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Full-circle mission integration **Page 2**

Two-factor authentication just got easier

TIMELESS — Chris Jenkins, a Sandia cybersecurity researcher, invented a new, simpler two-factor authentication method that does not depend on the time. **Photo by Craig Fritz**

A new variation cuts out the clock, which could help protect vulnerable smart devices

By **Troy Rummler**

A new, simpler version of two-factor authentication could broaden its protection to many smart devices that currently cannot support it.

Researchers at Sandia have announced a more efficient way to generate and send temporary security codes. Unlike conventional methods, the new technique does not depend on the time, which could help secure small and remote network-connected devices, including drones, remote sensors, agricultural equipment and industrial control systems.

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Asteroid hunting using heliostats?

Sandia scientist says heliostats can be valuable at night

By **Kenny Vigil**

Sandia scientist John Sandusky believes he has found a way to put heliostats, which typically turn solar energy into electricity, to work in the dark.

He proposes that these large mirrors could help find asteroids at night.

"The heliostat fields don't have a night job. They just sit there unused. The nation has an opportunity to give them a night job at a relatively low cost for finding near-Earth objects," John said. "If we knew ahead of time that an asteroid was coming and where it might hit, we'd have a better chance to prepare and reduce the potential damage."

Most planetary defense efforts use observatory-grade telescopes to produce images of the stars. Within those images, computational methods identify streaks, which are asteroids.

NIGHT WORK — While heliostats can collect energy from the sun, Sandia scientist John Sandusky put the heliostats to work at night. His findings could help detect near-Earth objects, such as asteroids. **Photo by Craig Fritz**

This process is precise but time-consuming, and building new observatories is expensive.

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Innovations propelling the nuclear deterrence mission

By **Amy Treece**

Modernizing and creating the nation's nuclear deterrence capabilities requires the collaboration of innovative teams across the Labs. One division heavily integrated in these efforts is Advanced Science and Technology.

The division comprises six centers, in which scientists conduct cutting-edge research in materials science, advanced computing and sensor technologies, and they employ sophisticated modeling and simulation techniques to predict the performance of weapons. Experts use machine learning and artificial intelligence to inform critical design decisions, and engineers bring the systems full circle by conducting laboratory testing and field trials to help predict system performance.

"With a strong partnership between AS&T and our mission partners, we are rapidly innovating, advancing and integrating our capabilities and technologies to meet the nation's future mission needs," Experimental Mechanics and Dynamics Senior Manager Steven Samuels said.

Advanced Science and Technology develops broad capabilities needed by the W80-4, the W87-1 and the W-93. For example, each system component must be exposed to complex stress states, so the Experimental Solid Mechanics team uses a planar biaxial load frame to simulate real-world conditions and apply torsion to see how materials behave.

The Energetic Environments team also performs testing for extreme conditions, including a new method for conducting explosive flyer plate tests. Rather than conducting one full-scale test, the team developed eight scaled tests with a variety of variable changes. This allows the team to collect data that informs

GOOD CATCH — Sequence showing test setup and flyer plate trajectory into a catchbox. The flyer plate was imaged after emerging from the fireball, allowing engineers to precisely measure its angle and velocity while confirming its structural integrity and future ability to impact nuclear deterrence systems at extreme speeds. **Photo courtesy of Sandia Photometrics**

development techniques for full reentry body and reentry vehicles at previously unattainable ground test speeds, saves costs and increases the speed of setup.

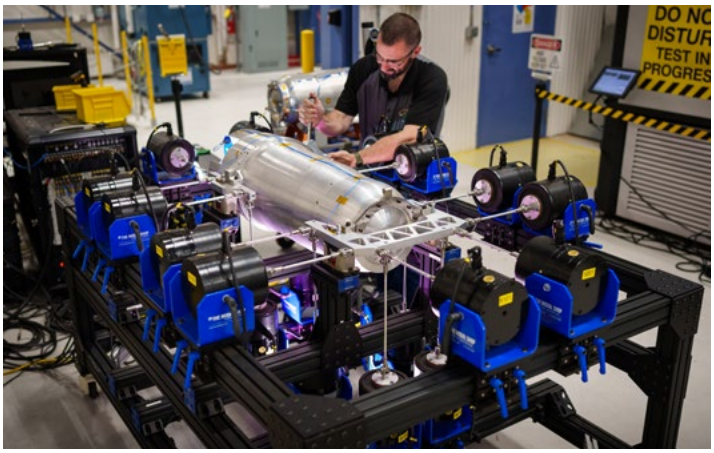
The same team also developed a device to calibrate the sensors that measure linear displacement, or position, with a high degree of accuracy. This new system saves hundreds of hours each year while providing higher confidence in the testing and evaluation of various components and systems associated with nuclear warheads and delivery systems.

Integrating advanced technology for the W80-4 Life Extension Program

The W80-4 Life Extension Program was developed to ensure the effectiveness of the bomber leg of the nuclear triad when coupled with the Air Force's Long Range Standoff Cruise Missile. To meet the needs of the Life Extension Program, teams across Sandia are partnering to integrate advanced technology from Advanced Science and Technology within existing systems.

Rapid modeling and simulation techniques have been applied by the Engineering Sciences center to inform design decisions for the W80-4 Life Extension Program warhead case, ensuring the case can withstand challenging environments. The teams also evaluated the "simplification" redesign effort of the W80-4 case by deploying advanced ultrasound and radiography techniques.

With new multiple input and multiple output methods, Sandia is now able to "fly on the ground," by replicating vibration environments with high fidelity. This resulted in test schedules reduced by up to one-half depending on configurations and environments, and programmatic cost savings as well. The W80-4 program reduced their test schedule by 12 weeks, resulting in time and budget savings on one test series alone.



SHAKEDOWN — Sandia's multiple input, multiple output technology is expanding with two state-of-the-art six-degree-of-freedom systems now operational, and an additional one ordered and on the way. The Labs can also design and configure frame-based MIMO vibration test systems for specific programs and applications. **Photo by Craig Fritz**

Karen Rogers, senior manager for the Validation and Qualification Sciences group, said, "The insights we are gaining for the mission are invaluable, as they enable us to anticipate the stresses our weapons will endure and provide accurate test data to our modeling teams."

Revitalizing the W87-1

The W87-1 thermonuclear weapon requires a comprehensive overhaul to meet contemporary demands, and Sandia is rising to that challenge.

"Finding innovative ways to meet the country's national security needs is why Sandia exists," Material, Physical and Chemical Sciences Center Director Joel Lash said. "There is so much ingenuity among our scientists and engineers. I've never seen a problem they can't solve or a process they can't improve."

One problem the Impact Environments team faced was how to create complex components while reducing waste for the Characterization Mechanical, or CHARM, drop tests, which were used to prepare for a nuclear safety assessment of the W87-1 in abnormal mechanical environments.

FIREBALL — A W87-1 test conducted at the 120' blast tube as captured by Sandia Photometrics. High-speed video shows explosive testing, subjecting the test article to the resulting shock wave.

Video by Sandia Photometrics

The teams reviewed the test parameters for the W87-1 and developed 3D-printed sacrificial fixturing that could fully guide the unit to impact, reducing unwanted effects during free-flight, such as wind. Traditional manufacturing would have taken weeks. 3D printing took a day, including updates, fabrication and application.

Potential disruptions to the supply chain are always problematic, and scientists and engineers in the Material, Physical and Chemical Sciences organization faced them head-on. They developed a new process to weld copper with a blue laser welder that enabled the W87-1 team to make cables meeting new mission critical environment requirements. They also introduced two new nuclear security enterprise-controlled formulations for fluorocarbon O-rings, which are crucial to maintaining system environment controls. Controlling the formulations makes the nuclear security enterprise more robust to changes in material availability and vendor dynamics.

Informing design decisions for the W93

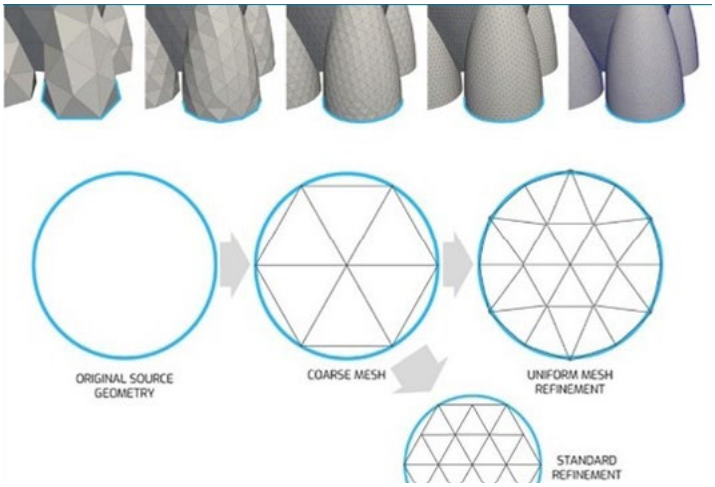
The W93, a new era of nuclear deterrence, is being built with an emphasis on modularity so new technologies can be integrated as they emerge.

"When we look for credible solutions to help safeguard our country, I know that engineers and researchers at the Labs will be part of the solution. That includes the design, analysis and testing for the new W93," Sandia's Engineering Sciences Center Director Basil Hassan said.

For the W93, one innovation includes a quick-turn feasibility matrix allowing designers to conduct informed trades between environmental flexibility and risk, manufacturability and component reuse. Advanced Simulation and Computing-developed software is providing confidence that the updated design will significantly reduce the likelihood and susceptibility of the warhead to lose positioning in abnormal electrical environments.

In another example, a design trade study for the W93 thermal battery only took one month, as opposed to the typical three to nine months of engineering testing and building because of a collaboration between the Power Sources Technology Group and the Thermal Activated Battery Simulator team. Their work resulted in 10-times savings of costs and development time.

Finally, a mesh generation toolkit for solid models developed by the Engineering Sciences center is enabling certain radiation-simulation tasks for parts to be accomplished in one day as opposed to weeks. Cubit can instantly perform calculations related to shape dimensions, significantly reducing the time needed to generate 3D overlays needed for studying thermomechanical shock and thermostructural response.



COOL CUBIT — Software advancements in Cubit, a mesh generation toolkit for solid models, can perform specific radiation-simulation tasks needed for analyzing W93 and W87-1 parts in one day as opposed to weeks.

Graphic courtesy of Brian Carnes

By leaning into intelligent risks, collaborating and maintaining a steadfast commitment to excellence, Advanced Science and Technology is strengthening national security, improving modern weapon systems and ensuring they remain relevant for decades to come.

Authentication

CONTINUED FROM PAGE 1

Securing small, internet-connected electronics has been a topic of interest within the U.S. government. In 2024, the National Institute of Standards and Technology issued draft standards for cryptography on what it terms "resource-constrained devices."

"This work can build on top of those algorithms," said Chris Jenkins, the Sandia cybersecurity researcher who invented the new method.

A temporary security code, also known as two-factor authentication, might be more commonly associated with online accounts, such as banking, but it can also protect physical devices, like smart electric meters that require users to log in to change settings. But many smart devices lack the processing power, network bandwidth or GPS connection to support it, leaving them vulnerable to cyberattacks.

Chris said his technique is so simple he believes it could enable a device as basic as a thermostat to generate its own authentication code, without a GPS timestamp, and pass it directly to an authorized user over a low-data network.

His team has successfully tested the new technique in a remote sensing application. The project is funded by Sandia's Laboratory Directed Research and Development program.

New technique simplifies a deceptively complex cyber defense

Two-factor authentication is a familiar security routine that requires users to provide an additional, temporary code to log in. The code usually shows up by text, email or an authenticator app. Behind the scenes, though, this is a surprisingly complex transaction, Chris said.

"While you might see a security code as coming from your bank, a lot of times your bank is using a third-party vendor," he said. "And then the vendor even contacts a telecom provider, and then the telecom provider is who sends you the code to your phone. Then, the vendor also sends the code back to your bank."

And the code itself? It's based on the time. Banks might get that from their servers, while environmental sensors and other remote devices frequently get their timing from GPS.

Chris' simpler version works directly between two devices without third parties or extensive IT infrastructure. This means devices can use it over network connections that are prone to disruptions or delays, whether unintentionally or by design.

"Some of these are low-power systems that only wake up every so often," Chris said.

The new method does not need to know the time, so devices do not need a GPS connection, and it uses minimal computing resources, which is ideal for devices designed to minimize size, weight and power use.

"Typically, a lot of these devices don't have the same processing power as your cell phone or your computer," so they cannot run complex cybersecurity software, Chris said. Their computing resources, he added, are more like those in a thermostat or a washing machine.

Love it or hate it, two-factor authentication stops cyberattacks

In 2016, about 100,000 routers, webcams and other small, internet-connected devices became infected with a nasty bit of malware called Mirai. Protected only by a username and password, the devices posed little challenge to the aggressive code which, after a little educated guesswork, logged itself in and reconfigured the devices to launch massive, coordinated cyberattacks on servers. Many devices are still vulnerable to malware like Mirai.

But the new, lightweight Sandia authentication is a simple way to protect them. Just like conventional, more complex two-factor authentication, it forces malware to come up with another code beyond a username and password, making the device much harder to log into and infect.

Chris originally designed the defense with a different application in mind: protecting military aircraft against would-be hackers. Many planes use a relatively basic communications network to connect different onboard systems, and so also require lightweight cyber defenses.

"We had this already worked out for a weapons system. That was the original focus," Chris said. "But we thought, couldn't we change it and have it work for authentication of remote systems?"

Now, he hopes his defense will help protect even the humblest internet-connected device.

Heliostats

CONTINUED FROM PAGE 1

The nighttime experiment

As part of a Laboratory Directed Research and Development project, John spent summer nights working at the National Solar Thermal Test Facility. He used one of the 212 heliostats in the field for his experiment.

"Solar towers collect a million watts of sunlight," John said. "At night, we want to collect a femtowatt, which is a millionth of a billionth of a watt of power of sunlight that's scattered off of asteroids."

In simpler terms, he believes the heliostats can measure the speed at which asteroids pass by the stars, rather than using conventional imaging methods.

"I'm trying to detect the asteroid by its speed relative to the stars," John said.

The heliostat he used was not retrofitted with any new equipment for the experiment. John used existing software to oscillate the heliostat's direction relative to the stars.

"We changed the direction the heliostat was pointing gradually so it would sweep back and forth about once per minute," John said.

As dusk turned to night, John sat up on the solar tower, 200 feet above the ground, and used standard optical instruments to detect the light the heliostat was concentrating on the solar tower.

"You spend a lot of time waiting. There was about 20 minutes between the collection of data points. I would collect data until dawn," John said. "We did not set out to find asteroids. We demonstrated the heliostat can be swept back and forth and that it can see stars."

More advantages

John said this is early-stage technology. In addition to being more cost-effective than building new observatories, this method may offer other advantages.

"It may help the U.S. Space Force with its job of trying to find spacecraft, especially in the cislunar area. Orbits near the moon can be difficult to track from the ground," he said.

John presented his findings at a conference for the International Society for Optics and Photonics, and a paper was published. At this stage, he said, feedback is important.

"We want to hear from our peers in optics and the asteroid hunting community," John said. "Getting peer feedback provides an opportunity to understand what the concerns are about how this technology will work."

He said the next step might involve using the heliostat to find a known planet, which would help understand the technology's limitations.

"We're looking for opportunities to scale up from one heliostat to many and try to demonstrate that we can help find near-Earth objects," John said. "We also want to demonstrate we can scale up the technology to detect even smaller asteroids."

NIGHTTIME EXPERIMENT — Scientist John Sandusky stands in the field of heliostats at the National Solar Thermal Test Facility. John conducted research at night showing that heliostats might be able to detect asteroids. **Photo by Craig Fritz**

Lingering question helps Sandia scientist discover how heliostats can be used in the dark

A question posed nearly 20 years ago — early in his Sandia career — had been stuck in the back of John Sandusky's mind. At the time, John was asked if the heliostats at the National Solar Thermal Test Facility could be used to do imaging.

The answer was simple.

"No. They're not high enough optical quality to form an image," John said.

But the heliostats do collect a lot of light.

"Isn't there a way to use that?" was the lingering question in the back of John's mind.

John worked at NASA's Jet Propulsion Laboratory after graduate school in laser communication.

"Communication theory is heavily into looking for repetitive events that we call frequencies. Those frequency domain techniques have been a mainstay of communication since radio first came to town," he said.

He explained that the current method of finding asteroids by looking at streaks in imagery is related to a frequency shift problem. The asteroids move at a slightly different rate than the stars.

"We have very precise methods for measuring frequency," John said. "Even frequency changes as small as one-one-millionth of one cycle per second are measurable thanks to frequency standards that can be commercially procured and locked to references like GPS signaling. I knew it was possible to measure the very small rate differences of an asteroid passing relative to the stars."

This insight led John to consider how heliostats could do that job.

"All I needed to do was sweep the heliostat pointing relative to the stars at a fixed rate," he said. "If I can map all of the stars to one frequency, anything moving relative to the stars will appear at a neighboring frequency but still be separable."

Nearly 20 years after that lingering question about how the heliostats could be used, John received Laboratory Directed Research and Development funding and began his nighttime experiments at the solar tower.

"What I did for the experimental phase was demonstrate that the heliostats can be swept back and forth and respond to the stars," John said. "No surprise. They can see stars."

Government embraces AI for national security, guided by Sandia expertise

Staff showcase capabilities at AI+ Expo

By **Troy Rummler**

Sandia and the DOE national lab complex showcased artificial intelligence capabilities in Washington, D.C., in June, exemplifying their role as trusted advisers among government officials.

Staff from the Labs hosted two demos and gave one presentation at the AI+ Expo, a relatively new event that has quickly become a major conference for government and industry. Sandia highlighted its AI efforts related to advanced manufacturing. All 17 national labs exhibited from a combined DOE booth, the largest at this year's event.

"Elected officials, their staff and government agencies are turning to Sandia and our partner labs for our expertise and capabilities when making decisions about AI for national security," said Caylin Howard, chief of staff for Sandia's AI board of directors. "We are a key player in this space."

The event itself, which was open to the public, was indicative of how fast the government has come to see AI as critical to continued U.S. competitiveness.

REPRESENTING — Sandia's Dwight Beck, left, and Lorenzo Gutierrez enjoy the DOE exhibit space at the AI+ Expo in Washington, D.C. **Photo by Andy Lee**

ChatGPT launched only three years ago, abruptly changing how people view and use AI technologies. And yet this was already the second year the AI+ Expo has been held, which focused heavily on AI adoption and national security issues.

"Everything was about competition with China," said Sandia's Anthony Garland, one of about 15,000 attendees, according to the event website.

While sponsorships and keynotes were drawn from a mix of tech and defense staples, the event drew many government and military officials. Adm. Samuel Paparo, commander of U.S. Indo-Pacific Command, Ukrainian Ambassador Oksana Markarova and Mississippi Gov. Tate Reeves addressed the conference, among other public sector representatives.

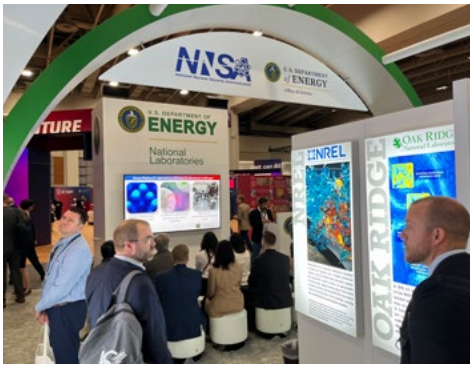
"I had the privilege of presenting my demo briefly in front of DOE Secretary Chris Wright," Sandia's Nathan Brown said.

Wright touted the national labs during an interview with Ylli Bajraktari, president and CEO of the Special Competitive Studies Project, which hosts the expo.

"AI is certainly in the sweet spot of the Department," Wright said, answering a question about how he sees his role as secretary, adding that the national labs have been pioneers in launching AI."

Although the conference was well-attended, Caylin said there's more work to be done to coordinate and amplify the national labs' expertise, and at least one attendee recognized that need, too.

"I was expecting more people to come and check out all the DOE area," Anthony said. "I think people don't understand what the DOE does, especially for AI."



STANDOUT — The DOE stood up the largest exhibit space at the event, combining all 17 national labs. **Photo by Andy Lee**

Sandia exhibitors impress listeners

Nathan Brown calls himself "one of two oddball mechanical engineers" on a team of information scientists. But his background proved useful at the AI+ Expo, where he showed how open-source AI tools can save engineers hours of time preparing computer-aided design models for simulations with natural language prompts.

"If we can get that virtual environment set up faster and we can test out more samples and test out more designs, we're going to be able to get to a superior-performing design significantly faster," he said.

The message seemed to strike home with at least one listener. Nathan said a military representative who watched the demo expressed interest in collaborating on a similar system.

Another demo presenter, Steve Owen, found Sandia's message resonated with students, whom he said asked him thoughtful questions about how Sandia is applying AI to CAD.

"Several mentioned they were finishing their degrees or expressed interest in opportunities at Sandia," Steve said.

Anthony Garland gave a presentation on using AI to find defects in 3D-printed parts, a concept with clear benefits for manufacturing industries and Sandia mission work.

"We are not sitting idly on the side while all this cool AI stuff is going on," Anthony said. "We're taking all that and combining it with our needs and capabilities to make something that helps national security."

Unseen, unsung, undeniably important

By **James Stewart**

When Sandia's labs are quiet and Sandians are home asleep, the work of saving the mission happens.

Unnoticed, an exhaust fan in a research lab fails in the dead of night, triggering an alarm. Without it, hazardous fumes could accumulate. A team mobilizes. Calls are made. Teams arrive on-site. They diagnose, then fix the problem. By sunrise, the system is back online.

Nathan Garcia, a mechanical team lead, has been in that moment more times than he can count.

"On New Year's morning, at 1:30 a.m., I got a call that one of the major exhaust fans went down in the Emergency Operations Center," Nathan said. "I called craft out. They assessed the situation, and by morning, we figured it out."

When employees showed up for work, no one even knew what happened.

This is the world of the Facilities Control System at Sandia — a hidden network of people and technology ensuring critical mechanical systems function seamlessly across Sandia New Mexico and California.

A system that never sleeps

Facilities Control System tracks tens of thousands of pieces of mechanical equipment and more than half a million data points, controlling boilers, chillers, air handlers, exhaust fans, laboratory clean rooms and much more. It's similar to a giant smart home but a lot more complex and higher stakes.

It safeguards research, protects critical lab components and ensures personnel can work in stable environments. When something goes wrong, Facilities Control System helps coordinate a response.

Alarms rarely go off during the workday; they usually sound in the dead of night.

"A lot of people go home thinking this place shuts down, but it runs 24-7," said Mike Rymarz, a Facilities Control System specialist. "Our work happens even when no one sees it, and the systems we maintain are critical to keeping everything running."

"Nobody knows we're there," Nathan said, which is an aspect of his job he really enjoys.

"The customers are none the wiser, and I think that's the key," Mike said. "We're kind of the wizard behind the curtain."

A small team with a big job

Facilities Control System operates with a surprisingly small team: five full-time staff members, three contractors, five mechanical team leads and a network of skilled craftworkers who handle maintenance and repairs.

"The amount of equipment we manage with our limited resources is staggering," Mechanical Services manager Kelly Bouska said. "We have around 48,000 pieces of mechanical equipment under our watch."

Failures don't happen on a schedule. Whenever issues arise, the team responds, they assess, troubleshoot and do whatever it takes to get things back up and running before the next shift starts.

Fixing for the future

Facilities Control System prevents crises, too. A key part of its mission involves predictive maintenance, using data to anticipate and address failures before they happen.

"In the past, we reacted when equipment broke," Kelly said. "Now, we're looking forward — analyzing trends, performing preventive maintenance and ensuring our systems last as long as possible."

By tracking system performance, identifying early warning signs and optimizing maintenance schedules, Facilities Control System reduces downtime and extends the life of critical equipment. Some of the system's components still run on legacy systems. Making a data-driven future a reality will mean upgrading thousands of control points, replacing outdated systems and integrating smarter technology.

UNDER COVER OF NIGHT — Mechanical team lead Nathan Garcia stands guard at the Emergency Operations Center. He is a member of the Facilities Control System team — a hidden network of people and technology ensuring critical mechanical systems function seamlessly across Sandia New Mexico and California. Nathan is part of a small team of managers, team leads, employees, contractors and craftworkers who are on-call 24-7, and their round-the-clock readiness underscores the vital role they play keeping the mission moving forward, day or night. **Photo by James Stewart**

Fortunately, the system is moving toward a smarter, more connected system thanks to Mike, who is also a DOE certified energy manager.

"We're kind of on the pulse of where's the industry going, what kind of equipment is coming out, what are its features," Mike said. "So that we can figure out how do we implement that into Sandia's future."

Every upgrade strengthens the system's ability to identify potential failures, but it must also adhere to Sandia's stringent standards. Balancing reliability and advanced technology requires careful planning and execution.

"Security and safety of a national laboratory are extremely important," said Mike. "You can't just plug something into the wall. It's got to have specific security plans that keep it safe."

Mike plays a key role making Facilities Control System more modern. He helps integrate upgrades and new technology while making sure new and existing components meet Sandia's requirements.

Meanwhile, Sandia's mission never stops. Buildings and labs must keep running day and night.

Going unnoticed

For all their work, the Mechanical Services team doesn't seek recognition. They take pride in keeping the Labs operational — often without anyone ever noticing a problem.

"I don't like to be held up high," Nathan said.

That humble sense of purpose runs deep. Mike, who has worked in Facilities Control System for decades, put it this way: "If we do our job effectively, they never know we're here."

Their reward isn't the spotlight but knowing their efforts keep Sandia's mission moving forward. The team doesn't wait for recognition. They just keep working — unseen, unsung and undeniably important.

DOE deputy secretary, acting NNSA chief tour ACRR

DEBRIEF — From left, Annular Core Research Reactor Director Bryan Oliver, Labs Director Laura McGill, DOE Senior Advisor Rebecca Michael, DOE Special Advisor Juan Pablo Varela, DOE Deputy Secretary James Danly and NNSA Acting Administrator Teresa Robbins talk as they leave the reactor facility, shown in the background. **Photo by Craig Fritz**

REACTOR VISIT — Annular Core Research Reactor Director Bryan Oliver, right, briefs DOE Deputy Secretary James Danly, center, NNSA Acting Administrator Teresa Robbins, Senior Advisor to the Deputy Secretary Rebecca Michael, Labs Director Laura McGill and Sandia Associate Labs Director Doug Kothe during a tour of the reactor facility on July 10. **Photo by Craig Fritz**

Kids Day offers fun for all ages at California campus

By **Lea Blevins**

Aiming to inspire the next generation of scientists and engineers, Sandia's Livermore site hosted nearly 200 students from fifth through 12th grades for Kids Day on June 25.

The event offered opportunities for students to explore the workplace and imagine career possibilities at a DOE laboratory.

"The success of Kids Day is a direct result of everyone's commitment to teamwork," said Community Relations Specialist Michelle Walker-Wade, who helped coordinate more than 50 volunteers for the day. "It really speaks favorably for the Integrated Security Solutions Division's commitment to a unified approach to our work."

Sandians set up a variety of activities for hosts and their guests to explore, including tours of the Combustion Research Facility, a cyber escape room and rocket-on-string races. Volunteers from the Lawrence Hall of Science hosted STEM Festival fun with Phenomenal Physics, and Engineering with Hydraulics.

Sandia's Workplace Improvement Network organized a Lunch for Kids community service activity, packing 113 lunches to the Tri-Valley Food Bank. Participants decorated the bags and added other surprises, such as origami cranes.

"These lunches were generously donated, thoughtfully prepared and beautifully decorated by Sandians and their kids," said Kelly Nykodym, WIN program lead for the division. "This activity not only brought our community together but also allowed us to make a meaningful impact by supporting local children in need."

Before job shadowing Sandians in the afternoon, students visited the Stronger Together: Employee Wellness Day display, which featured a photobooth with Chip Watson the Robot Dog and demonstrations on proper backpack wearing and handwashing techniques.

"Attendees enjoyed the variety of activities available," Michelle said. "I personally love seeing our Sandians so happy. Whether they were hosting a young guest or sharing their work and expertise, the joy on their faces is priceless."

VOLUNTEERING TIME — Postdoc Jessica Trinh works the booth on How Sandians Use DNA. **Photo by Spencer Toy**

RACING ROCKETS — Technologist Charles Steinhaus demonstrates rocket-on-string races during Kids Day. **Photo by Spencer Toy**

HANDS-ON HYDRAULICS — Postdoc Liam Taylor, right, teaches engineering with hydraulics to a student during Kids Day. **Photo by Spencer Toy**

Retiree Deaths

Feb 1-July 6, 2025

Joe Tafoya (age 79)	Feb 3
Charles Hall (88)	Feb 4
Lance Gordon (80)	Feb 11
Jerry Cuderman (89)	Feb 17
Richard Williams (86)	Feb 17
John Guth (83)	Feb 21
Betty Hilgartner (92)	Feb 27
Frank Van Swol (71)	Feb 27
Thomas Tormey (89)	March 1
Philip Green (83)	March 2
Billie Garrett (97)	March 2
Ramona Plummer (78)	March 3
L. Gene Harrison (94)	March 3
Richard Caudell (86)	March 6
J. Keith Johnstone (83)	March 9
James Lathrop (85)	March 10
Theresa Chavira (65)	March 11
George Stone (88)	March 11
Geraldine Albright (76)	March 12
Wayne Einfeld (74)	March 13
Gerald Smith (90)	March 13
John Leeper (92)	March 15
Richard Heckler (73)	March 18
Karl Hess (73)	March 21
Ben Conklin (91)	March 25
Blanche Ottinger (92)	March 26
Lee Cunningham (81)	March 29
Dale Koehler (92)	March 29
Edward Powell (70)	April 1
Robert John Gross (70)	April 2
Mildred Smith (92)	April 3
Patrick Smith (62)	April 4
Thomas Hoover (93)	April 5
R. Leon Parrish (95)	April 6
Dan Nielsen (67)	April 8
Martin McDaniel (71)	April 9
Donald Lewis (92)	April 18
Thomas Foucher (82)	April 19
Ernest Vinsant (78)	April 19
John Andersen (92)	April 23
James Giachino (90)	April 23
Florencio Aragon (87)	April 25
Donna Sue Campbell (77)	April 29
Noe Lovato (89)	April 29
Robert Easterling (82)	April 29
Marshall Lapp (92)	May 5
Anna Trujillo (70)	May 7
Bonnie Conley (97)	May 8
Paul McKey (79)	May 11
Herbert Parsons (102)	May 13
John Roberts (88)	May 13
Bernard Guerrero (96)	May 15
James Armijo (87)	May 18
Duncan Tanner (88)	May 19
Robert Sandoval (80)	May 20
W. Curtis Hines (85)	May 20
Stephen Kranz (75)	June 6
Duane Dewerff (87)	June 17
Kenneth Shriver (95)	June 18
David Begeal (85)	June 25
Walter Schuster (88)	July 6

Mileposts


John Herzer 40


Ben Aragon 30


Hongyou Fan 25


Amos Martinez 25

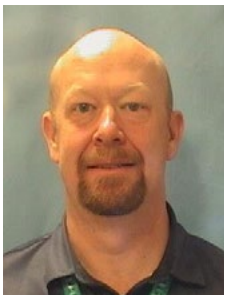

Jamie McClain 25

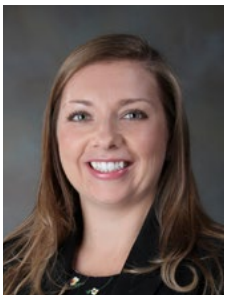

Junko Mondragon 25

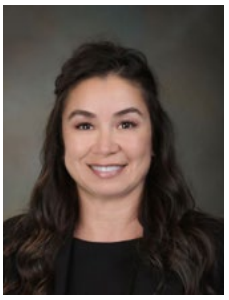

Jedediah Alderete 20


Manuel L Chavez 20


Tracie Durbin 20


Robert Lovejoy 20


Marla Pohl 20


Joanne Trujillo 20


Alison Winstead 20


LouAnn Burnett 15


Roger Byrd 15


Brandon Cover 15

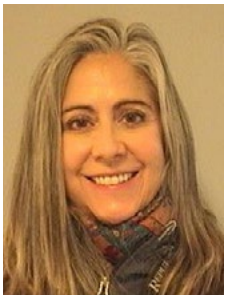

Macario Flores 15


Michael Henry 15


Joseph Howard 15


Stacy Martin 15


Matthew-Ryan Morrell 15


Danielle Perchert 15


Kara Smith 15


Bill Wilbanks 15