Research participant analyzed UAS radiation data to lower costs in detection missions

By Jordan Stidham

Danielle Nobles-Lookingbill, Ph.D., a participant in the U.S. Department of Homeland Security Domestic Nuclear Detection Office Summer Internship Program, used her background in mechanical engineering to enhance national security.

When Danielle Nobles-Lookingbill, Ph.D., started high school, young women were not strongly encouraged to study science, technology, engineering and math (STEM) programs. At this young age, she had not heard of engineering as a career. Times have changed. Now, women with advanced degrees in STEM disciplines are sought to fill professional jobs. Women comprised half of all STEM workers in the United States in 2018, according to the Pew Research Center.

Nobles-Lookingbill obtained a psychology degree with a certificate in criminal justice for her undergraduate studies. Much later, her inherent love for mathematics led to her pursuing a second bachelor's degree and a doctoral degree in mechanical engineering. The rewards of the change in her field of study have been numerous, but most significantly to Nobles-Lookingbill, she has had the opportunity to encourage students to pursue STEM careers.

Nobles-Lookingbill partnered with a Clark County (Nevada) School District representative to form a competitive robotics club at two local high schools. Together, they used the club as a platform to propel students into STEM occupations.

"As it has turned out, engineering has provided the career I love, as well as the gift of a new path to make a lasting difference in my community," she said.

While Nobles-Lookingbill was looking for a nuclear engineering-related internship opportunity, her professor at the time referred her to the U.S. Department of Homeland Security (DHS) Domestic Nuclear Detection Office (DNDO) Summer Internship Program. Nobles-Lookingbill saw the chance to blend her interests of nuclear mission security with robotics.

The DNDO Summer Internship Program provides opportunities for undergraduate and graduate students to participate in projects at federal research facilities across the United States. Participants address issues related to national security and nuclear detection to help DNDO meet its mission of preventing nuclear terrorism and training future generations of scientists.

“When people hear that my previous degree was in psychology and criminal justice, and I finished a Ph.D. in mechanical engineering, they nearly always give a perplexed look. Admittedly, it does seem strange on the surface. However, the DNDO Summer Internship Program has bridged that gap. This program gave me the opportunity to be an integral part of a science and engineering team with a national security mission,” she explained.

During the internship, Nobles-Lookingbill was a part of the Unmanned Aerial Radiation Detection Team, comprised of scientists and engineers. This team operated at the Remote Sensing Laboratory in Las Vegas, Nevada (RSL-N).

“Beginning with my first day, I was always made to feel part of the team by every team member. The entire RSL-N community was so gracious in providing me insight and the information necessary to complete my tasks,” she said.

As a participant in the DNDO Summer Internship Program, under the mentorship of scientist Russell Malchow, Ph.D., Nobles-Lookingbill was involved in many tasks. She reviewed previously collected unmanned aerial system (UAS) radiation data and completed analysis to provide information regarding the current UAS capability. This capability can provide valuable public health information in areas where radioactive material may be present without exposing human workers. This information can be used to guide decisions creating safe distance perimeters to guard workers and the community from unwanted radiation exposure.

Nobles-Lookingbill was invited to participate in the Counterterrorism Operations Support Preventative Radiological/Nuclear Detection On-Site Program, in which she earned Primary and Secondary Screener Certifications. Nobles-Lookingbill was also provided Mission Planner and Piccolo training for UAS missions. She used this training to compile and execute a UAS radiation detection mission, in which she and the team successfully collected test data.

“This experience has benefitted me tremendously. This program has opened the door to a career that combines my seemingly eclectic academic history by combining engineering research with a national security goal,” she said.

Nobles-Lookingbill graduated in December 2018 from the University of Nevada, and she is actively pursing career opportunities within the mission of national nuclear security. She is confident that the experience and training she gained throughout her participation in the DNDO Summer Internship Program have increased her skill set and identified her as a competitive researcher.

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http://www.pewsocialtrends.org/2018/01/09/diversity-in-the-stem-workforce-varies-widely-across-jobs/