SANDIA LABNEWS
PUBLISHED SINCE 1949

Vol. 77, No. 12, June 26, 2025

Sandia, LANL co-plan better buildings **Page 8**

Flagship course reaches milestone

DETERRENT MODEL — As part of a training about physical security for nuclear facilities and materials, a room is filled with smoke to demonstrate a deterrent. Sandia hosted more than 40 participants from 28 countries for the flagship International Training Course. **Photo by Craig Fritz**

By **Kenny Vigil**

More than 40 nuclear site operators, regulators and policy makers from 28 countries gathered recently at Sandia for a deep dive into physical protection systems for nuclear facilities and materials.

This year's International Training Course on the Physical Protection of Nuclear Materials and Nuclear Facilities, or ITC, marked the 30th session of the class, which has seen more than 1,000 participants from 70 countries.

Sandia developed the course for the International Atomic Energy Agency and the NNSA Office of International Nuclear Security in 1978. Globally, ITC is considered the flagship course on physical

— CONTINUED ON PAGE 5

Inspiring the next generation of microelectronics experts

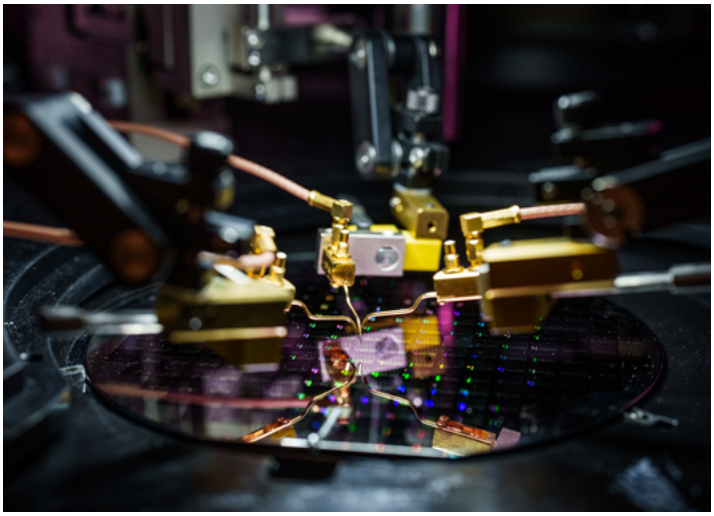
Sandia provides hands-on experience for U.S. students in critical, growing area

By **Mollie Rappe**

For the second consecutive summer, bright, inquisitive young minds will join Sandia's Microsystems Engineering, Science and Applications Complex through the Student Intern Group for Microelectronics Advancement, known as the SIGMA institute.

Last summer, the SIGMA institute provided 12 undergraduate and graduate students with hands-on experiences ranging from cutting-edge research fields such as brain-inspired computing, to microelectromechanical production systems and photonics devices. The institute also offered mentorship, tours of Sandia

— CONTINUED ON PAGE 6



TINY TESTER — Sandia intern Jared Arzate remotely operates a device to test the effect of temperature on brain-inspired computing devices. **Photo by Craig Fritz**

SANDIA LABNEWS
PUBLISHED SINCE 1949
Managed by NTESS LLC for the National Nuclear Security Administration

Sandia National Laboratories

Albuquerque, New Mexico 87185-1468
Livermore, California 94550-0969
Tonopah, Nevada | Kauai, Hawaii
Amarillo, Texas | Carlsbad, New Mexico | Washington, D.C.

Katherine Beherec, Editor kgbeher@sandia.gov
Ray Johnson, Production rbjohns@sandia.gov
Craig Fritz, Photographer cvfritz@sandia.gov
Michael Langley, California Contact mlangle@sandia.gov

CONTRIBUTORS

Michelle Fleming (milepost photos, 505-844-4902), **Kristen Meub** (505-845-7215), **Troy Rummler** (505-284-1056), **Meagan Brace** (505-844-0499), **Mollie Rappe** (505-288-6123), **Skyler Swezy** (505-850-2063), **Lea Blevins** (lsblevi@sandia.gov), **Kenneth Vigil** (505-537-1528), **Luke Frank** (505-844-2020), **Michael Baker** (505-284-1085), **Valerie Alba** (vnalba@sandia.gov), **Maggie Krajewski** (mkrajew@sandia.gov), **Kim Vallez Quintana** (505-264-1886)

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

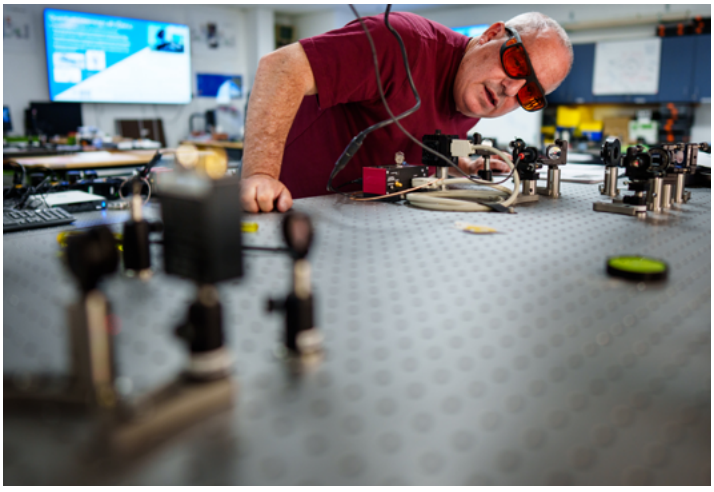
Published on alternate Thursdays by Communications, MS 1468

LAB NEWS ONLINE: sandia.gov/LabNews

TABLE of CONTENTS

EDITOR'S NOTE: Please send your comments and suggestions for stories or for improving the paper. If you have a column (500-800 words) or an idea to submit, contact the Lab News editor at labnews@sandia.gov.

Quantum Bootcamp



QUANTUM TRAINING — Final equipment installation is taking place at Central New Mexico Community College for the Quantum Technician Bootcamp. The program launches this fall and is a collaboration between Sandia and the college. **Photo by Craig Fritz**

A look inside New Mexico's quantum training lab

By **Kenny Vigil**

The final touches are underway, including the installation of quantum lab equipment, as Central New Mexico Community College, or CNM, prepares to welcome students to its Quantum Technician Bootcamp. Students don't need a math or science background to participate in the 10-week program.

The project, a collaboration between Sandia and CNM, is designed to give students the hands-on skills necessary for job placement in the industry as quantum technicians. Sandia and CNM are partnering to build the lab and develop the curriculum for the 400-hour course through a Cooperative Research and Development Agreement. The first cohort will start in the fall.

"We're leading the nation in building a quantum technician training program to get students job-ready in a semester-long bootcamp," said Megan Ivory, a quantum scientist at Sandia. "Most students don't get introduced to quantum until their junior or senior year of undergraduate school if they're majoring in physics or engineering."

Megan is also one of the co-founders of QCaMP, which introduces quantum computing to high school students and teachers. That work will provide the foundation for the Quantum Technician Bootcamp curriculum.

"This is immersive training with hands-on experience," said Brian Rashap, a professor spearheading the effort for CNM. "I would say 70% to 80% of the curriculum is hands-on experience." He added that there are only a handful of quantum training programs for technicians across the country.

LEARNING LAB — Brian Rashap, a professor at Central New Mexico Community College, sets up equipment for a quantum training lab. Sandia and the college teamed up to create a Quantum Technician Bootcamp, which is a 10-week immersive program that will launch in the fall. **Photo by Craig Fritz**

Training program roadmap

Sandia, a member of the Quantum Economic Development Consortium, helped lead a workshop at CNM in 2023 to delve deeper into the current needs for quantum technicians in the United States. The industry's feedback indicated that a training program at an academic institution would be beneficial and ease some of its burden.

"We developed a report, and it provided recommendations for establishing training programs that can address some of the gaps identified," said Jake Douglass, a business development specialist at Sandia. "The report was a big piece of getting our partners at CNM engaged to establish the Quantum Technician Bootcamp."

Lab training space

The lab space in downtown Albuquerque is colocated with CNM's FUSE Makerspace to provide access to a variety of tools and capabilities that benefit quantum systems. The lab is set up with optical tables that host several experiments to train in-demand skills for technicians at quantum companies.

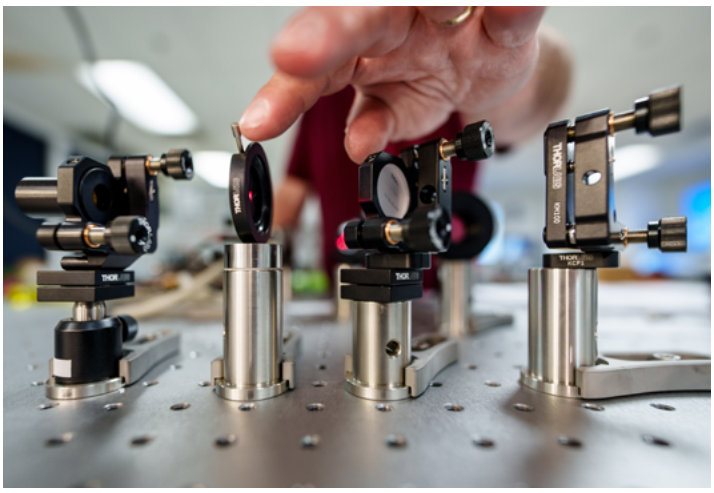
Students will learn about lasers and photonics. They will also learn how to measure and manipulate properties of light. With hands-on work to build optical setups, they will learn about quantum phenomena such as entanglement, where two quantum particles link together in a certain way, no matter how far apart they are in space.

High-vacuum training systems, such as those found at Sandia's Microelectronics Engineering and Science Applications complex and in many different quantum systems, have been installed to provide hands-on experience working in low-pressure environments.

Finally, the photonics, vacuum systems and quantum concepts all come together in a magneto-optical trap experiment where magnets and lasers are used to confine and cool atoms for use in quantum computing, quantum sensing and quantum communication.

"We're building a laboratory that can address many of the skills needed at national laboratories and that industry partners said they would really value in a technician," Megan said.

Each Quantum Technician Bootcamp is expected to include about 12 students so they can work on each experiment in small groups and get hands-on experience.



BUILDING CAPACITY — To address an anticipated increase in demand for quantum technicians, Sandia and Central New Mexico Community College have been collaborating to create a Quantum Technician Bootcamp. Program organizers say the only prerequisites for the course are knowing how to use a computer mouse and a calculator. **Photo by Craig Fritz**

Why now?

Having a trained workforce is key especially as quantum information science taking place in research and academic laboratories begins moving into industry due to its potential for commercialization.

"Over the past decade, we've had a large increase in the number of quantum jobs. We don't have enough people to fill the jobs," Megan said. "We expect the demand is going to increase."

Right now, about 57% of quantum jobs require a graduate degree, according to data from Lightcast, which analyzes the labor market. Over the next 10 years, the number is expected to shrink to less than 30% as demand increases for bachelor's level degrees or below.

"It's important to start training programs now because it's going to take us a while to develop that quantum workforce," Rashap said. "Our program will provide training for quantum-adjacent fields such as semiconductor and solar cell manufacturing."

Megan added, "A lot of times you will see businesses and offices in places where there is a strong, trained workforce."

She hopes the workforce development programs being established here in New Mexico will result in new business and job opportunities in the coming years.

New Mexico's role in quantum

New Mexico has a long history in the quantum field because of Sandia and Los Alamos national laboratories and the academic research institutions in the state.

"New Mexico has foundational quantum programs — in ways that almost no other region does — that have enabled the rest of the quantum ecosystem. Some of the largest startup quantum computing companies used Sandia-developed technologies," Jake said. "We're focusing on giving New Mexicans opportunities to engage in this field by bringing industry here."

Providing opportunities for Americans who want to be a part of the quantum industry is a big part of planning the Quantum Technician Bootcamp.

"We want to reduce the barriers to entry," Rashap said. "You need to know what a computer mouse is, and you need to be able to divide using a calculator. If you can do those two things, we're going to teach you everything else."

Ready for bootcamp

The first Quantum Technician Bootcamp is scheduled in the fall, with plans to offer the program twice a year starting in 2026.

"Our partners at CNM have taken the lead to move this project forward in ways we couldn't have done on our own," Jake said. "We're incredibly excited to partner with CNM to launch this innovative program." He added that Sandia is looking to partner with additional academic institutions in New Mexico for quantum programs.

Anyone interested in learning more about the program can click here.

Elevate Quantum, a consortium of more than 120 organizations, is one of the main funders of CNM's Quantum Technician Bootcamp.

The quantum impact

Quantum may not be a word in your everyday vocabulary unless you're working in the field, but it is impacting our lives in ways many of us might not recognize.

"Quantum is already all around us, and we've already seen tremendous impacts from quantum as a field," said Megan Ivory, a physicist at Sandia. "Solar panels, MRI devices and atomic clocks all rely on quantum properties. If you've used Google Maps to figure out where you're going, then you've already used an atomic clock, which is a quantum system."

Sandia physicist Megan Ivory **Photo by Craig Fritz**

Megan said there are many different applications where quantum computing can be beneficial.

"One of the things that I like to talk about is quantum chemistry, which is a tool for modeling chemicals and molecules. These models become difficult for even our supercomputers today as you build more complex molecules," she said.

She added that quantum computing has the potential to help create life-saving medicine more quickly. "There's a lot of potential for the quantum field to impact people's lives down the road."

Learn more about Sandia's quantum work by visiting the Sandia Quantum website.

WATCH
Brian Rashap sets up a demonstration on an optical table. **Video by Craig Fritz**

Training course

CONTINUED FROM PAGE 1

protection for nuclear facilities and materials.

Sondra Spence, manager of Sandia's Nuclear Security Engineering department, directs the course and is one of 20 experts from across the Labs who taught during the two-week course in May.

"Sandia is home to world-class experts across every physical security discipline," she said. "The depth of our team and our ability to use Sandia's unique facilities for hands-on exercises make this course a standout."

Course evolution

Greg Baum, manager of Sandia's Global Security Training, Testing and Evaluation department and one of the previous course directors, worked with Sondra to update the course about 10 years ago.

"Before the revamp, most of the learning was done in the classroom," he said. "We decided to incorporate more field training that could help bring theory to life."

The Integrated Security Facility at Sandia's Nuclear Security Technology Complex provides a realistic venue that mimics most of the facilities in the nuclear fuel cycle. It also has the necessary infrastructure to demonstrate physical security systems and their applications.

"When we take participants into the Integrated Security Facility and put them in operational environments, they get a better understanding of how all of the different technologies are integrated into one system and how that system should be applied and evaluated," Greg said.

And it's not just operators who benefit from field exercises.

"We've had participants who work at regulatory bodies who have never stepped into a nuclear facility. The mock environments give them a much better understanding and awareness of what security implementation looks like, and that helps them do their jobs more effectively," Sondra said.

FIELD LEARNING — Participants in the International Training Course get a closer look at how vehicle access control plays a role in the overall physical security plans for nuclear facilities and materials. During the two-week course at Sandia, participants got hands-on experience in the field, in addition to classroom time.
Photo by Craig Fritz

The hands-on component is not the only change to the class in its almost 50-year history. Moving beyond traditional, large-scale nuclear power plants and research reactors, the course now includes discussion on physical security for multiple types of advanced and small module reactors. Other recently included course modules include cybersecurity and evolving threats.

"During the second week of ITC, we introduce participants to Sandia-developed software modeling tools so they can build virtual models of their sites for realistic tabletop exercises and assessments," Sondra said. "Our goal is for ITC — and Sandia — to continue to be at the forefront of security system design and assessment technologies."

TAKING NOTE — During field training, International Training Course participants write notes about best practices for physical security of nuclear facilities and materials. Sandia created the course for the International Atomic Energy Agency and NNSA in the late 1970s.
Photo by Craig Fritz

Confidence and consistency

The primary goals of ITC are to ensure the security of nuclear materials and facilities and to build a community of practice that adheres to international security standards.

"If nuclear materials are mishandled, there are obvious risks to the environment and the public. That's why there are strict safety and security protocols," Sondra said. "It's important that sites have a common understanding of how to validate and understand the performance of their physical security systems."

The course teaches a systems engineering approach to physical security, which relies on an iterative process to define, design and evaluate physical protection systems.

"The nuclear generation landscape is evolving, including with small modular reactors. Our goal is to understand how this evolution affects security needs and requirements," Sondra said. "We want ITC to provide our international partners with a systems-based approach to physical security that can be applied to current and future sites."

Moving forward

Sondra's team looks forward to hosting more participants to support global nuclear security.

"The ITC is genuinely one of my favorite projects, because we have the opportunity to meet and work with a broad cross-section of people from around the world and make a measurable impact on nuclear security globally."

SIGMA institute

CONTINUED FROM PAGE 1

research facilities, professional development seminars and opportunities for participants to showcase research at the end of the summer. This summer the institute is hosting 21 interns.

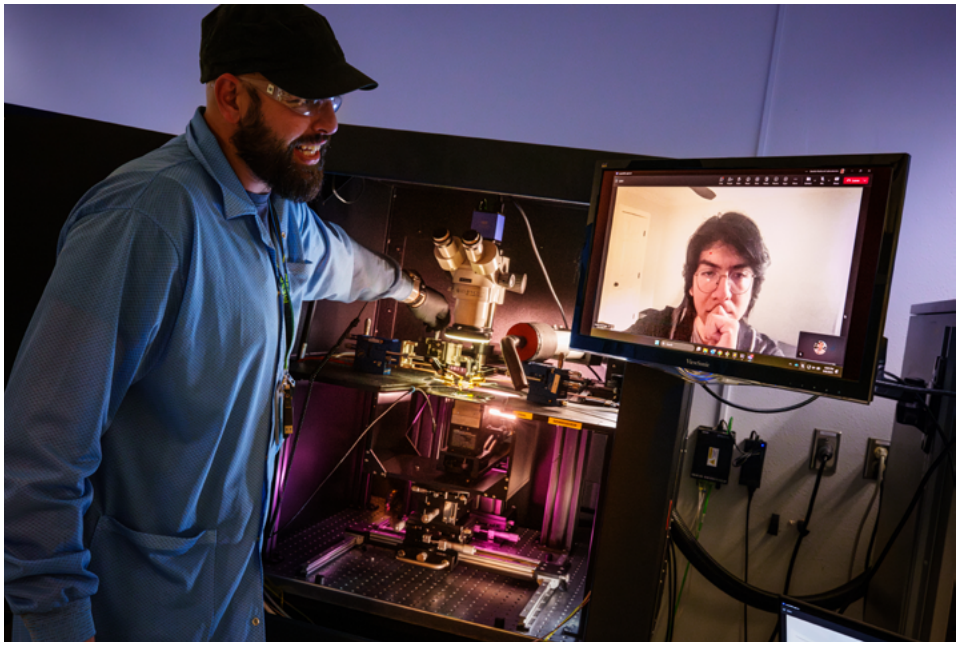
Launched in response to the 2022 Creating Helpful Incentives to Produce Semiconductors act, the SIGMA institute addresses a growing national demand for microelectronics talent. While the CHIPS Act spurred interest in redeveloping an onshore semiconductor industry, it also intensified competition for scientists, engineers and technicians, said Alan Mitchell, a manager with Sandia's MESA workforce development team who recently retired. To meet that challenge, a volunteer team of Sandia managers and researchers spearheaded the SIGMA institute and are collaborating with Arizona State University's Southwest Advanced Prototyping Hub, Alan said.

"The government needs highly trained microelectronics experts that understand the industry, the technology and capabilities," Alan said. "Our focus is on creating a pipeline of interns who experience the value of national service and national security work. By showing students there are really cool jobs at Sandia, the hope is that we will have a population of interns that will be interested in longer-term careers at the Labs and other government agencies."

Although MESA has hosted interns for decades, SIGMA's expanded recruiting efforts have attracted even more top talent, Alan said. The institute also partners with Sandia's Securing Top Academic Research and Talent program to reach untapped groups of U.S. citizens. Attracting students capable of obtaining security clearances is vital to MESA's mission of developing and producing trusted microelectronics for critical national security systems.

Experience, mentorship and tours

Through SIGMA, interns gain hands-on research experience in growing areas of microelectronics, including design and testing, fabrication engineering and packaging — fields critical to national security.



TEAMWORK, REMOTELY — Sandia electronic device engineer Robin Jacobs-Gedrim, left, assists SIGMA intern Jared Arzate as he remotely operates a device to test the effect of temperature on brain-inspired computing devices. **Photo by Craig Fritz**

Working alongside Sandia's microelectronics experts on their research projects, interns gain experience in tasks ranging from writing computer code and running scripts to testing devices and assembling circuit boards, Alan said.

Robin Jacobs-Gedrim, an electronic device engineer at MESA, mentored two undergraduates last summer: Melvin Witten from Alabama Agricultural and Mechanical University and Jacob Martinez-Marez from New Mexico State University. Both worked on brain-inspired devices that mimic the way neurons move ions to potentially process information more efficiently than traditional chips. One intern studied how temperature affected a device's ability to "remember" its programmed resistance, while the other used computer modeling to better understand the device's physics.

Beyond their research projects, the interns are introduced to the breadth of Sandia's research with tours of research facilities, including the MESA fabrication center, the National Solar Thermal Test Facility and the Primary Standards Laboratory.

Robin also formalized a professional development series for interns he had piloted within his department, expanding it into a structured program for all SIGMA interns featuring guest lecturers from across the MESA complex.

"There are a lot of things that are not really taught in school about working in a professional environment or at a national lab," Robin said. "There are a lot of things you can't really learn anywhere else, but we don't want students to have to learn these lessons the hard way."

The seminars cover practical skills such as reading scientific papers, creating effective graphs, applying to graduate school and exploring career paths with individuals from a range of research experiences. Robin added several interns followed up with questions related to his "how to apply to graduate school" seminar, including how to ask for letters of recommendation and apply for student grants.

Interns also attend technical seminars, including several sessions hosted by the Quantum Computing Mathematics and Physics program for high school students and teachers. At the end of the summer, SIGMA interns also can participate in events with Sandia's broader Student Intern Programs and present their research

through talks or posters.

Some interns transition into part-time, year-round roles while continuing their education. Additional year-round interns have been hired through SIGMA as well.

Research results and giving back

In addition to building a pipeline of microelectronics experts with experience working on national security topics, Sandia benefits immediately from interns' research contributions, Alan said.

Robin agreed, noting that several of his interns over the years have produced enough data for first-author scientific papers, and approximately half have contributed to published results.

"One of the most rewarding parts of my job is getting a student who has studied for a long time to do research to the point where they produce their first original scientific result and seeing them realize 'hey, this is a new piece of knowledge that no one else has ever found,'" Robin said. "It's so cool to watch. Seeing their eyes light up with that success is more rewarding than almost anything else, including success in my own research."

But that's not the only reward Robin receives from mentoring.

"What I get out of mentoring is the opportunity to give back and offer others the same experience I had," Robin said. "Seeing what the work was like, having the experience of what people actually did in a research career helped me keep going in college and graduate school."

Robin's own journey began at Sandia when he interned as a sophomore at Albuquerque's Valley High School, inspired by Sandia physicist Danelle Tanner who had visited his second grade classroom as part of the Labs' Science Advisors program.

He is far from the only Sandian who got their start as an intern. Several of his colleagues have had similar career trajectories, he said. Even one of the undergraduate interns Robin helped mentor when he was a postdoctoral researcher, Steven DiGregorio, now works at the Labs as a postdoctoral researcher himself.

Sandia to help propel US semiconductor manufacturing

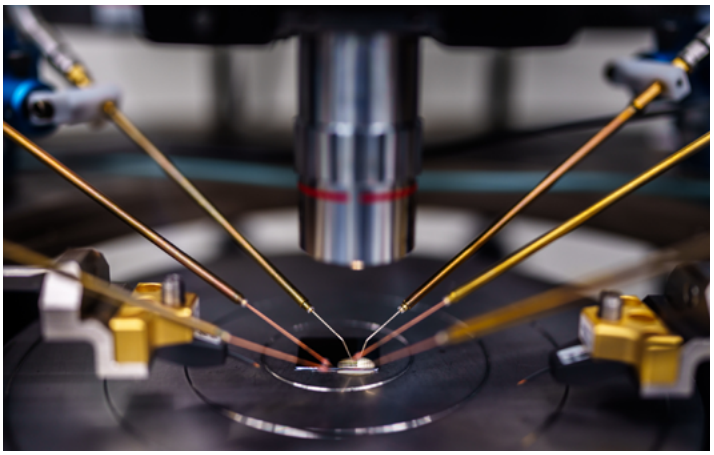
By **Kim Vallez Quintana**

Sandia has joined a new partnership aimed at helping the United States regain its leadership in semiconductor manufacturing.

While the U.S. was considered a powerhouse in chip production in the 1990s, fabricating more than 35% of the world's semiconductors, that share has dropped to 12%. Today, the U.S. manufactures none of the most advanced chips that power technologies like smartphones, owned by 71% of the world's population, as well as self-driving cars, quantum computers, and artificial intelligence-powered devices and programs.

Sandia hopes to help change that. It recently became the first national lab to join the U.S. National Semiconductor Technology Center. The center was established under the CHIPS and Science Act to accelerate innovation and address some of the country's most pressing technology challenges.

"We have pioneered the way for other labs to join," said Mary Monson, Sandia's senior manager of Technology Partnerships and Business Development. "The CHIPS Act has brought the band back together, you could say. By including the national labs, U.S. companies and academia, it's really a force multiplier."



MESAFAB — A semiconductor is tested to see if it meets specifications at Sandia's MESAFab complex. The complex develops and maintains core semiconductor processing capabilities that enable customers to build differentiating microsystems products. **Photo by Craig Fritz**

Sandia has a long history of contributing to the semiconductor industry through research and development partnerships, its Microsystems Engineering, Science and Applications facility, known as MESA, and its advanced cleanrooms for developing next-generation technologies. Through National Semiconductor Technology Center partnerships, Sandia hopes to strengthen U.S. semiconductor manufacturing and research and development, enhance national security production, and foster the innovation of new technologies that sets the nation apart globally.

"The big goal is to strengthen capabilities. Industry is moving fast, so we are keeping abreast of everything happening and incorporating what will help us deliver more efficiently on our national security mission. It's about looking at innovative

ways of partnering and expediting the process," Mary said.

The urgency of the effort is evident. The pandemic provided a perfect example as car lots were left bare and manufacturers sat idle, waiting for chips to be produced to build new vehicles.

"An average car contains 1,400 chips and electric vehicles use more than 3,000," said Rick McCormick, Sandia's senior scientist for semiconductor technology strategy. Rick is helping lead Sandia's new role. "Other nations around the globe are investing more than $300 billion to be leaders in semiconductor manufacturing. The U.S. CHIPS Act is our way of 'keeping up with the Joneses.' One goal is for the U.S. to have more than 25% of the global capacity for state-of-the-art chips by 2032."

Sandia is positioned to play a key role in creating the chips of the future.

"More than $12 billion in research and development spending is planned under CHIPS, including a $3 billion program to create an ecosystem for packaging assemblies of chiplets," Rick said. "These chiplets communicate at low energy and high speed as if they were a large, expensive chip."

Modern commercial AI processors use this approach, and Sandia's resources and partnerships can help expand access to small companies and national security applications. MESA already fabricates high-reliability chiplet assembly products for the stockpile and nonproliferation applications.

Rick said Sandia could also play a major role in training the workforce of the future. The government has invested billions of dollars in new factories, all of which need to be staffed by STEM students.

"There is a potential crisis looming," Rick said. "The Semiconductor Industry Association anticipates that the U.S. will need 60,000 to 70,000 more workers, so we need to help engage the STEM workforce. That effort will also help Sandia bolster its staffing pipeline."

As part of its membership, Sandia will offer access to some of its facilities to other National Semiconductor Technology Center members, fostering collaboration and partnerships. Tech transfer is a core part of Sandia's missions, and this initiative will build on that by helping private partners increase their stake in the industry while enabling Sandia to build on its own mission.

HIGH STANDARDS — Hruby Fellow Samantha Jaszewski works at the Microsystems Engineering, Science and Applications facility.

Photo by Craig Fritz

"We will be helping develop suppliers and strengthen our capabilities," Mary said. "We are a government resource for semiconductor knowledge. We are in this evolving landscape and have a front row seat to what it will look like over the next 20 years. We are helping support technology and strengthening our national security capabilities and mission delivery."

WATCH
Take a virtual tour of MESA.
Video by Creative Services

Sandia and Los Alamos labs set DOE's first joint building information modeling standards

By **James Stewart**

Sandia and Los Alamos national laboratories have launched a joint initiative to standardize 3D design and building information modeling practices.

It's a joint effort aimed at optimizing infrastructure delivery, costs and mission readiness to support the nuclear security enterprise.

The partnership, the first of its kind in the DOE, supports the NNSA's strategy to modernize facilities using data-driven infrastructure practices. Building information modeling combines 3D visualization with embedded facility data to support every phase of a building's life cycle, from design and construction to long-term maintenance and upgrades.

While 3D modeling and building information modeling tools are used at other DOE sites, this marks the first coordinated initiative to align around a shared set of modeling standards tailored to mission needs. Experts from Sandia and Los Alamos say that consistent, transparent design data is already improving collaboration, reducing rework and lowering the risk of costly project errors.

"Sandia already built something thoughtful and well-tested," said Bruce Gunderson, manager of the Virtual Build Environment Office at Los Alamos. "We worked with their team to adapt it to LANL's needs, and it's already made a difference."

The partnership builds on years of informal collaboration but has accelerated over the past three to four years, with teams sharing software templates, workflows and lessons learned. Matt Pacheco,

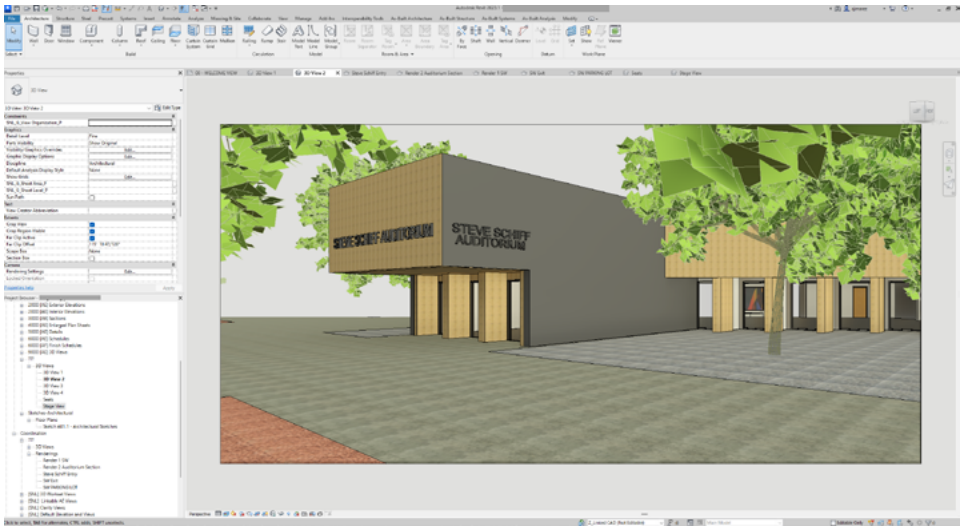
Sandia's Facilities building information modeling team lead, said the goal is to improve how project data is created, structured and used for both labs and across the life cycle of every facility.

"It's inspiring to see DOE laboratories increasingly solving problems as a united team rather than as individual sites," said Michael Richardson, Engineering Services division leader at Los Alamos. "The joint BIM standards from SNL and LANL exemplify this collaborative spirit."

Building on this foundation, Gunderson noted that Los Alamos has successfully deployed Sandia's templates in its environment, streamlining coordination with design teams and cutting down on duplicate work. That foundation now supports consistent engagement with architecture and engineering firms, ensuring clean hand offs between design and delivery.

"The standards are structured for the people who actually use them," Matt said. "That includes the architectural and engineering partners delivering our projects."

Richardson explained the practical implications of this collaboration, noting that New Mexico has a relatively small pool of engineering and construction contractors, many of whom work with both Sandia and Los Alamos. "By aligning on a single BIM standard, the labs are making it easier for these contractors to deliver projects more efficiently," he said.



MODEL PARTNERSHIP — An example data-rich 3D model used by Sandia and Los Alamos national laboratories. The labs are jointly standardizing building information modeling practices to improve infrastructure delivery across the nuclear security enterprise. These models include detailed information such as equipment specifications, maintenance history or space utilization.

Screenshot courtesy of Jude Garcia

This efficiency is further enhanced by the technology itself. "The 3D environment gives everyone from designers, contractors and facilities teams immediate access to a shared source of truth," Sandia computer-aided drafting and design technologist Jude Garcia said. "That translates to faster decisions, fewer errors and ultimately cost savings."

Jude emphasized that building information modeling is more than a visualization tool — it's an operational asset. "When someone looks at a pump, door or piece of equipment in the model, they also see its specs, history and maintenance needs," he said.

Looking ahead, Gunderson, Matt and Jude anticipate long-term benefits from the alignment, including smoother contractor coordination, faster onboarding and fewer missteps during design and construction. For NNSA, those gains directly support safer, more responsive and more cost-effective infrastructure delivery.

"Standardizing how we design and deliver infrastructure is one of the smartest, most scalable investments we can make," said Jeff Heath, associate laboratories director for Sandia's Infrastructure Operations Division. "This collaboration shows what's possible when we align tools and talent in service of national security."

"It's exciting because other labs are getting involved. That means we're not just solving problems locally…we're building something the whole enterprise can use," Jude said.

Eight additional sites, including Sandia California, Savannah River Nuclear Solutions, Pacific Northwest National Laboratory, the National Renewable Energy Laboratory, Idaho National Laboratory, the Naval Reactors Facility in Idaho and Lawrence Livermore National Laboratory, participate in a monthly coordination meeting with Sandia. That growing interest signals a broader shift toward enterprise-wide building information modeling, with Sandia and Los Alamos helping lead the way toward more unified, data-driven infrastructure across the nuclear security enterprise.

Nuclear deterrence expert picked to lead Sandia's California site

Toby Townsend named Integrated Security Solutions ALD

By **Michael Ellis Langley**

Sandia has selected nuclear deterrence expert Toby Townsend to lead its California campus, effective June 16.

Toby will serve as associate Labs director for Sandia's Integrated Security Solutions Division. In this role he will oversee operations at the Livermore campus, manage the California Nuclear Deterrence programs, direct Sandia's Energy and Homeland Security portfolio, and lead a workforce of more than 2,000 staff across California, New Mexico, Texas and Alaska.

He has spent his more than 20-year career at Sandia specializing in nuclear deterrence and national security. Labs Director Laura McGill cited Toby's track record in delivering complex systems and programs across the nuclear security enterprise as a key factor in his selection.

"His leadership in both nuclear deterrence and national security space programs reflects his deep technical expertise and commitment to Sandia's mission," Laura said. "Toby has built trusted partnerships across Sandia, NNSA, the DOD and other government agencies. He understands the responsibility that comes with delivering national security systems that must work the first time and every time. He's shown the ability to drive results while supporting the people and culture that make Sandia exceptional."

Toby joined Sandia as an intern in 1999 before working as an electrical engineer supporting work related to the Comprehensive Nuclear-Test-Ban Treaty. He has held leadership roles in national security space programs, nuclear detonation detection and defense nuclear nonproliferation. Most recently, he served as director of nuclear deterrence systems, guiding the W80-4 warhead modernization program and leading the California stockpile systems and engineering services teams.

"I am excited and grateful to be provided the opportunity to continue Sandia National Laboratories' amazing tradition of exceptional service in the national interest here in Livermore," he said. "This site has a rich history of doing incredibly vital things for national security and partnering with the community."

TAKING OVER — Toby Townsend began his tenure as Associate Labs Director for Integrated Security Solutions on June 16.

Photo by Lonnie Anderson

Toby holds a master's degree in electrical engineering from Princeton University and a bachelor's degree in electrical engineering from the University of New Mexico. He lives in the Bay Area with his family and said he looks forward to deepening Sandia's role as a community partner in Livermore and the Tri-Valley.

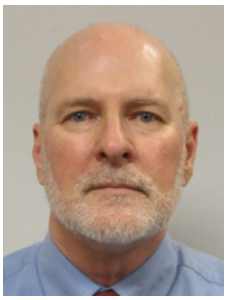
Career connections

NETWORK — Alice Strack, left, and Jacob Trappett chat with representatives from nuclear deterrence groups during Careerapolooza Building Bridges: Your Career Expo Awaits on June 5. This event, the last of series that began in March, featured representatives from 11 divisions at Sandia and a chance for staff to learn about various career paths at the Labs. Director of Strategic Talent Management Tobie Webb delivered opening remarks. Sandia staff can visit the Career Development Office website for more resources and information about upcoming events.

Photo by Craig Fritz

Mileposts


Roger Showalter 40


Chuck Rhykerd 30


Pavel Bochev 25


Courtney Dornburg 20


Sam Durbin 20


Steve Feador 20

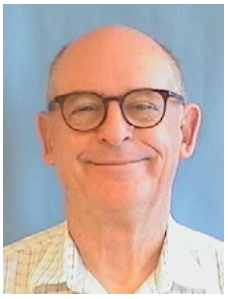

Bertha Haner 20


Brent Kucera 20


James Levy 20


Sarah Mahoney 20


Paul Mariner 20


Dirk Pruitt 20


Patrick Barnes 15


Marcus Chavez 15


Philip Huffman 15


Anthony Matta 15


Mark Pepple 15


Jennifer Rivera 15


Robbie Sanchez 15


Stephanie Shreck 15


Luke Shulenburger 15


Trey Skaggs 15


Jeremy Wendt 15


Marc Williams 15


Nick Wyatt 15

Recent Retirees


Larry Kincaid 30