nuclear weapons, which in the absence of actual nuclear testing are critical in assessing the effects of aging and remanufactured parts in nuclear weapons. Such radiographs help scientists ensure that nuclear weapons in the stockpile are safe and effective and that—if ever necessary—they will perform as designed.

Networking Opportunities

Ample time was provided for the NGSPN members to get to know one another and exchange professional interests and ideas. Each evening arrangements were made for the participants to meet for dinner and breaks were scheduled before and after tours and demonstrations. Contact information and short biographies for each participant and contact information for all presenters were included in the briefing books provided for the meeting.

Despite this, several participants expressed a desire to expand and formalize the networking mission of the NGSPN and its next meeting. Suggestions included facilitating the ability to collaborate on research proposals and creating opportunities during NGSPN meetings for participants to present their own project work to their peers. Participants also wanted to have more discussion time with subject matter experts (SME's) and facility operators featured on the NGSPN agenda.

Participant Feedback and Potential New NGSPN Activities

Based on the workshop evaluations, participants indicated that the 2014 NGSPN event was a very enriching experience as it strengthened their understanding of international nuclear safeguards and the various technical capabilities at SNL and LANL. In particular, participants enjoyed the tours, activities and discussions with the SME's at each lab. One recommendation participants made for future NGSPN events was to incorporate more time for networking and to exchange information on their own research and interests. Based on SNL and LANL's experience, a full day would be needed to accommodate this recommendation with a group of 15 to 20 participants. Another recommendation was to combine a trip to DOE/NNSA Headquarters in Washington, DC

with a visit to another national laboratory so that participants can better understand the role of DOE/NNSA and its relationship to the national laboratories in international nuclear safeguards.

Appendix A

AGENDA

NEXT GENERATION SAFEGUARDS PROFESSIONAL NETWORK (NGSPN)

Sandia National Laboratories (SNL)
Los Alamos National Laboratory (LANL)
March 10-14, 2014
Agenda

Monday, March 10
SNL

8:15	Participants Arrive at IPOC Building for badging
8:50	Participant Introductions and Networking (IPOC Rm. 1248)
9:00	SNL Welcome – Rodney Wilson
9:05	NGSPN Overview and Instructions – Risa Haddal
9:10	Participant Introductions and Networking Cont. (Icebreaker game)
9:45	SNL History and Background in Nuclear Safeguards – Risa Haddal
10:00	*Coffee Break/Networking*
10:15	Information Assurance/Security & RMSA– George Baldwin
10:45	C/S & Remote Monitoring; seals demo – Sue Caskey
11:15	Cryptography/Authentication & Safeguards – Maikael Thomas
11:45	*Lunch (no host)*
13:15	Geospatial Information Tools & Nuclear Safeguards - Karl Horak
13:45	Intrusion/Detection Expertise & Application – Dave Furgal
14:15	*Coffee Break/Networking*
14:25	Depart IPOC for Tour: Tech Area V – Integrated Security Facility (ISF)
14:45	Brief overview of tour facility - Integrated Security Facility (ISF)
15:00	Tour ISF
16:30	Return to IPOC, hotel
18:00	*Dinner in Old Town (no host) – Church St. Cafe*

Tuesday, March 11
SNL

9:00	Welcome remarks from Diana Blair, Global Security Programs
9:10	SNL's Diverse Nonproliferation Portfolio – Risa Haddal
9:30	Middle East Engagement on Nuclear Safeguards – Amir Mohagheghi
10:00	*Coffee Break*

10:15	Physical Protection – Ryan Whalen
10:45	Biological Threat Reduction – Connie Stewart
11:00	Chemical Threat Reduction – Linda Stiles
11:30	*Lunch (no host)*
1:00	Tour: TTD (IPB) – Karl Horak
2:00	Depart for Aquila Technologies
3:30	Participants depart for LANL

Dinner (no-host)
The Cowgirl, Santa Fe

<u>Wednesday, March 12</u>
LANL

8:00	Participants Arrive at LANL Badge Office
8:30	Shuttle to RLOUB TA-55
9:00	LANL Welcome and Introduction to Safeguards – Mike Baker
9:20	Brian Boyer – Safeguards by Design
10:15	Break
10:30	Jim Tape – SAGSI Interactions
11:00	Julianna Fessenden-Rahn – Nuclear Forensics
11:30	Background on TA-55 – Heather Hawkins Erpenbeck
12:00	Lunch –Integrated Plutonium Science and Research Strategy- Franz Freibert
1:00	LANL Plutonium Facility Tour
4:30	Shuttle back to Otowi - Participants Stay in Los Alamos

Dinner (no-host)
Los Alamos Parajito Brew Pub

<u>Thursday, March 13</u>
LANL

8:00	Participants arrive at Otowi Building
8:15	Shuttle to TA-35
8:30	Application of Safeguards Technology – Howard Menlove
9:00	Chantell Murphy – State Level Approach to Safeguards

<u>TA-35 Rotation Schedule 9:30 - 12:00</u>

9:30 – 10:00
Group A Micro-Calorimetry (Gamma Technique) – Ryan Winkler Group B Neutrons – Karen Miller Group C Advanced Enrichment Monitor – Kiril Ianakiev
10:00 – 10:30
Group A Treaty Verification – Duncan MacArthur

Group B Advanced Enrichment Monitor Group C Micro-Calorimetry (Gamma Technique)
10:30 – 10:45 break – Conference room
10:45 – 11:15
Group A Advanced Enrichment Monitor Group B Treaty Verification Group C Neutrons
11:15 – 11:45
Group A Neutrons Group B Micro-Calorimetry (Gamma Technique) Group C Treaty Verification – Duncan MacArthur
11:45 Lunch – Discussion of Demos and VISIBLE Team's DARHT Simulation - Kelly Michel, Phil Hypes
1:00 Shuttle to DARHT
1:30 Intro to DARHT
2:00 Tour DARHT
3:45 Shuttle back to Otowi
4:00 Participants drive to ABQ

Thursday, March 13

Dinner

Bravo Cucina

2220 Louisiana Blvd, NE

Albuquerque, NM 87110

18:00 Dinner at Bravo Cucina (no host)
18:00 – 18:30 Cocktails (cash bar)
18:30 – 19:30 Dinner (no-host)
19:30 – 20:00 Talk – Chuck Loeber (TBD)
20:00 – 21:00 Questions, Social/networking time
21:15 Return to hotels

Friday, March 14

Participants depart Albuquerque.

Jennifer Steeb is an Assistant Chemist in the National Security theme within the Chemical Science and Engineering Division at Argonne National Laboratory. In 2006, Jennifer completed her bachelor degree in chemistry from the University of Miami. Following her undergraduate degree, she completed her Ph.D. in analytical chemistry from the Georgia Institute of Technology in 2010, where she was a named Nuclear Forensics Graduate Fellow with joint sponsorship from Department of Homeland Security and Department of Defense (DHS/DOD). Jennifer originally joined Argonne National Laboratory in 2010 as a postdoctoral appointee, where she was awarded a three year Nuclear Forensics Postdoctoral Fellowship sponsored by the Department of Homeland Security's Domestic Nuclear Detection Office – National Technical Nuclear Forensics Center (DHS-DNDO-NTNFC). As an Assistant Chemist, she is currently working on method development for age-dating radiological sealed sources and exploratory studies on uranium morphology for nuclear forensics.

Sarah Poe is a Scientific Associate at Brookhaven National Laboratory. She joined Brookhaven's Nonproliferation and National Security Department in 2011 where she supports the DOE/NNSA with international nuclear safeguards and non-proliferation policy work. Sarah focuses primarily on international outreach to strengthen International Atomic Energy Agency (IAEA) safeguards, among other projects. Before arriving at Brookhaven, she worked as an intern at the IAEA's Division of Public Information. She was also an NGSI sponsored safeguards policy intern at Lawrence Livermore National Laboratory. While a graduate student at the Monterey Institute of International Studies, she conducted researched at the James Martin Center for Nonproliferation Studies. Sarah received her Master of Arts Degree in Nuclear Nonproliferation and Terrorism Studies from the Monterey Institute. She holds a Bachelor of Arts in International Politics and Economics, as well as Russian Language, from Middlebury College. Sarah has lived and traveled extensively abroad. She speaks fluent Russian and hails from Louisville, Kentucky.

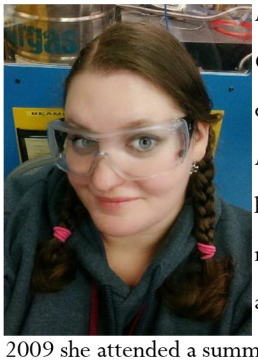
Jose Gomera joined BNL during the summer of 2010 to work as an undergraduate intern on the calibration andmaintenance of portable radiation detectors. From 2010-2012 he worked on software development and statistical analysis for calibration traceability. From 2012 to the present he has mostly been involved in database management and data acquisition for the gamma spectroscopy algorithm improvement program funded by DHS. He received his B.S. in Applied Math & Statistics from Stony Brook University in Dec 2011 and is currently pursuing a M.Eng. in Nuclear Engineering through Penn State University.

Amanda Rynes is currently a non-proliferation policy specialist at Idaho National Laboratory. She holds a B.A in International Studies from the University of Washington and an M.A. in International Relations from the University of Chicago. After graduation, Amanda spent a summer as an NGSI intern at INL and was hired following the internship. In 2012, she spent four months on rotation in the State Department's Office of Nuclear Energy, Safety and Security, where she worked on an array of nuclear energy related issues. Since returning from graduate school Amanda has worked on the University Engagement effort, developing a safeguards policy curriculum and giving lectures at regional universities.

After serving 6 years in the United States Navy on a ballistic missile submarine, Sean Morrell sought after a career in nuclear nonproliferation. While earning his Master's degree in nuclear engineering he worked as a Reactor Engineer at the Advanced Test Reactor at Idaho National Laboratory (INL). He was recruited to work on the Global Threat Reduction Initiative in the Nuclear Nonproliferation and International Safeguards Division at INL. Since then, he has been leading two GTRI projects to convert the Advanced Test Reactor and the Transient Reactor Testing Facility (TREAT) to a low enriched uranium fuel. Working in the Non-proliferation Division allowed him to branch into other areas of interest, including research and development in safeguards instrumentation and other nonproliferation projects.

Dr. Michael Lorne Fensin is an MCNP code developer/Staff Scientist in the Nuclear Engineering and Nonproliferation Division at Los Alamos National Laboratory (LANL). He received his BS, MS and PhD, all in Nuclear Engineering from the University of Florida (2003, 2004 and 2008). Michael was a summer student in reactor engineering for the Southern Nuclear Company at the Alvin W. Vogtle Electric Generating Plant. Michael was also a CO-OP student for Global Nuclear Fuels (General Electric), where he collaborated his Master's thesis research: Optimum Boiling Water Reactor Fuel Design Strategies to Enhance Reactor Shutdown by the Standby Liquid Control System. Michael initially worked at LANL in the compact space reactor design team, and then transitioned to the MCNP team, where he completed his PhD research: A Monte Carlo Linked Depletion Method that Automates the Coupling between MCNPX and CINDER90 for High Fidelity Burnup Calculations. Michael has ~10 years of experience at LANL in the area of radiation transport code development and simulation using the Monte Carlomethod. Simulation expertise, with numerous publications in each field; include: steady-state space and terrestrial reactor design, reactor burnup, source term generation for space and terrestrial applications, radiation signature and detector characterization for homeland security and nonproliferation, radiation dosimetry for space and terrestrial applications and shielding design (including advanced variance reduction and tallying techniques). He is a current instructor of the MCNP courses taught at LANL and worldwide.

Michael has been a member American Nuclear Society (ANS) member since 2000, and a member of the Radiation Protection and Shielding Division (RPSD) since 2004. He is currently a member of the RPSD program committee, and has been an RPSD paper reviewer since 2006. Michael pioneered MCNPX/6 burnup tutorials taught at ANS annual, ANS winter and RPSD topical meetings. He has been the organizer/chair for several RPSD sessions including: "Computational [Tools/Methods] for Radiation Protection and Shielding," "Modeling and Simulation Efforts for Nuclear Nonproliferation," and other MCNP related tutorial sessions.



Alison is a Nuclear Forensics Graduate Fellow, conducting pre-detonation forensics research at Los Alamos National Laboratory. She has also received three additional radiochemistry fellowships, including a Glenn T. Seaborg Fellowship. In 2009 she attended a summer school at Brookhaven National Laboratory, which inspired her interest in radiochemistry and drew her to pursuing a career in the field. She received her BS in chemistry and biology from Florida Southern College in 2010, and is a PhD candidate at the University of Missouri.

Though she has conducted many types of research, including chasing lizards through the Caribbean to study their spectral properties and behaviors, her graduate work has primarily focused on synthesis of air and water sensitive actinide

complexes. Alison's current research explores the forensics signatures in aged uranium oxides, particularly explores the forensics signatures in aged uranium oxides, particularly the chemical, morphological and isotopic changes that the materials undergo. She has explored these oxide materials using a wide variety of techniques, including Scanning Electron Microscopy, Inductively-Coupled Plasma Mass Spectrometry, and X-ray Absorption Spectroscopy.

Christopher "Chris" Ryan is a staff scientist in the stockpile radiochemistry group at Lawrence Livermore National Laboratory (LLNL). Since arriving at LLNL in the summer of 2011, Chris has been involved in a variety of projects serving customers with an array of interests. He completed modern radiochemical assessments of nuclear test data in support of studies for the Long Range Standoff (LRSO) weapon, was the lead investigator for a comparative study of historical prompt diagnostic methods, and was responsible for comprehensive analyses of historical nuclear test data. He is currently the lead radiochemist for a stockpile weapon system, in addition to working on a variety of post-detonation nuclear forensics projects.

Chris previously worked for the United States Nuclear Regulatory Commission (NRC) as a regional-based reactor operations and engineering inspector. He holds a B.S. and M.S. in nuclear engineering from Texas A&M University. His thesis research focused on quantifying the gamma ray background from structural materials surrounding radiation portal monitors in support of multilateral efforts to interdict smuggled nuclear materials.

Brent is currently a Nuclear Mechanical Engineer for the Nuclear Material Processing Group at Oak Ridge National Laboratory in Oak Ridge, TN. Prior to this, he was an NNSA Non-Proliferation Graduate Fellow for NA-26 at the Savanah River Site in Aiken, SC, where he provided Nuclear Safety and Criticality oversight. Brent is a regular participant in Institute of Nuclear Materials Management events. Brent completed his M.S. in Nuclear Engineering at North Carolina State University in 2011 with research in "Probabilistic Risk Assessment for Safeguards Inspection Verification." He completed his B.S. in Mechanical Engineering at the University of Tennessee with emphasis in remote systems.

Denise Lee is currently an R&D Associate in the Process Engineering Research Group in the Nuclear Security and Isotopes Technology Division at Oak Ridge National Laboratory (ORNL).

Denise graduated from the University of Wisconsic at Madison in December 2008 with B.S. and M.S. degrees in nuclear engineering. She earned a Ph.D. degree in nuclear engineering from the University of Tennessee in December 2013. Denise has approximately six years of experience in radiochemical equipment and process research and development as both a full time staff member and as an intern. She has participated in projects related to environmental management, national security, nuclear safeguards, and various aspects of the nuclear fuel cycle. She has recently been involved as a principle investigator in research projects ranging from safeguards in natural uranium conversion plants to evaluation of the chemical stability of organic solvents and ion exchange resins in radioactive environments.

E. Travis Gitau received his B.S. in Nuclear Engineering from Missouri University of Science and Technology in 2009. He received his M.S. in Nuclear Engineering with an emphasis in Nonproliferation from Texas A&M University in 2011. While at A&M his research focused on the development and evaluation of a safeguards system concept for pebble bed modular reactors. Travis joined PNNL full time as a safeguards analyst/engineer in 2011. At PNNL he spends the majority of his time focused in advanced safeguards concepts and approaches, international safeguards training and engagement, and treaty compliance.

Valerie Lewis is a safeguards applications and research scientist at Pacific Northwest National Laboratory in the Nonproliferation Technology and Safeguards Group. Val has applied her background in nonproliferation and terrorism to computational modeling techniques, information analytics and research in support of projects for nonproliferation, arms control and predicting and preventing illicit trafficking. She has applied her policy background in safeguards work and completed several papers and exercises on safeguards implementation, the Additional Protocol and Complementary Access. In 2011, Val spent a year in the International Atomic Energy Agency's division of public information providing analytical and research support for the department, and aided in the IAEA Fukushima response effort. Val received her MA in Nonproliferation and Terrorism Studies from the Monterey Institute of International Studies.

Michael McDaniel is a Senior Member of Technical Staff in the International Safeguards & Technical Systems department at Sandia National Laboratories. Michael has been involved in a number of international security and nonproliferation programs, from border security technical working groups, to arms control and safeguards projects, while being active in both the INMM and ESARDA communities. Michael has 10 years of experience in information science in the areas of international security, modeling and simulation, demography, natural resource management, and teaching. He joined Sandia after receiving a Master's degree from the University of California, Santa Barbara, where he studied computational models of human spatial decision making.

Maikael Thomas has been at Sandia for nine years working on a variety of large-scale projects focused on remote sensing, safeguards, and treaty verification. He has previously researched and developed solutions in remote sensing in the areas of software and hardware architecture, high-performance signal processing algorithms, and sensor phenomenology. He currently researches architectures for large-scale data systems, develops embedded systems, and creates next-generation technologies for safeguards and arms control. Maikael especially enjoys the intersection of international policy and novel technologies to solve challenging problems.

Maikael received both a Bachelor's and Master's Degree in Electrical Engineering from the University of Washington where he researched embedded systems, high-performance computing, and software for various medical imaging modalities. He does not miss the rain.

Dr. Jason Wilson joined Savannah River National Laboratory (SRNL) in June of 2012 as a Next Generation Safeguards Initiative (NGSI) Intern and transitioned to a Post-Doctoral Fellow, in November 2012 in the International Safeguards team within the Global Security division. Prior to that, he earned a BS and a MS in Physics from Western Illinois University and a Ph.D. in Nuclear Engineering from the University of Missouri. Before coming to SRNL, during his Ph.D. studies, his research was part of a project involving several faculty and graduate students on high temperature gas nuclear reactors (HTGR). This work focuses on the acquisition of thermal transpiration data through capillaries and porous medium for fission products of interest in HTGR and developing models to account for this behavior. During his post-doctoral fellowship Dr. Wilson had the opportunity to assist with two PDRDs, Mg Bed Reduction/Elimination and Alternate Tritium Production, two LDRDs, Authenticated Sensor Interface Device and Spent Fuel Cask Fissile Material Assay by Collimated Gamma-Neutron Sensing and Modeling, along with projects for International Safeguards, Survey of International Safeguards Challenges Posed by Small Modular Reactors (SMRs) and others.

J'Tia Taylor is a Nuclear Engineer in the Proliferation Analysis Section of the Technical Nonproliferation Policy Program within the Nuclear Engineering (NE) Division at Argonne National Laboratory. Her work primarily focuses on analysis of technology, materials and equipment and their possible application toward non-peaceful purposes. This includes domestic export control license reviews as well as international commodity identification training. J'Tia holds a degree in Industrial Engineering from Florida State University and advanced degrees in Nuclear Engineering from the University of Illinois at Urbana Champaign. Her dissertation research encompassed integration of operations research and nuclear engineering theory and techniques to analyze international nuclear fuel supply options. The analyses were accomplished using system dynamics tools and focused on material requirements, nonproliferation and economic measures. During her graduate studies she participated in assignments with several DOE labs in the areas of criticality safety, international safeguards, and fuel cycle modeling. Notably, she has worked with the Idaho National Laboratory (INL) on the Verifiable Fuel Cycle Simulation (VISION) model and analysis in support of the Advanced Fuel Cycle Initiative (AFCI). J'Tia was selected as Finalist for the 2011 White House Fellowship, designed to give exceptional young leaders work experience at the highest levels of federal government. She is also a Fellow of the World Nuclear University Summer Institute 2009 held in Oxford, England and organized by the World Nuclear Association (WNA).

Jennifer Dahnke is an NNSA Graduate Program Fellow in the Office of Safeguards Engagement at DOE/NNSA, where she supports projects with international partners on a variety of topics, including safeguards infrastructure development, enhancing safeguards implementation, and testing and deploying advanced safeguards technologies.

Prior to the fellowship, Jennifer was a graduate research assistant at the Center for Nonproliferation Studies in Monterey, where her work including writing profiles of Russia's nuclear facilities, compiling a comprehensive guide to Russian- and English-language online resources for Russia-related nonproliferation research, and planning and leading the first-ever peer-to-peer discussion group between the Center for Nonproliferation Studies and students, staff, and faculty from Tomsk Polytechnic University in Tomsk, Russia. During a 2012 internship at Lawrence Livermore National Laboratory, Jennifer analyzed the safeguards implications in a scenario involving undeclared use of a research reactor for plutonium production and recovery. Her policy knowledge encompasses the nuclear

fuel cycle, International Atomic Energy Agency safeguards, and regions of the former Soviet Union.

Jennifer holds a Bachelor of Arts in Physics and Russian Language and Culture from Colby College. She will receive her Master of Arts degree in 2014 in Nonproliferation and Terrorism Studies from the Monterey Institute of International Studies.

Organizer Biographies

Risa Haddal received her M.A. in International Policy Studies with a certificate in Nonproliferation from the Monterey Institute of International Studies (MIIS) in 2005. She then spent five years working in the non-proliferation policy field in Washington, DC and in 2010, began to work for Sandia National Laboratories. Her portfolio has concentrated on international nuclear safeguards cooperation and biological threat reduction. The current focus of her work includes nuclear safeguards cooperation with the Republic of Korea, France and Germany and she supports technical collaboration with Argentina, Brazil, the European Atomic Energy Agency (EURATOM), and the International Atomic Energy Agency (IAEA). Risa is also engaged in the development of biological risk management curriculum in the Middle East and North Africa (MENA) region risk management curriculum in the Middle East and North Africa (MENA) region and has extensive experience designing and implementing international workshops. Prior to Sandia, Risa worked for the U.S. Department of State from 2007 to 2010 in the Bureau of International Security and Nonproliferation's Office of Regional Affairs (ISN/RA) where she focused on implementation of nuclear nonproliferation policy in the Middle East. While at State, she conducted worked in the Austria, Belgium, France, Namibia, and the UAE. Between 2003 and 2007, Risa worked for the U.S. Department of the Treasury, the U.S. Department of Energy, the United Nations, and the James Martin Center for Nonproliferation Studies. She is a graduate of Scripps College in Claremont, California is a certified Project Management Professional (PMP).

James E. Doyle has been a nonproliferation and nuclear security specialist at Los Alamos National Laboratory since 1997. His professional focus is on systems analysis, strategic planning and policy development. Dr. Doyle holds a PhD in International Security Studies from the University of Virginia. Dr. Doyle has focused on defining educational requirements for nuclear security specialists and developing university training courses in this area. He is the coordinator for Los Alamos activities related to the Human Capital Development project of NNSA's Next Generation Safeguards Initiative. His edited Textbook "Nuclear Safeguards, Security and Non-proliferation: Achieving Security with Technology and Policy," in use at over two dozen university departments worldwide, focuses on the integration of technical and policy issues in the field of nuclear security. In 2009 Dr. Doyle hosted a workshop for university faculty from across the nation interested in strengthening academic instruction in nuclear safeguards, security and nonproliferation. He was also course director for an IAEA-sponsored international training course on States Systems of Accounting and Control for nuclear materials held at the University of Missouri in 2009. Dr. Doyle designed and directed introductory nuclear safeguards and security courses for students and technical staff at Los Alamos in 2008-2010. Lectures from this series of courses have been selected by the IAEA to be featured on a safeguards knowledge platform available to all member states. Dr. Doyle's articles on nuclear security issues have appeared in Survival, Defense News, Science and Global Security, Nonproliferation Review, Arms Control Today, Bulletin of the Atomic Scientists, FAS Public Interest Report, Comparative Strategy, Strategic Review and "Abolishing Nuclear Weapons: A Debate," by James Acton and George Perkovich.

General Evaluation				
NGSPN				
1.	I am satisfied with the NGSPN event.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
2.	The quality and content of the materials and presentations met my expectations.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
3.	This event met objectives and expectations I had prior to the workshop.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
4.	The instructors were aware/familiar with the topic they discussed and its relevance to the international nonproliferation regime.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
5.	The ability, clarity and completeness of the presenters were adequate when responding to participant's questions.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Comments (Optional)				
6.	The facilities used for the workshop was appropriate for the event and adequate for the number of students			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional) The first day had a small room but it wasn't too bad.				
7.	The tours provided useful insight into SNL's and LANL's nuclear safeguards and nonproliferation capabilities in general.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) I think the TA-55 tour especially helped to solidify the points of safeguards.				
8.	The workshop was a useful opportunity to network with peers at other U.S. national labs.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional) I think it was very useful and I got to meet a lot of new people. I think follow-through on that will be important.				
9.	What was your favorite or most useful topic or exercise of the course?			
Comments (Optional) I really enjoyed the TA-55 tour and it really helped me understand the point of safeguards.				
10.	What was your least favorite or least useful topic or exercise of the course?			
Comments (Optional) I think the Biological threat presentation was hard to relate to personally. It may have been useful to others.				
11.	The information I learned in the NGSPN workshop was important and			

	relevant to my current position.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1

Comments (Optional)
The information I learned will help me focus my effort to get into safeguards. I learned about some funding opportunities etc.

12.	Based on this workshop, what topics should receive the most attention in subsequent NGSPN events?

Comments (Optional)
I think the tours with the opportunity to ask questions is important.

13.	What do you think future NGSPN events should include?

Comments (Optional)

14.	Overall, how do you think the NGSPN workshop could be improved?

Comments (Optional)
I think there are secondary aspects to establishing a true "network" like the website. The encouragement to stay in touch will improve the workshop as a whole.

General Evaluation				
NGSPN				
1.	I am satisfied with the NGSPN event.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
2.	The quality and content of the materials and presentations met my expectations.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
3.	This event met objectives and expectations I had prior to the workshop.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
4.	The instructors were aware/familiar with the topic they discussed and its relevance to the international nonproliferation regime.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
5.	The ability, clarity and completeness of the presenters were adequate when responding to participant's questions.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1

Comments (Optional)				
6.	The facilities used for the workshop was appropriate for the event and adequate for the number of students			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
7.	The tours provided useful insight into SNL's and LANL's nuclear safeguards and nonproliferation capabilities in general.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
8.	The workshop was a useful opportunity to network with peers at other U.S. national labs.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
9.	What was your favorite or most useful topic or exercise of the course?			
Comments (Optional) Visiting LANL's Pu production facility was the highlight of my week, and possibly my career thus far.				
10.	What was your least favorite or least useful topic or exercise of the course?			
Comments (Optional) I appreciated all of the topics we discussed.				
11.	The information I learned in the NGSPN workshop was important and			

	relevant to my current position.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) Absolutely. I've more ideas for opportunities to pursue in the future.				
12.	Based on this workshop, what topics should receive the most attention in subsequent NGSPN events?			
Comments (Optional) Obviously, safeguards is why we are here but I think it's imperative that we continue to discuss topics related to nonpro. as well.				
13.	What do you think future NGSPN events should include?			
Comments (Optional)				
14.	Overall, how do you think the NGSPN workshop could be improved?			
Comments (Optional) I hope that we can emphasize the "network" aspect of these workshops. The sharing of ideas and possibilities for collaboration are immense and ~~could~~ should continue beyond the actual workshop.				

General Evaluation				
NGSPN				
1.	I am satisfied with the NGSPN event.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
2.	The quality and content of the materials and presentations met my expectations.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
3.	This event met objectives and expectations I had prior to the workshop.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
4.	The instructors were aware/familiar with the topic they discussed and its relevance to the international nonproliferation regime.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
5.	The ability, clarity and completeness of the presenters were adequate when responding to participant's questions.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Comments (Optional)				
6.	The facilities used for the workshop was appropriate for the event and adequate for the number of students			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional)				
7.	The tours provided useful insight into SNL's and LANL's nuclear safeguards and nonproliferation capabilities in general.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
8.	The workshop was a useful opportunity to network with peers at other U.S. national labs.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
9.	What was your favorite or most useful topic or exercise of the course?			
Comments (Optional) The				
10.	What was your least favorite or least useful topic or exercise of the course?			
Comments (Optional) The crypto lecture (only due to placement)				
11.	The information I learned in the NGSPN workshop was important and			

	relevant to my current position.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				

12.	Based on this workshop, what topics should receive the most attention in subsequent NGSPN events?
Comments (Optional) For those who don't have an instrumentation background, the discussion of instruments would be useful before their crypto lecture	

13.	What do you think future NGSPN events should include?
Comments (Optional) Continue site tours, discussions w/ experts	

14.	Overall, how do you think the NGSPN workshop could be improved?
Comments (Optional)	

General Evaluation				
NGSPN				
1.	I am satisfied with the NGSPN event.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
2.	The quality and content of the materials and presentations met my expectations.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
3.	This event met objectives and expectations I had prior to the workshop.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
4.	The instructors were aware/familiar with the topic they discussed and its relevance to the international nonproliferation regime.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
5.	The ability, clarity and completeness of the presenters were adequate when responding to participant's questions.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1

Comments (Optional)				
6.	The facilities used for the workshop was appropriate for the event and adequate for the number of students			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
7.	The tours provided useful insight into SNL's and LANL's nuclear safeguards and nonproliferation capabilities in general.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
8.	The workshop was a useful opportunity to network with peers at other U.S. national labs.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
9.	What was your favorite or most useful topic or exercise of the course?			
Comments (Optional) Seeing all the safeguards and other equipment in person and getting to ask questions of people who designed and/or use them.				
10.	What was your least favorite or least useful topic or exercise of the course?			
Comments (Optional)				
11.	The information I learned in the NGSPN workshop was important and			

	relevant to my current position.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) I have read a lot about the work that SNL and LANL do in safeguards/nonproliferation, but nothing compares to seeing them in person				
12.	Based on this workshop, what topics should receive the most attention in subsequent NGSPN events?			
Comments (Optional) What the host Lab is particularly knowledgeable about and how that fits into the Lab complex as a whole and the current scope of research in the field.				
13.	What do you think future NGSPN events should include?			
Comments (Optional) • As much hands-on as possible • group dinners (like this time) to facilitate conversations and brainstorming				
14.	Overall, how do you think the NGSPN workshop could be improved?			
Comments (Optional)				

General Evaluation				
NGSPN				
1.	I am satisfied with the NGSPN event.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
2.	The quality and content of the materials and presentations met my expectations.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
3.	This event met objectives and expectations I had prior to the workshop.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
4.	The instructors were aware/familiar with the topic they discussed and its relevance to the international nonproliferation regime.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
5.	The ability, clarity and completeness of the presenters were adequate when responding to participant's questions.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Comments (Optional)				
6.	The facilities used for the workshop was appropriate for the event and adequate for the number of students			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional)				
7.	The tours provided useful insight into SNL's and LANL's nuclear safeguards and nonproliferation capabilities in general.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional)				
8.	The workshop was a useful opportunity to network with peers at other U.S. national labs.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
9.	What was your favorite or most useful topic or exercise of the course?			
Comments (Optional) Facility tours				
10.	What was your least favorite or least useful topic or exercise of the course?			
Comments (Optional) Waiting around for security & procedures while at LANL				
11.	The information I learned in the NGSPN workshop was important and			

	relevant to my current position.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				

12.	Based on this workshop, what topics should receive the most attention in subsequent NGSPN events?
Comments (Optional)	A broad overview of different safeguards-related tech. and progams to capture the cross-disciplinary nature of Sg.

13.	What do you think future NGSPN events should include?
Comments (Optional)	Time for an exclusively participant-oriented discussion. Presentations by participants about their work.

14.	Overall, how do you think the NGSPN workshop could be improved?
Comments (Optional)	Holding these meetings on a more consistent basis in order to better maintain the network.

General Evaluation				
NGSPN				
1.	I am satisfied with the NGSPN event.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) GREAT NETWORKING OPPORTUNITIES AND TALKS. FACILITY TOURS WERE ALL EXCELLENT				
2.	The quality and content of the materials and presentations met my expectations.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
3.	This event met objectives and expectations I had prior to the workshop.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) MY SAFEGUARDS KNOWLEDGE WAS A LITTLE RUSTY PRIOR TO COMING - THIS WAS A GREAT REFRESHER IN MANY AREAS.				
4.	The instructors were aware/familiar with the topic they discussed and its relevance to the international nonproliferation regime.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) ALWAYS NICE TO LEARN FROM PEOPLE ACTUALLY DOING THE WORK, AND IN MANY CASES THE EXPERTS IN THEIR FIELDS				
5.	The ability, clarity and completeness of the presenters were adequate when responding to participant's questions.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1

Comments (Optional)				
6.	The facilities used for the workshop was appropriate for the event and adequate for the number of students			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
7.	The tours provided useful insight into SNL's and LANL's nuclear safeguards and nonproliferation capabilities in general.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
8.	The workshop was a useful opportunity to network with peers at other U.S. national labs.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) GREAT TO SEE OTHER PROFESSIONALS FROM AROUND THE COMPLEX; DEVELOPED WORKING RELATIONSHIPS I CAN USE IN THE FUTURE				
9.	What was your favorite or most useful topic or exercise of the course?			
Comments (Optional) THE LANL Pu FACILITY WAS AN EXCELLENT TOUR - DON'T KNOW WHEN I WOULD HAVE SEEN THE FACILITY OTHERWISE				
10.	What was your least favorite or least useful topic or exercise of the course?			
Comments (Optional) THE CHEM/BIO TALKS WERE VERY INTERESTING, BUT I FEEL LIKE ~~THEY CAUSED~~ THE TIME MAY HAVE BEEN BETTER SPENT IN OTHER NUCLEAR-RELATED TALKS.				
11.	The information I learned in the NGSPN workshop was important and			

	relevant to my current position.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	(3)	2	1
Comments (Optional) NOT THE WORKSHOP'S FAULT THOUGH - CURRENTLY TRYING TO TRANSITION FROM WEAPONS FOCUS TO SAFEGUARDS FOCUS				

12.	Based on this workshop, what topics should receive the most attention in subsequent NGSPN events?
Comments (Optional)	

13.	What do you think future NGSPN events should include?
Comments (Optional)	

14.	Overall, how do you think the NGSPN workshop could be improved?
Comments (Optional) I THOUGHT IT WAS A GOOD POLICY/TECHNICAL BALANCE. I THINK SOME LESS RELEVANT TOPICS COULD BE REPLACED WITH MORE NUCLEAR-FOCUSED TALKS (SEE ABOVE)	

General Evaluation				
NGSPN				
1.	I am satisfied with the NGSPN event.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) Very focused presentations. Plenty of opportunities for networking.				
2.	The quality and content of the materials and presentations met my expectations.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) Content was current and relavent.				
3.	This event met objectives and expectations I had prior to the workshop.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional)				
4.	The instructors were aware/familiar with the topic they discussed and its relevance to the international nonproliferation regime.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) All speaker where the expert not just the presenter. Alowed for effective questions				
5.	The ability, clarity and completeness of the presenters were adequate when responding to participant's questions.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1

Comments (Optional) Same as above				
6.	The facilities used for the workshop was appropriate for the event and adequate for the number of students			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional) made it work. There could have been better rooms at times.				
7.	The tours provided useful insight into SNL's and LANL's nuclear safeguards and nonproliferation capabilities in general.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) Great tours. Relavent				
8.	The workshop was a useful opportunity to network with peers at other U.S. national labs.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) The exercise plans helped this alot.				
9.	What was your favorite or most useful topic or exercise of the course?			
Comments (Optional) The physical protection tour at T-6 was the new for me. So it was a highlight.				
10.	What was your least favorite or least useful topic or exercise of the course?			
Comments (Optional) Biological Threat Reduction if I had to choice				
11.	The information I learned in the NGSPN workshop was important and			

	relevant to my current position.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional) The info presented allowed me to begin to see opuntunity to use our capabilities and colaborate				
12.	Based on this workshop, what topics should receive the most attention in subsequent NGSPN events?			
Comments (Optional) IAEA current needs. Any domestic drivers/deployment.				
13.	What do you think future NGSPN events should include?			
Comments (Optional) Discussions of future opuntunites for collaboration.				
14.	Overall, how do you think the NGSPN workshop could be improved?			
Comments (Optional) I would like to see discussion on how the groups will continue to work together.				

General Evaluation				
NGSPN				
1.	I am satisfied with the NGSPN event.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
2.	The quality and content of the materials and presentations met my expectations.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
3.	This event met objectives and expectations I had prior to the workshop.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) Exceeded my expectations.				
4.	The instructors were aware/familiar with the topic they discussed and its relevance to the international nonproliferation regime.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
5.	The ability, clarity and completeness of the presenters were adequate when responding to participant's questions.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1

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Comments (Optional)				
6.	The facilities used for the workshop was appropriate for the event and adequate for the number of students			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) Except for the first day conference room @ SNL but it happens, no worries.				
7.	The tours provided useful insight into SNL's and LANL's nuclear safeguards and nonproliferation capabilities in general.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) PF-4 - one of a kind. Rare opportunity that was great				
8.	The workshop was a useful opportunity to network with peers at other U.S. national labs.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) There was a good cross section of backgrounds and experience levels.				
9.	What was your favorite or most useful topic or exercise of the course?			
Comments (Optional) Geospatial was great as it's not performed @ all labs. C/S presentation, while well known material, was presented in a great way.				
10.	What was your least favorite or least useful topic or exercise of the course?			
Comments (Optional) Information Security? was just boring/hard to keep my attention				
11.	The information I learned in the NGSPN workshop was important and			

	relevant to my current position.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1
Comments (Optional)				
12.	Based on this workshop, what topics should receive the most attention in subsequent NGSPN events?			
Comments (Optional) Unique facilities				
13.	What do you think future NGSPN events should include?			
Comments (Optional) N/A				
14.	Overall, how do you think the NGSPN workshop could be improved?			
Comments (Optional) N/A				

General Evaluation				
NGSPN				
1.	I am satisfied with the NGSPN event.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) This trip was an excellent opportunity for networking + learning. Awesome				
2.	The quality and content of the materials and presentations met my expectations.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional)				
3.	This event met objectives and expectations I had prior to the workshop.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
4.	The instructors were aware/familiar with the topic they discussed and its relevance to the international nonproliferation regime.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional)				
5.	The ability, clarity and completeness of the presenters were adequate when responding to participant's questions.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1

There were times we were a bit rushed for time, otherwise it was great.

Comments (Optional)				
6.	The facilities used for the workshop was appropriate for the event and adequate for the number of students			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional) Some spaces were a little tight but I think the number of this group was perfect.				
7.	The tours provided useful insight into SNL's and LANL's nuclear safeguards and nonproliferation capabilities in general.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional)				
8.	The workshop was a useful opportunity to network with peers at other U.S. national labs.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
9.	What was your favorite or most useful topic or exercise of the course?			
Comments (Optional) Plutonium facility at LANL was by far the best tour I have ever been on. (TA-55)				
10.	What was your least favorite or least useful topic or exercise of the course?			
Comments (Optional) The course that was least useful to me was the cryptology talk. I learned a lot though the talk, now it may be of more use to me next time.				
11.	The information I learned in the NGSPN workshop was important and			

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	relevant to my current position.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional)				

12.	Based on this workshop, what topics should receive the most attention in subsequent NGSPN events?
Comments (Optional)	

13.	What do you think future NGSPN events should include?
Comments (Optional)	A trip to D.C. to see the D.C. office + meet clients

14.	Overall, how do you think the NGSPN workshop could be improved?
Comments (Optional)	Moving away from lecture based courses + moving towards more lectures where we need to work together to create something or "solve" a Safeguards problem

General Evaluation				
NGSPN				
1.	I am satisfied with the NGSPN event.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) The presenters where very open to Questions at the event and after the event by email or Phone.				
2.	The quality and content of the materials and presentations met my expectations.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) Very good Presentations, Very diverse, and very informative				
3.	This event met objectives and expectations I had prior to the workshop.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) Exceeded my expectations, ~~exp~~ couldn't have been better.				
4.	The instructors were aware/familiar with the topic they discussed and its relevance to the international nonproliferation regime.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) Instructors were very good at Presentations along with answering Questions				
5.	The ability, clarity and completeness of the presenters were adequate when responding to participant's questions.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1

Comments (Optional) Would answer any question or find the answer to your Questio				
6.	The facilities used for the workshop was appropriate for the event and adequate for the number of students			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional)				
7.	The tours provided useful insight into SNL's and LANL's nuclear safeguards and nonproliferation capabilities in general.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) The Tours were very diverse and offered a great Learning experience that is unavailable except by these typesof Tours				
8.	The workshop was a useful opportunity to network with peers at other U.S. national labs.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
(5)	4	3	2	1
Comments (Optional) Great groupof People and a great opportunity to talk to other young Professionals				
9.	What was your favorite or most useful topic or exercise of the course?			
Comments (Optional) The tours were very informative and give us an opportunity to see things that can only beseen at these facilities.				
10.	What was your least favorite or least useful topic or exercise of the course?			
Comments (Optional) Too structured a larger open discussion time				
11.	The information I learned in the NGSPN workshop was important and			

	relevant to my current position.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	(4)	3	2	1
Comments (Optional)				

12.	Based on this workshop, what topics should receive the most attention in subsequent NGSPN events?
Comments (Optional)	Tours that give the attendees an opportunity To see unique facilities that can't be seen anywhere else

13.	What do you think future NGSPN events should include?
Comments (Optional)	Open discussion time with the SME instructors

14.	Overall, how do you think the NGSPN workshop could be improved?
Comments (Optional)	All the talks were focused on safeguards from a R&D Point of View, a presentation from a former inspectors to give an IAEA Representation of the Safeguards issued they saw.

General Evaluation				
NGSPN				
1.	I am satisfied with the NGSPN event.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5				
Comments (Optional)				
2.	The quality and content of the materials and presentations met my expectations.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5				
Comments (Optional)				
3.	This event met objectives and expectations I had prior to the workshop.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	4			
Comments (Optional)				
4.	The instructors were aware/familiar with the topic they discussed and its relevance to the international nonproliferation regime.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	4			
Comments (Optional) I do not know how to resolve this, but I have the same problem with my courses so I will put the comment down in hopes of getting some ideas. There was significant overlap in the areas discussed and a sometimes the information delivered was too basic, which made for a tough time to keep schedule once the speaker started getting questions. This is very tough to overcome when you have a large variety of participant backgrounds and a large number of speakers. Any ideas on how to reduce this would be greatly appreciated for the next course...				

5.	The ability, clarity and completeness of the presenters were adequate when responding to participant's questions.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5				
Comments (Optional)				
6.	The facilities used for the workshop was appropriate for the event and adequate for the number of students			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5				
Comments (Optional)				
7.	The tours provided useful insight into SNL's and LANL's nuclear safeguards and nonproliferation capabilities in general.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5				
Comments (Optional)				
8.	The workshop was a useful opportunity to network with peers at other U.S. national labs.			
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
		3		
Comments (Optional) This is the only area I think can be improved. The schedule was so tight and full that we did not have much planed time to interact with the members of the network, hear what things they are working on, and also I would have liked more time with the various presenters. The presenters were often cut off from questions due to keeping with the schedule. This network proved to be a very enthusiastic and curious group, I don't think LANL/SNL could have planned for that.				
9.	What was your favorite or most useful topic or exercise of the course?			

Comments (Optional) Obviously the tours of PF-4 and DAHRT were the most amazing things we could have seen. I am very grateful for that opportunity. I think it was very important for SNL and LANL to show the network what they can do, and they did a very good job.	
10.	What was your least favorite or least useful topic or exercise of the course?
Comments (Optional) The aquilla tour was very long, I would have rather spent some time in the museum or with the safeguards experts who do the R&D that allows for private companies to serve the function aquilla does. (just my opinion, others seemed very engaged).	
11.	The information I learned in the NGSPN workshop was important and relevant to my current position.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	4			

Comments (Optional)	
12.	Based on this workshop, what topics should receive the most attention in subsequent NGSPN events?
Comments (Optional) What are the members of the network working on and what are the capabilities of the host lab(s).	
13.	What do you think future NGSPN events should include?
Comments (Optional) More time to network and brainstorm.	
14.	Overall, how do you think the NGSPN workshop could be improved?
Comments (Optional) I think that the network should continue to be supported and a larger constituency can be developed. Integration with INMM/ANS would be beneficial. I think that the Network should establish a charter and membership and resurrect the website.	