BEHIND THE SCENES

Livermore Fellows Share Offsite Assignment Stories

SHORTLY after the September 11, 2001, terrorist attacks, Congress created the Countering Nuclear Smuggling Program to thwart nuclear terrorists from importing and potentially using nuclear materials in the United States. In support, the U.S. Customs Service installed new radiation detection technologies at its border sites and requested Department of Energy (DOE) assistance in developing threat-based detection standards. With a background in radiation detection applications, Lawrence Livermore nuclear and radiochemistry expert Steven Kreek was well positioned to take on this task. In fact, Kreek had already been tapped for a temporary offsite assignment as a technical advisor for the National Nuclear Security Administration's (NNSA) Office of Defense Nuclear Nonproliferation (DNN) Research and Development (R&D)—known as NA-22.

Today, such assignments are part of the Laboratory's Offsite Fellows Program (OFP), offering Laboratory employees temporary roles with federal government agencies. (See *S&TR*, September 2019, pp. 12–15.) Offsite fellows learn to create and defend program efforts, engage with and advise federal program managers in Washington, D.C., and elsewhere, and gain a deeper understanding and appreciation for federal government operations from interagency, political, and budgetary perspectives.

While the general premise of an offsite assignment is similar for every fellow, unpredictable events can make for an unforgettable experience, which is exactly what happened to Kreek. He arrived in Washington, D.C., to begin his NA-22 assignment just before commercial aviation halted on the morning of September 11, 2001. The attacks shifted the focus of his original assignment, and ultimately his career at the Laboratory, from nuclear nonproliferation to domestic counterterrorism and homeland security.

Implementing New Technologies

In his revised role, Kreek coordinated efforts among DOE's three weapons laboratories to establish initial radiation alarm thresholds for U.S. Customs detection technologies—informing both Customs operations and new technology development within NA-22's Countering Nuclear Smuggling Program. Additionally, Kreek established an operational pilot program with the Port Authority of New York and New Jersey to better understand how radiation detection systems could be used and implemented across transportation vectors such as bridges, tunnels, and airports.

Following this work, DOE detailed Kreek to assist the newly established White House Office of Homeland Security in creating the Department of Homeland Security (DHS) and DHS's Science and Technology (S&T) Directorate. Once DHS was launched in early 2003, Kreek and the entire DOE/NNSA Nuclear Smuggling R&D Program were transferred to DHS S&T with Kreek named a Radiological and Nuclear Countermeasures R&D program manager. Kreek increased the program's emphasis on nuclear forensics research and developed essential partnerships between DHS, DOE, and the national laboratories.

At the end of his offsite assignment in 2004, Kreek returned to a leadership role within Lawrence Livermore's Counterterrorism and Incident Response Division. He says, "Once you have a behind-the-scenes view of operations in D.C., you can more easily set direction and strategy at the Laboratory."

In 2019, Kreek returned to Washington, D.C., for a second assignment, this time bringing his breadth of expertise to be a science advisor to NNSA's DNN Deputy Administrator. Among other projects, Kreek helped the Surplus Plutonium Disposition

Program speed up the disposal of 40 metric tons of excess plutonium by identifying areas of improvement and recommending existing technologies that could be converted to streamline the disposal process. His efforts are anticipated to shave years off the decades-long, multibillion-dollar program.

After this assignment ended in 2021, Kreek's Livermore career shifted once again. His returning role focused on operations and personnel, as he oversaw the Return to New Normal team responsible for launching the Laboratory's telecommuting program and communicating COVID-19 updates to employees. Today, Kreek is the Human Resources (HR) Deputy Associate Director, a position that draws on his diverse experiences and perspectives to shape, refine, and plan HR process improvements enabling staff to execute the Laboratory's mission.

Planning for the Future

A typical offsite assignment lasts around two years, but nuclear engineer Chris Ryan demonstrates that no two assignments are the same. Since 2017, Ryan has served in an extended assignment as a senior technical analyst with DOE's Office of Intelligence and Counterintelligence, supporting the nuclear terrorism and security branch. In this role, Ryan reviews papers on intelligence analysis, providing technical insights related to nuclear weapons, radiochemistry, nuclear forensics, and nuclear engineering; and coordinates these papers with other agencies and laboratories prior to publication. Ryan has also briefed the secretary of energy on pressing nuclear issues and written technical documents read by the highest levels of U.S. policy makers, including the president.

Prior to his offsite assignment, Ryan worked in the Laboratory's Nuclear and Radiochemistry Group, contributing to stockpile stewardship, post-detonation nuclear forensics, and intelligence analysis. "Working at the Laboratory has put me at a unique advantage," says Ryan. "Here, a researcher can experience so many different things under one roof. The breadth of knowledge I have to offer, thanks to my work at Livermore, has led to a long and prosperous offsite assignment."

Since 2021, Ryan has split his time between DOE and NNSA's Office of Nuclear Forensics. In fact, he helped DOE write a presidential memorandum on nuclear forensics and then later, in his second assignment as an NNSA science advisor, witnessed the document's implementation. "Seeing the results of my technical analysis play out in the real world and come full circle is surreal," says Ryan. "As someone who has worked in this field since graduate school, having a direct hand in revamping the government's approach to nuclear forensics and pushing forward the next generation of research and planning is an amazing feeling."

Not every assignment requires a scientific background; some require extensive knowledge in international relations and nuclear deterrence strategy. For example, the Department of Defense (DOD) depends on experts like Paige Gasser, with a strong background in nuclear deterrence, nonproliferation, and arms control, to inform the nation's military strategies. Gasser started her offsite assignment journey in February 2021 as a senior policy advisor within the DOD's Office of the Under Secretary of Defense for Policy. The greater part of her multiyear assignment was spent advising in the Joint Staff's Strategy, Plans, and Policy Directorate—better known as the J5. In the J5, she was responsible for advising the Chairman and Vice Chairman of the Joint Chiefs of Staff and other senior leaders on a range of nuclear deterrence policy and strategy issues, primarily concerning arms control, extended deterrence, and the North Atlantic Treaty Organization (NATO)—an international, intergovernmental political and military alliance.

In both roles, Gasser worked on key strategy documents, namely the National Defense Strategy, Nuclear Posture Review, and Countering Weapons of Mass Destruction Strategy. With the J5, Gasser supported the Chairman in preparing his best military analysis, options, and plans for the president and secretary of defense on matters related to U.S. nuclear force posture. Gasser explains, "Being an advisor means knowing your audience and their knowledge base, for example, how much background they need on the topic at hand to successfully make decisions and strategically address some of the most pressing deterrence issues."

Throughout her assignment, Gasser played a major role in addressing the nuclear dimensions and implications of the Russia–Ukraine war and Russia's noncompliance with the New Strategic Arms Reduction Treaty, the last standing nuclear arms reduction treaty between the United States and the Russian Federation. "This assignment has strengthened my understanding of the broader nuclear security enterprise beyond Livermore," says Gasser. "Being so closely involved in addressing some of the emerging and ongoing security challenges we face is a vivid reminder of why our national laboratories exist, especially as future leaders try to navigate this complex era of strategic competition."

Bridging the Gap

Shock physicist Dayne Fratanduono started an 18-month assignment in 2018 for NNSA's Office of Experimental Sciences, providing technical expertise in high-energy density physics and materials science to federal program managers within the Dynamic Material Properties (DMP) program. Fratanduono explains, "Federal program managers who run research portfolios oversee technical decisions but may not have a background in a specific scientific field. In my role as a fellow, I served as an advisor on topics related to my area of expertise."

Fratanduono helped stand up a new capability at Argonne National Laboratory's Advanced Photon Source (APS) in support of nuclear weapons research. Classified research had not been permitted at the facility, but Fratanduono ushered in classified experiments at APS, ultimately putting the DMP program on

a better trajectory to utilize existing advanced light sources throughout the world.

Fratanduono says, "I spent a lot of time explaining and justifying to the federal government why enabling this capability would be of value and how it would advance the stockpile. To succeed, I conveyed messages that were simple, factually correct, and easy for the program managers to explain to their counterparts and up the chain of command." Upon returning to Livermore, Fratanduono was named the co-program working leader for Condensed Matter Physics (CMP) within the Weapon Physics and Design Program, applying his offsite experiences to help the CMP Program meet NNSA's needs.

While in Washington, D.C., Fratanduono crossed paths with Livermore experimental and nuclear physicist Dennis McNabb, serving in an offsite assignment for NNSA's Office of Defense Programs. Together Fratanduono and McNabb worked with members of Livermore's senior management team to educate federal stakeholders about the importance of the National Ignition Facility to the nuclear deterrent. McNabb focused on recommendations to improve the nuclear stockpile, speed up the modernization process, address production issues, and transform the enterprise to be more efficient and effective.

Additionally, McNabb served on the science council with other advisors, interfacing between the NNSA and JASON—an esteemed group of academics that provide national security advice to the government—putting together research requests for JASON to conduct on behalf of the NNSA and helping to facilitate those studies. "I had the opportunity to work with three other advisors, all from different DOE facilities. We truly bonded on the science council," he says. McNabb and his fellow council members also reviewed requests from the Committee on Foreign Investment in the United States, which handles export control, to ensure there were no potential national security issues.

"My time on assignment," says McNabb, "was a total change of pace from the normal day-to-day at Livermore. In D.C., my job was to explain the 'why' behind the science, to serve as a conduit between the federal government and the national laboratories rather than conduct hands-on, technical research." Upon returning to Livermore, McNabb was selected as Global Security's (GS) Deputy Principal Associate Director for Strategy and Programs. He remains a vital information conduit, working with external sponsors at the DOE and NNSA to ensure their priorities are reflected in the Laboratory's GS strategy.

Supporting Transformational Science

In October 2020, Heather Whitley entered a remote six-month assignment with NNSA's Office of Experimental Sciences (OES NA-113), within the Office of Research, Development, Test, and Evaluation (NA-11). OES NA-113 works closely with the national laboratories to deliver world-class experimental data, facilities, and expertise to support the needs of the Stockpile Stewardship Program. While on assignment, Whitley supported federal program managers in these endeavors by providing technical and advisory assistance on matters involving stockpile stewardship and applications of laboratory experiments and advanced simulations to problems of interest.

Along with NA-113, there are two additional offices under NA-11—the Office of Advanced Simulation and Computing and Institutional R&D Programs (NA-114) and the Office of Engineering, Stockpile Assessments, and Responsiveness (NA-115).


Steven Kreek


Chris Ryan


Paige Gasser

A major deliverable Whitley worked on was bridging these three offices in their strategic plan for artificial intelligence and machine learning (AIML). The efforts resulted in a draft AIML proposal geared toward exploring the use cases of AI and ML for improving information and data management processes, developing more efficient experimental designs, and building knowledge management tools to support knowledge transfer across the enterprise.

In a second deliverable, Whitley provided technical input to support the annual NNSA budget proposal. For this effort, Whitley helped break down technical details and summarize their importance to the program. In return, she gained a bird's eye view of the budget process. Upon completing her assignment, Whitley stepped into a new position with Livermore's Weapons and Complex Integration organization as Associate Program Director (APD) for High Energy Density Science. Whitley says, "Management is all about creating pathways and clearing obstacles to enable research, and my time on assignment taught me how to do this effectively in my role as APD."

Each offsite assignment story is different, yet all highlight the extreme value of the program to federal stakeholders and to scientists seeking career-broadening experiences. The experiences that fellows bring back to Livermore reflect how their offsite assignments have fundamentally altered their mindset and career, allowing them to become effective advocates for the sciences and embrace the meaning of nuclear stockpile stewardship. Fratanduono says, "A fellow on assignment is not advocating for Livermore or the other laboratories, but rather trying to do the right science for the enterprise and learning how science and policy come together."

Over the years, the number of Lawrence Livermore employees filling offsite assignment roles has increased tremendously. To better align the shared missions and priorities of the OFP, the Laboratory, and the federal government, the OFP board has conducted a strategic review of all assignments. As a result, the program has begun grouping assignments into one of three groups—those supporting relationships with current sponsors and partners, those developing new relationships with potential sponsors and partners, and one-off assignments that support an immediate and specific need at the request of a federal agency. The first two groups will be long-term assignments, filled on a rotating basis, while the final group will enable fellows to engage in unique assignments and are not intended to be backfilled after the original assignment is completed. This new strategy aims to equip Livermore employees with a diverse set of external opportunities, while ensuring the program is maximizing its resources.

–Shelby Conn

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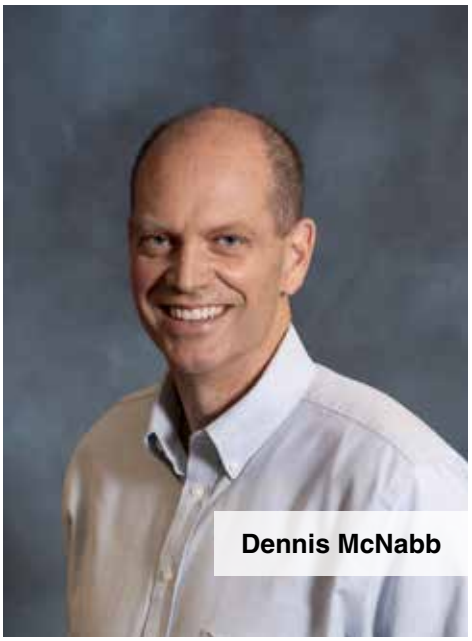
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