



SANDIA CELEBRATES NATIONAL ENGINEERS WEEK

B61-12 system production ends, sustainment begins



MAJOR MILESTONE — Two B61-12 joint test assembly units are prepared for shipping at Sandia’s Weapon Modernization Lab. The last production unit of the nuclear gravity bomb was completed at the Pantex Plant in December. **Photo by Craig Fritz**

Weapon fully transitions into stockpile sustainment

By **Kenny Vigil**

Sandia and the nuclear security enterprise have achieved a significant milestone for the nation’s nuclear deterrence program with the completion of the last production unit of the B61-12 nuclear gravity bomb in December. While the last production unit is now complete, the B61-12 program is still producing spare components and pursuing program closeout activities into fiscal year 2026.

“It’s a tremendous accomplishment,” said Rich Otten, a Sandia senior manager involved in the design and production aspects of the B61-12 Life Extension

— CONTINUED ON PAGE 4

Recycling products from the inside out

Sandia scientists tackle plastic pollution

By **Kim Vallez Quintana**

What if plastics could self-destruct when their time as a useful product ends? Scientists at Sandia are exploring this concept in one of their latest projects.

“Many researchers are trying to discover better ways to break down and recycle plastics. It’s a very busy area of research right now,” Sandia organic materials scientist Brad Jones said. “We at Sandia were thinking about how we could contribute to this area.”

When Brad, Oleg Davydovich, Samuel Leguizamon, Koushik Ghosh and former Sandia postdoctoral researcher Matthew Warner combined their expertise, they developed a concept they hope will be groundbreaking.



FROM THE INSIDE OUT — Organic materials scientist Brad Jones examines a mixture of ingredients that will be microencapsulated as part of a new technology developed by his team at Sandia with the goal of recycling materials from the inside out. **Photo by Craig Fritz**

— CONTINUED ON PAGE 5

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),

Neal Singer (505-846-7078), Kristen Meub (505-845-7215),

Troy Rummier (505-284-1056), Meagan Brace (505-844-0499),

Mollie Rappe (505-288-6123), Skyler Swezy (505-850-2063),

Kim Vallez Quintana (505-264-1886), Kenneth Vigil (505-537-1528),

Luke Frank (505-844-2020), Michael Baker (505-284-1085)

Maggie Krajewski (mkrajew@sandia.gov),

Valerie Alba (vnalba@sandia.gov), Lea Blevins (lsblevi@sandia.gov)

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 Internal, Digital and Executive Communications, MS 1468

LAB NEWS ONLINE: sandia.gov/LabNews

TABLE of CONTENTS

- 1** | B61-12 system production ends, sustainment begins *continued on page 4*
- 1** | Recycling products from the inside out *continued on page 5*
- 2** | National achievement award goes to Sandia engineer
- 6** | Engineers Week 2025
- 7** | Success as a result of the people
- 9** | Spotlight on the chief engineer of nuclear weapons
- 11** | Learning from failures
- 11** | Sandia, KCNSC launch Rapid Prototyping Maker Space
- 12** | Hacking safer communities
- 14** | Mileposts

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.

National achievement award goes to Sandia engineer

Budi Gunawan recognized for marine renewable-energy advances

By **Luke Frank**

Sandia engineer Budi Gunawan recently received the **Society of Asian Scientists and Engineers** prestigious Professional Achievement Award for his groundbreaking work in marine energy and river hydrodynamics.

“To be recognized at this level for something that is already so rewarding is quite an honor,” Budi said.

Seeking solutions

As a youngster, Budi was intrigued by the dynamics of water flow, especially after heavy rainfalls, in a river near his home. He observed fast-moving water navigating paths of less resistance, often interrupted by rocks and boulders. He watched as the water flow slowed and dissipated its hydrokinetic energy, sometimes damaging nearby infrastructure.



FLUID FOCUSED — Sandia engineer Budi Gunawan recently received the Society of Asian Scientists and Engineers prestigious Professional Achievement Award for his groundbreaking work in marine energy and river hydrodynamics.

Photo by Craig Fritz

Budi channeled his early interests in math, physics and nature to become a civil hydraulic engineer, focusing on flood flow measurements and modeling during his graduate studies. His rising expertise led him to Sandia in 2013, where he researched marine energy technologies, studying how to harness hydrokinetic energy from rivers, tidal channels and man-made canals.

One of the key challenges faced by marine energy technologies is the harsh environment in which they are deployed, according to Budi. These technologies, positioned in rivers and oceans, can be damaged by biofouling, sediments, salt and debris such as logs and ice sheets. “We are fortunate that Sandia has many capabilities for verifying the integrity of components and devices,” he said.

Two such capabilities are Sandia’s

Drop Tower facility and its Structural Mechanics Laboratory. “Last year, we performed drop-testing of novel torpedo anchor technologies,” he said. “The anchors can lower the cost of mooring systems required to keep wave energy converters in place when deployed in the ocean. We also successfully verified the structural performance of tidal turbine blades and their novel fiber optic load measurement system.”

Currently, Budi is designing a new physical testing facility for wave energy mooring lines and umbilical cables. “We expect to begin construction in 2026,” he said. “It should go a long way in helping us better understand the loading dynamics on lines and cables used in marine energy applications and beyond.”

Growing body of work

Over the years, Budi’s research portfolio has surged into areas like fiber-optic and hydrodynamic sensor development, component and system testing, and numerical modeling. His work has led to numerous research partnerships with national and international developers and university researchers, as well as collaborations with other departments within Sandia. “Marine energy in the U.S. has the potential to fulfill more than 50% of

our country’s electricity needs,” Budi said.

Budi’s work in environmental fluid dynamics, hydraulic engineering, and marine and hydrokinetic energy has also resulted in several appointments, including serving as a U.S. representative expert for the International Electrotechnical Commission committees that develop standards and as Sandia’s representative for IEC Renewable Energy. He has also served as associate editor of the American Society of Civil Engineers’ Journal of Hydraulic Engineering.

Filling the pool

This promise for the future energizes Budi beyond advancing water-power technology. He is engaging numerous young engineers to continue the next generation of marine energy work. “We’re performing numerous experiments with capable university students,” he said. “They’re bringing new ideas and perspectives that yield results. We’re focused on developing the workforce while conducting the research.”

In addition to engaging university students, Budi actively promotes STEM in the local community, including special lectures at the University of New Mexico, engineering demonstrations at the Isleta Pueblo Head Start, and judging New Mexico’s Future City Competition and Albuquerque Institute for Math and Science Expo. He also guides elementary school students on field trips to the Rio Grande Nature Center State Park to learn about water treatment and conservation in Albuquerque.

“It’s important to help young students realize their potential and provide insight into what it takes to work in an engineering field,” Budi said. “Working with these kids creates new perspectives and possibilities for us all.” 



INSIDE SANDIA
PODCAST

Catch new episodes every other Tuesday.

Visit podcast.sandia.gov for more.

B61-12

CONTINUED FROM PAGE 1

Program. “For more than a decade, people have poured their time, effort and careers into making this a reality.”

The B61 went into service in 1968. As part of this life extension program, most older modifications of the B61 have been replaced to extend the weapon’s service life by at least 20 years resulting in a high reliability stockpile.

The completion of the last production unit is the result of collaborative partnerships among the Sandia and Los Alamos national laboratories, the Kansas City National Security Campus, Pantex Plant, Y-12 National Security Complex, Savannah River Site, NNSA and the U.S. Air Force, along with numerous vendors.

Sandia is the design and engineering laboratory for the nonnuclear components in the life extension program and the systems integrator for the B61-12. As systems integrator, Sandia is responsible for ensuring all systems and subsystems work together seamlessly.

Sandia also produced several components delivered to the Kansas City National Security Campus and Pantex Plant to enable full-scale production.



FLUID FOCUSED — With completion of the last production unit of the B61-12, the weapon has fully transitioned into the stockpile. Work will continue on building spare parts and other activities to close out the program. **Photo by Craig Fritz**

Rich added that production is complex, and significant effort went into ensuring aircraft compatibility, especially as changes were made to delivery platforms.

Stockpile sustainment

With full system production complete, the B61-12 is now fully a stockpile system.

“We want to take time to recognize and celebrate the last production unit,” said Scott Klenke, a Sandia senior manager

overseeing stockpile sustainment. “This is just the beginning of our efforts at Sandia to make sure the B61-12 is sustained and maintained appropriately. It’s a critical element to ensure we have a strong and viable deterrent.”

Scott said work will continue across the nuclear security enterprise, NNSA and the DOD to ensure stockpile surveillance activities on the B61-12 run smoothly. These activities include randomly selecting units, disassembling them at the Pantex Plant and testing components at Sandia’s Weapons Evaluation Testing Laboratory.

Additionally, some units will be used to support surveillance flight tests. Testing data from surveillance, laboratory and flight activities are used to support the system’s annual assessment report, which underpins the Labs director’s letter asserting the safety, reliability and performance of weapons in the stockpile.

“These surveillance and assessment activities continue until retirement and until the last unit is dismantled,” Scott said. 



CELEBRATING SUCCESS — About a dozen Sandians attended a celebration at the Pantex Plant on Jan. 7 to recognize production completion on the B61-12 gravity bomb. **Photo courtesy of Pantex Plant**

Recycling

CONTINUED FROM PAGE 1

The problem with plastic

Plastic does not naturally biodegrade. The Environmental Protection Agency cites [research](#) indicating that once in the environment, plastics can take between 100 and 1,000 years to decompose. Over time, these plastics often fragment into smaller pieces, entering oceans, land, wildlife and humans.

Society is also highly dependent on plastic products with short lifespans, such as plastic packaging, which is among the most difficult to recycle. Current recycling methods involve reforming plastic into new objects by shredding and melting, but the plastic's chemical structure remains unchanged. The challenge is finding a way to force plastic to break down through chemical alterations more quickly and efficiently.

Brad said that much of the current research focuses on creating different mixtures and compounds that break down plastic from the outside in. A common method involves placing plastics in a reactor and exposing them to a compound that facilitates breakdown.

Sandia's team thought up a different approach. "What if we could use those same compounds and somehow build them into the plastic product?" Brad said. "Rather than having to stick them in a reactor and treat them afterward, maybe we could somehow activate the compounds when ready and break down the plastic from the inside out."

The science behind the idea

The idea seems logical, but how can it be achieved? With support from Sandia's [Laboratory Directed Research and Development](#) program and technology maturation funds, the team got to work turning their idea into reality.

"We are doing something called microencapsulation," Brad explained. "We are building plastics that contain the compounds that will eventually break them down. Through our process, we can keep the plastic's original composition intact by building a barrier between the compound and the plastic itself, until we are ready to activate it."

Brad says all plastic products are formulated with additives. These additives change



A NEW WAY OF RECYCLING — Postdoc Oleg Davydovich prepares a resin that can be polymerized on demand as part of microencapsulation technology, as demonstrated by the diagram on the hood sash.

Photo by Craig Fritz

the color, make a plastic more stable, or change the material properties or flow characteristics. "Our vision for this technology is to formulate a plastic with an additive that will eventually break it down."

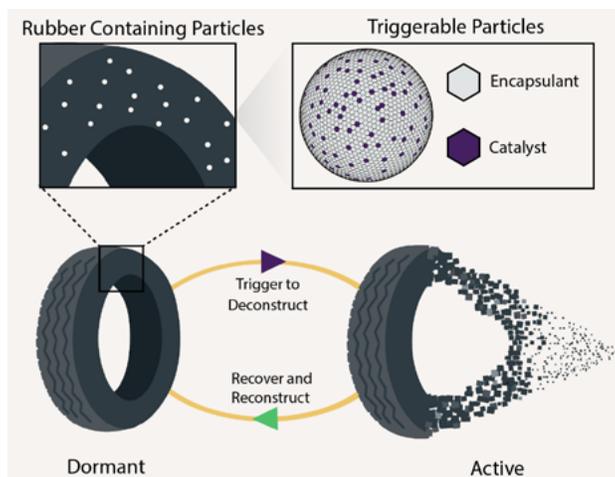
To prevent unintentional breakdown, the microencapsulation would be designed to release its contents only when the plastic is exposed to a very specific trigger, such as heat, a certain wavelength of light or a combination. This is where the team's expertise in chemistry comes into play.

Putting the concept to the test

With the idea in hand, the team had to test their concept.

They began with a form of plastic, polybutadiene rubber, which is the most widely used synthetic rubber in the world and most commonly used in car tires. The team has significant experience with Grubbs' catalyst, known for effectively breaking down polybutadiene rubber.

Despite its effectiveness, the Grubbs' catalyst never gained traction for dealing with the rubber waste problem. "We suspect it's because you need fairly large amounts of the



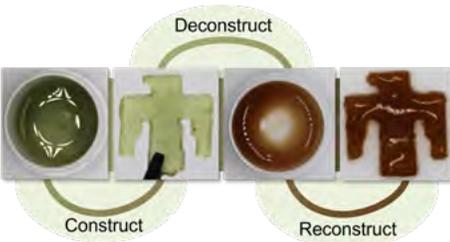
MICROENCAPSULATION TRANSFORMATIONS — Sandia researchers demonstrate how building a catalyst and reagents inside a plastic or rubber will help the product self-destruct on demand.

Graphic by Oleg Davydovich

expensive catalyst and significant amount of solvent to infuse the catalyst into rubber," Brad said. "That's why we thought it would be a good model to prove the benefits of our idea by microencapsulating the catalyst and formulating it into the rubber. This reduces the amount of catalyst needed, eliminates the solvent and allows the user to trigger the breakdown on demand."

Through testing, the team's concept has proven successful. Tests demonstrated the ability to break down rubber at different temperatures, and the ability to easily recycle

the material into new rubber. That isn't possible with traditional processes.



CREATE, DECONSTRUCT, REPEAT — This diagram demonstrates how a resin, containing a microencapsulated catalyst can be constructed, deconstructed, and reconstructed again in a different form. **Graphic by Brad Jones, Matt Warner and Oleg Davydovich**

What's next

The team says the next step is to further develop this idea, including reaching out to

plastic manufacturers as potential partners.

While there is still a lot of work ahead, the team is encouraged by their findings thus far.

“What I love about this project is that it's a way to apply a lot of different chemistries to a problem,” Samuel said. “This is something that isn't already done. It's a relatively simple idea that addresses a lot of significant challenges.”

Oleg, who has been interested in polymer science throughout his entire career, sees a way to use the science to significantly help the world. “Making degradable polymers is work we can apply to real-world plastics. We can solve problems that are more tangible to the everyday person.”

Brad often gets questions from family

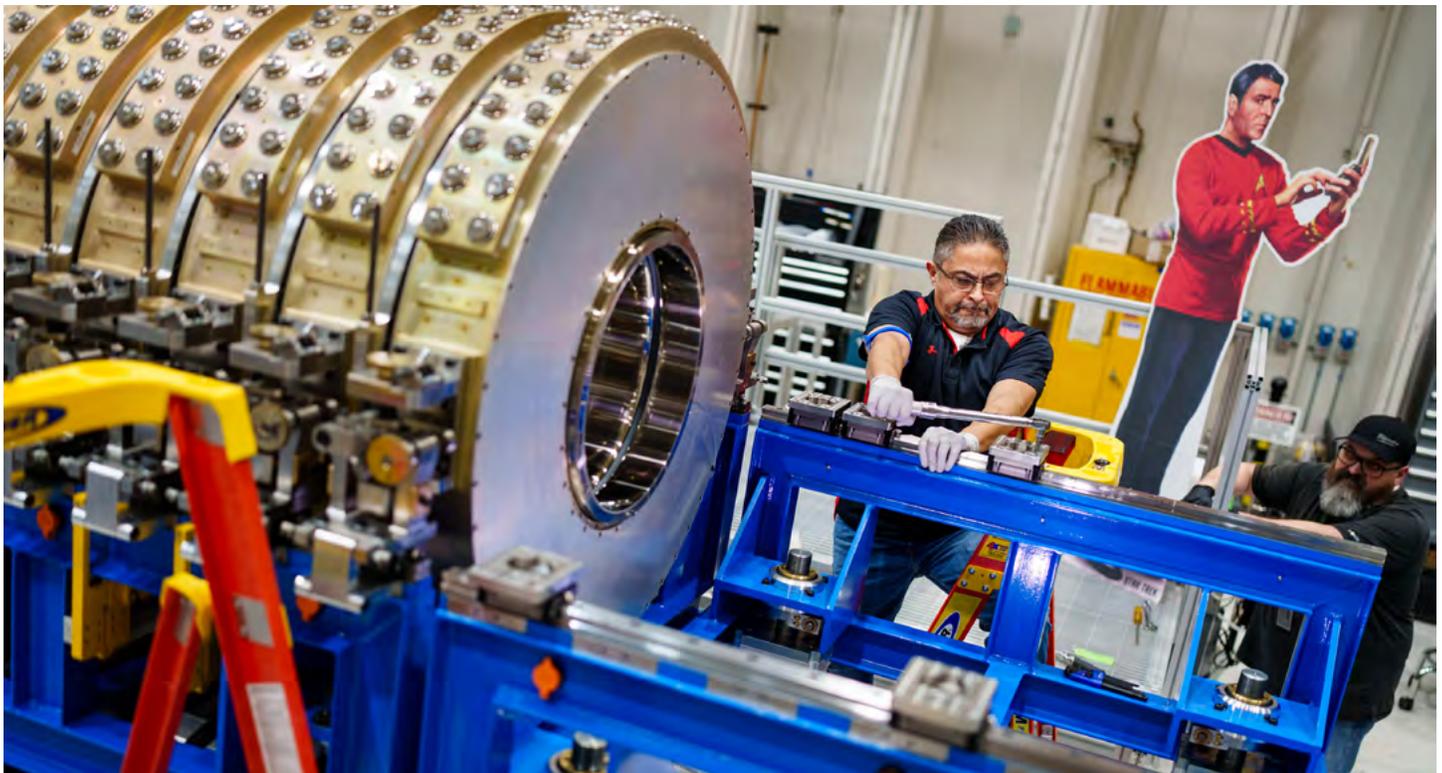
and friends about his work at Sandia. While he can't always share details, he is proud to discuss this project. “This is the first thing I mention when they ask because it's something we can be personally proud of. The plastic waste crisis is something the average person is aware of and understands. It's a huge existential crisis and we are trying to find a solution.” 

Unexpected applications

Through this project, the team developed microencapsulated catalysts that are activated by UV light. They have discovered that these additives can also address significant challenges in 3D printing plastics and manufacturing. The team is working to find additional applications in that area.

SANDIA CELEBRATES NATIONAL

ENGINEERS WEEK



HONORING EXCELLENCE — Under the watchful eye of Star Trek's Starfleet Chief Engineer Montgomery Scott, technologist Jesse Sanchez begins building an inductive voltage adder module for Spatially Coherent Radiation and Optical Probes for Understanding Integrated Systems, or SCORPIUS. The system creates images of plutonium to test nuclear stockpile simulations.

This week, during National Engineers Week, Sandia celebrates the accomplishments of engineers, technicians and technologists at the Labs. Visit the Building 962 auditorium to view a photo installation of engineering in action, and say thanks this week and all year long to those committed to solving our nation's most complex problems.

Photo by Craig Fritz

Success as a result of the people

By **Justin Griffin and Whitney Lacy**
Photos by **Craig Fritz**

As Justin Olmstead wrote in the introduction to last year's "From Nuclear Weapons to Global Security: 75 Years of Research and Development at Sandia National Laboratories," "Sandia's success is a result of the people who work at the Labs." Considering the types of complex problems Sandia has been charged to solve over the past 75 years, that success is largely due to the work of people who are, not coincidentally, our nation's most talented engineers.

But what makes engineering at Sandia particularly special is not just the sheer number of engineers on staff — although that number is impressive, comprising about half the Labs — but the variety of engineering roles filled by people working together across many organizations, bringing their breadth of knowledge and diversity of backgrounds to the work.

One would be forgiven for thinking that Sandia is simply a place for nuclear engineers. While the Labs has people serving in that role, it is also a home for aeronautical, biological sciences, chemical, computer, electrical, electronics, geosciences, mechanical and optical engineers, and more.

In keeping with Sandia's vision to be the "nation's premier science and engineering laboratory for national security and technology innovation," it recruits the best engineers to support its mission. In parallel with a [new video for Engineers Week 2025](#), four of these engineers sat down with Lab News to provide insight into why their work matters, what challenges them and why they choose to practice their chosen discipline at Sandia.



Aaron Murray, electrical engineer

At an institution that has been operating for over 75 years, pursuing work at Sandia can feel like entering the family business. Aaron Murray's tie to the Labs was his grandfather, who worked at Sandia before Aaron was even born. "He would share countless stories about the incredible work being done here," Aaron said. "He often spoke of the travel opportunities and the significant impact his efforts had on our great nation."

Aaron dreamed of being an astronaut. "I would gaze up at the night sky, filled with wonder about the existence of life and the possibilities of new promising futures," he said. That quest for fulfilling a promising future led him to a degree in electrical engineering and eventually to his current role where he supports nuclear weapon qualification and continues to learn and grow every day.

"Many of the challenges I encounter at Sandia arise from fully grasping the complexities of a problem. It can be tempting to leap directly to a solution without carefully considering options and trade-offs. This tendency often results in inefficiencies and typically yields a less optimal final outcome."

His positive attitude is infectious and has played a major part in his success. "I like to believe the impossible is possible, which seems to enable and allow for a wide-open solution space that would have been completely crushed with believing something can't be done," Aaron said. "It's amazing how almost getting there solves more problems that people think. This philosophy is something I learned to embrace, and I wish I had embraced it much sooner in my career."

And he still hasn't given up on his dream of journeying into space. "I will strive to achieve this goal for as long as I live for a glimpse into the extraordinary experience of being an astronaut."



Kelsey Carilli, systems engineer, Virtual Technologies and Engineering

Like Aaron, a younger Kelsey Carilli dreamed of being an astronaut ... and an inventor ... and a veterinarian.

"I had amazing math and science teachers who helped me discover my passion for math and physics," she said. "During undergrad, I took an intro to materials science course and fell in love with the hands-on lab work and the discovery and investigation process." That

experience led her down a path toward a master's degree in materials science and engineering from New Mexico Tech and an internship at Sandia. "The need to understand how materials impact other disciplines helped plant the seeds for my interests in overall integration, leading me to systems engineering," she said.

Originally, working at Sandia just made practical sense — her interests aligned well with the innovations being made at the Labs. Over time though, she made an emotional connection to Sandia as well.

When asked what she finds challenging at work, Kelsey highlighted the opportunities and obstacles in communicating with a broad and diverse group of coworkers. "One of my mentors with decades at Sandia put it nicely: In order to be a successful communicator, you have to extend your vocabulary and understanding to the other person's world view." A major lesson Kelsey has learned over her Sandia career is to "identify opportunities early on to understand the background, interests and motivators of collaborators."

And like everybody at Sandia, her contributions are changing the world in ways both big and small. "I believe my boots-on-the-ground-level contributions are feeding into the overall success of the digital engineering transformation at Sandia, which feeds into the higher mission objectives for nuclear deterrence," she said.

From a more personal perspective, her biggest source of pride at Sandia has been mentoring students and early career staff. "Due to the multigenerational nature of the work conducted at Sandia," Kelsey said, "the investment in the next generation will result in long-term positive change."

One of her proudest moments was sharing her experiences with an intern and watching their growth into a staff member. "Transferring my technical and professional maturation experience and watching that manifest in others has been so rewarding," she said.

"I like to think the small impacts I have on their outlook will have a big impact on the work we do at Sandia."



Justin Wilgus, geosciences engineer

When Justin Wilgus was very young, he wanted to be a truck driver, seeing America from behind the dash of a big rig pointed down the open highway. As he got older, he found fulfillment in building things and began working in the construction industry. But after taking a few college courses, he pursued a long-held interest in geology in earnest, earning a doctorate in earth and planetary science with a focus in seismology.

Above all, Justin wanted to do work that made a difference, and he found that work at Sandia, now assessing the performance of the **Waste Isolation Pilot Plant**.

WIPP is "one of the only operational deep geologic nuclear waste repositories in the world," Justin said, and in his role he serves "the people of New Mexico, the nation and the world through responsible environmental stewardship." It's an important position with far-reaching implications.

"I get to work with multiple physical process models that range in disciplines from actinide chemistry to hydrogeology," Justin said. "I find the interdisciplinary nature of the work fascinating, but the complexity and diversity of the work can be challenging, especially as it pertains to understanding interactions between parts

of the system and potential impacts on repository performance."

WIPP has cleaned up numerous generator sites across the United States as part of its mission to dispose of defense-generated transuranic waste. Its success can be attributed to passionate engineers like Justin who believe in the importance of the mission.

But if he could try one job for just one day, Justin still thinks he would give trucking a go. "Honestly, I still want to get a commercial driver's license. Maybe I could do some over-the-road trucking in retirement," Justin said, "if the industry is not entirely automated by then."

Reflecting on his career thus far, Justin added, "I have come a long way and have a lot to offer. At the same time, I have a ways to go and a lot to learn."



Kathleen Shurkin, computer science engineer

Kathleen Shurkin dreamed of being a sci-fi writer, creating faraway places and the ways to reach them. She pursued a degree in astrophysics with the intention of incorporating accurate physics principles into her writing — and in doing so, she found out that the research itself was pretty fun too.

After receiving a Master of Science in physics from Heidelberg University in Germany, she took her expertise to the Air Force Research Laboratory, where

her passion shifted again. With a strong interest in software development, Kathleen came to Sandia, where she now works in Integrated Software Solutions.

A throughline in Kathleen's career has been her pursuit of challenges, and she noted that the challenges in her line of work are also what make it extremely rewarding. "The biggest challenge is consistently being innovative," Kathleen said. "We are often tasked to solve

problems that have never been solved before, which is incredibly exciting but can also be overwhelming at times."

Making the impossible possible is no small task, whether writing chapters or code.

When asked how she is "changing the world" through her work at Sandia, Kathleen focused on the little things that make big things possible: "I believe that small actions can have the biggest impacts, so I would say that the most impactful way

that I am changing the world is by creating positive connections with others," she said, adding, "No one changes the world in isolation."

And although her work is firmly rooted on earth, she is still looking toward the sky for inspiration. "My top bucket list item is to see the aurora borealis in-person," she said. "Preferably while staying at one of the glass igloo resorts in Finland." 

Spotlight on the chief engineer of nuclear weapons

By **Justin Griffin and Whitney Lacy**

In a common area in one of Sandia's oldest buildings, a short phrase hangs high above a scale model of a B61 nuclear gravity bomb: "A Safe, Secure, Reliable & Effective Deterrent."

These words live at the heart of the nation's nuclear deterrence mission and perhaps understate the complexity of that goal through simplicity of language. But at an unprecedented time when the United States faces two major nuclear powers as strategic competitors and potential adversaries, as well as other rogue states that harbor an eye toward world conflict, these words carry more urgency.

Rita Gonzales, associate laboratories director for Nuclear Deterrence Modernization and Stockpile Systems, walks past these words many times every day — and as the chief engineer of nuclear weapons for the nation's lead systems integrator, these words weigh heavily on her shoulders.

In the most recent step in a career that has affected countless national security programs and build far-reaching partnerships across the national security enterprise, Rita assumed her role in 2024, stepping into shoes previously worn by some of the most gifted engineers in Sandia's history.

But to an engineering mind, maintaining a safe, secure, reliable and effective deterrent is



CHIEF ENGINEER — Rita Gonzales, associate Labs director for Nuclear Deterrence Modernization and Stockpile Systems and chief engineer of nuclear weapons, speaks at a recent leadership and awareness event at Sandia. **Photo by Craig Fritz**

just a problem in need of a solution, and "the joy of solving problems — the fun part of engineering — is what drives me every day," Rita said.

Making time to ask questions

While Sandia employs thousands of engineers across a multitude of roles, there is only one chief engineer of nuclear weapons.

In this role, Rita represents all of Sandia's nuclear weapons engineering activities and is responsible for the qualification and quality of Sandia's nuclear weapon products. She

approves all technical authority for every weapon system, including the safety and security of each system, and in doing so, makes countless complicated decisions over the course of a year.

Rita's approach to this challenge is to be inquisitive. "You have to make the time to ask questions before moving forward," she said, "because the nation depends on it."

But while no one shares her role, Rita isn't alone in her work: although she makes many decisions that impact the Labs and

our nation, a large, dedicated pool of experts advise her on every issue.

Rita often calls on the expertise of colleagues, partners, independent assessment groups, financial professionals and more in order to exercise her approval authorities. So when Rita talks about the importance of partnerships at the Labs, she truly means it. Professional partnerships drive the role.

At the end of the day, a decision must be made

Formally, much of the responsibilities of her role are outlined in the Realize Product Procedures, which, along with the Business Management Procedures, provide a structured approach to implementing DOE-NNSA contractual requirements across all nuclear deterrence programs. These are mandatory procedures developed by Sandia to provide consistent delivery of nuclear deterrence projects with unparalleled reliability, performance and quality. And all this responsibility must also fall within budgetary guidelines.

Among many other responsibilities, the Realize Product Procedures note that the chief engineer of nuclear weapons is expected to resolve most if not all differing professional opinions within the nuclear deterrence portfolio, which are “encouraged, expected and considered healthy aspects of the nuclear weapons engineering discipline.”

Essentially, when two or more diverging paths on a weapons program escalate through the normal management chain, the chief engineer of nuclear weapons must review all available information and point Sandia down the most appropriate path.

“But that is the role, and at the end of the day, a decision must be made,” Rita said.

And in an evolving threat landscape, the chief engineer of nuclear weapons must take everything one day at a time.

Engaging in critical thought and deep thinking

Back at her desk during a particularly busy day, Rita’s eyes lit up with the idea of highlighting the chief engineer of nuclear

weapons role during Engineers Week.

A lifelong engineer, Rita received her master’s degree in electrical engineering from Stanford and her bachelor’s degree in electrical engineering from New Mexico State University. The engineering community is near and dear to her.

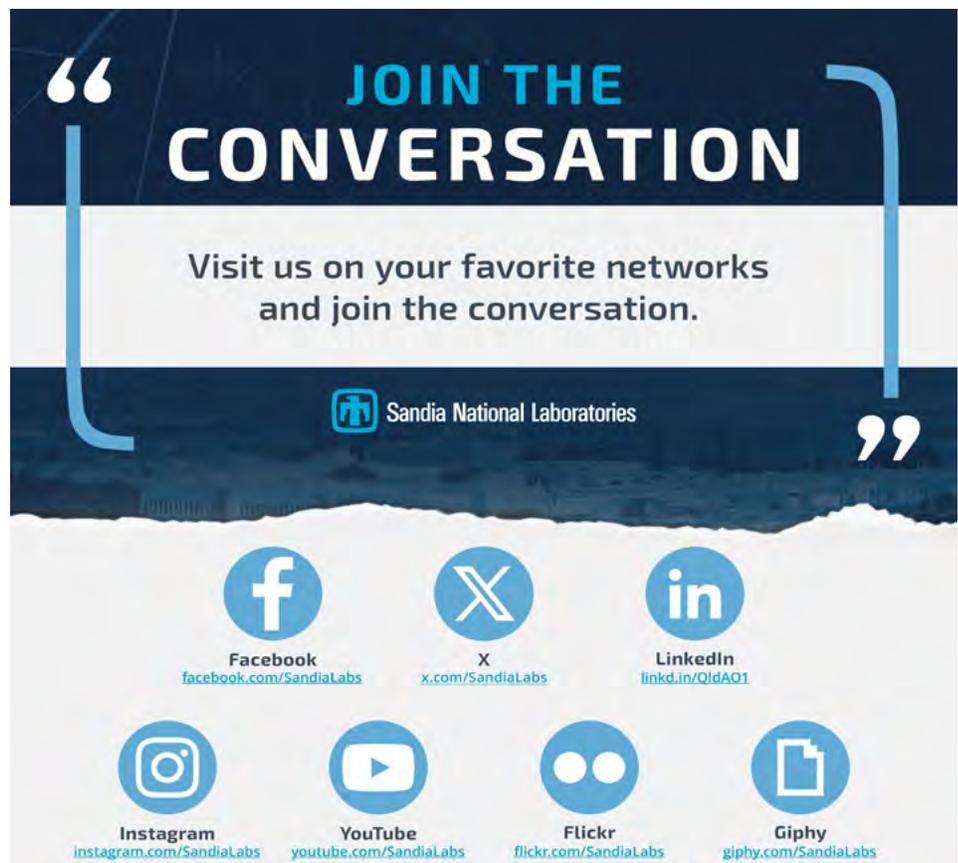
Her Sandia career has taken her to positions with advanced systems and transformation, radio frequency and electronic systems, the threat intelligence center and the microsystems center, where she spent 17 years designing application-specific integrated circuits and eventually leading the organization at a senior level. And now, she sees much of work at the Labs from a unique point of view.

But according to Rita, all engineers, no matter where they are in their careers, share a particular set of traits.

“Being an engineer at Sandia is more than what job you have or what degree you pursued,” she said. “Being an engineer means engaging in critical thought and deep thinking. What kind of engineer you are matters less.”

As Rita left the building that day, that phrase on the wall — “A Safe, Secure, Reliable & Effective Deterrent” — hung static where it always hangs, ready to greet her in the morning. But the critical thinking needed to fill one of the most visible and vital engineering roles at the Labs left with her, because it’s part of who she is.

And thanks to the work of the chief engineer of nuclear weapons and engineers from across the Labs and beyond, there will always be tomorrow. 



“ JOIN THE CONVERSATION ”

Visit us on your favorite networks and join the conversation.

 Sandia National Laboratories ”

 Facebook facebook.com/SandiaLabs
 X x.com/SandiaLabs
 LinkedIn linkd.in/QldAQ1
 Instagram instagram.com/SandiaLabs
 YouTube youtube.com/SandiaLabs
 Flickr flickr.com/SandiaLabs
 Giphy giphy.com/SandiaLabs

SANDIA CELEBRATES NATIONAL

ENGINEERS WEEK

Learning from failures



TRAILBLAZER — Retired Maj. Gen. Jeannie Leavitt, the U.S. Air Force’s first female fighter pilot and combat fighter wing commander, addresses a crowd at Breakthroughs Favor the Bold on Feb. 4 in Steve Schiff Auditorium. Designed to foster Sandia’s culture of innovation, the event featured Sandians discussing what they learned on projects that did not go as planned. Sandians can watch the event in the Digital Media Library. **Photo by Craig Fritz**

Sandia, KCNSC launch Rapid Prototyping Maker Space

By **Andrea Mackay and Lonnie Love**

In response to evolving national security threats, Sandia and the Kansas City National Security Campus New Mexico Operations launched the Rapid Prototyping Maker Space, marking a significant milestone in technological innovation. On Dec. 17, a ribbon-cutting ceremony celebrated this state-of-the-art facility, which will serve as a pioneering

pilot for Sandia’s Center for Advanced Manufacturing and Innovation.

The maker space aims to accelerate innovation, enhance collaboration and support workforce development. It provides engineers and researchers with essential tools to tackle complex challenges, streamlining the prototyping process from concept to solution.

Jeff Conner, director of New Mexico operations for Kansas City National

Security Campus, said, “CAMINO’s collaborative Rapid Prototyping Maker Space is unprecedented in our industry, bringing together innovation and expertise in a way never seen before. We’re excited to continue our work with Sandia to support national security, creating solutions that will shape the future.”

Deborah Frincke, associate Labs director at Sandia, added, “The Rapid Prototyping Maker Space represents a

bold step forward in our commitment to innovation and collaboration. By providing a dynamic environment where engineers and researchers can rapidly develop and test new technologies, we are not only enhancing our national security capabilities but also inspiring the next generation of problem solvers.”

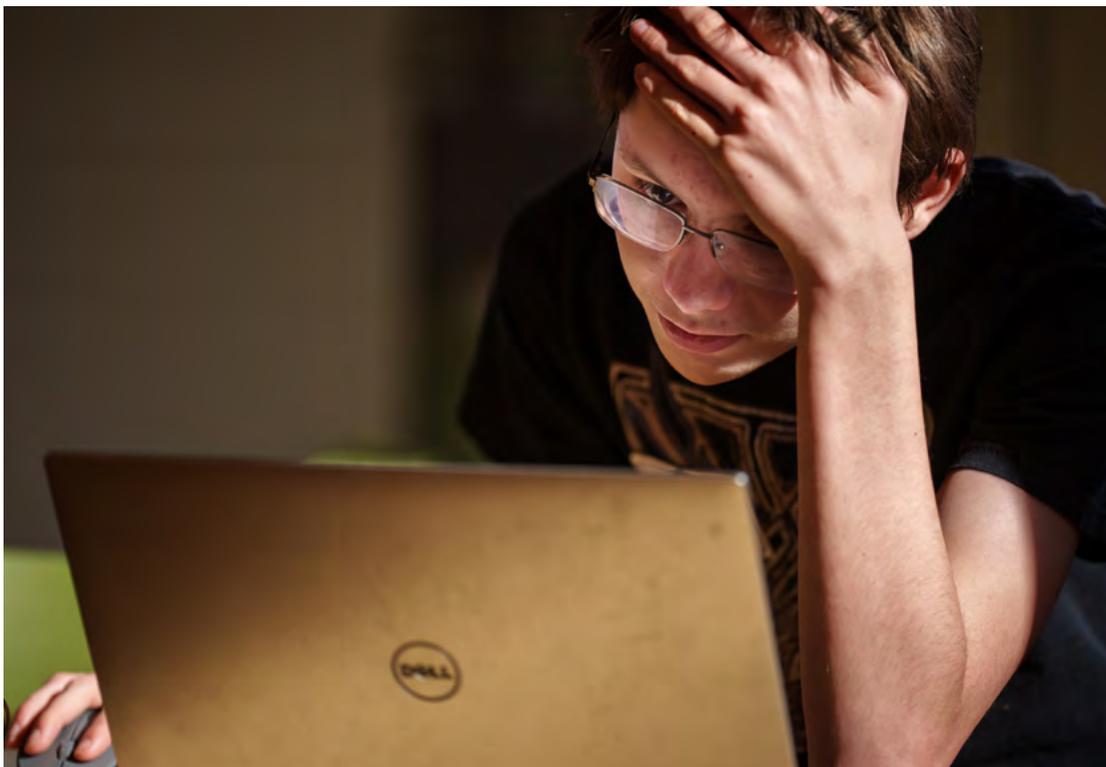
Equipped with advanced 3D printers, Computer Numerical Control machines, electronics workstations and collaboration areas, the Rapid Prototyping Maker Space is set to make a profound impact on national security by enabling rapid responses to emerging threats and fostering a culture of innovation. This strategic partnership between Sandia and Kansas City National Security Campus New Mexico Operations is poised to drive impactful solutions to the complex challenges facing our nation, heralding a new era of creativity and technological advancement.

For questions, email rpms-info@sandia.gov. 



RIBBON CUTTING — From left, Doug Kothe, Sandia associate Labs director; Jeffrey Conner, director of New Mexico operations for Kansas City National Security Campus; Deborah Frincke, Sandia associate Labs director; Sandia Fellow Lonnie Love; Shannon Muller, New Mexico Operations senior operation and service manager; and Victor Marthe, New Mexico Operations senior program management manager celebrate the official launch of the Rapid Prototyping Maker Space, symbolizing the beginning of a new era in rapid prototyping and collaboration in national security research and development. **Photo by Bret Latter**

Hacking safer communities



HACKING FOR GOOD — Focused and determined, student Tobias Compton is immersed in coding a machine learning model to predict crime incidents. At Thunderbird Hacks, students harnessed real data from Albuquerque’s open-data initiative to make a meaningful impact on community safety.

Photo by Craig Fritz



CODE MENTOR — At the Thunderbird Hacks Hackathon, Sandia computer engineer Ben Feinberg, right, mentors high school student Sebastian Bentley to code a machine learning model in Python that predicts crime incidents using real data from Albuquerque’s open-data initiative, promoting community safety.

Photo by Craig Fritz



HANDS-ON QUANTUM — At QuanTime, Sandia scientist Andy Mounce, right, who works at the Center for Integrated Nanotechnologies, demonstrates how illuminating a diamond with lasers can be used in quantum sensing to detect magnetic fields as Brian Hubler and his daughter Aurora Hubler watch.

Photo by Craig Fritz

Mileposts



Randy Harrison 40



Richard Griffith 35



Ronald Goeke 30



Jean-Paul Davis 25



Derek Farr 25



Tracy Armijo 20



Jennifer Dellinger 20



Jennifer Perea 20



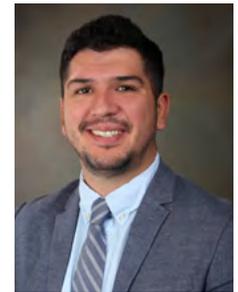
Monica Price 20



Alan C. Runyan-Beebe 20



Rodrigo Ballon 15



Jason Garcia 15



Omar Garcia 15



Bianca Gurule 15



Joshua Navarrete 15



Danielle Sedillo-Cafferty 15



Selina Santiago 15



Nicole Sikkink 15



Phuong Tran 15

**KEEP UP
WITH THE
LABS**

anytime, anywhere

SIGN UP
to get Lab News
in your Inbox
every two weeks

sandia.gov/LabNews