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Operational and Mission Highlights

A MONTHLY SUMMARY OF TOP ACHIEVEMENTS

December 2023

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NUCLEAR SECURITY

Classified Inventory Reflects Commitment to Security

Employees from Los Alamos National Laboratory's Detonator Production (DP) division recently completed a successful 100% classified parts inventory across all the division's ten locations. The inventory was efficiently executed by personnel from DP's Manufacturing Operations and Logistics and Supply Chain Management groups. All involved demonstrated exceptional teamwork during the inventory effort, underscoring their commitment to robust stewardship of security assets. The completed inventory fulfills the requirements of Lab policy P821-2, Management of Classified Parts, and is one of many steps taken by Weapons Production staff to ensure the safety and security of the Lab's valuable assets.

Enduring Knowledge Base Improves Access to Data in Weapons Research Repositories

Los Alamos National Laboratory employees working in the Weapons Program can now access valuable information and data through a streamlined process for Q-cleared Weapons personnel. The newly launched Enduring Knowledge Base (EKB) initiative provides access to technical information in multiple Weapons Research Services repositories. This information has lasting relevance for stockpile stewardship and weapons mission capabilities. Additional repositories will be added as the project progresses providing improved access to data in multiple areas.

In the past, employees often used a complex permission system to access data needed to perform their work, which impeded learning, caused duplicate efforts, and extended the time required to develop technical proficiency. The EKB initiative makes it faster and easier for staff to access information.

Key Piece of Equipment for Plutonium Heat Source Missions Becomes Operational

A key piece of equipment for Los Alamos National Laboratory's radioisotope power systems program was installed in July with support across the Weapons Production and Plutonium Infrastructure directorates. The equipment, called Hot Press 4 (HP4), is now operational and in the transition to operations, or equipment prove-in, phase.

HP4 makes heat source plutonium pellets to power NASA spacecraft such as the Curiosity and Perseverance Mars rovers as well as products for national security programs. The newly operational press creates a redundant capability long needed in the Plutonium Facility, which has operated with only one active hot press since 2001.

In late November, teams in Weapons Production's Actinide Material Processing and Power (AMPP) division successfully brought HP4 to operating temperature for the first time since it was installed—an achievement in both manufacturing capability and conduct of operations after a long journey over many years of developing the equipment. Compared to the existing operational Hot Press 1, HP4's capability, updated technology, and safety systems will create redundancy, ensuring continued manufacturing operations, and improve the quality and access experience for the workers through ergonomics, security, and safety features.

LANL Weapons Experiment Advances Nuclear Emergency Support Team training

A multidisciplinary team of scientists and engineers from across the Laboratory conducted the Enhanced Stand Off Experiment (ESOX) shot to examine ways to disable a nuclear weapon. The experiment was designed, manufactured, fielded, and executed in only six months as a quick-response assessment in support of the National Nuclear Security Administration's Office of Nuclear Threat Science. During the experiment, a "Pike" shaped charge was fired at a target designed to measure specific performance characteristics using modern diagnostic techniques including multiplexed photon doppler velocimetry, chirped fiber Bragg grating, and flash radiography. The results from the experiment will be used to train Nuclear Emergency Support Team responders. The experiment name ESOX was derived from a genus of freshwater fish, commonly known as a Pike.

Mission-Critical Equipment Assembled and Tested at Manufacturer, Ready for Installation

The Associate Laboratory Directorate for Plutonium Infrastructure (ALDPI) and Weapons Production's Pit Technologies (PT) division at Los Alamos National Laboratory received the Final Machining #2 glovebox at a Technical Area 55 warehouse. The ALDPI team took a different approach to assembling, disassembling, packaging, transporting, and receiving the piece of equipment—rather than performing assembly work and acceptance testing inside of the Plutonium Facility (PF-4), the team conducted this work offsite at the manufacturer. As a result, ALDPI and PT received a clean, integrated piece of equipment ready (with a minimized assembly effort) for installation at PF-4.

Nuclear Criticality Safety Division and Nuclear Criticality Safety Board Reinforce Mission

In early December, Los Alamos National Laboratory's ALDWP Nuclear Criticality Safety Board (NCSB) and the Nuclear Criticality Safety (NCS) division held a celebration and review of the significant accomplishments over the year. Leadership of both organizations set the tone for safety, collaboration, and the importance of the mission. They celebrated employees' achievements in the past year, including resolving the vault potential process deviation, improving flexibility for capital project operations, and working toward standardization of criticality limits for pit production. In the next year, some goals the NCSB and NCS will focus on include working the backlog of criticality safety evaluation documents, implementing more flexible processes for operations, and finalizing a key procedure to provide safety and efficiency to the work force.

The NCSB is chartered by the Weapons Production directorate to review and maintain the implementation of an SD130-compliant Nuclear Criticality Safety Program within the ALDWP facilities. The NCSB consists of representatives from each of the operations and programmatic divisions active at TA-55, and participation includes senior and first-line managers, fissionable material handlers, criticality safety officers, engineering staff, and program representatives that are knowledgeable about fissionable material operations in TA-55. The NCSB is responsible for the maintenance of the criticality safety program for the ALDWP including, but not limited to, training, scheduling, communication, and Criticality Safety Officer activities. NCS provides critical support to TA-55 production, construction, and facility operations when it comes to criticality safety.

Pit Build Reaches Key Certification Milestone

One of Los Alamos National Laboratory's (LANL's) first plutonium pit development builds of FY24 not only successfully reached the final stage of the production process but was formally accepted by Lawrence Livermore National Laboratory (LLNL) as a Certification build. The certification letter states that the build was considered against entry requirements and accepted as a Certification build; furthermore, the letter emphasizes that the build is "the highest fidelity pit made to date in this program." Certification activities are a key testing requirement of the pit production program. Once data from this Certification build is obtained, LANL will be able to produce its first war reserve pit, called the first production unit (FPU). The FPU build is expected to be completed in 2024.

Meanwhile, four other development pits are currently in the works that puts LANL ahead of schedule. Each of these builds helps inform the LANL and LLNL teams on process performance and stability. Despite the many challenges of reconstituting pit manufacturing, the Pit Technologies team has completed increasing numbers of development pit builds each fiscal year, which bodes well for the transition from development to production units in 2024.

Recruiting Efforts Bolster Weapons Engineering Workforce

The Weapons Engineering directorate's (ALDW's) Staffing and Professional Development (SPD) Program Office at Los Alamos National Laboratory, in collaboration with a team of ALDW staff, participated in 39 national recruiting activities that resulted in 44 new hires at the Lab this fall. With additional internal hiring, the outcome is a total gain of 71 personnel to help advance the Lab's weapons engineering design agency mission.

Since September, a team of more than 57 staff recruiters—mostly technical staff and managers—participated in the recruiting events, including the Northern New Mexico Career Expo and events at Texas A&M University and University of California. At the recruiting events, staff described the national security mission, the Lab's

work environment, and the various positions critical to the Lab's wide array of engineering capabilities.

The hiring initiatives target desired skillsets to fill a variety of positions throughout the engineering workforce in ALDW and its partner directorates. The Weapons Engineering SPD team has been actively collaborating with Laboratory organizations including partner directorates, Human Resources (Talent Acquisition), and the Partnerships and Pipeline Office on marketing efforts that supplement recruiting initiatives already underway.

SCIENCE, TECHNOLOGY, AND ENGINEERING

First Hints of Nuclear Fission in Cosmos Revealed by Models and Observations

Scientists have long thought fission was happening in the cosmos, but to date, no one has been able to prove it. Now, new research from Los Alamos National Laboratory suggests that fission may operate in the cosmos during the creation of heavy elements.

Researchers combed through data on a variety of elements that reside in very old stars and have found a potential signature of fission, indicating that nature is likely to produce superheavy nuclei beyond the heaviest elements on the periodic table. The elements above iron on the periodic table are thought to be created in cataclysmic explosions like the merger of two neutron stars or in supernovae.

Using the latest observations, researchers found a correlation between light precision metals like silver and rare earth nuclei like europium. The correlation is positive—when one of these groups of elements increases, the corresponding elements in the other group also increase. The researchers found that fission was the only way to reproduce this trend.

Laboratory Continues Biosecurity Efforts after Special Office for COVID-19 Retires

Los Alamos National Laboratory stood up the Special Office for COVID-19 (SOC-19) in March 2020 to coordinate all requests for the Lab's scientific and technical capabilities to support the pandemic response. Although the SOC-19 was retired on May 11, 2023, coincident with the end of the federal COVID-19 Public Health Emergency Declaration, the Lab has continued to sponsor research and development in biosurveillance, disease forecasting, virus evolution, and rapid development of countermeasures, including novel diagnostics, vaccines, and therapeutics.

An example of the continued efforts is a Bioscience Division–led wastewater analysis, which shapes guidance about COVID-19 safety. In partnership with the Lab's Operations directorate, scientists regularly analyze wastewater, sharing data with Lab management, the U.S. Centers for Disease Control and Prevention, and collaborators. Laboratory scientists receive samples three times a week for analysis—RNA in the wastewater is processed with specific target molecules that generate a signal if they bind to fragments of the SARS-CoV-2 genome.

By monitoring COVID risk to Lab employees, the wastewater surveillance program helps the Lab maintain mission operations by providing situational awareness. The team has further developed the science and worked on protocols to screen wastewater for other kinds of pathogens, even to look for emerging, previously unknown threats.

Laboratory Scientist Honored with APS Fellowship

Christopher Ticknor, a physicist at Los Alamos National Laboratory's Theoretical division, was recently selected as a fellow of the American Physical Society (APS) for his theoretical and computational advances in the properties of matter under extreme conditions and his leadership in guiding new research in these fields. In his career, Ticknor has explored a range of physics, including ultracold quantum mechanical scattering, many-body physics of Bose-Einstein condensates, quantum vortex dynamics, dense plasmas, and energetic materials.

The APS Fellowship Program recognizes society members who have contributed to advances in physics through original research and publication or who have applied physics to science and technology in significant, innovative ways.

New 3D Spatial Data of Entire Lab Available

To celebrate geographic information system (GIS) Day on November 15, Los Alamos National Laboratory's GIS Program shared news that the Lab recently purchased

a 3D mesh of 2022 aerial photography of the campus, produced using a 2021 LiDAR flight as the elevation source. This 3D spatial data provides enhanced visualization of the entire Lab, as well as a 3D platform for incorporating all other existing geospatial data and the ability to manipulate the 3D data to show what the campus will look like after construction or building demolitions.

Wastewater Testing Informs Laboratory Guidance About COVID-19 Safety

In partnership with the Operations Directorate at Los Alamos National Laboratory (LANL), scientists in the Genomics and Bioanalytics (B-GEN) group have regularly analyzed wastewater in Los Alamos since 2021 and shared their data with Laboratory management, the US Centers for Disease Control and Prevention, and various collaborators who perform national wastewater analysis. To generate this important surveillance data, technicians at LANL's wastewater treatment facility provide samples to B-GEN scientists three times a week for analysis. After preparing the samples by carefully removing other biological material, the RNA in the wastewater is processed with specific target molecules that generate a signal if they bind to fragments of the SARS-CoV-2 genome.

By monitoring COVID-19 risk to employees, the wastewater surveillance program helps the Laboratory maintain mission operations by providing situational awareness. Throughout this analysis program, the B-GEN scientists have improved and optimized their capability, demonstrating the value of passive surveillance such as wastewater testing because it does not rely on active participation from the public. In addition to SARS-CoV-2, the team has further developed the science and worked on protocols to screen wastewater for other kinds of pathogens and also to look for emerging, previously unknown threats.

MISSION OPERATIONS

500-Plus Cardiac Defibrillators Deployed at Los Alamos to Help Save Lives

More than 500 new and improved automated external defibrillators (AEDs) were recently placed at various buildings and facilities around Los Alamos National Laboratory to protect employees' health and well-being. Sudden cardiac arrest is a leading cause of death nationwide, and defibrillators serve a crucial role in saving a person's life while awaiting assistance from trained medical professionals.

New Mexico's Good Samaritan Law offers legal protection to those providing emergency care in good faith. Easy-to-follow instructions are included with each AED; formal training on how to use an AED, as well as how to provide CPR, is also offered at the Lab.

The new AEDs replace recalled units and address inconsistency in models that once existed across the Lab. The AEDs will be inspected, maintained, and tracked using a new systems-based approach to ensure access to formal documentation by everyone involved in the AED program.

Forensics Team Establishes Secure Teleconferencing to Enhance Emergency Response

The Technical Area 55 (TA-55) Forensic Support Operations (55FSO) program at Los Alamos National Laboratory has been working since 2017 to complete installation of a new classified emergency communications network (ECN) secure video teleconference (SVTC) capability at TA-55. The ECN secure computing node is necessary to support the NNSA Office of Nuclear Forensics (NA-83) and FBI nuclear forensics response activities.

After delays due to limited resources at the Remote Sensing Laboratory (which owns the network) and multiple relocation requests, on December 7 the SVTC capability was finally made fully operational in TA-55's PF-28 location and available to support NA-83's Diamond Thunder 24-01 emergency response exercise. The 55FSO program is under the Weapons Production directorate's Science, Technology, and Engineering Programs Office and has maintained an operational capability to support large-scale nuclear forensics analysis at TA-55 since 2014.

Lab Committed to Protecting Water Quality Amid Changing Regulations

Streams around Los Alamos National Laboratory that flow seasonally or with rainfall and spring snowmelt, known as intermittent and ephemeral waterways, continue to be protected from pollution thanks to a recent decision by the Environmental Protection Agency and

the work of a dedicated team of Lab employees with an unwavering commitment to preserving water quality.

The Lab has robust compliance, monitoring, and sampling programs, with stringent regulations around treated effluent that's released into the environment from Lab facilities. Environmental regulations also exist around controlling rainfall that runs off Lab sites, like construction areas and parking lots, that might transport sediment and pollutants. In addition, environmental professionals sample aquatic species and sediment in the Rio Grande every three years to assess the Lab's environmental impact. In comparing samples collected both upstream and downstream from the Lab, no difference is found in aquatic ecosystem health parameters. Environmental professionals at the Lab remain steadfast in their commitment to upholding water quality.

Lab Improves Process for Bringing Equipment Containing Controlled Technologies into Secure Areas

A Plutonium Infrastructure (ALDPI) project team and partner organizations at Los Alamos National Laboratory created a new procedure that will ensure equipment containing Bluetooth or radio frequency technology meets security requirements before being brought into protected or secure areas.

Earlier this year, ALDPI's Plutonium Facility (PF-4) project execution team needed to transport a saw into a protected work area in order to complete required construction work. Deployed security professionals recognized that the item contained controlled wireless technology, which does not comply with established cybersecurity requirements. The project team immediately removed the saw from the work area and collaborated with security personnel and other partners to turn the unexpected challenge into a learning opportunity. Together, the team established a simplified, consistent, and integrated process for introducing and approving this type of noncompliant equipment required to complete work in a protected area.

This success is a result of a collaboration among many Laboratory organizations, including Associate Laboratory Directorates Plutonium Infrastructure, Weapons Production, Business Management, Defense Protection Program, and Weapons Physics and the NNSA Los Alamos Field Office. This valuable process is being shared across directorates to support the use of future mission-critical, nonconforming equipment within protected areas throughout the Laboratory.

Lab Places Emphasis on Conduct of Operations for a New Generation

Conduct of Operations (ConOps) is a 30-year-old concept that improves worker safety and ensures that facility operations are conducted safely and securely. Los Alamos National Laboratory—with more than half of the workforce having five or less years of experience working at the Lab—is seizing the opportunity to reintroduce ConOps.

Within the Readiness and Training (RT) division, the ConOps Working Group reevaluated and updated documents, webpages, and PowerPoint presentations, some of which had not been updated in over a decade, to provide information on ConOps concepts to the workforce.

Expanding upon a program out of Savannah River Site, Operational Performance Assurance (OPA) has developed the Integrated Conduct of Operations (ICON) program to ensure team members understand ConOps concepts and employ these in their daily work. This January, the program will welcome the first class of ICON participants. The ICON program allows OPA and RT to develop a program that works across facilities and weaves ConOps experts throughout the Lab.

Lab Received 10 Diversity- and Employment-Related Awards in 2023

In 2023, the Laboratory received ten diversity- or employment-related awards, which were received by or applied for by the Human Resources' Diversity Office. The awards highlighted a variety of the Lab's commitments such as increasing minority workforce and leadership representation, increasing the veteran population, having policies that support working women and families, demonstrating commitment to work-life balance, and showing overall support for diversity, equality, and inclusion.

The Lab received the following awards: Best of the Best Award: Top Government & Law Enforcement Agencies for Women (Black EOE Journal); 2023 Family-Friendly New Mexico Award, Platinum Level; 50 Best Companies for Latinas (Latina STYLE Magazine); HIRE Vets Medallion Program: Gold Medallion; Top 20 Government Employers award and the Public-Sector Employer of

the Year award (CAREERS and the disABLED magazine); Top 20 Government Employers (Minority Engineer magazine); Top 20 Government Employers (Equal Opportunity magazine); Top 20 Government Employers (Women Engineer magazine); and Top 20 Government Employers (STEM Workforce Diversity magazine).

Lab Recognized for Support of the National Guard and Reserve

Los Alamos National Laboratory and Triad National Security were recognized by the Department of Defense for their outstanding support of employees serving in the National Guard and Reserve. Triad received a Pro Patria Award for establishing policies that make it easier for employees to serve our nation. Unica Viramontes, associate Laboratory director for the Defense Protection Program, accepted the award on behalf of Triad.

Each year, Guard and Reserve employees can nominate their employer for awards. Daniel Griego nominated Triad for supporting service members while deployed and assisting in preparation of their departure and return from federal deployments, state activations, and extended training periods. In addition, Ricky Ward, a major in the Air Force Reserve, nominated his team leader Amanda Craig for a Patriot Award based on her strong support of his military obligations. The Patriot Award reflects the efforts individual supervisors make to support citizen warriors through a wide range of measures, including flexible schedules, time off before and after deployment, caring for families, and granting leaves of absence if needed.

Lab Retires Long-Time Phone Switch, Upgrades to Modern Phone System

The Telecommunications Field Operations (TFO) team at Los Alamos National Laboratory (LANL) upgraded the Lab's phone infrastructure to a modern VoIP (Voice over Internet Protocol) system. VoIP phone systems are generally more reliable, cost effective, and smaller than the previous generation of phone systems. LANL's previous phone switch (known as 5ESS) was installed in the early '90s. It served Lab phone operations around Los Alamos, White Rock, and Fenton Hill. The 5ESS boasted a perfect record having never failed during its years of service. Using existing records, the TFO team estimated that the switch served roughly 1,258,188,371 calls in its lifetime.

New Hires Welcomed with an All-Day In-Person Event

On October 26, more than 70 new employees from across Los Alamos National Laboratory's Associate Laboratory Directorate for Facilities and Operations (ALDFO) gathered for the directorate's first in-person, new hire event. Between burrito bites and coffee sips, new employees met colleagues from different ALDFO divisions and learned about the history of the Laboratory and available resources.

With more than 3,200 employees, ALDFO has more people than any other ALD, with employees being viewed as the organization's greatest asset. To that end, ALDFO partnered with Human Resources to help connect these new employees to the directorate's mission. Engineers, maintenance team members, and others gathered to understand their critical role in strengthening national security. The program emphasized safety principles, reminding the new team members to pause work when there are concerns and questions.

With much of the onboarding process moved online, new team members embraced the in-person activities. Participants were able to visit historic sites around Los Alamos and connect with each other as they embarked on their new careers. Following the event, participants provided feedback on the program and highlighted the connection to the history of the Lab, their colleagues, and ALDFO leadership.

New Program Improves Onboarding Experience for More Than 600 New Hires

The New Employee Training Onboarding (NET Onboarding) program in the Weapons Production directorate (ALDWP) at Los Alamos National Laboratory celebrated its one-year anniversary this month. The program's inaugural year ensured that 621 new hires had a thorough, hands-on, engaging onboarding experience. The unique program was developed by the staff of ALDWP's Weapons Mission Services division, who are dedicated to employee training, professional development, and networking.

NET Onboarding provides new employees—most of whom are on their way to hands-on manufacturing or technical work across the directorate—with guidance on everything from how to swipe a badge and find a building to how to enter a timecard or download

software. The program provides a tour of the Lab that includes guidance on each employees' ultimate work location, Q-clearance paperwork instructions, and a variety of other general overviews on both the Lab and directorate.

NET Onboarding introduces more than 100 topics to new hires so that their home organization can build on that foundation. Every new hire receives a resource packet that includes a list of tasks to complete, media resources, training contacts, learning platforms, and information on employee resource groups.

New Security Access Facility Will Help with 30-Pits-Per-Year Mission

The Los Alamos Plutonium Pit Production Project (LAP4) West Entry Control Facility (WECF) subproject received Critical Decision 3A approval from the NNSA Deputy Administrator for Defense Programs, authorizing the project to move forward with long-lead material and equipment purchases and begin with early site preparation activities. Constructing a new entry-control facility will support the ingress/egress of personnel supporting the 30 pits-per-year mission. Site preparation activities, scheduled to begin in the first quarter of 2024 will include vegetation removal, grading, site leveling, and utility installation.

New Tools Help Maintain Lab's Operational Readiness

In preparation for winter weather conditions, Los Alamos National Laboratory (LANL) is deploying an innovative geographic information system (GIS) solution to help meet the complex challenges of clearing snow and ice from the Lab's approximately 40 square miles of roadways, sidewalks, and parking lots.

LANL's Facilities and Operations directorate and GIS program partnered to develop a suite of GIS applications to help ensure winter weather does not disrupt the Lab's operations. The software tools—which include a request form and management app, data editor app, and dashboard for real-time conditions—enable snow removal operations and crews to more efficiently use their fleet of plows, equipment, and deicing materials to keep roadways safe, reducing the need to close campus or delay work because of winter weather.

The GIS technology improves the team's ability to manage snow removal efficiently and make data-informed decisions during winter weather events. In the past, snow removal duty officers relied on phone calls to crews operating the snowplows to determine which roads were cleared and a checklist to track the status of roads and arterial highways for each snow event, with the decision to keep the campus open often hinging on nonvisual information and intuition.

'Safety Blitz' Ensures Safe and Slow Start After Holiday Break

A few days before the Thanksgiving break, the Weapons Production directorate's Chief Operations Office hosted a "Safety Blitz" to ensure readiness upon returning to work after the long weekend. Weapons Production leadership alongside employees from Deployed Security gathered outside of the entry control facility at Technical Area 55 during morning rush hour to talk with employees and remind them to be diligent in safety and security. Employees were encouraged to slowly and thoroughly identify risks or concerns before leaving work and after returning to verify readiness for safe and secure operations. Managers and security team members engaged with approximately 500 employees during the safety event.

Wearable Robotic Devices May Aid Cleanup Workforce and Countless Others

Through a program funded by the Department of Energy's Office of Environmental Management Technology Development, researchers at Los Alamos National Laboratory are exploring whether wearable robotics and exoskeleton systems can help protect cleanup workers from musculoskeletal injuries resulting from ergonomic issues, acute overexertion, or even chronic overuse.

Engineers from the Lab's Automation, Robotics, and Controls group are working alongside Sandia National Laboratories, the program's lead, and other organizations to identify and evaluate specially designed wearable advanced technologies to assist workers in a variety of industries—from construction and logistics to military and manufacturing—and help keep workers safe.

The group's charter is to evaluate wearable robotic devices that distribute load through other parts of the body. The team is working to determine if the devices

are beneficial and whether the benefits outweigh any hindrances the devices may introduce. The project team has been in lockstep with the Lab's Occupational Safety and Health ergonomists and industrial hygiene and safety professionals in their assessment of the technologies.

COMMUNITY RELATIONS

Collaboration with Navajo Technical University Supports Clean Hydrogen Careers

A newly expanded partnership between Los Alamos National Laboratory (LANL) and Navajo Technical University (NTU) is helping foster a STEM-adept workforce ready to contribute to a high-tech, clean energy future with a concentration on fuel cell technology and additive manufacturing.

The Department of Energy recently helped expand LANL's partnerships with NTU by establishing the Hydrogen and Fuel Cells Technology Office (HFTO) Native American Fellowship, a pilot program that offers Lab internships for NTU students, connects students with real-world research experiences, and funds the purchase of advanced scientific equipment installed at the tribal university. The new program is also supported by and builds upon similar efforts from the National Nuclear Security Administration's Minority Serving Institutions Partnership Program.

Navajo Technical University, based in Crownpoint, New Mexico, on the Navajo Nation, is the largest tribal university in the United States. In the HFTO fellowship pilot program that began this year, seven NTU students work as LANL interns. Students do research with additive manufacturing, building on an existing NTU specialty area, and advance materials essential to the development of fuel cells that produce electricity by combining hydrogen and oxygen from the air and produce zero emissions when used to power vehicles. The program's practical applications help prepare students for careers and advanced degrees in materials science and engineering.

Employees Raise $2.6 Million Through Holiday Giving Campaign to Help Local Communities

Los Alamos National Laboratory employees raised $2.6 million through this year's Holiday Giving Campaign to make things a little brighter for communities in Northern New Mexico and beyond this holiday season, underlining the Laboratory's commitment to be a force for good in the region.

As in previous years, the Laboratory combined several drives and campaigns into one seasonal push, with employees given several choices of how to get involved. Employees could donate to nonprofits or scholarships, support a toy drive by donating money or toys, or sign up for volunteer opportunities.

Across the Lab, donations and gifts from all employees included $2.2 million to the Employee Giving Campaign; $385,000 to the Los Alamos Employees Scholarship Fund; and $18,015 and more than 1,924 toys for the Toy Drive, with 34 employees volunteering 45 hours to sort and deliver gifts. The monetary contributions to the Toy Drive will be used to purchase toys that, together with the donated toys, will be given to 30 agencies and organizations that work with children and teens needing extra support.

Laboratory operator Triad will match 50 cents on the dollar for each employee's contributions through the Giving Tool to charitable 501(c)(3) nonprofits based in the seven counties in which many Laboratory employees reside and in Eddy County where the Lab also has a presence.

First Phase of Triad-Supported Childcare Center to Open in Early 2024

Construction on the childcare center serving employees of Los Alamos National Laboratory and others in the region is nearing completion with the first phase of the project scheduled to open in early 2024. The new center will be operated by local childcare provider Bilingual Montessori School and will have space for approximately 150 children, consistent with state licensing requirements. There are approximately 305 children on the waitlist.

Triad parent entity the University of California provided funding for the project. The university has provided $2 million for remodeling and furnishings, and Triad's Board of Directors has pledged ongoing financial support for operations of the new facility. Neither the Lab nor the Department of Energy will be financially invested in the initiative. Childcare services will be provided at market-competitive rates.

Extensive remodeling has been going on at the site since July. Different buildings are designated for different childhood stages, and construction will be completed in phases with the infants' building scheduled for completion first (end of January), toddler building next, and then the final two phases (tentatively for April).

Laboratory Leaders Give Update to State Elected Officials

Representatives from Los Alamos National Laboratory (LANL) recently appeared before the New Mexico Legislative Committee on Science, Technology, and Telecommunications to give an update on the Laboratory's activities and its economic and community impact in the region.

Staff Director Frances Chadwick and Director of the Community Partnerships Office Kathy Keith both testified on November 28. They discussed hiring, budget, and procurement issues and the work being done to accommodate the Laboratory's growth, including improved transportation options, support for a new childcare center, and updating facilities and infrastructure.

One fact shared with the elected officials was that this last fiscal year (FY23), $919 million of the Laboratory's procurement went to New Mexico businesses. Chadwick and Keith also gave updates on economic development topics, thanking the state for its partnership on the New Mexico Small Business Assistance program, which helps businesses access Laboratory expertise.

The state legislators asked a range of questions, including some on the division of LANL's state gross receipts tax (GRT) among local governments. In FY23, the Laboratory paid $155 million in GRT, with the state deciding on the allocation of the tax payment to local governments.

SELECTED MEDIA COVERAGE

Manhattan Project National Historical Park Releases 3-Part Stamp ... Embodies One Park, Three Sites, Countless Stories
Los Alamos Daily Post, Carol A. Clark (11/21)
Manhattan Project National Historical Park (NHP) releases a new three-part park stamp to celebrate the whole park and its individual communities. The new stamp features line drawings of the B Reactor at Hanford, Main Gate Park in Los Alamos, and the X-10 Graphite Reactor at Oak Ridge.

NASA One Step Closer to Fueling Space Missions with Plutonium-238
NASA.gov (11/21)
The recent shipment of heat source plutonium-238 from the U.S. Department of Energy's (DOE's) Oak Ridge National Laboratory to its Los Alamos National Laboratory is a critical step toward fueling planned NASA missions with radioisotope power systems.

Los Alamos National Lab Safely Shipping Radiological and Hazardous Waste Off-Site
Homeland Security Newswire (11/27)
A substantial amount of Los Alamos National Lab's radiological and hazardous waste from years past was permanently disposed of at off-site facilities — a move in step with the Lab's goal to mitigate hazards to workers, the community, and the environment while carrying out its national security mission.

LANL Scientists Help NASA with Technology to Explore Boundary of Solar System
KOB, Adrian Rivas (11/28)
New Mexico scientists are working with NASA on a project to map out the boundary between the solar system and the rest of the galaxy. NASA as well as others in the science community have come together to build a revolutionary spacecraft.

Los Alamos Lab, Navajo Tech Uni Partner for Clean Hydrogen Jobs
Mirage News (11/30)
A newly expanded partnership between Los Alamos National Laboratory and Navajo Technical University (NTU) is helping foster a STEM-adept workforce ready to contribute to a high-tech, clean energy future with a concentration on fuel cell technology and additive manufacturing.

Los Alamos National Laboratory Trialing Artificial Intelligence-Backed Screening Systems by Boston Company
New Mexico Inno, Jacob Maranda (11/30)
Los Alamos National Laboratory recently started trialing a pair of high-tech security screening systems developed and sold by a Boston-area defense company as one of the East Coast firm's first customers.

LANL Develops AI Method to Help Drones See Better
Santa Fe New Mexican, Scott Wylans (12/2)
A team of researchers at Los Alamos National Laboratory aims to take data-gleaning drones to a new realm with the help of artificial intelligence. Drones and AI are two rapidly evolving technologies that when combined can collect and sift through a sea of data to form a

more complete and accurate picture of what's being probed.

This Neural Net Could Help Find Orphaned Wells
IEEE Spectrum, Rina Diane Cabalar (12/5)
In the U.S., as many as three-quarters of a million oil and gas wells are orphaned, their locations and operators are unknown, and many are leaking climate-warming methane into the atmosphere. We've got to find them, but surveying the United States with airplanes and drones gives only limited coverage.

Los Alamos National Laboratory Releases 'Winter 2023: The Energy Issue' Science Magazine
Los Alamos Daily Post, Carol A. Clark (12/6)
Los Alamos National Laboratory (LANL) presents its National Security Science magazine, Winter 2023: The Energy Issue.

Astrophysical Breakthrough: "Incredibly Profound" Evidence of Nuclear Fission Across the Cosmos
SciTech Daily (12/7)
The elements above iron on the periodic table are thought to be created in cataclysmic explosions like the merger of two neutron stars or in rare classes of supernovae. New research suggests fission may operate in the cosmos during the creation of the heavy elements.

UNM-Los Alamos Community Internship Collaboration Program is a Win-Win for Students and Employers
Los Alamos Daily Post, Carol A. Clark (12/7)
Entering the workforce can feel daunting, even armed with a college degree or a certificate in a specific trade. How does one compete with other applicants or get experience that employers may require? It's not just newbies to the workforce that may feel overwhelmed; employers might also be scratching their heads; wondering how to attract people to apply for positions.

LANL: Collaboration with Navajo Technical University Supports Clean Hydrogen Careers
Los Alamos Daily Post, Carol A. Clark (12/9)
A newly expanded partnership between Los Alamos National Laboratory (LANL) and Navajo Technical University is helping foster a STEM-adept workforce ready to contribute to a high-tech, clean energy future with a concentration on fuel cell technology and additive manufacturing.

LANL's Christopher Ticknor Honored with APS Fellowship for Theoretical and Computational Advances
Los Alamos Reporter (12/10)
Christopher Ticknor, physicist in Los Alamos National Laboratory's Theoretical division, was recently selected as a fellow of the American Physical Society (APS). Ticknor was nominated for the fellowship by the APS Topical Group on Few-Body Systems and Multiparticle Dynamics. The recognition cites Ticknor "for theoretical and computational advances in the properties of matter under extreme conditions, and for leadership in guiding new research in these fields."

LANL's Jonathan Reynolds Uses a 3D Printer and Wiring Knowledge to Make Sure Toys are Accessible for Children with Disabilities
Los Alamos Reporter (12/10)
For the second consecutive year, Jonathan Reynolds, a postdoctoral researcher at Los Alamos National Laboratory, is doing his part for the Holiday Toy Drive by making adaptive toys to help ensure children and youth with disabilities can enjoy a toy they may not otherwise be able to play with.

First Hints of Nuclear Fission in Cosmos Revealed by Models, Observations
Space Daily (12/11)
The elements above iron on the periodic table are thought to be created in cataclysmic explosions like the merger of two neutron stars or in rare classes of supernovae. New research suggests fission may operate in the cosmos during the creation of the heavy elements.

Excavated Dirt Reuse Saves $11M, Cuts 500K Lbs of Carbon
Mirage News (12/12)
Los Alamos National Laboratory has saved $11.7 million by processing and reusing soil already excavated on-site for new building foundations, roads, and utility and stormwater lines. "Cost savings to the Laboratory is only one of the benefits," said Jen Payne, chief operating officer for the Associate Lab Directorate for the Environment, Health, Safety and Quality.

LANL: Falling for Oppenheimer
Los Alamos Reporter (12/12)
As the feature film "Oppenheimer" exits theaters and streams on TV screens everywhere, Los Alamos National Laboratory employees and citizens of Los Alamos wave goodbye to an autumn like they'd never seen before.

Los Alamos Looks to the Edge of Complex Data Management Challenges

Federal News Network, Justin Doubleday (12/13)

Experts in the High Performance Computing division at Los Alamos National Laboratory are working at the edge of some of the biggest "big data" challenges in the world. The problems LANL works on are not run of the mill data analysis: Climate change and nuclear reactions are just some of the issues that scientists at the lab analyze using complex simulations and massive supercomputers. Gary Grider, the leader of the HPC division at Los Alamos, said the lab is designing computing systems for "unsolved problems."

1st Evidence of Nuclear Fission in Stars Hints at Elements 'Never Produced on Earth'

Live Science, Sharmila Kuthunur (12/14)

An analysis of 42 ancient stars in the Milky Way reveals the first hints of nuclear fission in the cosmos, hinting at the existence of elements far heavier than anything found naturally on Earth.

Custom Software Speeds Up, Stabilizes High-Profile Ocean Model

Scienmag, Elizabeth Rosenthal (12/14)

On the beach, ocean waves provide soothing white noise. But in scientific laboratories, they play a key role in weather forecasting and climate research. Along with the atmosphere, the ocean is typically one of the largest and most computationally demanding components of Earth system models like the Department of Energy's Energy Exascale Earth System Model, or E3SM.

Los Alamos HIV Databases Support Global Battles with Disease

Santa Fe New Mexican, Brian Foley (12/17)

Los Alamos National Laboratory, in addition to its more well-known fields of research, has had a long history of studying the vast diversity of genetic sequences of all kinds.

Los Alamos Lab Upholds Water Quality Amid Regulatory Changes

Mirage News (12/20)

A team of Los Alamos National Laboratory employees and a recent decision by the Environmental Protection Agency are ensuring that streams around the Lab that flow seasonally or with rainfall and spring snowmelt, known as intermittent and ephemeral waterways, continue to be protected from pollution.