

NNSA Graduate Fellowship Program Class of 2019-2020 Fellow Posters

Jennifer Abdulla

Savannah River Project Management Office (NA-APM-1.4)



Overview

- Learned about contracts in the nuclear industry in one of the project management offices.
- Advanced my Arabic language capabilities.
- Traveled to different places and learned valuable information about different organizations and industries within global security fields.

Outcomes

- Completed training on the disarmament and nonproliferation of chemical, biological, and nuclear weapons in Den Haag, Netherlands through a program with the Organisation for the Prohibition of Chemical Weapons.
- Completed trainings and classes to earn certifications in nuclear weapons through the Defense Nuclear Weapons School in Albuquerque, New Mexico.
- Learned the value of networking within the federal government and cultivated new relationships.



Taking the unpaved, windy road that leads into the unknown future on unfamiliar territory.



Office

NA-APM-1.4
Savannah River
Site

Education

MA, Criminology, Arizona State University
MA, Global Security, Arizona State University
BS, Criminology, Arizona State University

“This fellowship has provided much insight into how the federal government operates in the nuclear industry. There is nothing more rewarding than the satisfaction of knowing you did your job with all your heart and others recognize this.”

Kelsae Adame Livermore Field Office (NA-LL)



Overview

Lawrence Livermore National Laboratory's Global Material Security team supports work for the NA-21 Office of Global Material Security (GMS). I worked on projects throughout GMS and had a large focus on international nuclear security regulations.



Kelsae visits the Hanford Site during orientation in Washington.

Outcomes

The international nuclear security team within GMS is separated into functional groups. The regulations and inspections functional team works with foreign partners in these areas. I helped with assessments on multiple countries, looking at regulated areas such as physical protection systems and nuclear material accountability and control.

These efforts help to improve the worldwide security infrastructure of sensitive materials through a better understanding of how partner nuclear security is handled at a national level.



Office

NA-LL Livermore
Field Office

Education

MEng, Nuclear Engineering, University of California, Berkeley

"This fellowship gave me a great insight into the many facets of nuclear security. Working at a national laboratory gave me an understanding of how headquarter missions are implemented at sites."

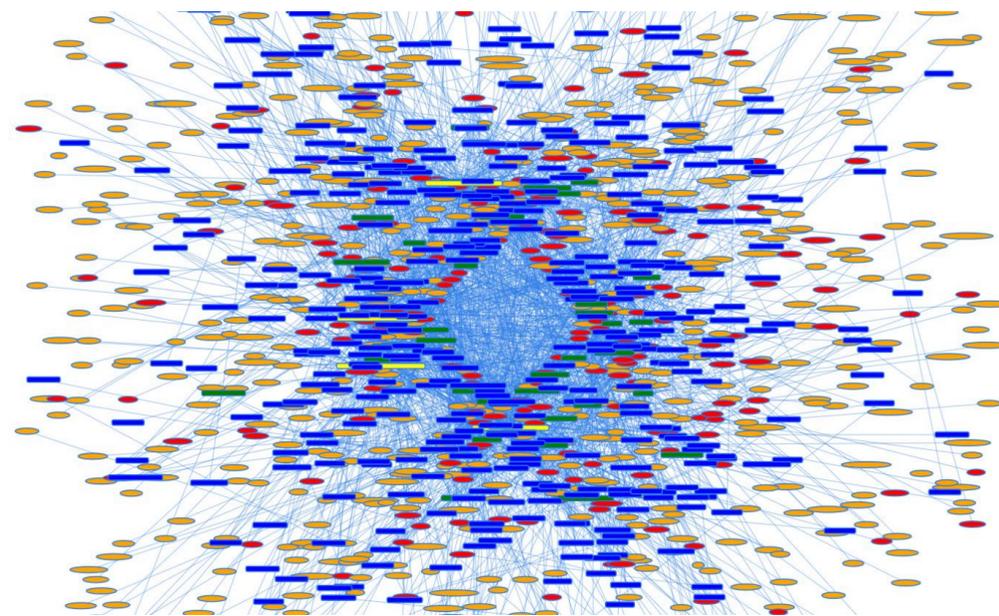
Wardah Amir

Office of Nuclear Smuggling Detection and Deterrence (NA-213)



Overview

The Office of Nuclear Smuggling Detection and Deterrence (NSDD) provides fellows the opportunity to learn different areas of the program by supporting activities and taking ownership of certain projects. I was assigned to lead a data project for NSDD to analyze data collected on events attended or supported by NSDD (~FY19) and produce visualizations that are useful for program management.



This image shows the large amount of data that was analyzed in this project.

Outcomes

With its engagements spread out in more than 70 countries around the world, NSDD generates and collects a lot of travel and event data. This project complements some of the other efforts undertaken by the program to organize NSDD's data and systems. The main outcome of the project was to emphasize the usability of the data collected by NSDD, particularly as a resource for program management.

This project allowed me the opportunity to lead and work with a team at Sandia National Laboratories to clean up the collected data and produce visualizations. The data visualizations were presented to NSDD management on March 16, 2020. A discussion was convened on improving the consistency and accuracy with which data is collected and how it can be analyzed to bolster the overall NSDD mission.



Office

NA-213 Office of Nuclear Smuggling Detection and Deterrence

"I appreciate my fellowship with NSDD for its leadership that trusted my ability to lead, experiences that provided me the opportunity to grow, and colleagues that I will call friends no matter where I go."

Education

MA, Security Policy Studies, George Washington University
BS, Chemical Engineering, Texas A&M University

Simón Arias

Office of High Explosives and Energetics (NA-193)



Overview

Energetic materials (EM) such as high explosives (HE) are vital to the nuclear stockpile, along with their characterization, testing, and performance.

To ensure safety and reliability, HE materials must pass rigorous analytical evaluation involving synthesis, formulation, testing, and performance. Without an evaluation capability, HE parts cannot be evaluated.

The Energetic Materials Characterization (EMC) project began the critical decision (CD) process. Once completed, it will resolve these capability gaps:

- Lack of temperature control on testing and equipment
- Loss of laboratory utilities such as deionized water
- Electrical outages resulting in equipment failures
- No safe egress in the event of an emergency
- No potable water or restrooms



The HE Chemistry and Characterization facility (left) and the Detonator R&D Lab (right), about 70 years old; the EMC would replace both facilities.

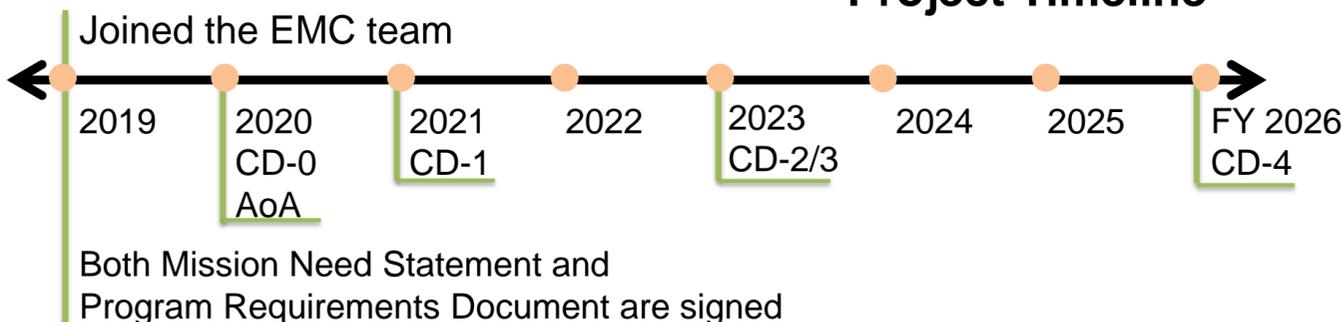
Outcomes

I joined the team as the EMC project prepared for CD-0. Recently completing the ESAAB-E, the team initiated an Analysis of Alternatives (AoA) study plan for the EMC project.



Conceptual design for the EMC facility.

Project Timeline



Office
NA-193 Office of High Explosives and Energetics

“My unique fellowship experience provided me both programmatic and high-level exposure within NNSA. As an active player in the front-office, I shared my bandwidth across our five programs, providing additional support for essential, mission-scope projects and functions. The leaders I’ve worked alongside are life-long role models who have shaped my perspective as I navigate my career path.”

Education

MA, International Relations and Economics, Johns Hopkins, School of Advanced International Studies
BA, Religion and Politics, University of Bridgeport (UB)
BA, International Political Economy and Diplomacy, UB

Whitney Baillie

Office of Material Disposition (NA-233)



Overview

The Office of Material Disposition's mission is to safely and securely dispose of surplus weapons-grade plutonium and uranium. Our office's International Plutonium Disposition program coordinates with international partners to share best practices of special nuclear material disposition.



NA-23 Office of Material Management and Minimization team in Tokyo, Japan.

Outcomes

In support of the International Plutonium Disposition program, I organized both domestic and international meetings on plutonium management with a variety of international partners, including the United Kingdom and Japan. My contributions involved a high level of cooperation and planning with our foreign counterparts and with partner offices, agencies, laboratories, and sites.

International collaboration on special nuclear material disposition is integral to global threat reduction. Maintaining relationships with international partners is imperative to addressing challenges, devising innovative process improvements, and ensuring effective plutonium disposal both in the U.S. and abroad.



Office
NA-233 Office of
Material Disposition

“Working for the International Plutonium Disposition program helped develop my technical competence on nuclear topics while allowing me to cultivate deep understanding of other countries’ perspectives on nonproliferation issues.”

Education
PhD, Political Science, Syracuse University (anticipated 2020)
MPA, National and International Security, Syracuse University

Jessica Bateman

Office of Nuclear Incident Policy and Cooperation (NA-81)



Overview

I supported the International Medical Management of Radiological Injuries Course (I-Med) through NATO in Rome, Italy, and was subsequently tasked with updating the course as a whole. The course provides best practices on effective medical response to radiological incidents through lectures, practical activities, and exercises for medical physicians, nurses, first responders, radiation protection specialists, and emergency medical managers.

Outcomes

I supported the I-Med course in Rome from the beginning, from crafting the agenda, working with Italian partners, to helping run the course while we were on site. The course had 23 participants from four different NATO nations and included the Commander of the Italian Medical and Veterinary School, eight medical doctors, and seven nurses.



Participating in the International Medical Management of Radiological Injuries Course in Rome, Italy.

After completing the course, I started updating the framework of the I-Med course, including the slide decks, practical exercises, and supporting documents.

Overall, this project aided me in advancing my project management skills and furthered the office's mission to enhance partner countries' emergency preparedness and response capabilities.



Office

NA-81 Office of Nuclear Incident Policy and Cooperation

"The fellowship has opened my eyes to new career paths and pushed me out of my professional comfort zone."

Education

MA, International Affairs, George Washington University

Ryan Bolt

Office of Defense Nuclear Nonproliferation (NA-20)



Overview

On February 10-14, 2020, the U.S. Department of Energy led the U.S. delegation to the 2020 International Atomic Energy Agency (IAEA) International Conference on Nuclear Security (ICONS) in Vienna, Austria.

Outcomes

I coordinated briefing memos and talking points for the Secretary of Energy, Under Secretary for Nuclear Security and NNSA Administrator, and Deputy Administrator for Defense Nuclear Nonproliferation ahead of their meetings with international counterparts at the 2020 IAEA ICONS event.



2020 International Atomic Energy Agency International Conference on Nuclear Security.

This was a unique opportunity to work with interagency partners to prepare senior members of the U.S. delegation for bilateral and multilateral meetings on advancing global nuclear security. As a member of the U.S. delegation, it was a privilege to work with—and learn from—the many talented professionals supporting NNSA’s mission.



Office

NA-20 Office of Defense Nuclear Nonproliferation

Education

MA, Nonproliferation and Terrorism Studies, Middlebury Institute of International Studies at Monterey

“This fellowship connected me with fantastic colleagues, mentors, and leaders throughout the Nuclear Security Enterprise.”

Blake Campbell

Office of Nuclear Safeguards (NA-242)



Overview

The Office of Nuclear Export Controls (NA-242) reduces the risk of diversion of nuclear, missile, and chemical and biological dual-use materials, equipment, technologies, software, and information to non-peaceful programs. NA-242 accomplishes this by strengthening U.S. and global efforts to detect, interdict, and prevent such diversions.

Outcomes

I helped the office to reduce the threat of proliferation by conducting technical and end-user risk assessments of dual-use export licenses and foreign engagement proposals for chemical, biological, and nuclear proliferation concerns. I attended interagency export control licensing meetings with my colleagues to represent NNSA's export control equities and argue our positions and routinely attended the Operating Committee,



Blake Campbell at export control training in Malaysia.

the interagency dispute resolution body for export control license application disagreements. In the future, I hope to also attend WMD interdiction meetings.

In November, I was afforded the opportunity to travel with a team of experts to deliver training to Malaysian export control officials to build their capacity to conduct effective export license application reviews.



Office

NA-242 Office of Nuclear Export Controls

Education

MA, Security Studies, Georgetown University (anticipated August 2020)
BA, International Affairs, University of Georgia

“This fellowship offered me the opportunity to gain valuable experience in the government where I can apply my previous experience in nonproliferation and my coursework in security and technology.”

Miguel Cortez

Sandia Field Office (NA-SN)



Overview

I worked in a number of projects involving Sandia National Laboratories (SNL) facilities to assist in assessing SNL's performance. The majority of these are multiyear research and development projects revolving around state-of-the-art technology. Furthermore, I formed part of the review of Laboratory-Directed R&D process as well as the oversight of the B61-12.



Fellows tour the Waste Isolation Pilot Plant in Carlsbad, NM.

Outcomes

In this position I gained knowledge on the topics of foreign nuclear proliferation, nuclear fuel cycle, nuclear weapons, nuclear material security, analysis of raw information, and the production of finished analytic assessments.

Being part of the Sandia Field office enabled me to visit various sites and gave me a better understanding of how the sites all intertwine to form part of the greater Nuclear Security Enterprise. Attending various nuclear weapon courses also helped in the oversight of the B61-12.



Description
NA-SN Sandia
Field Office

"Being part of NNSA helped me see and be a part of the application of the science I had studied about."

Education
MS, Physics, The University of Texas at El Paso

Cesar E. Dominguez

Los Alamos Field Office (NA-LA)



Overview

As part of the U.S. Department of Energy and NNSA mission, the Los Alamos National Laboratory (LANL) is a design and production laboratory that provides scientific and engineering support to national security programs, as well as support in areas of science, energy, and environmental management. In my role, I assisted the Los Alamos Field Office (NA-LA) in oversight of these activities.



Fellow tour of the Waste Isolation Pilot Plant in 2019.

Outcomes

Adjacent to the laboratory, NA-LA oversees management, security, quality assurance, environment, health, and safety of the national and nonproliferation security missions at LANL. Through my fellowship I worked in oversight alongside Mission Assurance and Infrastructure, under the Landlord and Stewardship Program, primarily in the area of Waste Management, which is a major part of the mission at Los Alamos.

Consecutively, I shadowed the Nuclear Safety and Engineering Readiness and Facility Representatives under the Technical Operations group. The major take away from my fellowship is that I had amazing opportunities in which I saw how the Management and Operations contractor conducted work and how the NNSA Field Office cooperated to execute and facilitate the mission and its goals. From being inside an office, to walking down facilities, opportunities are endless as an NNSA Graduate Fellow.



Office

NA-LA Los Alamos
Field Office

Education

MS, Mechanical Engineering, 3D Engineering and Additive Manufacturing, University of Texas at El Paso

“Being a fellow for the Los Alamos Field Office will be an experience I will cherish for a lifetime.”

Daniel Ellis

Los Alamos Field Office (NA-LA)



Overview

My fellowship was spent learning Nuclear Criticality Safety (NCS) and the roles of the U.S. Department of Energy (DOE) and the Maintenance and Operations contractors in this capacity. DOE oversight responsibilities include performing assessments, walkdowns of operations, and document reviews. NCS reports directly to Nuclear Safety, Engineering, and Readiness and is closely linked to Field Operations at the Los Alamos Field Office.



Flat-Top Critical Assembly.

Source: <https://permalink.lanl.gov/object/tr?what=info:lanl-repo/lareport/LA-UR-16-27378>

Outcomes

I was involved in three assessments. The first was part of a five-system Safety System Oversight assessment, where I reviewed the TA-55 Criticality Alarm System. The second was an assessment of the NCS Division's Program Improvement Plan, which had support from NA-50. The final assessment was on the implementation of TA-55-AP-522, which outlines the NCS Program at TA-55.

I also provided technical basis for the approval of a variance to SD130, which set a new limit to the enrichment of heat-source plutonium. This variance should enable Operations to increase production of Radioisotope Thermoelectric Generators for space applications. Outside of these activities, my role in the Field Office was reviewing Criticality Safety Evaluation Documents produced by the NCS Division at Los Alamos National Laboratory.



Office

NA-LA Los Alamos
Field Office, Nuclear
Criticality Safety

Education

MS, Chemical Engineering, New Mexico State University
BS, Chemical Engineering, New Mexico State University

“The fellowship provided me with the opportunity to get my foot in the door of the government sector. It also showed me how complex the nuclear enterprise mission is and how DOE works together with other government agencies and contractors to achieve it.”

Arnold Jesse Eng Los Alamos National Laboratory Project Management Office (NA-APM-1.5)



Overview

The Los Alamos National Laboratory (LANL) is home to several NNSA missions. NNSA's LANL Project Management Office is responsible for oversight of large capital projects essential for new and continuing capabilities to meet these missions. During my fellowship, I assisted in the design oversight of a radioactive waste facility.

Outcomes

I assisted the NNSA Acquisition and Project Management Office at Los Alamos with the design oversight of the proposed Transuranic Liquid Waste Treatment Facility (TLW). Completion of this project will give LANL the ability to retire an aging facility and the versatility to respond to an evolving mission.



From left, former fellows J. Seth Dustin (2018-19) and Jonathan Vander Wiel (2017-18).

In addition to learning from the amazing people at NNSA and LANL, what made this fellowship extra special is that I had the privilege to work directly with my predecessors (pictured above) at NA-APM-1.5. The TLW project had three generations of NGFP fellows working together to help make this facility a reality.



Office

NA-APM-1.5 Office of Acquisition and Project Management

"This fellowship was an unparalleled opportunity to learn and jump-start my career in the Nuclear Security Enterprise. I had the fortune to see a few of our nation's most innovative technologies as well as learn directly from some of the leading experts at the national laboratories, military, and government."

Education

MS, Chemical Engineering, Purdue University
BS, Chemical and Biomolecular Engineering, Georgia Institute of Technology

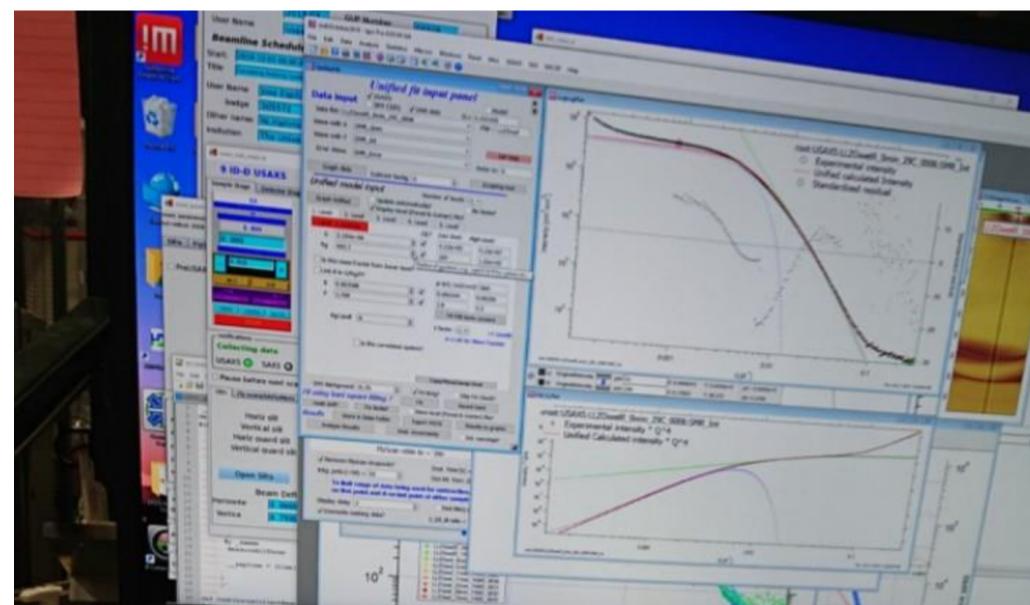
Overview

Rechargeable Li-ion batteries are widely used in personal electronic devices. Their applications in electric vehicles and grid storage for clean energy utilization are also rapidly growing. The use of liquid organic electrolytes has raised significant safety concerns due to its natural flammability. It also limits their energy density as organic electrolytes have narrow stable operating voltage window and inability to stop lithium dendrite penetration.

Solid state lithium batteries using solid ceramic electrolytes to replace organic electrolytes are intrinsically safe and can improve energy density by enabling the use of metallic lithium anode and high voltage or capacity cathodes. As part of my research at the Livermore Field Office, I studied how to improve solid state battery performance.

Outcomes

Understanding the sintering condition effects on the microstructure and morphology of the solid-state electrolyte, LLZTO, may better address the densification of the system and enable higher energy densities to optimize overall solid-state batteries.



USAXS/SAXS 9-ID beamline data acquisition at Argonne National Laboratory.

This project used synchrotron 9-ID beamline ultra-small X-ray scattering (USAXS) at Argonne National Laboratories Advanced Photon Source to elucidate the porous system in LLZTO as a function of temperature and time.

The La₂Zr₂O₇ phase was clearly seen at higher temperatures, suggesting severe lithium loss. Interesting discoveries on porosimetry evolution and intermediate product formation were correlated with other analyses to form a comprehensive picture of sintering behaviors of LLZTO. A manuscript for these experiments is underway and should be published by latest June.



Office

NA-LL Livermore
Field Office

Education

MS, Physics, University of Texas at El Paso

“The fellowship allowed me to expand my experimentalist skillset by allowing me to work in various capacities throughout the Lawrence Livermore National Laboratory while collaborating with various experts in different subject matters and traveling to other national laboratories for experiments.”

Hilda Fontes

Nevada Field Office (NA-NV)



Overview

The Nevada Field Office is responsible for conducting oversight activities over the Nevada National Security Site (NNSS). As a Nevada Field Office fellow, I had the opportunity to understand NNSS activities and help ensure their safe operations.



Hilda at Sedan Crater at NNSS.

Outcomes

As a NGFP fellow in Nevada Field Office, I reviewed technical contracts to address NNSA/DOE requirements for high-hazard nuclear operations. Through my fellowship I had the opportunity to support a Federal Readiness Assessment evaluation and assist during project management reviews.

Nevada Field Office fellows were assigned a collaborative group project, giving us the opportunity to understand the public's perspective regarding DOE/NNSA and its impact to the NNSS nearby communities.



Office

NA-NV Nevada
Field Office

“Being an NNSA Graduate Fellow has given me the opportunity to understand the importance of NNSA’s mission and the impact to our nation.”

Education

MS, Mechanical Engineering, University of Texas at El Paso
BS, Chemical Engineering, New Mexico State University

Hannah Gardiner

Office of Engineering and Technology Maturation (NA-115)



Overview

The Office of Engineering and Technology Maturation leads Defense Programs technology and component maturation efforts to ensure the Nuclear Security Enterprise develops and can use cutting-edge technology and processes required to maintain the U.S. nuclear weapons stockpile; enhance safety and security; and be agile, flexible, and responsive to emerging threats.

Outcomes

As support for the Advanced Manufacturing Development (AMD) program within NA-115, my primary deliverable was to plan the 2020 Additive Manufacturing Workshop that will bring subject matter experts in Additive Manufacturing together from around the country to encourage cross-governmental collaboration.



Gardiner posing with Reveille IX at the America Makes Technological Review and Exchange.

Although originally scheduled for May 2020, the workshop was postponed to September 2020. Additionally, I assumed responsibility for the management of the AMD program including developing the long-term strategy for advanced manufacturing research and creating an integrated priority list of site research in the AMD portfolio.



Office

NA-115 Office of Engineering and Technology Maturation

Education

PhD, Nuclear Engineering Sciences, University of Florida

“This fellowship provided a fantastic opportunity to learn about how the federal government works and to make an impact on the Nuclear Security Enterprise.”

Alexander Godinez-Robinson

Office of Material Management and Minimization (NA-23)



Overview

I served as the Front Office Fellow for NA-23. The Office of Material Management and Minimization (M3) program reduces the risk of highly enriched uranium and plutonium falling into the hands of non-state actors by minimizing the use of and, when possible, eliminating weapons-usable nuclear material around the world.



Alexander and other fellows on a river cruise on their last day at orientation in Richland, WA.

Outcomes

During my time with M3, I worked with three technical programmatic offices: the Offices of Material Conversion, Removal, and Disposition. My main project was to coordinate M3's deliverables for the International Conference on Nuclear Security (ICONS) in Vienna, Austria.

I focused on planning and reviewing cooperative activities to prepare for various bilateral meetings with partner states in Vienna. ICONS was very important to continue fostering and maintaining positive relations with key partners regarding the conversion, removal, and disposition of nuclear material.



Office
NA-23 Office of
Material Management
and Minimization

"This experience has allowed me to step out of my comfort zone and see first-hand how government works and, when done right, can make a positive impact on the lives of others."

Education

MSc, International Public Policy, University College London
MA, Security and Terrorism, The University of Kent (UK)
BA, Political Science, Minor in History, University of California, Santa Barbara

Overview

The goal of the Office of Transformation Safety is to design a way to collect, retain, and use the information about the different NNSA sites. Ultimately it is about getting the right information to the right people at the right time. As this is a new project, we are doing everything from finding the right resources to creating the documents in accordance to U.S. Department of Energy requirements.



Aimee Gonzalez (left), Celene Chavez (lower right), and Diego Lozano Jimenez (upper right) in front of the Capitol Building in Washington, D.C.

Outcomes

Starting up a new project involves a lot of documentation and planning. The end goal is to have a fully functional prototype as well as having all the necessary contracts and documents in place to keep this running smoothly.

The design includes software with the ability to go through data in any format and create a functional output that can be widely understood by those who need it. It also will serve to help organize the data so that it is accessible when needed while keeping security in mind.



Office

NA-50.1 Office of
Transportation

“NGFP has allowed me to create connections with peers and superiors in a short amount of time that, otherwise, may have taken years to create. This program has served as the door to the job with purpose.”

Education

MS, Materials and Nuclear Engineering,
University of Nevada, Las Vegas

Miguel A. González-Sierra Uranium Processing Facility Project Office (NA-APM 1.3)



Overview

In the process of improvement and modernization in the NNSA, the Uranium Processing Facility (UPF) will replace the existing plant that dates from the times of the early Cold War. The project is currently in the construction phase. During the fellowship, I supported the Project Office in Construction/ES&H, Quality Assurance, and Project Controls.

Outcomes

With the completion and turnover of the substation and over 500 craft and support personnel, the UPF continues advancing toward Critical Decision 4.

One of my contributions during the fellowship was to provide oversight on subcontracted work scope, specifically fire protection, HVAC, and mechanical systems.



Cooling Towers Platform with the Mechanical Electrical Building in the Main Construction Site.

In quality assurance I was able to participate in audits regarding materials, equipment, and NQA-1 suppliers.

In relation to project controls I supported the Mechanical Electrical Building in materials and schedule tracking and weekly updates.



Office

NA-APM 1.3 Uranium Processing Facility Project Office

Education

ME, Mechanical Engineering, University of Puerto Rico
BS, Mechanical Engineering, University of Turabo

“The fellowship opened the door to a new world and career path. Being in this office surrounded by great colleagues with years of experience has given me good exposure of the U.S. Department of Energy and the nuclear enterprise.”

Taylor Hart-McGonigle Office of International Nuclear Security (NA-211)



Overview

On December 17-19, the State Department sponsored the Joint Standing Committee on Civil Nuclear Cooperation (JSCCNC) held in Taipei, Taiwan. The JSCCNC included a plenary, working group discussions, and a technical tour. The JSCCNC establishes civil nuclear cooperation for the following year.



Participants of the JSCCNC in Taipei, Taiwan.

Outcomes

The Office of International Nuclear Security's interest in the JSCCNC was the Nuclear Security Working Group. The purpose of the engagement was to establish an action plan for nuclear security cooperation for the upcoming year. I attended the JSCCNC and participated in the working group to represent NA-211's interests and determine activities for 2020.

During the nuclear security working group, I gave a brief presentation on NA-211's mission, resources, and capabilities for preventing theft and sabotage of nuclear material globally. As a result of this meeting, NA-211 established future engagements on the topics of decommissioning and cybersecurity.



Office

NA-211 Office of
International
Nuclear Security

"The NGFP fellowship afforded me the opportunity for continuous professional development through engaging with international partners, coordinating workshops and technical exchanges, and exposure to nuclear security subject matter experts."

Education

MPA, Syracuse University
MA, International Relations, Syracuse University

Overview

When the “Storm Area 51” event became a concern in September of 2019, the Nevada National Security Site (NNSS) discovered that if participants googled directions to “Area 51,” Google Maps would lead them directly through NNSS. My office director asked me to prepare material to help convince Google to reroute participants away from NNSS.



NNSS Logo.

Outcomes

As part of the fellowship, I had recently visited NNSS and was familiar with the site’s layout and geography. I created an image that depicted how the Google route would lead map users through the heart of the NNSS site, which could create an unnecessary risk to the site’s security and public safety.

My office used the image I created and sent it to a Google Senior Manager who replied that Google would be responsive to our concerns. Google corrected the route and redirected the public away from NNSS thereby eliminating a security concern to an NNSA site and preventing unnecessary risk in an uncertain situation.



Office

NA-EA Office of
Congressional Affairs

Education

MPA, Brigham Young University

“NGFP has given me the unique opportunity to learn about the Nuclear Security Enterprise while simultaneously applying that knowledge to support my team in the Office of Congressional Affairs.”

Dr. Edward D. Hoegg Office of Program Analysis and Evaluation (NA-MB-92)



Overview

During a time of rapid growth throughout the nuclear enterprise, capital investments have been a major focus. As part of the 413 process used to manage these investments, Analysis of Alternatives (AoAs) are an integral step to ensure the solution meets the requirements and that costs, schedule, and risks are considered. Over the last year I have been part of the AoA teams for the Power Sources AoA and the Combined Radiation Effects for Survivability Testing (CREST) AoA.



Edward (fourth from Left) and other members of the NGFP Class 2019-2020 and colleagues from the EPA toured the Remote Sensing Laboratory at Joint Base Andrews.

Outcomes

I worked on the Power Sources and CREST AoAs as well as performing analysis for the Programmatic Recapitalization Working Group. My work in the Power Sources AoA included developing a requirements model that included a three-point estimate of the number of power sources that would be required in the future stockpile. For the CREST AoA, I served as the Sub Teams Lead, working to integrate the effectiveness, cost, schedule, and risks results for each alternative. Both experiences allowed me to use my skills as a chemist while also continuing my education and learning from the experts at NNSA as well as our partners that the national laboratories.



Office

NA-MB-92 Office of
Program Analysis
and Evaluation

Education

PhD, Chemistry, Clemson University

“The NGFP fellowship has provided me with an unparalleled opportunity to learn from the countries leading nuclear experts so that I may carry on the mission going into the future.”

Timothy Jacomb-Hood

Office of Material Disposition (NA-233)



Overview

The Office of Material Disposition mission is to safely and securely dispose of surplus fissile material. The U.S. is pursuing a dilute and dispose approach for a vast portion of the plutonium that has been determined to be excess to national security needs. At the Savannah River Site (SRS), the Enhanced Dilution Process (EDP) is being used to inhibit plutonium recovery and prepare it for permanent disposition at the Waste Isolate Pilot Plant.

Outcomes

I was tasked with creating an EDP program requirements document to coalesce the distributed programmatic knowledge. The EDP was constrained by a multitude of federal and local regulations, and no one person was an expert in all of them. Having a single document that references all of the external factors will make it easier to understand why the EDP exists in its current form and simplify the process of studying future improvements to the process.



Timothy Jacomb-Hood (right) touring the SRS tank farms with facility expert, Jeff Ledbetter (left). Multiple facility tours were offered to gain exposure to the broader SRS mission.

Working with multiple subject matter experts at the Savannah River Site, I was able to understand the EDP and its drivers. Knowledge of how the EDP came into existence and how the various regulations have shaped it helped me better understand the project cycle of the DOE/NNSA, which will be useful throughout my career within the Nuclear Security Enterprise.



Office

NA-233 Office of
Material Disposition

“Being based at the Savannah River Site provided me many opportunities to engage with people performing nuclear work and not just read about it in reports. It has been a great complement to my educational experiences.”

Education

PhD, Nuclear Engineering, Texas A&M
University (anticipated 2020)

Becky Lewis

Defense Nuclear Nonproliferation Research and Development (NA-22)



Overview

I was the the Point of Contact in the NA-22 office for nuclear data projects and interagency collaborations. This included organizing the program needs component of the 2020 Workshop on Applied Nuclear Data Activities (WANDA), which occurred March 3-6 in Washington, DC.



Participants of the WANDA2020 meeting at the George Washington University's Elliott School of International Affairs.

Outcomes

Nuclear data is an important component of the entire Nuclear Security Enterprise. Organization between funding agencies is vital to cover nuclear data research that needs to be funded. The WANDA meeting brings together funding agencies, data users, and researchers to collaborate and discuss what needs exist and how to support research efforts.

I worked with program managers and research staff across the Nuclear Security Enterprise to organize discussions about what needs still exist and how they can be solved through joint research projects. Such discussions at WANDA meetings have led directly to research being co-funded by multiple agencies.



Office

NA-22 Defense Nuclear Nonproliferation Research and Development

"I was introduced to the wider Nuclear Security Enterprise through the fellowship, which allowed me to find paths forward for my career that I did not realize existed."

Education

PhD, Nuclear Chemistry, National Superconducting Cyclotron Laboratory, Michigan State University

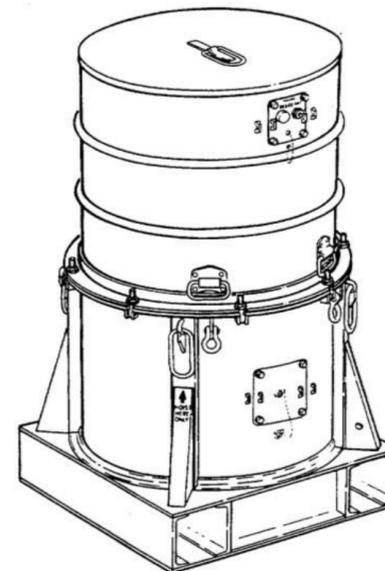
Tyler Lo

Office of Packaging and Transportation (NA-531)



Overview

NA-531 was facing the issue of inadequate Offsite Transportation Authorizations (OTAs). OTAs are needed before transporting certain materials. This issue was often due to new or inexperienced contracting personnel being unfamiliar with NA-531's requirements and expectations. Thus I was tasked with the mission of constructing a training and templates for OTA use.



Example of H1333 gear used for shipping contents.

Outcomes

The new training and templates should be of great benefit to both the NNSA and contractors who work closely with NA-531 and will be available on Learning Nucleus. The tool was designed to ease the workload and speed up the process of approving shipping requests, while still allowing us to be separated as an independent regulatory reviewer.

Being a part of this project has given me an assigned task that was sorely needed. During this training I was working on an OTA. Gathering past cases from the office and experience from my own OTA allowed me to fine tune the training and templates for a person who is unfamiliar with our world.



Office

NA-531 Office of Packaging and Transportation

“During the NGFP fellowship I have been part of a very specialized industry. The NGFP fellowship is a once-in-lifetime experience that has given me multiple opportunities and allowed me to visit sites I never thought I would be able to see.”

Education

ME, Nuclear Engineering, Texas A&M University
BS, Mechanical Engineering, Iowa State University

Haylie Lobeck

Office of Tritium and Domestic Uranium Enrichment (NA-192)



Overview

The Office of Tritium and Domestic Uranium Enrichment (NA-192) works to provide NNSA Defense Programs with an assured supply of critical strategic material to use in the U.S. nuclear weapons stockpile. As a fellow, I worked within the Tritium Sustainment Program to develop a plan to increase tritium production to meet a growing national demand.



Fellows Jana Starks, Haylie Lobeck, Alyssa Jones, and Cesar Dominguez collecting salt samples during a tour of the Waste Isolation Pilot Plant transuranic waste site located near Carlsbad, NM.

Outcomes

Throughout the fellowship I worked on developing a strategy to use greater than 5.0 wt% enriched uranium fuel in a commercial reactor to produce tritium. This strategy has the potential to increase tritium production, decrease the amount of fuel necessary to produce tritium, and mitigate certain supply chain issues should they arise in the future.

This project explores the physical and regulatory impacts on fuel enrichment facilities, fuel fabrication facilities, logistics of transporting higher enriched fuel, potential impacts to the reactor, and storage of spent fuel. This work has been a cross-cutting collaboration between several NNSA offices, national laboratories, the commercial nuclear reactor site, commercial vendors, and regulatory government agencies.



Office

NA-192 Office of Tritium and Domestic Uranium Enrichment

“The NNSA Graduate Fellowship Program provided me an opportunity to see how the Nuclear Security Enterprise works together to accomplish a shared mission. As a fellow you get the chance to take specialized trainings and tours most civilians do not get to experience.”

Education

PhD, Actinide Chemistry and Mineralogy, University of Notre Dame
BS, Chemistry, Arcadia University

Diego A. Lozano Jimenez Office of Packaging and Transportation (NA-531)



Overview

The Office of Packaging and Transportation (NA-531) ensures the regulatory compliance and technical validity of content submittals. I worked closely with federal packaging certification engineers to manage and ensure completion of the 9977 Consolidated Safety Analysis Report for Packaging (SARP) Revision 5. To do so, I formulated a Project Management Plan (PMP) that establishes the framework for managing the Model 9977 Revision 5 project.

Outcomes

The Model 9977 is a Non-Defense Program specific package designed by Savannah River National Laboratory. The SARP fully describes the packaging radioactive material contents, containers, and the content configurations. It is undergoing a revision to include new content and make sure it is within current regulation. To help this effort move forward I developed the PMP that would allow the Transportation Safety Review Panel (TSRP) and Design Agency (DA) to agree on the general path forward.



In anticipation of the Kickoff Meeting for Revision 5 of the 9977 SARP, TSRP and DA members met to improve on team relationships and discuss 9977 content.

The purpose of the PMP is to create a project environment that is based on trust, builds strong professional relationships, and encourages collaboration. It also establishes an agreement between TSRP and DA on how the 9977 Consolidated SARP Revision 5 will be managed and what steps will be taken to ensure its completion. Most importantly it builds lines of communication between the applicant and independent reviewer.



Office

NA-531 Office of
Packaging and
Transportation

“This fellowship really highlighted the importance of communication. Whether it is written or oral, the ability to let your ideas known clearly and concise is key.”

Education

MS, Mechanical Engineering, University of Texas El Paso
BS, Mechanical Engineering, University of Texas Austin

Zachary Matheson

Office of Advanced Simulation and Computing (NA-114)

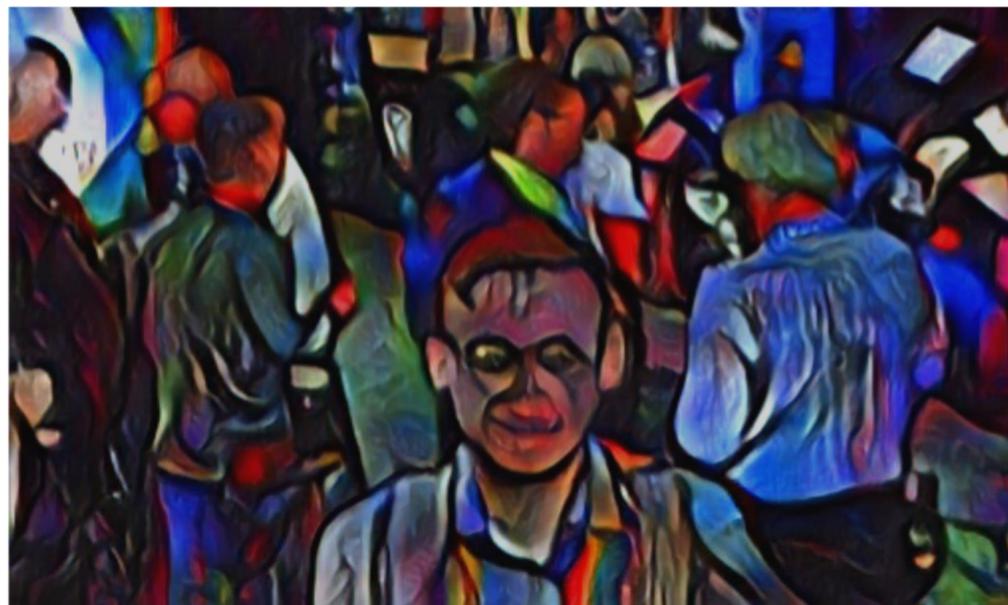


Overview

The Advanced Simulation and Computing (ASC) program uses high-performance computing to support stockpile stewardship activities within NNSA Defense Programs. The mission requires that ASC be at the very forefront in the field of scientific computing. I supported ASC in preparing for some of the latest advances in high-performance computing, such as machine learning and quantum computing.

Outcomes

Working with NA-114 and NA-221, I prepared a report to Congress that outlines how the NNSA plans to utilize artificial intelligence and machine learning over the next five years throughout the NNSA complex.



At the Supercomputing 2019 conference, this photo was created by a demonstration system using artificial intelligence to mimic stained glass in real-time. (MathWorks at SC19)

I also prepared white papers for the ASC program office on topics related to quantum computing, machine learning, and verification and validation, including:

- Types of qubits
- Global investments in quantum computing
- Deep learning and high-performance computing



Office

NA-114 Office of Advanced Simulation and Computing & Institutional Research and Development Programs

“This fellowship has given me an awareness of the context, importance, and relevance of nuclear security and an opportunity to contribute to the mission while simultaneously allowing me to expand my knowledge of physics and scientific computing.”

Education

Dual PhD, Nuclear Physics and Computational Math, Science, and Engineering, Michigan State University

Alexander Moe

Office of Global Material Security (NA-21)



Overview

On February 10-14, 2020, the U.S. Government led by Secretary Brouillette attended the International Conference on Nuclear Security (ICONS) 2020 at the International Atomic Energy Agency (IAEA) in Vienna, Austria. ICONS brought together 1900+ participants from IAEA member states to focus on the accomplishments and next steps of nuclear security globally.

Outcomes

The Office of Global Material Security (GMS) leveraged ICONS to build new and strengthen existing relationships with international partners in nuclear and radioactive material security and counter nuclear smuggling. This was accomplished through bilateral meetings with foreign counterparts, presentations on nuclear security-related topics, and outreach to international organizations attending.



Secretary of Energy Dan Brouillette, Administrator Lisa E. Gordon-Hagerty, and the ICONS team.

During ICONS, I attended bilateral meetings with senior NNSA and DOE principals, assisted the IAEA in organizing and executing the conference, and engaged with foreign counterparts at multiple events to advance U.S. nuclear security objectives. GMS was able to expand its existing relationships and establish new lines of effort to strengthen the global nuclear security regime.



Office

NA-21 Office of Global Material Security

“My fellowship at NNSA has provided me with hands-on experience, valuable training, and a greater understanding of the policy and implementation processes in the Nuclear Security Enterprise.”

Education

MA, Security Policy Studies, Elliott School of International Affairs, the George Washington University
BA, Economics, Boston University
BA, International Relations, Boston University

Amber Morgan

Office of International Nuclear Safeguards (NA-241)



Overview

The 2020 Review Conference (RevCon) of the Treaty on the Nonproliferation of Nuclear Weapons (NPT) will occur this year at the United Nations in New York. The 2020 RevCon marks the 50th anniversary of the treaty, which is the foundation of the international nonproliferation regime. NNSA, along with our interagency partners, is working diligently to ensure a successful Review Conference.

Outcomes

Leading up to the RevCon, Nigeria and Argentina, as President of the RevCon, hosted an African regional workshop on Expanding Access to Peaceful Uses Under the NPT Framework. Participants discussed the role of nonproliferation as a facilitator for access to peaceful nuclear technologies under the NPT and ideas for making progress in this area. This also served as an opportunity for Ambassador Eberhardt to hold discussions with his African counterparts before the RevCon.



Fellow Amber Morgan with participants of NPT at 50th Regional Workshop in Abuja, Nigeria.

I was asked to support interagency preparation and engage with international partners during the event to learn about partner needs and opportunities for cooperation. This was a unique opportunity for me—engaging with interagency and international partners was a unique learning experience that will help prepare me for a career in government and diplomacy. Outcomes of the event will be shared by Argentina and Nigeria at the 2020 NPT Review Conference.



Office

NA-241 Office of International Nuclear Safeguards

“My fellowship provided unique opportunities to gain practical nonproliferation and government experience, complete valuable training at the national laboratories, and be mentored by respected and experienced leaders in the field.”

Education

MA, Nonproliferation and Terrorism Studies, Middlebury Institute of International Studies
BA, International Affairs and Political Science, University of Georgia

Danny Niez

Office of Defense Programs (NA-10)



Overview

The NNSA Office of Strategic Partnership Programs administers the Defense Programs Reserve Officer Training Corps (ROTC) Internship Program, placing collegiate Cadets and Midshipmen in summer internships at Sandia National Laboratory in New Mexico.



Seals of the University of New Mexico and the University of Virginia.

Outcomes

In addition to my normal portfolio as a member of the Defense Programs Deputy Administrator's Action Group, I volunteered to serve as Deputy Project Manager for the ROTC Internship Program.

I travelled to the Universities of New Mexico and Virginia to pitch the internship opportunity to the ROTC students. I also spoke directly with the Nuclear Accessions Manager for the nation's Naval ROTC.

I was responsible for running all aspects of the internship program, including interfacing with ROTC Commanders at universities, pitching the program to students, and selecting the interns after assessing their applications.

I took pride in placing Cadets and Midshipmen in internships at Sandia National Laboratory in order to identify and develop the next generation of nuclear security professionals.



Office
NA-10 Office of
Defense Programs

"The NNSA Graduate Fellowship Program introduced me to a career in nuclear security, providing me the opportunity to directly engage with senior leaders in the Nuclear Security Enterprise. I cannot think of a better way to learn than from the foremost leaders in the field."

Education

MPP, Frank Batten School of Leadership and Public Policy,
University of Virginia
BA, Foreign Affairs, University of Virginia

Caitlin O'Grady

B61-12 Life Extension Program (NA-125.1)



Overview

The B61-12 Life Extension Program (LEP) Federal Program Office provides oversight toward the modernization of the aging B61 bomb family. This is an essential mission to maintain our nation's deterrence. During my fellowship, I supported the planning, research, and execution of the weapon's LEP.

Outcomes

The Federal Program office encompasses work on a variety of topics. As a fellow, I interacted first-hand with experts to help solve emerging challenges associated with the B61-12 LEP.

Early in my fellowship, my expertise with high explosives was valuable in resolving an issue on the LEP with NA-193. While working on this challenge, I traveled to the United Kingdom (UK) and coordinated with our UK partners in a working group.



Left to right, fellows Tyler Lo, Jana Starks, Caitlin O'Grady, and Haylie Lobeck during a tour of the White House Press Briefing Room.

My role with the B61-12 LEP was to provide technical knowledge to the nuclear components team and assist in oversight of the various laboratories and sites involved in the LEP.

During the fellowship, I was provided many opportunities to work with experts across the Nuclear Security Enterprise.



Office

NA-125.1 B61-12
Life Extension
Program Office

Education

PhD, Materials Engineering (in progress), Purdue University
MS, Mechanical Engineering, The University of New Mexico
BS, Nuclear Engineering, The University of New Mexico

"This fellowship afforded me the opportunity to participate in multidisciplinary teams and solve real-world problems. I am deeply impressed with the wide breadth of expertise within NNSA. It has been a privilege to participate in this fellowship"

Nic Pilley Lithium Production Modernization Office (NA-195)



Overview

The Lithium Processing Facility (LPF) modernization project is a multi-year endeavor taking place at the Y-12 National Security Complex, Oakridge, TN. It is one of the many modernization and transformational projects taking place across the Nuclear Security Enterprise. Most recently the project achieved the Critical Decision 1 milestone.



Nic and a group of fellows tour the White House.

Outcomes

Over the course of the fellowship, I worked on multiple products and deliverables that were linked to the LPF modernization project. I was given the opportunity to assist the Federal Program Manager on such deliverables as Construction Project Data Sheets, Program Hot Topics, Congressional Budget Justifications, numerous informational one-pagers and many other documents.

Participating in creating these deliverables provided me with professional developmental experiences across many facets of project and program management. These inputs and deliverables will have an impact on future projects vital to the eventual successful completion of the LPF modernization project.



Office
NA-195 Lithium
Production
Modernization

“The fellowship provided me the unique opportunity to work collaboratively with some of the top technical experts in their fields as well as with top-notch national security professionals on projects that will have impacts for years to come.”

Education

MA, International Security, George Mason University
MS, Engineering Management, University of Missouri Science and Technology
BA, Political Science, North Carolina State University

Annelise Plooster

Office of Nuclear Material Removal (NA-232)



Overview

The 10th meeting of the U.S.-Japan Nuclear Security Working Group (NSWG) occurred at Lawrence Livermore National Laboratory in July 2019. The NSWG was established in 2011 in support of the Nuclear Security Summit process. The working group is one of five under the U.S.-Japan Bilateral Commission on Civil Nuclear Cooperation.

Outcomes

As a fellow in the Office of Nuclear Material Removal, I participated in the 10th meeting of the NSWG. Participants reported on key nuclear security issues, including minimizing highly enriched uranium, enhancing the physical protection of nuclear materials, integrating national and emergency response plans, reducing material attractiveness, and securing nuclear materials in transport.



Participants at the 10th meeting of the U.S.-Japan NSWG at Lawrence Livermore in 2019.

My fellowship duties also included coordinating with foreign entities on future removal projects, engaging with NNSA's laboratories to better understand the technical requirements for removal, and crafting the public message for how my office seeks to eliminate the threat of nuclear terrorism.



Office

NA-232 Office of Nuclear Material Removal

“This year, I gained fresh insight into how NNSA bridges the gap between science and policy. I enjoyed having the opportunity to work with the national laboratories on a daily basis on challenges I never would have thought of trying to address before.”

Education

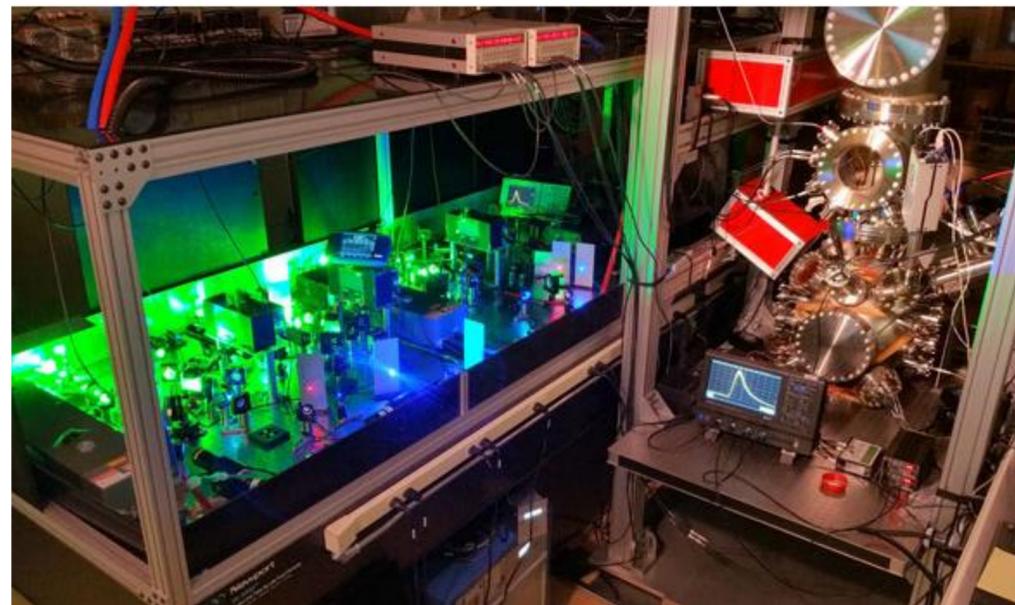
MA, Nonproliferation and Terrorism Studies; Middlebury Institute of International Studies
MA, International Relations, Moscow State Institute International Relations

Miguel Richardson Livermore Field Office (NA-LL)



Overview

My primary project was to develop a Thorium ionization scheme for the Resonance Ionization Mass Spectroscopy (RIMS) group. RIMS uses a laser (or ion source) to sputter material from a sample. A voltage pulse rejects the ions and tuned lasers pass through the neutral clouds to selectively excite and ionize the targeted element. An electric field is used to send the ions into a time of flight mass spectrometer.



The LION (Laser Ionization of Neutrals) laboratory used for nuclear forensics (RIMS setup).

Outcomes

This work was to add additional capabilities to the RIMS system: the ability to measure Thorium and its isotopes and the possibility to age-date material containing thorium and uranium.

I gained experience with new spectroscopic techniques and data analysis tools and greater appreciation for the importance of nuclear forensics tools.



Office

NA-LL Defense Nuclear
Nonproliferation Livermore
Field Office

Education

PhD student, Physics, Florida A&M University

“The fellowship provided me with greater insight into the enterprise and valuable hands-on training and experience.”

Samuel Rising Office of Nuclear Export Controls (NA-242)



Overview

The Office of Nuclear Exports' International Nonproliferation Export Control Program travelled to the Philippines to participate in the licensing risk assessment workshop.



Skyline of Manila, Philippines.

Outcomes

The workshop taught licensing officers how to effectively assess proliferation risks of dual-use commodities potentially passing through their ports of entry.

During this week-long workshop, I led several risk assessment exercises and group discussions with Philippine government officials.

I was able to better understand the working relationship between NNSA and the National Laboratories, as well as our (DOE/NNSA) nonproliferation relationship with foreign partners. I also enjoyed the opportunity to represent the U.S. Government while working overseas with our Asia-Pacific partners.



Office

NA-242 Office of Nuclear Export Controls

Education

MS, International Affairs, Georgia Institute of Technology

"This past year afforded me the opportunity to grow as a professional in innumerable ways. Through this hands-on experience, I had the opportunity to contribute to our many capacity-building engagements with foreign partners who are eager to develop more comprehensive export controls."

Gabriel Sandler

Office of Cost Estimating and Program Evaluation (NA-1.3)



Overview

As a fellow in NA-1.3, one of my roles in the office was independently reviewing several Analysis of Alternative (AoA) reports. This included the Tritium Finishing Facility (TFF), Combined Radiation Environments for Survivability Testing (CREST), and Digital Infrastructure Capabilities Enhancement (DICE) AoAs.

Outcomes

I performed an independent study on the TFF report where I summarized its completeness, quality, technical soundness, and adherence to established processes and policies to support decision-making. I analyzed the increase of the total project cost after the AoA was finalized and helped develop a review memo that was submitted to the NNSA Administrator to outline the sufficiency of the report according to the Government Accountability Office's 22 AoA best practices.



Group of fellows after a tour of the White House.

I provided my nuclear engineering background and expertise to evaluate the CREST AoA by supporting trade space and requirements discussions. Lastly, I took the lead on reviewing the DICE AoA, which will analyze alternatives that can provide the networking and communication capabilities currently provided at Building 256 at Lawrence Livermore National Laboratory.



Office

NA-1.3 Office of Cost Estimating and Program Evaluation

“This fellowship helped me develop new skills outside of my comfort zone while allowing me to continuously learn about different aspects of the Nuclear Security Enterprise.”

Education

PhD, Nuclear Engineering, University of Florida
MS, Nuclear Engineering, University of Florida
BS, Nuclear Engineering, University of Florida

Anthony Santo Domingo Nevada Field Office (NA-NV)



Overview

A Federal Readiness Assessment (FRA) of the Dwindraft Table operations is underway at the Nevada National Security Site (NNSS). I was chosen to participate as a team member assigned to the functional area of Feedback and Improvement. Upon successful completion of this readiness assessment, the result will provide a high degree of confidence that the Dwindraft Table operations will be conducted in a safe and reliable manner.

Outcomes

As a fellow for the Nevada Field Office, I participated as both a team member and coordinator of the Dwindraft Table operations FRA. I learned about the amount of rigor and coordination that goes into a readiness assessment to ensure the safety and reliability of nuclear operations. My involvement included reviewing procedures and processes, interviewing various laboratory and contractor personnel, and observing operations, ultimately producing a final report of each element.



Anthony at the U.S. Department of Energy.

I was involved with planning and conducting the readiness assessment process, which included drafting a plan of action, a startup and verification report, an implementation plan, and various memorandums and letters of approval. This opportunity has given me an in-depth understanding of the entire readiness process and the importance of having independent verification of readiness to start a nuclear operation within the U.S. Department of Energy enterprise.



Office

NA-NV Nevada
Field Office

“The fellowship with the Nevada Field Office allowed me to see projects and programs at the Nevada National Security Site from a big picture point-of-view. It is exciting to know I am contributing to the future of national nuclear security.”

Education

MS, Materials and Nuclear Engineering, University of Nevada,
Las Vegas
BS, Mechanical Engineering, University of Nevada, Las Vegas

Sydney Shuk

Nevada Field Office (NA-NV)



Overview

During this fellowship, I integrated dose recording and reporting technology and simulator training technology at the Nevada National Security Site (NNSS) based on technologies used at other U.S. Department of Energy facilities.

Outcomes

The NNSS Radiation Protection team currently uses pen and paper tracking for radiological worker doses. I reviewed two digital systems utilized for worker dose tracking at Idaho National Laboratory (INL) and at Oak Ridge National Laboratory. Additionally while at INL, I observed the use of the Sim-Teq (Mirion) training simulator at INL for use at the Counterterrorism Operation



Tour of EBR-1 at site visit to INL.

Support training at NNSS. This would reduce risk of exposure or dose to first responders attending the trainings and would eliminate the need for a radiological control technician at such courses. The Nevada Field Office is currently reviewing the purchase of the Sentinel System for digital tracking of employee dose.



Office

NA-NV Nevada
Field Office

“NGFP provided a great opportunity to explore different career paths in the Nuclear Security Enterprise. I am thankful for all the networking and career advancement opportunities NGFP has given me.”

Education

MPH, Epidemiology, Rollins School of Public Health,
Emory University

Overview

The Office of Radiological Security (ORS) enhances global security by preventing high activity radioactive materials from use in acts of terrorism. During this fellowship, I supported the ORS front office as an action officer and provided program support to the Middle East and Africa regional portfolios.

Outcomes

I coordinated closely with subject matter experts at four national laboratories on management of security upgrades and other activities at ORS partner sites in Africa and the Middle East.

I accompanied an ORS team visit to South African partner sites in early 2020, providing detailed notes, and contributed to a U.S. Embassy cable.



Photo from joining the ORS delegation to the South African Nuclear Energy Corporation, a partner in South Africa.

I assisted the ORS front office with answering high-level requests from senior officials, Congress, the interagency, and international partners; prepared detailed notes for various meetings; and co-edited the bi-monthly ORS Informer newsletter.

I also assisted in evaluating a training with foreign partners at Sandia National Laboratories and attended trainings at Y-12 and Argonne National Laboratory.



Office

NA-212 Office of
Radiological Security

"The NGFP fellowship is an amazing opportunity. I acquired new skills and first-hand experience in the nuclear enterprise, while supporting our vital national security mission. I feel honored to have met and worked with so many dedicated civil servants, contractors, and fellows.

Education

MA, International Affairs, Elliott School of
International Affairs, George Washington University

Jana Starks

W87-1 Modification Program Office (NA-125.4)



Overview

To support the W87-1 Modification program through phase 6.2, I developed and integrated the planning Project Controls Document into the enterprise scheduling software, LAPS. As a 100% newly manufactured warhead, the technical planning and provisioning documents need to account for enterprise-wide capacity and capabilities.

Outcomes

As the fellow in the W87-1 program office, I was involved in large-scale acquisitions for both the U.S. Department of Energy and Department of Defense. Being involved with the Project Officers Group allowed me to see components of the Ground-Based Strategic Deterrent missile and Mk21-A aeroshell programs. The close interactions with the Air Force allowed me to participate in a mock launch from a training launch control facility at Vandenberg Air Force Base.



The 576th Flight Test Squadron is critical in providing data to measure current and future capabilities.

I was also able to set up a small working group to develop standard planning curves for future systems.



Office

NA-125.4 W87-1
Modification
Program Office

“The unique and extraordinary opportunities afforded to me through this fellowship program are unlike what could be found anywhere else. I have learned the value of every role in the enterprise, from administrative to program management to basic science researchers.”

Education

MS, Nuclear Engineering, University of Tennessee
BS, Chemistry, Colorado School of Mines

Erica Symonds

Office of Nonproliferation and Arms Control (NA-24)



Overview

I learned about essential role of technology in nonproliferation and arms control work across international nuclear safeguards, export controls, nuclear verification, and the civil nuclear sector. I endeavored to gain an understanding of this work and build my expertise in these areas throughout my fellowship.

Outcomes

In addition to learning about the role of technology as the Action Officer for NA-24, I created a comprehensive catalogue of tools and technology that NA-24 develops to enable the International Atomic Energy Agency to conduct nuclear safeguards activities around the world and that the United States and others can use to verify compliance with international agreements and treaties.



NGFP fellows at PUR-1, Purdue University's nuclear research reactor.

I attended a nonproliferation training at Argonne National Laboratory focused on reactors and the commercial nuclear industry, and I particularly enjoyed visiting the reactor at Purdue University and seeing 3D printers and 3D-printed objects. I also toured Savannah River National Laboratory and supported a WMD interdiction training for a foreign delegation at the HAMMER facility in Richland, WA.



Office

NA-24 Office of Nonproliferation and Arms Control

Education

Master of Public Policy, University of Maryland

“Through the fellowship, I gained valuable insight into how the United States works to solve pressing global challenges to prevent proliferation by various means and effectively support arms control agreements.”

Brandon Thompson Plutonium Program Office (NA-191)



Overview

The Plutonium Sustainment Program was formed to sustain a modern, robust, flexible, and resilient capability to process and handle plutonium, an essential capability in the assessment and maintenance of a credible nuclear deterrent. The program is currently pursuing the 2018 Nuclear Posture Review mandate to achieve a pit production capacity of 80 ppy during 2030.



An electro-refined ring of plutonium.

Outcomes

I entered the nuclear enterprise with no prior government experience. Selected by the Pu Sustainment Program Manager for my private sector experience at a major technology firm, my mandate was to better enable the growing team in its mission to produce pits and recapitalize infrastructure safely, securely, and effectively. I am proud of what we accomplished and the progress the program made over the past year.

Performance Management – rewriting the NNSA Program Plan to meet expanded scope.

Operational Effectiveness – piloted a meeting model designed to enable quick decision-making in a matrixed organization.

Technological Advancement – partnered with the Executive Director to build a team intranet in our effort to foster collaboration on a growing team.



Office

NA-191 Plutonium
Program Office

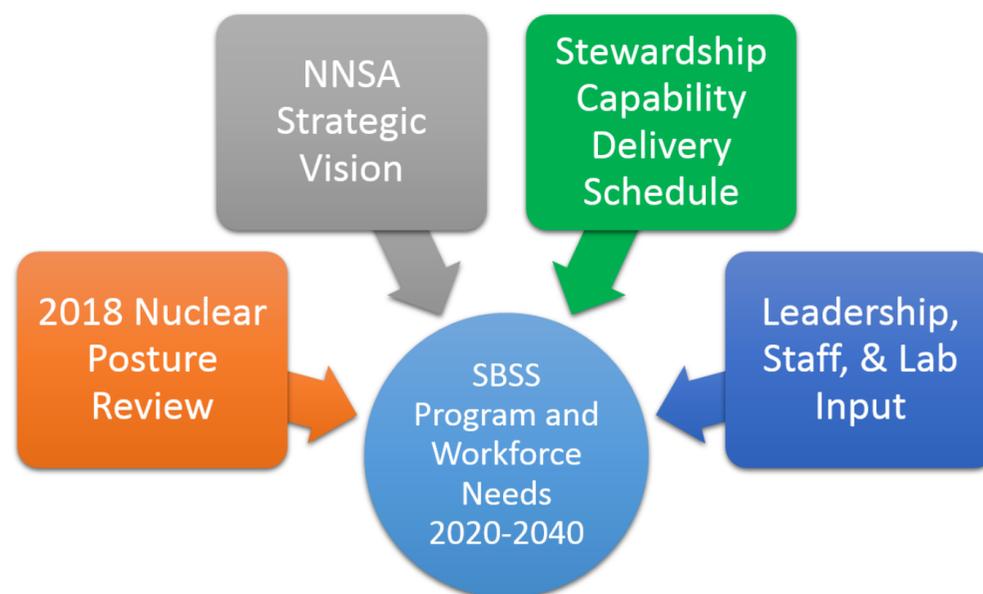
“Whether or not I remain in the Nuclear Security Enterprise beyond the program, this past year afforded me critical exposure that enlightened my intellect and solidified my championship for the missions of the NNSA and the contribution of our national laboratories.”

Education

Master of International Affairs, Columbia University

Overview

The Office of Research, Development, Test, and Evaluation (NA-11) is creating a strategic plan to address the needs of the science-based stockpile stewardship (SBSS) program and workforce over the next 20 years. I contributed to this effort through literature review, collaboration, and analysis.



A chart showing what inputs went into the product created to support the strategic vision.

Outcomes

In support of the strategic vision, I performed a literature review, compiling SBSS needs drawn from relevant documents. I collaborated with leadership and program managers both in and out of my office. I also organized responses from an office-wide activity designed to garner broad discussion of possible needs.

In addition to contributing to the strategic vision, my other activities included compiling an FAQ on subcritical experiments, attending various technical seminars and trainings, and participating in the Aspiring Leaders Certification Program.

Overall, this year has given me a taste for the mission-focused work performed in a government agency.



Office

NA-113 Office of
Experimental Sciences

Education

MS, Physics, University of Notre Dame
BA, Physics, Ripon College

“NGFP provided me a view into a career of applying my technical background for the purpose of national security. The mission I supported, the work family I joined, and the goals I achieved will leave a positive impression on me as I move forward from this fellowship.”

Erica Wolf

Office of Nuclear Smuggling Detection and Deterrence (NA-213)



Overview

The Green Borders Security Initiative (GBSI) seeks to improve foreign partner capabilities to counter nuclear smuggling on green borders and administrative lines of uncontrolled regions through strengthening radiation detection, patrol, interdiction, and inspection capabilities of security teams. The Office of Nuclear Smuggling Detection and Deterrence (NSDD) is piloting GBSI activities in Armenia, Belarus, Moldova, Ukraine, and Tajikistan.



Ukrainian Border Guard conducting an exercise in Ukraine. Photo courtesy of NSDD.

Outcomes

GBSI forges new frontiers and partnership for NSDD. This requires the necessity to train country partners in new ways. This new way of working requires collaboration with subject matter experts with different skills and expertise to complement NSDD's work. With this understanding, NSDD has entered a new Interagency Agreement with the Department of Homeland Security Customs and Border Protection Agency.

Rather than developing an entirely new training mechanism for GBSI, managing this interagency partnership taps into existing training resources and personnel that reflects the responsible use of taxpayer dollars. It is excellent to be a part of this new journey for NSDD. Working on this project has been rewarding and impactful in advancing NNSA's mission.



Office

NA-213 Office of Nuclear Smuggling Detection and Deterrence

Education

MA, Political Science, Howard University
MPA, American University
BA, Political Science, Howard University

"The fellowship provided a structured yet flexible transition to a career in nuclear security. The sincere relationships I built from this inspiring network, while sharpening my skills as a leader, was icing on the cake!"

Overview

In December 2019, a team from the NNSA met with representatives of China's Ministry of Ecology and Environment (MEE) to discuss radiological security cooperation under the Peaceful Uses of Nuclear Technology Agreement between the U.S.A. and China. The meeting focused on planning joint activities and events.



ORS staff meet with MEE members.

Outcomes

As a fellow in the Office of Radiological Security (ORS), I helped to manage cooperative efforts and communication regarding radiological security between NNSA and China's MEE. I helped ORS work closely with U.S. Department of Energy mission China counterparts to achieve this goal, including overseeing the development of event and course curriculum and the writing and execution of the Record of Meeting.

This event and engagement with the China portfolio improved my understanding of how NNSA engages with foreign entities to enhance national and global security given rapidly evolving scientific challenges. It taught me the importance of navigating complex and dynamic relationships with foreign partners as well as maintaining a unified approach in government.



Office

NA-212 Office of
Radiological Security

Education

MS, Health Physics, Georgetown University
BA, Physics, Rutgers University

"The fellowship at NNSA has provided me indispensable experience and exposure in the radiological security field and has introduced me to new ways of problem solving pertinent to federal work that I would otherwise have never gained."