



S A N D I A

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Sandia scientists achieve breakthrough in tackling PFAS contamination



TEAMING UP TO TACKLE POLLUTION — Materials scientist Ryan Davis, left, and chemist Andrew Knight work on new materials to better absorb PFAS contamination at big and small scales.

Photo by Craig Fritz

By Kim Vallez Quintana

A Sandia team is developing materials to tackle what has become one of the biggest problems in the world: human exposure to a group of chemicals known as PFAS through contaminated water and other products. Sandia is now investing more money to take their research to the next level.

“It’s in the news constantly. It seems every day we hear of another product that is contaminated. We saw sparkling water with PFAS, toilet paper with PFAS, so it’s not just a groundwater problem; it’s popping up everywhere,” said Andrew Knight, a chemist at Sandia who has a passion for solving PFAS contamination. “It has become clear to the world it is a growing problem. It is a national security issue of a large scale.”

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Spotlight on nuclear incident and WMD response

Labs showcase highlights detecting, acting on real-world threats

By Justin S. Griffin

On a warm spring day in Albuquerque, more than 270 people from across the Labs came through Steve Schiff Auditorium for the first Weapons of Mass Destruction Counterterrorism and Incident Response Showcase.

Attendees learned about myriad opportunities to serve as a responder for the Nuclear Emergency Support Team and participate in training drills and exercises in response to incidents involving WMDs and radiological materials. A call was also made to collaborate on research and development to keep pace with rapidly evolving threats.

Representatives from Sandia’s Joint Technical Operations Team, the Consequence Management Program, Accident Response Group, Radiological Assistance Program, Stabilization Program and many more were on-hand to educate on their important role as

— CONTINUED ON PAGE 4



KICKING IT OFF — Art Shanks, senior manager of the Weapons of Mass Destruction Counterterrorism and Response Group, kicks off the event in Steve Schiff Auditorium with a presentation about the Nuclear Counterterrorism and Incident Response program’s mission and showed a new video made in collaboration with Creative Services.

Photo by Lonnie Anderson

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Careerapalooza sparks career growth

By Kerri Dufault

Sandia is hosting its second annual Careerapalooza extravaganza June 27-29. Careerapalooza is a three-day exposition featuring a variety of in-person and virtual workshops, resources and talks designed to help Sandians grow their career and network at the Labs while boosting their skills. From new to seasoned Sandians, Careerapalooza has something for everyone.

"I was able to represent my division at last year's Careerapalooza event," said Mark Dodd, intellectual property senior counsel.

"Part of my role involves writing patent applications for advanced semiconductor and radar concepts. However, before I became an attorney, I was an engineer.

"What I do requires a technical background, so I really enjoyed sharing with our technical employees what I do now to show them an alternative career path," he said. "Many of the people I spoke to were surprised to learn how they might apply their technical skills and knowledge to support a completely different area within the Labs."


Each day is designed to expand on the prior day's events. Day 1 features a blend of in-person talks that will also be livestreamed that introduce Sandians to the tools and resources available through the [Career Development Office](#). Day 1 also includes two panel discussions with Sandians from across the Labs sharing their career journey stories. Day 2 includes a mix of in-person and virtual events that teach employees how to apply the tools covered on the first day to spur career growth.

Day 3 culminates with a Careerapalooza extravaganza in both New Mexico and California. In New Mexico, in-person and virtual events will take place from 10 a.m. to 4 p.m. MT in the Steve Schiff Auditorium. In California, there will be an in-person event from 11:30 a.m. to 1 p.m. PT at the General Access Area Event Pad.

See a preview of in-person events here and a full schedule on the [Careerapalooza website](#). Topics are subject to change. Watch for additional announcements in Sandia Daily News.

Careerapalooza first launched in June 2022 as part of a Labs' strategic milestone known as Sandia Spark, which aimed to foster an environment where employees feel as energized,

valued and engaged as they did on day one. Sandia Spark is now an enduring effort as part of the Labs' People and Culture Strategy, which aims to maximize the success of Sandia's people and organizational performance through an intentional focus on

Sandia's workforce capabilities, workforce effectiveness, organizational culture and employee health and well-being. Learn more about Spark and the People and Culture Strategy on the People Initiatives website. 

CAREERAPALOOZA 2023

Sandia has planned Careerapalooza events on June 27-29 that include career talks, panel discussions, résumé writing workshops, speed mentoring and mock interviews. On Friday, June 29, the Labs will host three in-person Careerapalooza events in New Mexico and California. Visit careerapalooza.sandia.gov for the full three-day agenda.

Expo and Extravaganza Thursday, June 29, 10 a.m.-4 p.m. MT

This event will feature representatives from every division as well as booths for staff to meet representatives from Sandia's Employee Resource Groups, IDEA team, Workplace Improvement Councils, SERP, Career Development Office, Employee Health Services and more.

Intern Career Fair Thursday, June 29, 10 a.m.-Noon MT

The fair, organized for interns, will take place in the lobby of Steve Schiff Auditorium.

Careerapalooza California Thursday, June 29, 11:30 a.m.-1 p.m. PT

Head to the General Access Area Event Pad for an in-person Careerapalooza event at Sandia California. The event will feature a food truck, games, snacks and a variety of tables with representatives from Integrated Security Solutions, Human Resources and Sandia's Employee Resource Groups. Contact Tahmina Azimi with questions.



The graphic features a dark background with a burst of colorful, multi-colored lines radiating from the center. On the left, the text '» PROPEL YOUR PROFESSIONAL JOURNEY' is displayed in white, with a blue icon of a person with arms raised inside the letter 'P'. On the right, a blue arrow points down to a stylized mountain range graphic. Above the mountains is the text 'SANDIASPARK PRESENTS'. Below the mountains, the text '« CAREERAPALOOZA »' is written in white, followed by 'COMING JUNE 27-29' in blue. At the bottom right, a blue icon of a person with arms raised is next to the text 'Career Development Office and the Student Intern Program'.

Nuclear incident response

CONTINUED FROM PAGE 1

part of Sandia's Nuclear Counterterrorism and Incident Response program. The program includes the Nuclear Emergency Support Team mission, as well as numerous technology development efforts and training programs that comprise Sandia's nuclear incident response resources.

As explained by Mike Enghauser, Radiological Triage skillset lead, "Radiological material can end up in almost any location or any place and take on almost any shape and form." The incident response program focus on detecting, evaluating, responding to and mitigating threats is not purely hypothetical work. "It is not practice. It is not an exercise. It is real life stuff," he said.

Visitors to the showcase were also shown virtual reality and haptics technology demonstrations and sat down for lunch from a local food truck.

Art Shanks, senior manager in WMD Counterterrorism and Response, was thrilled with the success of the showcase. "I hope this event brought broader awareness across the Labs' leadership for those already supporting the mission so their management — and management all the way up the Sandia chain — will understand the importance and significance of the Nuclear Counterterrorism and Incident Response mission. I also hope that staff from around the Labs that are interested in this very important mission area learned about opportunities where they could help support as either a responder or as part of the cutting edge research that supports the programs," Art said.

Highlighting a national asset

Before the event, a tour included Deputy Labs Director David Gibson and multiple senior leadership team members. Associate Labs Director Justine Johannes kicked off the day by speaking of the vital efforts of the incident response program and its impact on the Nuclear Emergency Support Team mission. "[The Nuclear Counterterrorism and Incident Response program] serves a national mission by drawing on capabilities from across every division at the Laboratories," Justine said, further characterizing the program as a "combination of operational readiness enabled by

research and development innovation and technology development."

"I was very excited to see how engaged the leadership was during their visit," Art said. "I also heard from many people, including several from the senior leadership team, about how helpful this event was to give visibility to all the different elements and help connect how all the assets are involved, including the impacts on current real-world events. For a program that often works quietly in the background with a high level of operational security, it was great to give a little visibility to those supporting the mission."

Also in attendance for the tour was Mike Peters, Albuquerque deputy director of NNSA's Office of Nuclear Incident Response. He praised the efforts of the Nuclear Counterterrorism and Incident Response program and its support of the Nuclear Emergency Support Team for his office, which relies upon responders across Sandia to be among the first to respond to a nuclear incident.

The Nuclear Emergency Support Team roster currently includes 210 Sandians from the New Mexico and California sites, spanning every division at the Labs. Jay Tilden, the NNSA deputy under secretary for counterterrorism and counterproliferation, has said that the "diversity of [the team's] missions" and its scientific capabilities "set the unit apart as a national asset."

Lindsay Klennert, Sandia's executive chief of staff, said that while the incident response mission is already well-regarded by the senior leadership team, often in association with response activities and exercises, the showcase "provided an opportunity for Sandia's leadership to see the breadth of the program — the number of divisions that support the mission, the space utilized, the variety technical expertise required and impressive capabilities developed by Sandia to enable response.

"Everyone walked away with an appreciation for how the program reaches across the Labs to push knowledge and capability development to best respond to the unknown at a moment's notice," she said.



HANDS ON — Attendees visit booths outside and inside Steve Schiff Auditorium to engage with tools and technology currently being used in the field.
Photo by Lonnie Anderson

Ready when we are needed


Nuclear Emergency Support Team responders come from a variety of backgrounds but share one important commonality: the passion to serve and use their training to make the nation safer.

Kevin Hart, Radiological Assistance Program manager, explained his love for his job as "the ability to take all the technical training that I've had and get out in the field, carry backpacks and work with law enforcement, civil support teams and the general public to help protect the nation from nuclear terrorism or radiological terrorism activities."

Sean Fournier, a nuclear engineer, echoed that sentiment. "It is exciting work knowing that you are playing a key role in helping to keep the nation safe.

"We practice and build technologies and devote our careers to build a program that we hope to never have to use. But it is very important that we are ready when we are needed," Sean said.

The WMD Counterterrorism and Incident Response Showcase brought those already devoted to the mission together while extending an invitation to those interested in engaging.

"I am very excited by how effectively this event helped those already supporting the program to connect how all the different elements of the program work together," Art said. "I also hope those who are interested in becoming more involved were able to make contacts and identify some ways to become involved, whether by becoming a responder or as part of the research and development efforts that support the program." 

PFAS contamination

CONTINUED FROM PAGE 1

What are PFAS?

PFAS, an abbreviation for perfluoroalkyl and polyfluoroalkyl substances, are a group of chemicals used to make fluoropolymer products that resist heat, oil, stains and water. They are also known as “forever chemicals” because they do not break down in the environment but can move through soil and water and build up in wildlife and humans.

While human health effects from low levels of PFAS have yet to be defined by the Centers for Disease Control and Prevention, scientists have documented 12 types of PFAS in people tested and four types of PFAS in every human tested, revealing widespread exposure in the U.S. population. Tests on laboratory animals using high levels of PFAS exposure have shown an **increased risk** of cancer, liver damage and compromised immune systems.

PFAS are found in products including Teflon, fast food packaging, pesticides, eye makeup, cleaning products, dental floss and shampoo. However, one of the biggest contaminations identified in recent years is the groundwater under U.S. Air Force bases, which is a result of the use of PFAS-containing firefighting foam.

Creating a new and unusual solution

Andrew has been working with Ryan Davis, who specializes in materials science, to create a filter that could not only eliminate PFAS in water on a large scale but also in a household setting. “This could be something that could be deployed for major remediations or could be something that could be kept under your sink. If the initial treatment is already done, what does come through the water treatment facility through your faucet can be filtered by you, prior to end use,” Andrew said.

To do this, the team must approach things differently. PFAS do not degrade on their own because the carbon-fluorine bond is so strong. They are also not the only pollutants present. This results in a sort of competition during absorption efforts. “We are working to design materials that are more selective in absorbing PFAS. Traditional methods involve ion exchange of resins or granulated activated carbon. While these are effective at absorbing some PFAS, they lack specificity and versatility,” Andrew said.

With \$100,000 in recently awarded funds from the Sandia Technology Maturation Program, the team hopes to build its data to show how well the materials work. The goal is to commercialize the product to remove 99% of PFAS from water. “Our analytical lab here at Sandia is much better equipped than your average analytical lab, with Andrew’s synthetic capability and our analytical capability. It really is a perfect match. Sandia is a unique place to do this work,” Ryan said.

A different approach inspired by nature

This project is just one of several on which these Sandia researchers are working to tackle PFAS contamination. Joined by geoscientist Mark Rigali and materials scientist Jessica



A DYNAMIC PROBLEM — Chemist Andrew Knight mixes a sample at Sandia while working on the problem of PFAS contamination.

Photo by Craig Fritz

Kustas, the team is partnering with a local business to try a different approach that goes beyond just capturing PFAS. “It’s a one-two punch as we are combining two different technologies to develop something more effective than either one individually,” Mark said. The materials they are working with are inspired by nature. Mark is particularly interested in how PFAS behave in the body. He looked to medical literature for guidance and got the idea of creating a material that targets and absorbs PFAS by mimicking its behavior in humans, an approach that appears promising.


Some of their work is being paid for with \$150,000 in funding from the **New Mexico Technology Readiness Gross Receipts Initiative**. Through the program, Sandia and Los Alamos National Laboratory can provide technical assistance to help private companies mature technology. In this case, researchers are working with New Mexico-based Sigma Advanced Technologies LLC.

The inspiration behind the project

The inspiration for this project also comes from personal experience. Jessica completed her postdoc with the U.S. Army where she tested water at military bases for PFAS. She found that the

contamination was widespread, not just in those locations. “It’s a little scary. I saw a figure that this ‘forever chemical’ is in the blood of 97% of the U.S. population. We consume more plastic than we realize. It used to be just in plastics, but now it’s in water and in all the animals we eat because their bodies don’t know how to break it down,” Jessica said.

For others on the team, it’s about accomplishing what no one else has. “Honestly, I like hard problems, and I like problems that can have very impactful solutions. If we can find a better way to treat PFAS, we can positively impact not only the U.S. but also places around the world,” Mark said.

This team believes Sandia is the perfect place to accomplish this. “It’s a large-scale problem, and with Sandia’s mission of national security, water security and energy security, it’s important for Sandia to get involved. It’s something Sandia can directly tackle and address,” Andrew said. 



TACKLING PFAS IN A NEW WAY — Materials scientist Jessica Kustas, left, and technologist Andre Benally work with a mass spectrometer as they try to pair up technologies to go beyond just absorbing PFAS.

Photo by Craig Fritz



EXPERIMENTING WITH POLLUTION — Technologist Andre Benally pipettes on a MALDI plate as the team works to perfect its process for removing PFAS contamination.

Photo by Craig Fritz

HOMeward BOUND DRIVE

JUNE 5 - 9

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ANGLE, Community Involvement and the Sandia Laboratory Federal Credit Union bring you the **Homeward Bound Drive** to help homeless pets that are still looking for their forever home. Both physical items and financial donations are accepted. Details on the [Community Involvement](#) site.

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World Blood Donor Day challenge

Sandia takes on Los Alamos in friendly competition

By Katrina Wagner

The Community Involvement teams at Sandia and Los Alamos national laboratories have organized a friendly blood donation competition in honor of World Blood Donor Day on June 14. The laboratory that collects the most units of blood in June will win.

Sandia Community Involvement manager Amy Tapia encourages employees to see the value in giving blood and help with recent blood shortages across New Mexico. “We make it convenient to donate blood with bimonthly drives. Last year, 1,011 employees gave 1,220 units of blood, which could potentially impact 3,360 lives,” Amy said.

Donors that participate in the challenge will receive a CoLABorating for our Community T-shirt and will be entered to win one of two \$10,000 prepaid gift cards from Vitalant. Both laboratories have two scheduled blood drives this month with equal appointment availability. Sandia will host blood drives on **Tuesday, June 13**, in the IPOC Supplier Lobby and **Tuesday, June 27**, at the Steve Schiff Auditorium. [f](#)



GENERATIONS OF GIVING BACK — Office Administrative Assistant Janet Laros, left, with her mother, since deceased, daughter and granddaughter said she gives blood every eight weeks. “My mother taught me early on to help whenever needed and to take care of people who need help,” said Janet, who has the universal donor type O-negative blood. “My life has been one of service. Blood donations are really needed in an emergency. It doesn’t take much time, it’s free and you get snacks.”

Photo courtesy of Janet Laros



SAVING LIVES — Office Administrative Assistant Zuzana Patterson, center, donates blood at a recent Sandia blood drive. “I donate blood because it is a life-giving substance. It only costs me a little bit of time, but it may give someone a lifetime that they would otherwise not have the luxury of having,” Zuzana said. “It is a small way that I can help others.”

Photo by Craig Fritz



40 YEARS OF HELPING OTHERS — Electrical engineer Greg Haschke donates blood frequently. “Donating blood is a unique opportunity in technological age,” Greg said. “All the modern medical technology has not yet devised a way to manufacture a substitute for human blood that provides the gift of life to so many in need.” Greg first donated blood while attending Texas A&M University about 40 years ago. “The ease of access near campus and some peer pressure in my dorm got me started. The convenience of donating on-site at Sandia really fueled my passion,” he said. Greg has the lofty goal of becoming a 20-gallon lifetime donor and keeps meticulous donation records. When he started at Sandia in 1987, Greg had donated 21 units.

Photo courtesy of Greg Haschke

Mark Herrmann: Achieving first-ever fusion ignition

Pathfinders in Science and Technology Series launches with talk on major scientific feat

By Krystal Martinez

On March 22, Mark Herrmann, program director of Weapon Science Research and Development at Lawrence Livermore National Laboratory, visited Sandia to discuss the significance of a historic, first-ever demonstration of fusion ignition, which occurred at the **National Ignition Facility** on Dec. 5.

His presentation focused on the work behind the achievement, and its impact on NNSA's **Stockpile Stewardship and Management Program** and the future of clean power. The experiment performed at the Lawrence Livermore facility enables experimental developments that help sustain U.S. nuclear deterrence.

"I want to highlight that this was an effort, six decades in the making, that involved thousands of people, many of whom have spent their entire career working on this. I'm just representing a small portion of the team, not just at Lawrence Livermore, but across the NNSA complex," Herrmann said, noting that the achievement would not have been possible without many partnerships, including with Sandia.

His talk was the first in the Pathfinders in Science and Technology Seminar Series sponsored by Advanced Science and Technology.

"Kicking off this series at Sandia was one of my personal goals, and one I wanted to see come to fruition before I retired," said Susan Seestrom, associate Labs director of Advanced Science and

Technology. "Pathfinders highlights significant technical accomplishments achieved in science, technology and engineering across the country to motivate and excite Sandians. Having my colleague Mark Herrmann kick off the series and speak about the great science, technology and engineering associated with achieving ignition on the National Ignition Facility was fabulous because it resulted from a long-term vision in NNSA."

Fusion ignition

Fusion ignition is achieved when as much or more energy is produced from a fusion reaction than was used to drive it. Herrmann and the National Ignition Facility team exceeded the threshold for fusion ignition inside the lab for the first time ever by generating an extreme environment. This work paves the way for advancements in national defense and potentially a fusion power energy plant.

"We are working on how to incorporate what we have learned to both repeat this experiment and go beyond it. We have plans to make the laser even more energetic, make the lasers hit the small targets better and make this easier. The more extreme the conditions, the better the fidelity of the experiments we are doing," Herrmann said.

The pursuit of fusion

Most U.S. nuclear weapons were produced in the 1950s and 1960s and **tested underground**. Underground testing continued until 1992 when the Stockpile Stewardship and Management Program established a science-based approach to certifying the stockpile.

In 1992, a group of Lawrence Livermore scientists hypothesized that lasers could be used to induce fusion in a laboratory setting. To pursue this concept, Lawrence Livermore built a series of laser systems that led to the creation of the National Ignition Facility. Construction began in




FUSION BREAKTHROUGH — Mark Herrmann is the program director for Weapon Science Research and Development at Lawrence Livermore National Laboratory. Sandia hosted Herrmann to present the research and impact of achieving fusion ignition for the first time, an achievement that occurred at the National Ignition Facility on Dec. 5. Herrmann's presentation is the first in the Pathfinders in Science and Technology Series, organized by the Advanced Science and Technology division.

Photo courtesy of

Lawrence Livermore National Laboratory

1997, and the facility opened in 2009 to perform fusion experiments that support and maintain U.S. nuclear deterrence.

The National Ignition Facility is about the size of three football fields. There are 192 laser beams, each the most energetic lasers operating in the world today. The lasers concentrate onto targets about the size of a pencil eraser for a short period of time and create X-rays, which radiate and compress a small capsule that contains fusion fuel. By doing this, researchers can study the effects of compressed fusion fuel in a laboratory setting.

A recording of Herrmann's talk can be viewed on the Pathfinders in Science and Technology Series webpage. There, staff can learn more about the Pathfinders Series and future speakers as they are announced. 

Linton Brooks: Chief negotiator to mentor

By **Kenny Vigil**

Former Ambassador Linton Brooks' tenure as a member of the Board of Managers for National Technology and Engineering Solutions of Sandia ended in May. He had served since July 2017 and chaired the missions committee, which covers all aspects of the Labs' missions.

Brooks had been closely affiliated with Sandia since the late 1970s, when he escorted a foreign delegation on his first visit to the Labs in 1979.

"One of the most striking things about Sandia is the breadth of what we do. Every time I come here, I find out something I didn't know Sandia is doing," Brooks said during an interview about his five-decade-plus career.

When questioned about his most significant contributions to Sandia, Brooks pointed to his work on gender issues with Dori Ellis, who served as deputy labs director and in several other leadership positions at Sandia. "I take some credit for more leadership roles at Sandia being occupied by women. When I began, no women were voting members on the Board of Managers. Now, two of four voting members are women," Brooks said. "I have worked alongside incredibly talented and dedicated women, and to exclude them from leadership roles would be unjust."

Brooks also served on Sandia's Nuclear Deterrence External Advisory Board. "Ambassador Brooks is a consummate leader who brought vast experience in U.S. government and on the international stage to the Board of Managers," said Labs Director James Peery. "His contributions to Sandia Labs will endure as will his impact on national security. We were privileged to have someone of Ambassador Brooks' caliber on the board and will miss his dedication and insight."

A career of public service

To say Brooks has had an impressive career would be an understatement. From the Navy to negotiating treaties and



LASTING LEGACY — After nearly six years, Linton Brooks ended his tenure on the Board of Managers for Sandia in May. Brooks has dedicated his career to public service and national security.

Photo by **Craig Fritz**

leading NNSA, Brooks said his career has been all about one thing: public service.

When asked what work or job he's most proud of, he picked three.

Submariner

Brooks started his career in 1959, serving as a U.S. Navy officer, including commander of the nuclear-powered submarine USS Whale. He completed several naval and DOD assignments over the course of his 30-year career as a naval officer, including in nuclear policy and arms control. "I'll always think of myself as a submariner," Brooks said.

Strategic Arms Reduction Treaty

Brooks served as the chief U.S. negotiator of the START I Treaty, with Senate-confirmed rank as ambassador. The treaty, signed in 1991, required the United States and Soviet Union to reduce the number of strategic nuclear weapons. "I managed to maintain decent morale in a time of intense work. The treaty stands up well. We got most of it right," Brooks said. Reductions of nuclear weapons were complete by the treaty's December 2001 deadline.

Brooks also led negotiations on the START II Treaty, which was signed in 1993, but that treaty was never entered into force.

NNSA Administrator

Brooks served in high-level positions in the DOE starting in the early 2000s. From 2002 to 2007, Brooks led more than 37,000 federal workers at NNSA, maintaining the safety, security and reliability of the U.S. nuclear deterrent. NNSA oversees national laboratories in the nuclear security enterprise, including Sandia. "Employees at the federal level and the labs are so wonderful to work with," Brooks said, adding that he shielded the internship program from budget cuts during his time as NNSA administrator.

Following his retirement in 2007, NNSA established an award in Brooks' honor. The annual award recognizes employees with five or fewer years of experience as a federal worker, and whose contributions exemplify Brooks' spirit of commitment and achievement. "When I was at DOE, I was well-known for a relentless commitment to talking about public service," Brooks said. "Not everyone gets to make a difference like we do."

In addition to advising national laboratories since his retirement in 2007, Brooks has also served on federal panels and has been an independent national security consultant.

Sandia's mission and relevance

With the current geopolitical situation, Brooks said we'll continue to face complex international situations, elevating the importance of Sandia's national security work.

"The public needs to understand that nuclear deterrence is important. Elites need to understand how much more complicated it is," Brooks said. "It's conceivable the deterrent we have today is not the deterrent we will need in 2050. If we don't learn along the way, it's the deterrent we'll have available," Brooks said. "New ideas have always come out of Sandia."


Brooks also said space and cyberspace need to be factors considered when talking about deterrence.

Attracting top talent

Equipment like Sandia's Z Pulsed Power Facility, Earth's most powerful pulsed-power facility and X-ray generator, is key to attracting new talent, according to Brooks.

"We have tools that no one else has. Academia can't afford to do the type of work we do. People can go work elsewhere and make more money," Brooks said. "The importance of the mission is what keeps people here."

While leadership is important for shaping workplace culture, Brooks reminded Sandians of the power they hold to shape the work environment. "Be the type of people that you want to work with and build the type of community that you want to work in," Brooks said.

As the interview wrapped up, and Brooks prepared for a busy week that includes his final Board of Managers meeting, it was clear what he'll miss most. "The most important thing I do is mentor the next generation. I love it," Brooks said quietly, followed by a short pause. "I just love it." 

Sandians observe National Day of Prayer

By **Amy Treece**

Sandians and others from Kirtland Air Force Base gathered on May 4 at Hardin Field and via Zoom to observe the 2023 National Day of Prayer. The event was sponsored by the Christians in the Workplace Networking Group and co-hosted by the Kirtland Chaplain Corps.

Randy Schunk, senior scientist who works in material, physical and chemical sciences, read the official prayer with other leaders focusing on specific topics.

Deputy Labs Director David Gibson prayed for the peace of those who work at the Labs as they navigate challenges and for their success as they perform critical missions. He prayed for Labs Director James Peery and the senior leadership team to effectively set strategic direction.

Senior scientist and electrical engineer Stan Atcitty prayed in Navajo for tribes from the Native American community who live in the Four Corners region and for Natives working at the Labs.

Kirtland chaplains Stephen Odgen and Jason Knudson prayed over the nation and the military; Randy Edwards from electrical maintenance prayed for the leaders in New Mexico and California; Brandon Lund, who works in information technology, offered a prayer for the strength of families across the country; and Tim Draelos, a Sandia retiree, closed the event.




DAY OF PRAYER — About 90 people from Sandia and Kirtland Air Force Base prayed together at Hardin Field on May 4.
Photo courtesy of Kirtland Air Force Base

"I felt it was important to lift the many needs of Albuquerque. We have been through and are continuing to go through so much as a city," said Sandian attendee Connie Schneider, who said a prayer at the event.

The National Day of Prayer was created in 1952 by a joint resolution of Congress and signed into law by former President Harry S. Truman.

About 90 people attended in person with another 30 from California attending via Zoom. Systems analyst Jeff Gruda helped organize the event this year.

"We encountered a few technical difficulties holding the event on the field, but they were easily resolved," he said. "Overall, we had beautiful weather and great attendance." 



PRAYERS FOR THE NATION — Kirtland Air Force Base Chaplain Stephen Odgen speaks at the 2023 National Day of Prayer. The event was sponsored by the Christians in the Workplace Networking Group and co-hosted by the Kirtland Chaplain Corps.

Photo courtesy of Kirtland Air Force Base

Mileposts



Kurt Sorensen 35



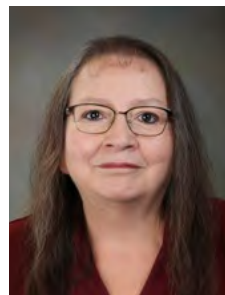
Cliff Ho 30



Anne Yang 30



David Blackledge 25



Josie Chavez 25



Karen Tafoya 25



Angel Urbina 25



Ramona Gallegos 20



JJ Jones 20



Joe Kenny 20



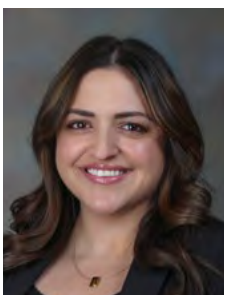
Sam Olsen 20



Josh Schare 20



Margaret Vanderheiden 20



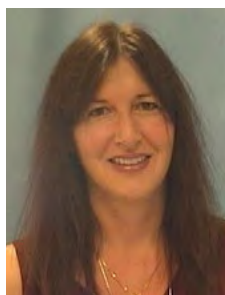
Jacqueline Baca 15



Rob Bell 15



Jonathan Coleman 15



Anna Gorman 15



Lung-Hwa Hsieh 15



Michael Sena 15



Tristan Walters 15

Recent Retirees



Rod Schmidt 35

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Sandia Fellow Lonnie Love: Adventures in manufacturing

By **Neal Singer**

Lonnie Love, the driving force behind the creation of an exploratory manufacturing facility at Oak Ridge National Laboratory, the nation's largest science laboratory, has come 10 years later to develop a similar facility at Sandia, the nation's largest security and engineering lab.

As the newest Sandia Fellow, Lonnie believes this increased focus will change the future of manufacturing and positively impact U.S. security.

"I believe this so much that I left my friends and career in east Tennessee to come to Albuquerque and devote myself to helping enable this vision," he said. "It's a lot of pressure, but I have to say I'm having a lot of fun."

In six months at Oak Ridge in 2013 at the nascent Manufacturing Demonstration Facility, he transformed the additive manufacturing process. He developed it from a tool that slowly printed expensive material, in shapes a cubic foot in size, to a tool that rapidly printed large functional systems weighing thousands of pounds using inexpensive feedstocks costing less than \$5 per pound.

The additive manufacturing technique prints raw material directly into computer-guided shapes, reducing waste unavoidable in conventional manufacturing, which must cut blocks of material down to size.

In 2014, Lonnie's team printed an automobile in real time in front of 120,000 people at a trade show in Chicago.

"From that one demonstration, seven companies started commercializing the technology and a new industry was born," Lonnie said.

That first vehicle, the Strati, was a 1,400-pound monolithic structure printed in 44 hours. "Most cars are manufactured by assembling close to 20,000 different parts. The Strati had less than 100,"

Lonnie said. "However, the true objective wasn't to print cars. It was to show we could make large structures in days with commodity-grade materials.

"We had eight months to prepare. It was a high-pressure schedule, but I've continued to push for these moonshots," he said. "They force us to accelerate the development of new technologies and fail early, so we understand the real issues that need to be solved.

"I believe strongly that Sandia needs this type of culture. Sandians should be the world experts at how to digitally design and manufacture complex structures using advanced manufacturing technologies. It will help us in our mission, be impactful for our country, be a hell of a lot of fun and is the reason I'm here."

Some weeks later, Lonnie's team designed, printed and assembled a replica 1964 Shelby Cobra, which is now at DOE headquarters.

"Printing a full vehicle is still a niche market but does have the potential to change the whole business model of the automotive industry," Lonnie said.

In 2016, Lonnie shifted from printing large composite structures to metal structures. "Our goal was to show additive manufacturing could be used to transform the tool and die industry as well as diversify the castings and forgings industry. This is a multibillion-dollar industry that our country gave up on, and we can get it back through advancements in manufacturing."

Later, he used additive manufacturing to transform the complex structure of an artificial hand's hydraulic actuation tubes and mechanical linkages. By doing this, he internalized the hand's actuating mechanisms, improved its hydraulics, decreased its size, protected its delicate mechanisms against damage, benefited stroke victims relearning to move their extremities with the hand's immediate feedback, and, by adding a waterproof



INNOVATIVE FELLOW — Sandia Fellow Lonnie Love recently joined Sandia from Oak Ridge National Laboratory, bringing extensive knowledge about manufacturing. Lonnie hopes to elevate Sandia's expertise in digitally designing and manufacturing complex structures through advanced manufacturing technologies.

Photo by Lonnie Anderson

Sandia Fellows program adds six

Labs Director James Peery recently announced six new Sandia Fellows. For the first time in Labs history, the fellows program has expanded beyond research and development positions to include all professions that are required to meet Sandia's mission.

"This is a rare and highly selective honor that recognizes pioneers with the highest accomplishments among their peers," James wrote in his announcement. "A promotion to this level allows each fellow to focus on advancing the frontiers of their fields and enhancing Sandia's reputation."

Cynthia Phillips, Tina Nenoff, Ted Kim, Elizabeth Roll, Amber Romero and Lonnie Love joined the Sandia Fellows this year.

“skin,” improved the underwater exploration and repair capabilities of the U.S. Navy.

Lonnie demonstrated his management skills by coordinating the manufacturing response to COVID-19 across 16 national laboratories under the National Biotechnology Virtual Laboratory program funded by the Coronavirus Aid, Relief, and Economic Security Act. His efforts led to partnerships with Coca-Cola Consolidated Inc. and Thermo Fisher Scientific Inc., enabling a supply chain of 10 million test tubes per week and the establishment of a new factory focused on test kits in Lenexa, Kansas. Partnering with Cummins Filtration Inc. and DemeTECH Corp., the team also created a U.S.-sourced supply of N95 respirators, resulting in the production of more than 1 million masks per day and resulting in a new factory with more than 1,000 employees in Tampa Bay, Florida.

As one supporter wrote, “Individually, these contributions evoke reactions of wonder and awe and would stand as the work of a lifetime for most of us. For Dr. Love, they are simply part of enjoying every day.”


As a boy, Lonnie admired his father, who joined the Air Force as a teenager and fell in love with cartography. He recalls his father showing him maps he had made for the Apollo missions and the first pictures from Mars.

“His last project was to lead the digitization of all mapping information,” Lonnie said. “He taught me love of family, loyalty to our country, passion for people and the confidence to take big risks to change the world.”

Lonnie started his career at Oak Ridge as a postdoctoral researcher from the Georgia Institute of Technology in 1995. “I quickly became a survivalist, living project to project. This exposed me to a variety of technologies and skills and instilled in me a passion for pivoting to new research areas.”

The success of these pivots has not escaped Lonnie’s reviewers, who note that his contributions to general knowledge “rapidly penetrate into industrial practice” and who consider him a kind of “embodiment of the Renaissance man.”

One reviewer wrote, “I consider Dr. Love to be the visionary in the deployment of interdisciplinary research to our national needs. ... Lonnie is indeed the chief manufacturing officer of the USA.”

Another reviewer notes that Lonnie’s ability to span the gaps between basic and applied research, and technology development, demonstration and commercialization “makes him unique and often difficult to find in our scientific and technology ecosystem,” for which reason Lonnie’s colleagues “refer to him as a unicorn of manufacturing.” 

Managers plant tomatoes for food pantries



GROWING HEALTHY FOOD — Senior Manager Ernie Limon helps plant hundreds of tomato plants on May 13 with Seed2Need, which provides produce to food pantries in New Mexico. **Photo by Katrina Wagner**



FAMILY TIME — Emergency Planner Tomas Benavidez and his son spend their Saturday afternoon planting tomatoes with Seed2Need.

Photo by Katrina Wagner



FLOAT ON — Intern Brittany Hernandez waves a flag while aboard the Sandia float as it moved along Central Avenue during last year's Albuquerque Pride Parade.

Photo by Craig Fritz

Sandia celebrates Pride Month

**JUN
10**

Albuquerque Pride Parade on Central Avenue

Saturday, June 10, 9:30 a.m.-noon MT

Join Sandia Pride Alliance Network members to walk in the Albuquerque Pride Parade along Central Avenue. Meet at 9:30 in the line of parade floats near Girard Boulevard. Look for tie-dye T-bird shirts and you'll find the Sandia float.

The parade ends this year at San Mateo. Additional information will be sent about how to get back to your vehicle after the parade. Bring sunhats and sunscreen. Water will be provided. Bring your fun.

**JUN
13**

Social event at North Domingo Baca Park in Albuquerque

Tuesday, June 13, 6 p.m. MT

Hang out with Sandia Pride Alliance Network for an informal dinner. Use the entrance on Carmel Ave. NE and park near the tennis courts. The table will be set up near the tennis courts. You can make an online donation to Common Bond New Mexico during the social event. Food trucks will be available or bring your own dinner. Don't forget a lawn chair or blanket.

**JUN
15**

Student Intern Welcome Event at Hardin Field

Thursday, June 15, 11 a.m.-1 p.m. MT

Stop by to say hi. Sandia Pride Alliance Network will staff a table at the annual Student Intern Welcome Event.

**JUN
21**

STEM in the Sun at Alamosa Community Center

Wednesday, June 21, 10-11 a.m. MT

Community Involvement is working with Albuquerque community centers to offer STEM in the Sun to children attending summer programs in underserved neighborhoods. Sandia Pride Alliance Network needs six to seven volunteers to help. Volunteers should plan to arrive about 20 minutes early to pick a station and learn the activity. All needed materials and instructions will be supplied. Volunteers can use TRC-280, Education Service Time Off, with an approved TRC-280 application and management approval. Contact Katrina Wagner with questions and to sign up.

**JUN
29**

Ally Panel via Teams

Thursday, June 29, 2-3 p.m. MT

Join this casual conversation about allyship and what it means to members of Sandia Pride Alliance Network and other Employee Resource Groups.