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ERA EMPLOYEE RECOGNITION AWARDS | 2023 — PAGE 5

Sandia partners with other labs to bolster nuclear security

Exercise simulates dual attack on nuclear power plant

By **Kenny Vigil**

Sandia is collaborating with international partners to collect data to better protect nuclear sites from cyberattacks and physical intrusions. As part of the multiyear research project with Canadian Nuclear Laboratories, Sandia developed software to emulate a cyberattack on a site's central alarm station during exercises, with the goal of improving overall security.

— CONTINUED ON PAGE 3



DUAL ATTACK — Sandia global security staff works with a team from a private Canadian nuclear power plant during a cyberattack exercise on May 17. The mock cyberattack was followed by a simulated physical intrusion. The exercise was the culmination of two-year project involving Sandia, Idaho National Laboratory and Canadian Nuclear Laboratories.

Photo by **Craig Fritz**

Smart Labs pilot program takes off



LAB UPGRADES — Contractor Callan Scoggin retrofits a fume hood in a building as part of the Smart Labs pilot program.

Photo by **Craig Fritz**

Laboratory practices implemented to improve safety, energy efficiency

By **Jennifer Sawayda**

A new program at Sandia aims to increase occupant safety and make operations more energy efficient. The Sandia Smart Labs pilot has been launched in four buildings in New Mexico and California. On June 28, the team completed its first round of assessments to identify new areas that could be improved by the program.

Proven effective by institutions across the country, **Smart Labs** is a set of best management practices that use risk assessments to analyze and reduce ventilation risks within a laboratory setting. Ventilation is critical for maintaining environmental conditions for experiments and reducing occupant exposure to chemical hazards.

— CONTINUED ON PAGE 4

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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 Lab News editor Katherine Beherec at kgbeher@sandia.gov.

Sandia and Los Alamos national labs face off to save lives



EVERY PINT COUNTS — Sandia employee Andrew Harvey squeezes a cow toy to encourage blood flow during the blood drive in June. Sandians donated 145 pints of blood during the drive — a win for New Mexicans in need of blood.

Photo by Craig Fritz

Competition proves every unit of blood counts

By **Kim Vallez Quintana**

Sandia and Los Alamos national laboratories faced off last month in a friendly battle to bring in the most blood donations to mark World Blood Day and help the community.

The competition was neck and neck — the winner decided by a unit of blood. Over two days in June, 124 Sandia employees donated 145 units of blood while 121 Los Alamos employees donated 146 units.

While Los Alamos won the friendly competition, the big winner is the community.

“Sandia and Los Alamos National Laboratory donors stepped up to this challenge and provided a tremendous amount of life-saving blood for our community. Vitalant greatly appreciates

the overwhelming and ongoing support of our mission of saving lives through the gift of blood donation. Ultimately, the real winners are the hospital patients in New Mexico who will benefit from their generous gift,” said Heidi Chase and Drew Sharpless, Vitalant account managers for Los Alamos and Sandia.

The 291 units of blood donated at both labs potentially impacts 689 patients in New Mexico. Additionally, Los Alamos had 38 first-time donors, and Sandia had 32.

“We’re stronger together. When both labs come together for a common purpose, we’re able to make a significant impact, said Los Alamos Community Relations Specialist Kayla Norris.

While disappointed Sandia fell short by one unit, Community Involvement Manger Amy Tapia offered her congratulations to Los Alamos and praised all those who organized and took part in the event.



SAVING LIVES — Sandia employee Zuzana Patterson, center, chats with Jacquelyn Chavez, left, and donor care tech Santa Vallejos while giving blood as part of the World Blood Day competition at Sandia. **Photo by Craig Fritz**



HELP FROM THE NORTH — Los Alamos National Laboratory employee Martin Ward smiles as he gives blood that will help New Mexicans in need. **Courtesy of Los Alamos National Laboratory**

“Sandia and Los Alamos National Lab truly collaborated for our community during this fun competition. We are proud of our employees rising to the challenge to meet the critical need for blood donations,” she said. Amy offered a challenge to rematch next year, which Los Alamos staff happily accepted.

While the two labs put their efforts into overdrive in June, Sandia hosts regular blood drives that support the community. During twice-a-month blood drives in 2022, more than 1,000 Sandia employees donated 1,220 units of blood, an amount that could impact 2,360 lives. [f](#)

Blended exercise

CONTINUED FROM PAGE 1

“Cyberattacks are becoming more frequent and more sophisticated. Nuclear facilities must now be prepared to address cyber-threats as well as more traditional threats to the physical security of a facility,” said Matthew Erdman, Sandia’s project lead for global security. “We’re developing a methodology and process to help facilities exercise their response capabilities and increase preparedness against all threats.” The blended attack exercise, which tested both cyber and physical security capabilities during one event, took place May 17 at Sandia New Mexico.

Developing software to test cybersecurity

One of the challenges in this project was figuring out how to carry out a mock cyberattack without it having real-life impacts to the site’s central alarm station. That’s where Andrew Hahn and Michael Rowland, cybersecurity experts at Sandia, came in. They developed the operating system and software platforms that can emulate a cyberattack without altering the central alarm system. “A cybersecurity exercise is one of the best ways to test a cyber program’s effectiveness, train staff and increase awareness,”



DOUBLE THREAT — Armed with fake weapons, Sandia’s Protective Force played both the intruders and responders during a physical intrusion exercise with Canadian Nuclear Laboratories on May 17. The exercise demonstrated how a cyberattack can be a precursor to a physical attack. **Photo by Craig Fritz**

Michael said. One platform developed is like an app that can be switched on during training to give symptoms of a cyberattack in a central alarm system. “The software is designed to have realistic effects without altering or compromising the operation of a site’s systems, allowing a site to measure its preparedness and response to a cyberattack,” Michael said.

Test time

About 100 people participated and observed as a private Canadian nuclear power plant’s cyber and physical security organizations were put to the test at the Nuclear Security Technology Complex. The complex is a mock nuclear reactor site at Sandia that’s used to train partners on how to keep nuclear sites secure. “We have this fantastic capability at the Nuclear Security Technology Complex that emulates what a real high-security nuclear site looks like. That allows us to create a scenario as close to the real world as possible,” Matthew said.

Observers gathered in a Sandia conference room to watch the exercise unfold from several live feeds, including one from the mock central alarm station. Employees from Idaho National Lab helped design the mock cyberattacks. The app worked, providing symptoms of a breach. The cybersecurity staff of the Canadian nuclear power plant had to respond to these symptoms and coordinate with the physical security staff.

Physical intrusion

The players in the exercise did not know beforehand when or where on the site the physical breach would take place. Two

members of Sandia’s Protective Force stormed the Nuclear Security Technology Complex for the physical attack portion of the exercise. Another portion of Sandia’s Protective Force was on the responding side and was able to successfully stop the intruders. “This exercise was very successful. We’ve seen a great level of engagement from our Canadian partners, who were the players in this exercise,” said Sondra Spence from Sandia’s global security. “We’ve learned a lot of positive lessons along the way.”

Workers from the nuclear power plant will decide what changes to make to enhance security, based on what they learned during the exercise.

What’s next?

Sandia will be open-sourcing parts of the software it developed and is hoping to leverage external partners to minimize the costs of development. “One of our main goals is to develop the software platform to a point where we reduce the time and number of people it takes to perform one of these exercises,” Michael said. “This will allow more sites to be able to use this tool to enhance their site security and readiness.”

Matthew anticipates Sandia will host more blended exercises in the future. “This is a good example of how world-class laboratories are teaming up to create stronger security for nuclear sites worldwide,” he said. [T](#)

Smart Labs

CONTINUED FROM PAGE 1

A team of industrial hygienists; systems engineers; environment, safety, and health coordinators; and ventilation consultants from the company 3Flow came together to implement the Smart Labs pilot.

“We had money to do a study, so we decided to start a pilot program to examine how Smart Labs could be applied to Sandia,” said Roberto Armijo, mechanical engineer and Smart Labs project lead. “This in turn will provide a road map for future projects.”

After deciding to implement a Smart Labs program, the next major step was to select buildings for the pilot. Eric Dueltgen, the industrial hygienist who oversaw the pilot program’s implementation at the Sandia California site, participated in the selection process.

“The buildings we ended up choosing in New Mexico and California make extensive use of lab ventilation systems throughout the building, giving us good bang-for-the-buck potential,” Eric said.

The pilot program started off with a laboratory ventilation risk assessment. In buildings with multiple labs, maintaining a complex ventilation system that optimizes efficiency and safety is challenging. Lab ventilation systems must be correctly designed and sized to mitigate risk.

Traditionally, assessments of lab activities and hazards are performed whenever a new project is started or lab work changes. However, as team member and industrial hygienist Chris



TEST AND ASSESS — Contractor Walker Smith tests fume hoods after performing energy-efficient upgrades as part of the Smart Labs pilot program.

Photo by Craig Fritz

Quinn-Vawter points out, these types of exposure assessments have limitations.

“While exposure assessments do assess risk, there has been no clear path on how to integrate those assessments into building performance requirements,” Chris said.

This is where the Smart Labs concept comes in. The laboratory ventilation risk assessment fills some of these gaps by providing risk control bands for laboratory ventilation systems and fume hoods, enabling Sandia to set operating parameters for each control

band. This gives the team greater ability to assess risks and develop better strategies for how to address them.

“The laboratory ventilation risk assessment is a systematic and reproducible way to evaluate ventilation hazards present in a laboratory environment,” Chris said, “and directly correlate these risks to ventilation system operating requirements.”

The Smart Labs team is now using the data gathered from the initial stage of the pilot program to identify recommendations for safety improvements. For instance, one recommendation the team developed for one building is to install sensors for measuring overall air handler flow. This will allow the team to identify air flow issues more quickly, an important step in increasing occupant safety.

The assessments also allowed the team to measure the current capacities of the buildings’ lab ventilation system — sometimes with surprising results.

“After conducting our study, we found

that another building’s HVAC system does have enough capacity, but we’ve been wasting some of it,” said Robin Jones, the senior manager who brought together the pilot program team. “By reducing these inefficiencies, we can add future capabilities to the labs without running into capacity constraints.”

Smart Labs has the additional benefit of reducing energy consumption, a key component of [Sandia’s plan to achieve net-zero greenhouse gas emissions](#). Labs use three to 10 times more energy than other similar sized buildings. As demonstrated by the assessment of the building with the inefficient HVAC system, much of this energy can be wasted.


SkySpark, a fault detection program used in some of Sandia’s buildings, can sense anomalies in ventilation systems, allowing the team to fix problems before they become serious issues.

Occupancy sensors are another recommended improvement that could alter the

airflow depending on the lab’s occupancy. “Improvements such as occupancy sensors would save on energy usage and alter the lab’s environment to better meet occupant needs,” Eric said.

Although Smart Labs emphasizes safety above all else, its ability to make labs more resilient and less energy-intensive is also important to meet the evolving needs of researchers.

“At the end of day, we’ll have a safer environment that will enable Facilities personnel, ES&H and Industrial Hygiene to know exactly what’s going on in those laboratories,” Roberto said. “This allows us to have a better plan for making changes for shifting mission needs, which is also an important way that we are answering Sandia’s [Rally Cry](#).”

The team describes the initial implementation for the Smart Labs program in an American Chemical Society article [published](#) in 2022. 

Honoring the winners

Employee Recognition Award winners celebrated

By **Kerri Dufault**

At ceremonies held June 21 in New Mexico and June 28 in California, Sandia celebrated the 2023 Employee Recognition Award winners for demonstrating achievements at the highest level of exceptional service in the national interest.

The awards are a peer-to-peer recognition program that honors those whose achievements exemplify high performance and sustained contributions with Labs-level impact critical to Sandia’s mission.

“These ceremonies are about honoring the people and teams whose achievements rose to the top in 2022, a landmark year for Sandia Labs,” Chief Human



AWARD SHOW ARRIVAL — Employee Recognition Award co-hosts California Site Operations Director Patricia Benguerel, left, and Communications Director Frederick Bermudez make a grand entrance at the New Mexico award ceremony on June 21. Winners were recognized at ceremonies in New Mexico and California. The Labs celebrated employees who were nominated by their peers for their achievements.

Photo by Craig Fritz

Resources Officer Brian Carter said.

“It’s a great honor to be recognized by my peers and have the impacts of my work acknowledged,” said computer scientist Carlos Tafoya, an individual winner in the innovation category who developed software modeling tools for the B61-12 and W80-4 programs. “This is my first ERA and winning boosts my confidence as I move forward in my career.”

“The sensitivity of our work often leads to us not celebrating our accomplishments,” Carlos said. “Having awards like this help staff know that leadership recognizes and appreciates their efforts.”

The six Employee Recognition Award categories are innovation, technical excellence, leadership, operational excellence, collaboration, and inclusion and diversity. Winners were selected for their achievements between Oct. 1, 2021, and Dec. 31, 2022.

Following the nomination process, each division selects and advances two of its winners for consideration for the Lab Director’s Award, the highest accolade of the awards, further highlighting top achievers.

At the ceremonies, Lab Director James Peery announced the three winners of the Lab Director’s Award. One individual and two teams were selected for solving



CELEBRATING EXCELLENCE — Labs Director James Peery congratulates winners at the Employee Recognition Awards ceremony in California on June 28. **Photo by Randy Wong**

complex technical puzzles, breaking ground in new fields of study, delivering results under intense pressure and setting a high bar for quality, efficiency and performance.

Matthew Kiesling was selected for demonstrating exceptional leadership as a mentor to project and technical leads.


The members of the W80-4 Systems Flight Test Team received the Labs Director’s Award for being behind many firsts for the program: first unpowered flight, first powered flight, first B-52H bay release, and first in-flight firedown with FTUO warhead. These critical

warhead-development milestones provided data and flight environments for the system and component teams.

The Power Sources Capabilities Critical Decision-1 Team received the Labs Director’s Award for working diligently to finalize key deliverables and meet NNSA expectations to achieve Critical Decision-1 approval, which provides authorization to begin project execution.

All winners receive a certificate and numbered coin redesigned for each year’s honors.

“A peer-to-peer recognition program is one of the most inclusive things an organization can do,” said electrical engineer R.A. Williams, an individual winner in the innovation category for thier work evaluating software for nuclear safety in abnormal environments. “It allows individuals to be acknowledged based on their contributions, regardless of disability or other real or perceived limiting factors.” R.A. has a serious hearing impairment.

“Sandia’s success in serving the nation depends on the commitment, expertise and contributions of our team members,” Brian said. “Through the ERA program, we are proud to recognize the most notable of accomplishments by these talented individuals and teams.” 



INDIVIDUAL HONOREES



Samuel Leguizamon 1000



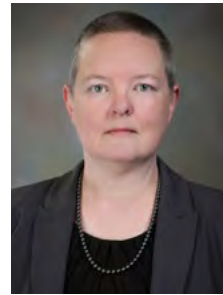
Christopher Bourdon 1000



Justin Brown 1000



Stan Moore 1000



R.A. Williams 2000



Gordon Eye 4000



Bradford Stricklin 5000



Pete Knee 5000



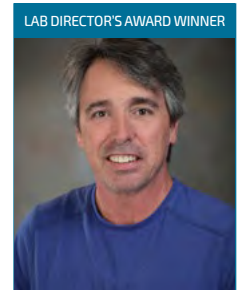
Susan Clark 5000



Kenneth Hu 6000



Amy Kaczmarowski 6000



Matthew Kiesling 6000



Theckla Elmazi 6000



Brian Hunt 6000



Matthew Raymer 6000



Michael Rimbart 7000



Tina Falling 7000



Carlos Tafoya 8000



Gerald Vincent 8000



Kyra Schmidt 8000



Megan Sabo 8000



Nicholas Belotti 9000



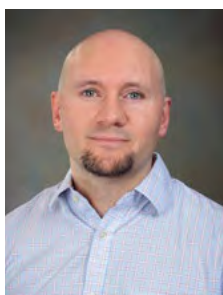
Vincent Urias 9000



Renee Reed 10000



Nicole Jacques Smith 10000



Steven Spencer 10000



Samantha Updegraff 11000



Alexandra Robinson EXEC



TEAM HONOREES

EXECUTIVE SUPPORT DIVISION



Nuclear Deterrence Vaccine Verification

Technical Area-V Emergency Planning Hazards Assessment Temporary Order Team

Emergency Management and team members significantly improved safety and advanced national laboratories-wide missions through development, review and timely approval of the Technical Area-V Emergency Planning Hazards Assessment Temporary Order, which provided urgent, short-term response actions for incidents involving the actual or potential release of hazardous materials at the facilities.

Workplace Violence

Key stakeholders from multiple Sandia organizations developed, implemented and are utilizing an improved Workplace Violence Prevention Program. This program, in use since Feb. 14, 2022, has conducted 25 intake cases to date and has resulted in significant improvements to addressing and preventing workplace violence.

Nuclear Deterrence Vaccine Verification Team

The Nuclear Deterrence Executive Office Administrative Team verified vaccination status of more than 650 visitors when the requirement to verify vaccination status for visitors was implemented. The team created a process that eliminated a significant burden for program teams, allowing them to focus on technical execution.

DIVISION 1000



CompSim Software Quality Engineering Assessment

W80-4 Electromagnetic Test Team

The team capitalized on an opportunity to provide critical baseline design characterization information for W80-4 Systems years ahead of schedule. By remaining vigilant, responsive and agile, the team collaborated with multiple partners and stakeholders during a tight two-week window to support Sandia's top-priority program.

Technical Excellence in Assuring Materials Innovation and Integrity

A highly integrated Sandia team composed of researchers from nine organizations and five centers produced new and differentiating technologies enabling the Labs to develop advanced concept solutions for materials assurance. The technical excellence is externally validated via seven high-impact journal articles and two patent applications.

Technology Commercialization Fund Team

Coordinating with diverse external partners and other DOE labs to establish three new programs that facilitate a more impactful lab commercialization process, address core tech-transfer challenges and enable mission impact, the team positioned Sandia as a leader in the national lab complex for innovative technology transfer.

CompSim Software Quality Engineering Assessment

The team took the initiative to both streamline the software quality engineering assessment process and to maximize the value of the assessment to improve software development practices. This yields high-quality simulation software in the Sierra, Cubit and SPARC product suites.

Validation and Qualification Sciences Proficiency Test Program

In 2022, the Validation and Qualification Sciences Experimental Complex successfully executed three Proficiency Test Program events: three rocket motor static fires, eight 120-foot blast tube test shots and one supersonic monorail test at the 10,000-foot rocket sled track, all of which advanced the team's technical and programmatic readiness and provided meaningful training opportunities.

HERMES III Greenhouse Gas Reduction Team

While executing mission critical nuclear deterrence and research and development testing, the team reduced emissions of a potent greenhouse gas by 80-90% through HERMES III accelerator upgrades. This represents a 10% reduction in total emissions for the Sandia New Mexico site, a dramatic step forward in achieving corporate sustainability and net-zero carbon emission goals.

DetNet High-Performance Computing Software as a Service for Component Design and Surveillance

The team successfully created and deployed high-performance computing, cloud-based software DetNet as a service exemplar for the detonator community. This is a novel digital engineering approach where the engineering community will greatly benefit from ease of access and usability of physics-based modeling and simulation functionality to assist design and surveillance.

TEAM HONOREES

Polyurea Nanocomposite Design and Testing

In an accelerated two-year timeframe, a cross-divisional team boldly proposed, designed, manufactured and tested an innovative materials solution of polyurea-based nanocomposites. Data show these materials are promising to provide protection of fragile targets from combined insults, producing an extraordinary materials solution for mission needs.

DIVISION 2000



W80-4 Functional Electrical Test Team

Primary Standards Lab High Vacuum Measurement System Team

The Primary Standards Lab qualified a new high-vacuum system to provide both better measurement uncertainties and the capability of calibrating up to eight customer vacuum gauges simultaneously. This system became a reality in 2022 and assures the future of traceable vacuum gauge calibrations for the nuclear security enterprise.

Mk21 Arming Fuzing Assembly Qualification Test Team

Overcoming several hurdles, including unplanned requirements changes that necessitated additional risk reduction testing, ever-changing hardware delivery dates and being down several resources, the test team successfully conducted more than 96% of the final qualification testing in 2022.

W80-4 Functional Electrical Test Team

The team was instrumental in conducting system-level testing and collecting data required to support the Systems Baseline Design Review. The team was faced with many unplanned test activities and hardware shortages, but persevered to deliver on time.

Nuclear Deterrence Threat Briefing Team

This team expertly collaborated to develop and present a threat briefing to educate Labs leadership, nuclear deterrence management and Kansas City National Security Campus partners on imposing threats to the nation and to reinforce the urgency of the nuclear deterrence mission.

Disablement Management System (DMS) Mod Systems and Production Relay Filter Assembly Team

Within cost and on schedule, the team successfully designed and manufactured the Relay Filter Assembly component that facilitates connection of Disablement Management System Mod to the B61-12. The team used Sandia production agency-built hardware to complete the project, a senior leadership priority.

W93/Mk7 Phase 1 Team

The team collaborated with sponsors and nuclear deterrence enterprise partners to complete the first Phase 1 development effort in almost 40 years. As system integrators, the team led multiple efforts to evaluate design concepts and document recommendations in a report delivered to the Nuclear Weapons Council.

DIVISION 3000



HR Solutions Chat Team

Together We Rise

By providing a corporate-matched employee giving campaign to assist people impacted by the devastating fires in New Mexico, the team demonstrated Sandia's community leadership. The campaign was launched in three days, engaged more than 800 employees, raised \$128,000 and received positive media attention.

Labswide Rally Cry

The Rally Cry was the culmination of months of work to staff the W80-4 program as the Labs priority. What started out as a staffing effort for W80-4, evolved into a Labswide effort to reinvigorate the workforce through a robust effort to reconnect Sandians to the Labs' mission.

HR Solutions Chat Team

Improving customer experience, increasing engagement, reducing wait times, providing skill development and expanding accessibility, the team deployed an innovative live chat capability for Sandia in Oracle Service Cloud. Live chat enables HR Solutions to help Sandians quickly and efficiently.



TEAM HONOREES

DIVISION 4000



Power Sources Capabilities Critical Decision-1 Team

LAB DIRECTOR'S AWARD WINNER

Power Sources Capabilities Critical Decision-1 Team

The project team worked diligently to finalize key deliverables and meet NNSA expectations to achieve Critical Decision-1 approval. The culmination of activities represents significant leadership, collaboration and excellence, resulting in Sandia achieving the first Critical Decision-1 approval in over a decade.

Smart Labs Building 897 Team

Collaboration between Environment, Safety and Health and Facilities on the implementation of the Smart Labs program in Building 897 has led to a risk-based, data-driven management approach to increasing laboratory safety and operational and energy efficiency.

Security Help, Awareness, Resources and Knowledge Seminar

Security risks must be identified and mitigated to prevent compromise of sensitive information. A team of security professionals designed and implemented the seminar to educate and inform program and project managers, with the goal of identifying local security risks and preventing compromise by building an intentional security culture.

Facilities Davis Bacon Implementation Team

The Facilities team was tasked with implementing the new Davis Bacon Act requirements into the normal workflow.

Safeguards & Security Planning Teams for DOE External Assessment Visit

To effectively prepare for DOE's External Assessment, more than 40 volunteers from various safeguards and security organizations collaborated within four subteams to facilitate a safe and successful visit for more than 40 External Assessment team members, prepare impacted programs for assessment activities through coaching and submit more than 900 documents in response to the data call.

DIVISION 5000



Quantum Information Science and Technology

Advanced Targets Flight Computer (eCube)

Providing a ruggedized, conduction-cooled electronics platform designed for the United States Common Glide Body architecture, the team completed the design, build and qualification program for the next-generation flight computer for hypersonic programs, known as the eCube.

Joint Flight Campaign-1 Courtland Team

In support the first flight test for the new Navy Conventional Prompt Strike and Army Long Range Hypersonic Weapon, the support team for Joint Flight

Campaign-1 Courtland integration and test activities answered the call many times, in many ways.

W80-4 Weapon Control Unit Software Team

The team completed its review of its D30 mission code, with emphasis on software safety in abnormal environments. The software was rigorously inspected from several perspectives including nuclear safety.

Quantum Information Science and Technology

Following a complete programmatic and technical redirection, the team immediately responded, exceeding multiple fiscal year 2022 technical milestones. The past three years have been a test of whether Sandia can perform in the new programmatic environment, and the sponsor now regards Sandia as a trusted partner for the future.

Improving the Plastic Ball Grid Array Packaging Producibility

Enabling record parts deliveries in 2022 and reestablishing trust with the four current production weapons programs, the team improved the manufacturability of the application-specific integrated circuits plastic ball grid array electronics and validated a new vendor for its production.

Hyper Temporal Sensor Team Delivers First Production Units to Customers

Twenty months after the first development unit and four months after the first production units were delivered, the team successfully completed the production, testing and delivery of the first four flight-qualified focal plane arrays for the Global Burst Detector in support of the U.S. Nuclear Detonation Detection System.

TEAM HONOREES

Machine Learning and Deep Learning Workshop Tutorials and Hackathon

The tutorials and Hackathon leveraged intense collaboration to provide informational, hands-on learning opportunities to Sandians interested in machine learning. These efforts helped participants understand how machine learning is being used at Sandia and engage with the main Machine Learning and Deep Learning Workshop talks the following week.

Threat Assessment Team

Prompted by historic national security and geopolitical challenges, the team developed multiple highly impactful threat assessments through collaborations across Sandia, DOE and the interagency, substantively impacting national policymaker risk awareness and decisions.

DropKick

The team developed a concept, prototype and then a deployable solution that is improving security in high-security buildings.

Redwood and Mako

By leveraging the teams' expertise in software analysis and development, hardware design and development, information analysis and program support, the Redwood and Mako teams have collaborated in the development of a capability that supports the high-priority operational needs of our DOD-sponsoring organizations.

Conventional Prompt Strike, Cyber Team

In support of integrated military systems, the team provides a virtuous security cycle where adversary-based assessments feed secure engineering and design of a novel weapon system. The Cyber team deliverables support inherent weapon security and greater assurance of weapon reliability.

Special Access Program Work Acceptance Team

The Program Security Office provides resources for some of Sandia's most impactful national security programs. The team developed a process to ensure programs are appropriately resourced and align with Sandia's objectives prior to acceptance. In FY 22, five programs, totaling about \$194M of new or growing work, were accepted and adequately resourced.

High Power Joint Electromagnetic Non-Kinetic Strike Team

The Sandia team greatly contributed to the program's success through the on-time, within budget development and delivery of a state-of-the-art compact pulsed power system, Time Out of Action model and Battle Damage Assessment capability to enable next generation non-kinetic weapon demonstrators.

DIVISION 6000



Explosives Destruction System Phase-3 Containment Vessel Qualification

Smart Border Initiative

The initiative was a cooperative effort between the Department of State's International Narcotics and Law Enforcement Bureau, Mexico's Agencia Nacional de Aduanas de México and Sandia. The Labs performed a systems analysis of the Mexico-U.S. border, analyzing Mexican operations at land ports of entry in five border sectors.

Transaction Evaluation for Suspicious Indicators Tool

The global security team developed a first-of-its-kind tool to identify suspicious indicators for front-line customer service and sales staff at chemical suppliers. This novel tool underscores a framework for using a facility's existing customer and product databases to identify suspicious sales indicators for dual-use chemicals.

Space Based Infrared System Geosynchronous Starer Processor 5

The enhancement was operationalized two months ahead of schedule to provide the nation and the warfighter with real-time battle-space awareness in response to rapidly changing real-world events, while preventing loss of mission capability resulting from outstanding circumstances.

Explosives Destruction System Phase-3 Containment Vessel Qualification

Using novel modeling, simulation and testing to demonstrate requirements, the Explosive Destruction System teams successfully qualified the vessel used by the U.S. Army Chemical Material Agency to destroy chemical weapons. The accomplishment has major positive impacts to the nation's recovered chemical weapons.

Site K Electronic Security System Project Team

Collaborating internally and externally with multiple entities in the Air Force, subcontractors and vendors to implement state-of-the-art protections for government-owned critical assets in the Site K facility, the team successfully completed the three-year, activity-level project on time and under budget despite a coinciding global pandemic.

TEAM HONOREES

DIVISION 7000



B61-12 Extended Level Maintenance Project Team

B61-12 Extended Level Maintenance Project Team

The team responded to an urgent tasking by NNSA and the Air Force to develop tools, procedures and a trainer for the project. The team successfully met deliverables and milestones, accomplishing a significant scope of work in an accelerated timeframe of 23 months.

W80-4 Surveillance Team at Sandia New Mexico

Developing a methodology, requirement sets and program documentation that can be used immediately by both the W80-4 Life Extension Program and as a model for future life extension programs, the team's work has the potential to fundamentally improve the quality and efficiency of surveillance contributions to modernization programs in the future.

Product Integration Engineering Team

The team's mission is to support all nuclear weapons cables whose programs are past the first production unit milestone so that the production agency meets full-rate production while maintaining quality. This intent flowed down from executive leadership to senior leadership and then to management, and the team continues to grow.

High Efficiency Adaptable Telemetry Transmitter

In FY 22, the team achieved Qualification Evaluation Release and first production unit milestones and gave Sandia's programs a common component to meet their telemetry needs. This innovation consolidated the capabilities of more than 30 telemetry transmitters into one telemetry transmitter.

Lithium Thionyl Chloride Battery Investigation Team

In less than four months, this team developed and conducted numerous tests and revalidated that the delivered battery met all design and mission requirements.

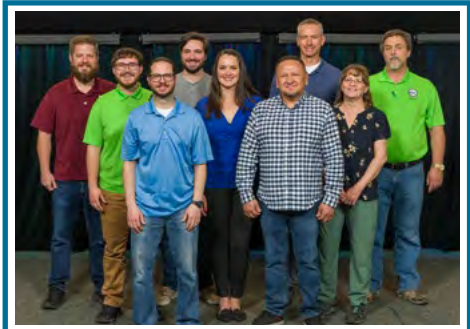
Additive Manufacturing Scroll Holder Design and Implementation Team

The additive manufacturing scroll holder is one of the first Sandia piece parts to incorporate additive manufacturing into the baseline design of a nuclear deterrence component. The team incorporated the design into W87-1. This helps Sandia and the nuclear deterrence enterprise expand knowledge and develop future pathways for incorporation and qualification of additive manufacturing into nuclear deterrence applications.

Radiation-Hardened, Bus-Based Electronic Neutron Generator Development Team

By completing a whirlwind development cycle and demonstrating functionality in expected high-risk environments for a strategic system, the neutron generator technical maturation team and collaborators developed a radiation-hardened, distributed bus-based architecture electronic neutron generator with magnetic triggering to Technical Readiness Level 5.

DIVISION 8000



LAB DIRECTOR'S AWARD WINNER

W80-4 Systems Flight Test Team

Providing functional data and flight environments for the system and component teams, the flight test team successfully executed many firsts for the program: first unpowered flight, first powered flight, first B-52H bay release and first in-flight firedown with FTUO warhead — all critical milestones for warhead development.

National Fire Protection Association 2 Liquid Storage Setback Distance Revisions

Team members from multiple centers and diverse technical specialties collaborated with multiple industrial partners in proposing revisions to separation distance requirements for bulk liquid hydrogen storage systems. The revisions were incorporated into the 2023 version of the National Fire Protection Association 2 Hydrogen Technologies Code.

B83 Surveillance Restart

Coordinating across multiple Sandia organizations, the team solved significant technical challenges to restart production capability after a three-year pause, successfully delivering and jointly testing critical surveillance test assets with the Air Force within a tightly constrained delivery and test schedule.

TEAM HONOREES

W80-4 Systems Joint Test Assembly Team

The team has delivered with excellence, including the first functional Joint Test Assembly flight test with successful fire-down, first integrated missile-warhead fire down, early identification of both War Reserve and Joint Test Assembly issues for resolution and five separate test unit builds while working to release version 2.0 component requirements and design definition.

W80-4 Systems Baseline Design Review, and Preliminary Design Review and Acceptance Group Development

The team successfully prepared, completed and executed the Baseline Design Review and Preliminary Design Review and Acceptance Group for the W80-4 Life Extension Program. Completion of these major milestones enables the program to transition into Phase 6.4 and marks the progression from design engineering to production engineering.

Special Programs Systems Accreditation Team

Displaying dedication, professional excellence, systems knowledge and technical expertise directly, the team issued four Approval to Operate decisions. These were issued by three classification domains and two accrediting agencies.

Biopolymer-Concrete Laboratory Directed Research and Development Team

As part of the industrial decarbonization effort to achieve carbon neutrality by 2050, the team developed biopolymer concrete using plant-based polyurethane as an innovative and sustainable alternative for Portland cement concrete, with significantly lower carbon footprint. A patent has been filed for this work.

Low Yield Nuclear Monitoring Program Physics Experiment 1 Instrumentation and Characterization Team

As a part of the Low Yield Nuclear Monitoring Program, the team successfully installed monitoring equipment and systems designed to detect and characterize chemical explosions conducted in P-Tunnel at the Nevada National Security Site. Sandia team members collaborated with colleagues at Lawrence Livermore, Pacific Northwest and Los Alamos national laboratories.

Sandia California Walk-Up Information Technology Bar

The Labs' California site launched a Sandia Walk-Up Information Technology Bar service. In the remodeled location, the team offers a consolidated, one-stop, walk-up solution for an array of unclassified computing needs, resulting in an improved integrated service delivery model.

Chemical, Biological, Radiological and Nuclear Defense Administrative Team

The administrative team that assists chemical, biological, radiological and nuclear defense did an outstanding job supporting a diverse team of junior and senior managers, staff, postdoctoral fellows and students across three sites in Albuquerque, New Mexico, and Livermore and Emeryville, California. Together, the team has adapted to a new hybrid work environment with courage and grace.

Division Diversity Council Leaders

Brian Duong and Myra Blaylock have provided high-impact leadership for the Sandia California Division Diversity Council, the leadership group for all of the California-based employee resource groups. They have also strengthened the partnership with the corporate Inclusion, Diversity, Equal Employment Opportunity and Affirmative Action group to move Sandia's inclusion and diversity efforts forward.

Accurate Email Distribution Lists

The team implemented a set of creative solutions aimed at improving the accuracy of state-based email distribution lists, ensuring all employees receive the communications they should be receiving to be better connected and informed. The project involved collaborators across divisions 3000, 8000 and 9000 to meet the desired outcome.

High-Ductility Refractory High-Entropy Alloys for Advanced Energy and Aerospace Systems

Developing a novel method that increases the ductility of refractory high-entropy alloys, the team manufactured and tested new alloy combinations and improved ductile properties at high strengths and high temperatures. The refractory high-entropy alloys are gamechangers for high-temperature applications such as advanced high-temperature nuclear reactors, aerospace, combustion and concentrated solar.

DIVISION 9000



Science and Engineering Info Systems Nuclear Deterrence Operational Excellence Team

Science and Engineering Info Systems Nuclear Deterrence Operational Excellence Team

The team increased the availability of Science and Engineering Info Systems applications, reduced the time it takes to respond and resolve outages, improved visibility of issues and their causes, increased

TEAM HONOREES

understanding of application dependencies across the organization, and built a culture of strong root cause analysis and preventive action, not just corrective action.

Asian Leadership and Outreach Committee

In times when various environmental, economic and social challenges have disproportionately impacted diverse communities at Sandia, the Labs' Asian Leadership and Outreach Committee showed up courageously to uplift each other, to support its communities and to demonstrate compassion, kindness and resilience while delivering exceptional service in the national interest.

New Employee Support Team

Prior to May 2022, only 43% of new hires were able to log in their first day after orientation, causing approximately nine full-time employees in lost productivity per year. New employee first-day logins have increased to 97% since May 2022 when the team assigned a buddy in Information Technology to each new hire and teamed with New Employee Orientation.

Adversarial Modeling and Penetration Testing Team

The team conducted engagements against Sandia's unclassified networks resulting in several identified areas for improvement and increased security. The team also identified zero-day vulnerabilities in software applications. These efforts resulted in numerous new detections around these vulnerabilities and risks, as well as improved security posture across the enterprise

DIVISION 10000



Lost and Stolen Property Innovation Team

Hypersonics Program Office

Courtney Allen and Edna Nolan, the two primary members of the Hypersonics Portfolio Office, successfully developed and implemented a resource management process for the integrated military systems team to use for understanding total-labor equivalent allocations on hypersonics-related projects.

Supply Chain Efficiencies Project

Sandia continues to navigate unprecedented global supply chain issues and evolving business practices to accept appropriate risk and identify opportunities to reduce red tape. Non-value activities are being removed to decrease cycle time so that the Labs more effectively delivers in mission areas and improves customer experience.

Lost and Stolen Property Innovation Team

Lost and stolen property at the Labs reduced by 67% from FY 21 to FY 22 due to efficiencies and improvements, developed and improved.

Defense Contract Audit Agency Incurred Cost Expense Model and Inspector General Audit

DOE ended the cooperative audit strategy, resulting in a new requirement to complete the Defense Contract Audit Agency Incurred Cost Expense Model and engage in an Inspector General audit for fiscal years 2018-2022. Sandia had never completed this model and required finance and accounting cross-group participation, management involvement and NNSA review.

Integrated Business Management and Program and Project Management Security Team

The team successfully implemented the Mission Services Security Briefing, along with supplemental security materials, including a website and security plan, for business management and program and project management, two centers that are at high risk for security incidents.

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Spinner lidar to improve accuracy, prediction of wind industry simulation tools

By **Kelly Sullivan**

Sandia [Wind Energy Technologies](#) researchers successfully installed and deployed the spinner lidar on the hub of a General Electric Co. wind turbine in Lubbock, Texas. The instrument was added as part of a cooperative research agreement between Sandia, the [National Renewable Energy Laboratory](#), and GE for the Rotor Aerodynamics, Aeroelastics and Wake experiment funded by the DOE [Wind Energy Technologies Office](#).

“This project seeks to improve how wind turbine models are validated and improve our understanding of large-rotor physics by applying new data assimilation techniques that enable time-resolved, high-fidelity model comparisons to the experimental data,” said Chris Kelley, a principal investigator for the Rotor Aerodynamics, Aeroelastics and Wake experiment at Sandia. Improving models and validation techniques for the wind industry is another way that Sandia researchers are studying innovative ways to produce clean energy and help meet the United States’ goal of net-zero emissions by 2050.

The new instrument looks upstream from the turbine hub and provides measurement data of the wind speed and turbulent structures approaching the wind turbine across the entire rotor swept area every two seconds. One thousand wind speed data points over the entire rotor disc allows for much higher spatial resolution than meteorological towers can provide.

Researchers at Sandia will use the spinner lidar to implement a data assimilation strategy, whereby measured inflow is input into an aeroelastic simulation.

They seek to improve the predictions of unsteady turbine and blade loads in turbine simulations by better characterizing the turbulent inflow structures. The spinner lidar, which sends pulses of laser light to determine the presence, shape and distance of objects, provides a validation dataset to improve



EXPERT INSTALLATION — Sandia has installed a spinner lidar on a GE wind turbine to measure turbulent structures in the wind approaching the turbine and to improve model predictions of unsteady aerodynamic loading on wind turbine blades. **Photo by Tommy Herges**

the accuracy and prediction of the DOE [ExaWind](#) code suite and simulation tools at GE. Such improvements to design codes lead to more robust and reliable wind turbine blade designs and reduced leveled cost of electricity for wind energy.

Sandia scientists obtained the spinner lidar instrument from the Technical University of Denmark and designed and fabricated the custom mounting frame and data networking hardware. Project partners developed and agreed upon a critical lift plan and multiorganizational work agreement to increase lift safety, reduce lift uncertainties and define roles and responsibilities clearly between partners of the Rotor Aerodynamics, Aeroelastics and Wake experiment.

“The installation of the lidar required considerable planning, since the instrument was too large to install from inside the nacelle or hub,” Chris said. “GE helped us develop a lidar mounting concept, and the Sandia team designed and fabricated a lidar mounting frame with a pivoting hinge. A large crane was part of the installation process and the pivot allowed for the lidar to be disconnected from the crane rigging by personnel within the turbine hub.”

The Rotor Aerodynamics Aeroelastics and Wake Project experiment team is already collecting inflow data from the spinner lidar instrument. The lidar will operate through September 2023. Data will be collected from the lidar instrument for various turbine operational states and wind conditions, so that simulation tools can be validated for all operating conditions.

Read more about the experiment in the Sandia [FY 22 Wind Energy Program Accomplishments Report](#). [📄](#)



MASTER RIGGER — Miguel Hernandez prepares rigging within the GE turbine hub to install and pivot the spinner lidar. **Photo by Tommy Herges**

Mileposts



Diane Peebles

40



Corbett Battaile

25



Kevin Halbig

20



Kristina Czuchlewski

15



Kara Franco

15

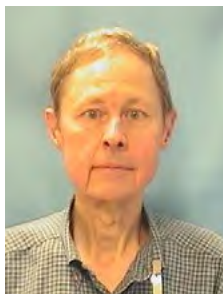


Recent Retirees



Jerome (Jerry) Cap

40



John Torczynski

38



Walt Gutierrez

33



Michael Ross

33



Ron Farmer

32



Ramona Atkinson

20

OPERATION BACKPACK

STUFF THE BUS

SCHOOL SUPPLY DRIVE
JULY 17 – JULY 28

School is about to start and our local students need supplies to succeed.

FINANCIAL CONTRIBUTIONS AND SCHOOL SUPPLIES WILL BE ACCEPTED

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LET'S STUFF THE BUS!

Perfecting the online and hybrid meeting

By **Stephanie Hobby**

When COVID-19 sent the world home in 2020, everyone faced unexpected challenges while finding new ways to get work done. One such challenge was how to productively meet without being in the same physical space.

Today, around 4,000 Sandians are working remotely or telecommuting, and that challenge continues. Two Sandians leaned into their Toastmasters training and recently offered some strategies during a presentation to the Sandia Women's Action Network, to help navigate this newly evolving work environment.

Barbara Lewis and Laura Lovato are both veterans of one of the Toastmasters International clubs that meets at Sandia and say their training has been instrumental to presenting ideas well. Laura said Toastmasters is much more than learning to speak in front of an audience.

"Some people will say, 'I don't need to go to Toastmasters, I already can speak in front of a crowd.' But it's more about effective speaking, especially when you need to sell an idea, and you need to get buy-in regarding that idea. How effective are you? Are you concise?" Laura said, adding that, given the propensity for good listeners to become good



THE VIRTUAL EDGE — Strategic Facilities Integration team members participate in a hybrid meeting at a touchdown space. Using best practices for hybrid and virtual meetings, teams like this one can work productively from afar. **Photo by Craig Fritz**

leaders, the organization also helps build strong leadership skills.

During their presentation, Laura and Barbara start with the basics.

"We go over how to have an effective meeting, first and foremost, because if you can't have an effective in-person meeting, you can't have an effective virtual or hybrid meeting," Barbara said.

A big part of that, particularly when screens are involved, is to condense the content so it is more easily retained. For an hourlong meeting, use the first 10 minutes

to go over what the goals of the meeting are, ideally have three main points to cover, and reserve the last 10 minutes to discuss take-aways and action items so everyone understands the next steps.

Laura and Barbara encourage presenters to explain the ground rules up front, so people know what to expect. If the meeting should be interactive, let attendees know at the beginning to plan their questions or expect to be called on if participation is lagging. They highly encourage participants, when security allows, to turn on their cameras, citing better opportunities for connection as well as helping the audience stay focused. If people are on camera, they are more likely to stay present and resist the urge to move on to other work.

"In person, you're making more of that connection, but how do we read body language, and how do we make sure people stay engaged? Cameras are the best way to do that," Laura said.

Additionally, eye contact is a critical component of how humans communicate; some research indicates that eye contact and body language are more important than what is verbalized. It can feel unnatural online though. Participants look at the screen, making it hard to see their eyes. Barbara encourages speakers to look directly into their camera to make



OPTIMIZING HYBRID WORK — Natalie Jung, middle, and Elizabeth Rose, right, meet with the Strategic Facilities Integration team in a hybrid meeting at the touchdown space in IPOC. **Photo by Craig Fritz**

the interactions feel more personable and effective.

“One skill we’ve learned in Toastmasters is that eye contact is important,” Barbara said. “To really make eye contact — so that you feel that I’m making eye contact — you have to look at the camera.”

Both agree that hybrid meetings present some of the greatest challenges. “If you’re in a conference room with other people, you have the danger of ignoring the people coming in virtually. Or if most people are virtual, you might ignore the people in the room,” she said. The chat feature of online meetings presents another hurdle, as people in the room can’t see what is being said on chat, but they can hear the potentially distracting alerts.

To combat that, Laura offers a creative solution. She asks everyone to bring their

laptops, even if they’re attending in-person. Participants will see a wide-angle view of the whole conference room, but they can also see one another and interact, regardless of where they are. Another strategy is to designate a chat monitor who can keep the presenter aware of questions coming in from those online.

They also suggest making purposeful use of the tools available, including polls, breakout rooms and whiteboards, but caution against overuse, as tools can also be distracting if used without discretion. When hosting a large meeting, they like to run a poll after a break to see how many people have returned.

Finally, for any presentation, whether in-person, online or a combination of the two, don’t be afraid of pauses. Allowing for several seconds of silence, particularly

during a Q&A portion of a meeting, gives audience members the chance to collect their thoughts and ask meaningful questions. A good rule of thumb is to silently count to seven before moving to the next topic. “Some people will feel like it’s an eternity, and they feel like they can’t do it, but you need to pause,” Barbara said, adding that it gives time to ensure that everyone who wants to participate can.

If you would like to learn to improve your presentation, leadership and speaking skills, consider joining one of the Toastmasters International clubs that meet at Sandia. Meetings are regularly advertised in Sandia Daily News, or contact Barbara Lewis for more information. [@](#)

Summer fun with physics

By *Katrina Wagner*

The Summer Physics Camp for Young Women, sponsored by Los Alamos National Laboratory, Sandia and the Hawaii Science and Technology Museum, welcomed 40 young women to programs in New Mexico and Hawaii this summer. Each two-week camp included hands-on experiences for participants interested in STEM careers.

In New Mexico, Sandia volunteers facilitated activities that demonstrated concepts like robotics, chemistry and cybersecurity. Volunteers also offered tips for resume writing, applying and interviewing for jobs, where to find job opportunities and how to pursue careers in STEM. [@](#)



EVERYDAY CHEMISTRY — Chemical engineer Amanda Sanchez volunteered with a group of Sandians who led hands-on STEM activities at the Summer Physics Camp for Young Women. **Photo by Anna Llobet Megias**



COSMETICS IN THE LAB — Systems engineer Danae Davis teaches summer camp participants how to create bath bombs and face masks during a demonstration about cosmetic chemistry.

Photo by Anna Llobet Megias