

Jill Hruby named Labs director

Paul Hommert steps down after five years as director; formal leadership transition to occur July 17



By Jim Danneskiold

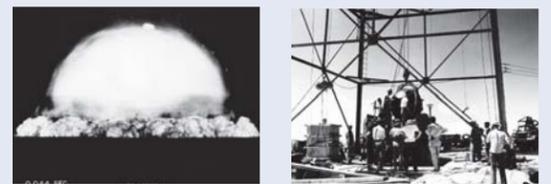
Jill M. Hruby has been named the next president and director of Sandia National Laboratories, the country's largest national lab. She will be the first woman to lead a national security laboratory when she steps into her new role July 17.

A Sandia staff member and manager for the past 32 years, Jill most recently served as VP of Energy, Nonproliferation, and High-Consequence Security Div. 6000 and head of Sandia's International, Homeland, and Nuclear Security Program Management Unit. She will be the first woman to lead any of the three DOE/NNSA national security labs — Sandia, Los Alamos, and Lawrence Livermore national laboratories. She succeeds Paul Hommert, who is retiring July 16 after serving as Sandia president and Laboratories director since 2010.

Jill's appointment was announced to the Sandia workforce Monday morning by Rick Ambrose, who
(Continued on page 4)

JILL HRUBY, who this week was announced as Paul Hommert's successor as Sandia president and Laboratories director, greets Sandians during her first Labs-wide all-hands meeting. She officially assumes her new role on July 17. (Photo by Randy Montoya)

Historic Trinity test was 70 years ago



Many future Sandians involved. See pages 6-7

Sandia LabNews

Vol. 66, No. 12

June 26, 2015



Managed by Sandia Corporation for the National Nuclear Security Administration

Inside



ALWAYS/NEVER documentary available. 8



EMERGENCY RESPONDERS train for 'worst day' 9

and . . .

- Where's my Lab News? 2
- Breaking ground on California Bldg. 926 3
- Colleagues remember postdoc Justin Jankunas . . . 3
- Make the most of your retirement benefits 10
- Labs, Georgia Tech form strategic collaboration . . 11



SANDIANS join in city celebration of gay rights. 12

SecuritySeal

Sandia's tamper-detecting technology is tough to fool



SEALED UP — Jason Hamlet was on the Sandia team that developed SecuritySeal, a device that attaches to a container and detects tampering. The technology, which is based on physical unclonable functions, or PUFs, is available for licensing. "We are looking for commercialization partners," Jason says. "We want this to be licensed and moved to the next level."
(Photo by Randy Montoya)

By Nancy Salem

Protecting assets from threats defines the wide-ranging industry of security, running the gamut from a padlock to a surveillance camera to a critical cyber firewall. "Adversaries continue to advance and technology is readily available, creating a more complex challenge to those of us who try to protect assets and detect unauthorized access to them," says Dianna Blair, manager of Global Technology

Engagement, Research & Analysis Dept. 6832. "One advancement by an adversary can make a security technology obsolete overnight in our world. The key is to stay ahead of the adversaries." An important area of security is ensuring that something inside a shipping or storage container stays there. "You might have to guarantee that cargo has not been tampered with or that nuclear materials in storage haven't been diverted," says
(Continued on page 5)

That's that

I've always remembered a meeting I had almost 20 years ago, not long after I started working at the *Lab News*. I was getting a briefing from one of our counterintelligence officers about the state of the world and the particular concerns and sensitivities I should be aware of as a *Lab News* writer. He held up a current issue of the paper and said: "Do you know where this is must-reading?" I fumbled for an answer and finally tentatively suggested, "Around the Labs?"

Actually, he said, the *Lab News* – at least at that time not long after the end of the Cold War – was very closely read by certain agencies in Russia and China. My eyebrows probably shot up because he apparently detected some surprise and maybe even a bit of skepticism on my part. "Bill," he said, "don't ever underestimate how interested our adversaries can be about things you consider absolutely trivial. They look at everything – and I mean everything – that we publish."

That message stuck with me over the years and I think I've taken it to heart.

All of this came back to me the other day when our social media lead Darrick Hurst called my attention to an article published on a Washington-based news website. The article focused on the Chinese military's recent efforts in the area of advanced hypersonic weapons (AHWs). Our own military has also worked on this technology with significant involvement from Sandia. The story from that Washington website, written by an experienced investigative reporter, was illustrated with a screen grab from a Chinese television network news report about the US AHW program. The image used in that Chinese broadcast was the very same image we published on page 1 of the May 18, 2012, edition of the *Lab News*.

I should add that the image in question is an artist's rendering of a milestone test of AHW technology conducted by the US Army and for which Sandia developed key components. The image was thoroughly vetted before we published it, of course, but that doesn't mean it's not of interest to other intelligence agencies around the world; they find even our open source information to be useful. Granted, in this case the AHW image was used by a Chinese news organization, but don't you suspect that Chinese military intelligence folks were also fascinated by it? Of course they were.

Here are the images of the Army's AHW test, as broadcast on Chinese television (image on left) and as published in the May 12, 2012, *Lab News*. More than a mere family resemblance, I'd say.



There's a good reason why the Chinese news coverage focused on the US AHW program and used an image published in the *Lab News* – the Chinese military doesn't discuss this kind of thing.

In a free and open society, we make a lot of information available that, were we a different sort of society, we'd probably hold very close to the vest. That policy of openness wherever possible – there are obviously some rational limits to what we should share with the world – is the right one. To be fully engaged participants in shaping their nation's future, American citizens need to be informed citizens. But we need to understand there is a price that comes with that openness: Our adversaries have much more and easier access to our information than we do to theirs.

See you next time.

– Bill Murphy (MS 1468, 505-845-0845, wtmurph@sandia.gov)

Where's my Lab News?

Every other week, *Lab News* highlights achievements of Sandians and the important work being performed at the Labs to make our nation more secure. And every other week, some Sandians never stumble across a copy.

The reason is tied to the "out of sight, out of mind" adage. *Lab News* editions are delivered to mail drops, but in many buildings employees may never see the mail drop.



LOOK FOR A NEWSPAPER RACK like this in a building near you at the New Mexico site to pick up your copy of the *Lab News* beginning with the July 10 issue. The *Lab News* will continue to be mailed to retirees every two weeks.

(Photo by Randy Montoya)

To help keep *Lab News* more "in sight," starting with the next edition on July 10, *Lab News* will be available in news racks at 24 locations throughout the Labs. Delivery to mail drops will be discontinued. A digital version of *Lab News* will continue to be available on Tech Web as well as on Sandia.gov.

The racks are being placed in areas with heavy traffic. For example, one will be located in the entryway to the Thunderbird Café, there'll be another in the main walkway through Bldg. 822, and one will be in the coffee shop area of Bldg. 898. A list of all initial locations, below, provides more detail.

Internal Communications (3651) will monitor the change and make adjustments as needed. For example, if some racks are in locations that aren't being frequently used, they can be moved to another location. And, if there are areas of the Labs identified that are negatively affected by the change, consideration will be given to adding new locations.

Members of the workforce with feedback on the new distribution method can contact Internal Communications with their suggestions and comments.

Lab News rack locations starting July 10

1. Bldg. 800, lobby
2. Bldg. 802, elevator lobby
3. Bldg. 810, east lobby
4. Bldg. 822, south entrance
5. Bldg. 858 EL, lobby
6. Bldg. 880, north aisle D, entrance
7. Bldg. 892, lobby
8. Bldg. 894, east entrance, lobby
9. Bldg. 898, east lobby
10. Bldg. 887, lobby
11. Bldg. 878, lobby
12. Bldg. 836, lobby
13. Bldg. 831/832 (Medical), north entrance lobby
14. Bldg. 861, Thunderbird Cafeteria lobby
15. Bldg. 870, lobby
16. Bldg. 897, lobby
17. IPOC, lobby
18. CGSC, lobby
19. CERL, lobby
20. Bldg. 960, lobby
21. Bldg. 962 (TA III), lobby
22. Bldg. 6585 (TA V), lobby
23. Bldg. 6584, (TA V), lobby
24. 800 (A), outside of Vicki's

Sandia Lab News

Sandia National Laboratories

<http://www.sandia.gov/LabNews>

Albuquerque, New Mexico 87185-1468

Livermore, California 94550-0969

Tonopah, Nevada • Nevada National Security Site

Amarillo, Texas • Carlsbad, New Mexico • Washington, D.C.

Sandia National Laboratories is a multiprogram laboratory operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corp., for the US Department of Energy's National Nuclear Security Administration.

Bill Murphy, Editor 505/845-0845

Randy Montoya, Photographer 505/844-5605

Patti Koning, California site contact 925/294-4911

Michael Lanigan, Production 505/844-2297

Contributors: Michelle Fleming (Ads, Milepost photos, 844-4902),

Neal Singer (845-7078), Patti Koning (925-294-4911),

Stephanie Holinka (284-9227), Darrick Hurst (844-8009),

Heather Clark (844-3511), Sue Holmes (844-6362),

Nancy Salem (844-2739), Tim Deshler (844-2502),

Valerie Larkin (284-7879), Lindsey Kibler (844-7988),

Rebecca Brock (844-7772), Valerie Smith, manager (844-6167)

Lab News fax 505/844-0645

Classified ads 505/844-4902

Published on alternate Fridays by Internal & Digital Communications Dept. 3651, MS 1468

LOCKHEED MARTIN

Retiree deaths

Florence Lenz (age 90) Apr. 24

Floyd Mcgimsey (90) Apr. 24

Peggy Collins (79) Apr. 25

Charles Kinsey (87) Apr. 25

Rolland Pyetzki (93) May 1

Marjorie Hedges (79) May 4

Max Dalling Hodge (86) May 5

Robert Jaramillo (95) May 7

Arthur Morales (76) May 13

Charles McKeever (93) May 19

Joseph Shelby (92) May 20

Richard Wahlberg (83) June 6

Lab News Reader Service

The *Sandia Lab News* is distributed in-house to all Sandia employees and on-site contractors and mailed to all Sandia retirees. It is also mailed to individuals in industry, government, academia, non-profit organizations, media, and private life who request it.

Retirees (only): To notify of changes in address, contact Benefits Dept. 3332, Customer Service, at 505-844-4237, or Mail Stop 1021, Sandia National Laboratories, Albuquerque, NM 87185-1021.

Employees: To address concerns regarding delivery of the *Lab News* to your facility, call Mail Services Team 10268-4, at 844-3796. At Sandia/California contact the Mail Room at 925-294-2427.

A new 'front door' for the California site

Bldg. 926 will house Human Resources, training center

By Michael Padilla

A groundbreaking ceremony for Bldg. 926 was held last week in Livermore. This new building will enable consolidation of "front door" activities.

The new building will house the site's Human Resources department and will be home of the training center for students and new hires. The new 20,000-square-foot facility, funded by institutional investments, will provide employment candidates, new hires, and student interns an open, welcome, accessible space. All employees, including foreign nationals, will have easy access to the building, which will be located in the space created where Bldg. 927 once stood. It is scheduled for completion next year.

Paul Hommert, Sandia president and Labs director, spoke at the event about the history of the open campus. Marianne Walck, vice president of Sandia's California laboratory, discussed how the building will have an impact on the Livermore Valley Open Campus (LVOC) and California site plan. Livermore Mayor John Marchand also spoke at the event. The ceremony was led by Denise Koker (8500), director of Site Operations.

Paul said the idea of the open campus was born out of a challenge from DOE to deepen the meaning, understanding, and value of the presence of the laboratory in California. In 2007, as Sandia's vice president for the California site, Paul commissioned a group of people to do a study on stewardship models for the site.

A concrete manifestation of the open campus vision

"It sharpened our focus and allowed us to think more deeply about how we can use our presence here," Paul said. "What we are celebrating here today represents a concrete manifestation of the open campus vision that has its roots in that original challenge."

He said this site and partnership with Lawrence Livermore National Laboratory are a terrific example of what the country needs to strengthen the approach to today's competitive world.



BREAKING GROUND – Denise Koker (8500), left, Paul Hommert, Livermore Mayor John Marchand, Marianne Walck, and Craig Bjorkman, president and CEO of JKL Construction, led the groundbreaking ceremony for Bldg. 926 at Livermore. (Photo by Randy Wong)

Marianne said having a welcoming environment where visitors, recruits, and new hires can access without having to immediately enter layers of visible security allows a greater ease in collaborations and builds a sense of community for new hires from the start.

"The building will have a positive effect on our ability to hire and retain the brightest people," Marianne said. "This allows us to meet all of our national security missions."

Marianne said this is the first new building specifically designed as part of the effort to reconfigure the site and as part of the LVOC. Plans for a new building called Collaboration in Research and Engineering for Advanced Technology and Education (CREATE) will also support this vision. The proposed 86,000-square-foot facility will provide additional collaboration space for engagement with industry and academia.

Marchand said he was excited about the potential that the LVOC can bring to Livermore and Tri-Valley.

"This first new building on the Livermore Valley Open Campus can be a place where a new era of open and international collaboration can occur as new ideas and new technologies are developed," he said. "At the same time, the LVOC will further the mission of the Laboratories and advance the Labs' mission of national security."

Denise said Bldg. 926 will enable the site to bring Bldg. 911 into the Limited Area and repurpose it for growing its classified mission work. In addition, when Bldg. 926 is occupied, several substandard mobiles will be removed.

"The site is well on its way to having a recognizable front door," she said.

Sandia California News

Employee death

A passion for science and life: Colleagues remember postdoc Justin Jankunas

Sandia postdoctoral appointee Justin Jankunas (8353) died in late May at the age of 30. The brilliant young scientist who was at the very beginning of what promised to be a consequential career, died after suffering head injuries in a crash of his racing motorcycle at a speedway in Southern California.

The Lithuanian-born Justin had been at Sandia since February. In that short time he had already touched many lives and impressed one and all with his passion for science, his creativity in the laboratory, and his love for his work.

Says Craig Taatjes (8353), Justin's manager for the few

months he was here: "Justin was working with David Chandler (8300) in Dave's laboratory studying the fundamental dynamics of molecular collisions and chemical reactions. He clearly loved the pursuit of knowledge and was excited to find new insights into the mechanisms of molecular physics, as well as to discover new connections among different areas of study. His generous enthusiasm was not contained by his own research but poured over into his interest in his colleagues' work. His insights and excitement will be missed."

Dave remembers Justin as "a true scientist and intellectual."

"My favorite part of working with him," Dave says, "was his sheer joy of discovery coupled with his love of doing experiments. . . . We would have a wide-ranging discussion about different projects to do in our lab and often talked about science philosophy. Justin's work ethic was infectious and he would give me an 'evil eye' whenever I told him I would not be coming to the lab to work on a weekend."

Colleague Mark Jaska (8353) shares an email he received from Justin not long ago: "Mark, Let me know when you are ready to do some great stuff in the lab! Thanks, Justin."

Says Mark, "That sums up a lot about Justin: The energetic manner, the excitement about doing science, the eagerness to get in the lab and do experiments . . . After collecting some interesting new data, he was anxious to talk about it and run the calculations on it to make sure it was what he thought it was. He would really light up during those discussions."

'Invigorating'

Even before Justin signed on at Sandia, Jeff Steil (8128) had met him at several professional conferences, where the two

enjoyed talking about life and science. "Justin was an invigorating scientist to work with," Jeff says, "humble but insistent, and every recent question he had was about getting tools to interpret experimental results he had acquired in mere months." With Justin gone, says Jeff, "We are missing out on a great part of working at the CRF [Combustion Research Facility] that we were just getting to know about."

Justin was a man of many dimensions. As devoted as he was to science, no laboratory in the world was big enough to contain all his passions. Max Osipov, who became friends with Justin in 2008 when they both matriculated as PhD chemistry students at Stanford, says, "Justin was a world-ranked checkers player and wrote for an Italian publication on the game. He played billiards and loved relating the game to physical phenomena he observed in his research. He enjoyed high-performance cars, motorcycles, and racing. In all things, Justin committed himself fully to his interests. If he did something, he did it with all his

heart and to the best of his abilities.

"In the laboratory, Justin was a brilliant scientist," says Max, "his academic and professional achievements speak volumes of his abilities. He never had a shortage of ideas, and always came up with innovative solutions to all problems."

'One-of-a-kind individual'

Max, who is still at Stanford, reflects on the empty place Justin leaves in many hearts. "Both being immigrants from the former USSR," Max says, "we quickly found a lot to bond over. Our shared interests for photography, science, philosophy, and running led to many adventures and memories."

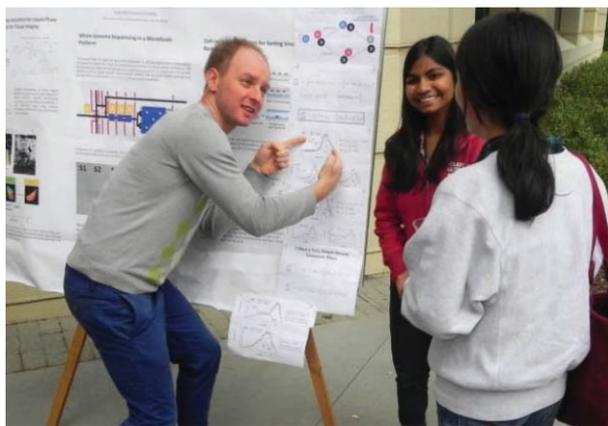
"Justin was the guy you could call for help or advice any time. Whether it was a ride to the airport at the crack of dawn, a manuscript that needed editing, or his presence at a friend's wedding 6,000 miles away, Justin was always there for those he considered his friends. He was a one-of-a-kind individual."

Craig cites one of Justin's more appealing and infectious traits, one that several friends and colleagues also commented on: "He was genuinely interested and excited about what other people were working on. . . . He was tremendously eager to figure things out, and he was highly generous with his enthusiasm, engaging with other CRF research groups even in the short time he was at Sandia."

"The last time I saw Justin was a few days before his accident," Craig recalls. "He burst into my office to show me molecular beam scattering data that he had just taken, looking at collisions that had left different amounts of energy in the molecule. He was excited because for one final rotational state the data beautifully matched a theoretical prediction, and even more excited because the data for another rotational state were clearly different than the theoretical prediction."

Justin, who received his doctorate in chemistry from Stanford in 2013, came to Sandia after being named a postdoctoral fellow at the Ecole Polytechnique Federale de Lausanne (EPFL), in Lausanne, Switzerland. He earned his bachelor of science degree in chemistry at Simon Fraser University in Burnaby, British Columbia, Canada. He is survived by his father and his sister.

— Bill Murphy



A ZEAL FOR SCIENCE – Justin Jankunas's passion for science and his animated nature when talking about his work are evident as he explains molecular dynamics results from Stanford's Zare Lab to prospective first-year graduate students during a recruiting weekend. (Photo courtesy of Max Osipov, Stanford University)

Jill Hruby is 14th Sandia Labs director



NEWLY APPOINTED Sandia President and Labs Director Jill Hruby, left, is joined during a Monday all-hands meeting at the Steve Schiff Auditorium by, left to right, Rick Ambrose, chairman of the Sandia Corp. Board of Directors and executive vice president of Lockheed Martin Space Systems; soon-to-retire Labs Director Paul Hommert; and HR and Communications Div. 3000 VP Melonie Parker. Jill will be the 14th Sandia Labs director and the first woman to head an NNSA laboratory.

(Photo by Randy Montoya)

(Continued from page 1)

chairs the Sandia Corp. board of directors and is executive vice president of Lockheed Martin Space Systems. Sandia Corp., a wholly owned subsidiary of Lockheed Martin, operates Sandia for the NNSA.

Right combination of qualities

"The board looked at a number of outstanding candidates," Ambrose said. "We saw right away that Jill has the right combination of technical expertise and strategic vision to lead Sandia into the future. With more than three decades of experience at Sandia, she understands the core national security missions and scientific foundations that are fundamental to the Labs' success."

Jill said she was at the same time honored and humbled by her selection.

"Leading Sandia is a tremendous responsibility because of its importance to the security of our nation and the phenomenal engineering and scientific talent here," Jill said. "I embrace the opportunity to maintain the US nuclear deterrent and lead Sandia in solving the difficult security challenges we face as a nation. I'm proud to be the first woman to lead an NNSA laboratory, but mostly I'm proud to represent the people and work of this great lab."

"Paul is leaving Sandia with the necessary fundamental elements in place, and it's personally gratifying to follow such a dedicated, visionary leader. I've assured him, the National Nuclear Security Administration, and the Department of Energy that we will continue to deliver on our weapons Life Extension Programs on schedule and on budget. We also will build on Paul's recent efforts to strategically advance our broad national security contributions, strengthen our basic research, and expand the transfer of Sandia innovations to the US economy."

Ambrose echoed Jill's appreciation of Paul's service to Sandia.

"During Paul's five-year tenure, he strengthened the development of Sandia's people, expanded its partnerships with universities and small businesses, and continued its longstanding focus on safety, security, and

exceptional performance," Ambrose said. "We're grateful for his leadership and his contributions to Sandia and the nation."

"I am not afraid to share my opinions and I love listening to your opinions, so please share your opinions freely with me. I'm looking for that. I've been told I ask a lot of questions — is that true? — and I really enjoy humor."

'The ideal national lab director'

Paul called Jill the "ideal national lab director" and praised the board for selecting her.

"Jill is a person of tremendous talent, someone who will make sure Sandia is ready for expanded roles with a wide variety of new strategic customers. We have a tradition of delivering with excellence on our national security commitments, and there is no one more qualified than Jill to lead those efforts," Paul said.

In an all-hands meeting on Monday morning shortly after Jill was announced as Paul's successor, she laid out her immediate priorities:

- **Talent development:** "We have to make sure that we provide the environment for everybody to bring to their job every day their talent and the opportunity to learn from others."

- **Mission delivery:** "The highest priority mission [is] our nuclear weapons mission. We have to ensure a safe, secure, and effective stockpile. . . . The new way that we think about this is that we can't deliver on the nuclear weapons program unless we have a broader set of missions to attract, retain, and challenge our workforce."

- **Maturing of the mission areas:** "We're not just a multi-program laboratory; we're a multi-mission laboratory. We deliver on many missions and over the long term we make very significant contributions in mission space. And I want to continue that. It exercises our strategic muscle; it makes us think; gets us ready; [helps us] anticipate, so we can be leaders in the nation and not just wait for sponsors to ask. We'll be ready."

'It'll be fun'

Recognizing that many members of the workforce don't yet know her well, Jill offered a few comments about her personal style: "I'm a very direct person," she said. "I am not afraid to share my opinions and I love listening to your opinions, so please share your opinions freely with me. I'm looking for that. I've been told I ask a lot of questions — is that true? — and I really enjoy humor. In fact, my husband and my daughters tell me every time I get a new job, 'You better warn them about your awful sense of humor the first thing you do.' So I'm warning you. You'll get used to it. It'll be fun."

During a news conference for local media following the all-hands meeting, Ambrose said replacing Paul Hommert was "no small feat."

"This is a unique job with a unique set of skills in such diverse areas as nuclear weapons, national security, technology development, and scientific research," he said. "We believe Jill is the right person for the job."

Regarding her appointment as the first woman to lead a large national security laboratory, Jill told reporters, "Sandia started on this path a long time ago. The Laboratory has long welcomed diversity and inclusion and has been a leader in hiring and developing diverse talent. That paid off for Sandia being the first to hire a female director. I am thankful to the leaders who gave me a chance."

"Isn't it great? In my wildest dreams, I never imagined this. Throughout my career I have worked hard and learned new things. Science and engineering are not dominated by women, so this sends a good message."

Joined Sandia in 1983

Jill joined the technical staff at Sandia's California laboratory in January 1983, working in thermal and fluid sciences, solar energy research, and nuclear weapon component research and development. During her career, she also has done research in nanoscience, hydrogen storage, mechanical-component design, and microfluidics.

She earned her first management appointment in 1989, and held technical leadership positions at the



California laboratory in polymer and electrochemical technologies, materials synthesis, and inorganic and physical chemistry.

Beginning in 1997, Jill served as a senior manager in organizations responsible for weapon components, microtechnologies, and materials processing. She was named a technical director in 2003. For the next seven years at Sandia's California site, Jill led the Materials and

Engineering Sciences Center and its work in hydrogen science and engineering and micro- and nanosystem science and fabrication, and then the Homeland Security and Defense Systems Center, fostering Sandia work in systems analysis, applied research, and systems engineering, primarily for homeland security and nuclear weapons missions.

Came to New Mexico site in 2010

Jill came to Sandia's New Mexico site in 2010 as vice president of Energy, Nonproliferation, and High Consequence Security Div. 6000 and of the International, Homeland Security and Nuclear Security Program Management Unit. In that capacity, she was responsible for more than 1,300 Sandia employees in such diverse areas as nuclear security and nonproliferation technologies; chemical and biological defense and security; homeland security and counterterrorism; and energy technologies.

A native of Ann Arbor, Michigan, Jill earned a bachelor's degree from Purdue University and a master's from the University of California at Berkeley, both in mechanical engineering. She has authored numerous technical publications, holds three patents in microfabrication, and won an R&D 100 Award in solid-state radiation detection. She serves on DoD's Threat Reduction Advisory Committee and the Board of Chemical Science and Technology for the National Academy of Sciences. She has served on several university advisory boards, on community boards in Livermore and Albuquerque, and as the campus executive at the Georgia Institute of Technology.

A Conversation with Rick Ambrose

Chairman of Sandia Corp. Board of Directors shares thoughts about Labs' opportunities and challenges

Rick Ambrose, chairman of the Sandia Corporation Board of Directors, is executive vice president of Lockheed Martin's Space Systems Company business area. Ambrose was in Albuquerque this week to introduce new Sandia President and Labs Director Jill Hruby and to thank Paul Hommert for his years of service to the Labs. The Lab News recently had an opportunity to have an email conversation with Ambrose about his role on Sandia Corporation's Board of Directors.

Lab News: First of all, Rick, could you talk a little bit about your background?

Rick Ambrose: I grew up in Southern California and always had an interest in space and flying as a kid. My high school testing showed an aptitude for math, and I decided to combine interests and pursue engineering. That opened the door to a rewarding 35-year career in the defense and aerospace industry.

Coincidentally, my first engineering roles were on the Geostationary Operational Environmental Satellite-D (GOES-D) program, which was a forerunner to the GOES-R weather satellites we're building for NOAA. I moved into program management fairly quickly and have been leading teams and organizations ever since.

"I think Sandia's biggest challenge is the same one that Lockheed Martin and our industry peers face, which is to maintain our relevance. How do we anticipate what our next national security needs will be? How do we apply our rich technical expertise to help our nation solve its most pressing challenges? The threat is evolving, and we need to stay a step ahead."

— Rick Ambrose, chairman, Sandia Corp. board of directors

Since joining Lockheed Martin in 2000, I've had the honor of leading our Space Systems Business Area, as well as serving as president of Lockheed Martin Information Systems & Global Solutions-National, which supports the US intelligence community and international partners.

LN: When did you first hear of Sandia?

RA: I don't remember the exact moment, but I've been aware of Sandia for many years. I think anyone who has studied nuclear engineering and technologies knows of the Labs.

LN: Before you had personal involvement with Sandia, what was your sense of who we were? Was it positive? What do folks around Lockheed Martin say about the Labs?

RA: Like most people at Lockheed Martin, I knew Sandia primarily for its work in ensuring the safety, security, and reliability of the US nuclear arsenal. I had a positive impression of the Labs in terms of the team's technical excellence and commitment to the nation. The people at Lockheed Martin have deep respect for the responsibilities you hold and the work you do for our country.

LN: When you became the executive vice president of Lockheed Martin Space Systems Company, you also took on the role of chairman of Sandia Corp. In that role, what have you learned about Sandia that has most impressed you?

RA: When I stepped into the chairman's role, I visited the Labs for two days to learn more about your work. I quickly realized I could spend a month or more. The depth and breadth of the technologies being developed at the Labs astounded me.

Cybersecurity, computational biology, nanotechnology, biofuels, and more. It's truly impressive what you do for the nation.

LN: Has there been anything you've learned about Sandia that has been surprising to you?

RA: Again, the depth and breadth of your expertise surprised me, as did the work being done with the Z machine. I was also surprised to learn how interconnected you are across the national laboratories.

LN: What do you see as Sandia's biggest challenge over the next five years?

RA: I think Sandia's biggest challenge is the same one that Lockheed Martin and our industry peers face, which is to maintain our relevance. How do we anticipate what our next national security needs will be? How do we apply our rich technical expertise to help our nation solve its most pressing challenges? The threat is evolving, and we need to stay a step ahead.

LN: Could you talk a bit about the role of the Sandia Corp. Board of Directors in shaping the direction of the Labs?

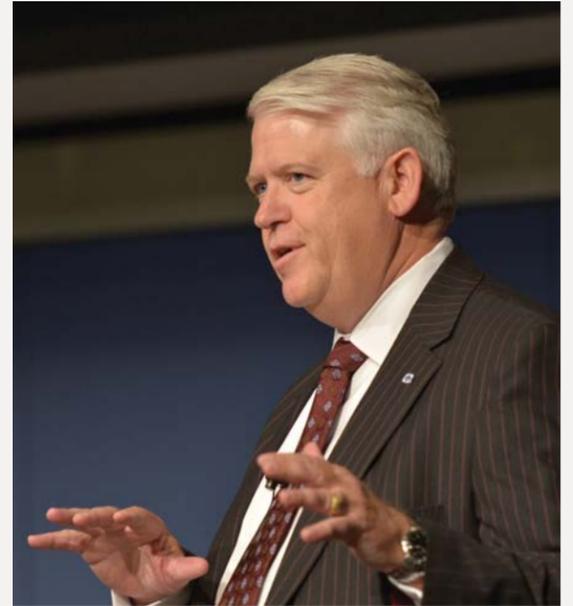
RA: The board's goal is to support the success of the Labs. We engage actively with the Sandia leadership to review strategic plans, provide input on operational plans, and advise on other aspects of running a complex institution of this kind. The board consists of subject matter experts with national reputations, and we act as a resource to the director in achieving the Labs' mission.

LN: When the Department of Energy rebids the contract to manage Sandia, do you expect Lockheed Martin to compete for it?

RA: We're very proud of our long-term association with the Labs. At this point, our intention is to compete for the opportunity to continue the relationship. We look forward to reviewing the RFP when it comes out, and we'll make a final decision then.

LN: Is there any other message you would like to convey to the Sandia team?

RA: Thank you for your service to our nation. In this time of global uncertainty, our nation is fortunate to have a team of this quality working on its behalf. It's an honor to participate in your work and interact with such high-caliber professionals.



RICK AMBROSE, chairman of the Sandia Corporation board of directors and executive vice president of Lockheed Martin Space Systems, addresses an audience of Sandians at the Steve Schiff Auditorium as he introduces Jill Hruby as the board's choice to succeed Paul Hommert as Sandia President and Labs Director. Ambrose recently answered a few questions from the Lab News about the challenges and opportunities he sees for the Labs. (Photo by Randy Montoya)

SecuritySeal

(Continued from page 1)

cybersecurity specialist Jason Hamlet (5627).

Sandia has a long history in tamper-detection research and continues to advance the field, providing technologies to users such as the International Atomic Energy Agency. The next generation of technologies has produced SecuritySeal, a patented method of tagging and sealing containers or doors. The seal is placed on a closed container so that any attempt to open it is detected cryptographically. "When you come back in the future you can verify that it had not been opened," says electronics engineer Todd Bauer (1746), a principal investigator with Jason on the SecuritySeal project.

Moving technology into the marketplace

SecuritySeal is available for licensing and is in the US Department of Homeland Security's Transition to Practice program, which helps move cybersecurity technologies developed through federally funded research and development into broader use. The program provides a connection point for researchers, the federal government, and the private sector to drive technology from research labs to the marketplace.

"We are looking for commercialization partners," Jason says. "We want this to be licensed and moved to the next level."

The prototype is a little bigger than a credit card and would fit a truck or cargo container. But it could be sized to something larger or as small as a prescription

medication bottle. "Seal a truck, seal a pallet, seal a box, or a bottle," Todd says. "You will know if the container has been opened and that what is in it is what is supposed to be in it."

Jason and Todd came up with the idea in 2009 and worked on it for several years. The technology is based on physical unclonable functions, or PUFs, the small defects that are part of any manufacturing process, a function of materials properties and tolerances.

Microelectronics is no exception. "Electrical characteristics exist in microelectronics that were not designed, small variations from one device to another that exist due to the manufacturing process," Jason says. "A PUF is a measurement of those variations, which are uncontrollable, unclonable, and unique to individual devices. It's a kind of fingerprint."

Jason, Todd, and team members including Bob Brocato (1751) and Brian Wroblewski (1833) developed a way to use PUFs to authenticate integrated circuits. SecuritySeal has two PUFs, one from a resistor network printed on a thin polymer film, and another from an on-board integrated circuit. The resistor network is adhered to the surface of the container it protects. The two PUFs are then measured and combined to form a system-level signature, leading to a private key that stays with the device and a public key a verifier can use.

Each SecuritySeal would be enrolled in a database with a serial number with the public key, similar to the Entrust identity management system. The private key is not stored in the device's memory, but is instead regenerated from a measurement of the PUFs when needed.

Resistance properties of the network change if the film is lifted, slid, or attempted to be removed from the surface it is adhered to, and the PUF response is altered so the tamper is detected. A digital reader interrogates

the device remotely and can infer a change in signature if the tag-seal fails to properly respond to a challenge provided by the reader. Knowledge of the private key is needed to generate the right response. If the PUF changes, the private key changes and the tag-seal can't provide the correct response.

A deterrent to adversaries

"Tamper-indicating seals are a critical part of the regime I work in," Dianna says. "SecuritySeal might not stop tampering, but it will help us monitor if a protected volume has been accessed. It addresses a key vulnerability. If a seal can be counterfeited, an intruder could take it off and replace it with one that looks just like it. SecuritySeal has a unique signature that cannot be counterfeited. It has a strong deterrence factor."

The research was done in the area of national security that focuses on arms control and treaty verification. "In nonproliferation treaties, a weapon system is dismantled and the component parts are stored in different containers," Todd says. "How do you know without continuous visual surveillance that no one has gone into the containers? This tool can remotely monitor treaty compliance with assurance."

But the device, which could be manufactured with custom parts or with less expensive commercial off-the-shelf components, has a variety of potential uses including protecting pharmaceuticals, cargo, crime scene evidence containers, consumer goods against warranty fraud, and ballot boxes.

"The market is quite broad for this technology," Todd says. "There are many ways to seal and protect assets, starting with padlocks. Our goal is to raise the bar. This helps keep everyone a little more honest."

70 years ago

the Trinity test changed our world

By Rebecca Ullrich, Sandia Historian

On July 16, 1945, at 5:29:45 a.m., in the pause between rainstorms on the Alamogordo Bombing Range, everyone knew they were experiencing something world-changing. Acknowledged now as the dawn of the nuclear age, the Trinity test of the plutonium implosion design of the weapon known as Fat Man immediately sparked a clear recognition of history being made.

The voices from the day come down to us, acknowledging the power they witnessed. Ernest Lawrence, inventor of the cyclotron and head of the Radiation Laboratory at the University of California, Berkeley, wrote later that day, “Although we knew the fundamentals were sound and that the explosion could be produced, we share a feeling that we have this day crossed a great milestone in human progress.”

Planning for the test began over a year earlier, in March 1944, in the wake of the realization that the original concept for a plutonium weapon similar to the gun-type uranium weapon design would not work. The resulting implosion design was seen as riskier, in that the calculations surrounding it did not provide the Los Alamos scientists with the confidence they had in the gun-type weapon.

In the Los Alamos Explosives Division, Kenneth Bainbridge took leadership of Group X-2. He was assigned to prepare a field test that would obtain photographic documentation of the explosion, as well as records of blast, shock, and the neutron and gamma radiation from the shot. Over the course of the next year, a site was selected and a base camp erected; the test tower and related equipment were configured and procured; the “gadget” (the test version of Fat Man) was designed and built; and the instrumentation to capture the test data was conceived, constructed, and tested in a 100-ton calibration shot on May 7, 1945.

A 100-foot tower at ground zero held the gadget for the test. Gauges, cameras, detectors, and other data-capture instruments were located around the tower and further out; monitoring posts were established in Nogal, Roswell, Socorro, and Fort Sumner. Over the course of test preparation, three shelters were built to house equipment and observers — 10,000 yards out from the tower to the south, west, and north. Personnel not involved in immediate preparations at the site or assigned to a shelter to operate equipment or observe, were either sent back to base camp or allowed to observe from La Compañía Hill, about 20 miles to the east of ground zero.

Among those at the Trinity site that morning were several future Sandians, some civilians and some of them members of the US Army’s Special Engineer Detachment (SED). The SED was made up of individuals who were in the military, selected for specialized training based on their aptitude and/or education, and then assigned to different elements of the Manhattan Engineering District. They worked with civilian staff in research, development, and test preparation.

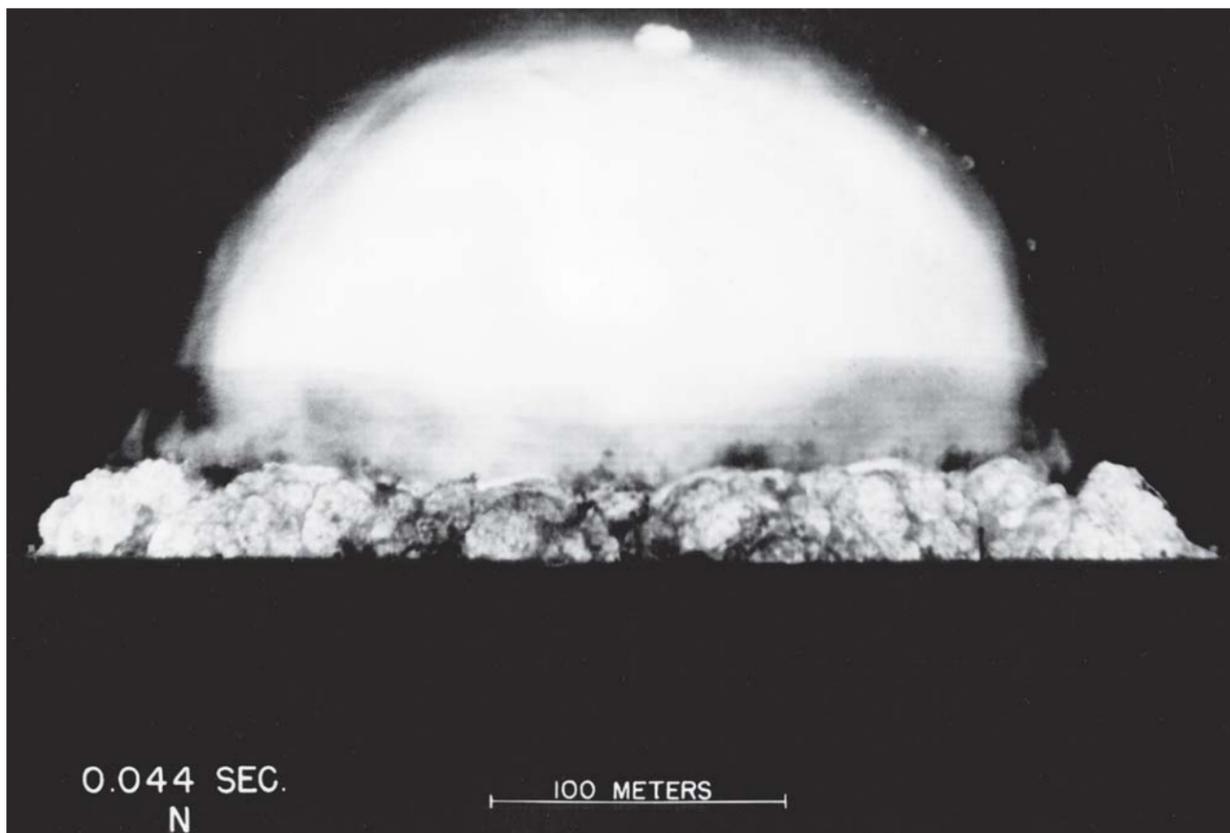
Leo “Jerry” Jercinovic was a chemical engineer assigned to SED. He was initially at Oak Ridge but was reassigned to Los Alamos where he worked in the explosives group, developing bridgewires and explosive detonators. The group supported the May 1945 test shot — assembling 100 tons of explosives in 50-pound blocks to fire a shot that would test some of the instrumentation designed for Trinity.

‘A sense of immense disbelief’

The same group provided final mechanical assembly for the Trinity device and drove it to the site just after midnight on Friday, July 13. Recalled Jerry: “We put it together and we assembled it and put it on a truck and drove down to the Trinity Site and disassembled it far enough for the nuclear guys to put ... the nuclear parts in it and we buttoned it back up again and raised it to the top of the tower and set it on its cradle and at that point my job was done.”

Jerry observed the test with the group at La Compañía: “I can remember just standing there and everybody feeling this awe and this sense of the immense disbelief. It worked! It really worked!”

Art Machen, head of Sandia’s Military Liaison program 1949-1968, was a member of the assembly team. At Trinity, his group intersected with Jerry’s, “opening the device for insertion of the active material and reassembly then on the tower.” He also worked with Henry Linschits of the detonator group in stringing the wires from the firing



JERRY JERCINOVIC OBSERVED, “Looking down into that giant valley ... and you saw this giant white light creeping out of the desert with great speed and this huge cloud of dust blurring out at you at an enormous rate of speed. It looked like it was coming at us like a freight train. It was all lit by its own light from the fireball.”

assembly to the detonator points and the installation of the detonators. The following month, Art went on to Tinian Island as part of the assembly and arming group for Fat Man, the weapon that was dropped on Nagasaki.

Sandia technical illustrator Louis Jacot was also in the SED assigned to Los Alamos. He was a staff sergeant working as a patent illustrator in the legal area at the lab, so it was not obvious that he would be involved with Trinity. However, he was assigned to an evacuation team of three officers and 150 men prepared to clear populated areas should the radiation fallout levels become too high after the shot. Prior to the test, they drove all roads and trails in the area, drawing maps of them at night. He reported that, “After the shot we were ready, but everything went according to plan and no evacuation was necessary.”



IN 1985, BEN BENJAMIN REVISITED the Trinity site, noting how well some of the equipment shelters withstood the years.

Another member of SED, Ben Benjamin, was at the 10,000 west location during Trinity. He and Julian Mack set up a variety of cameras and experiments designed to capture images and measure the output from the test. As the fireball expanded and the cameras whirred, “My immediate thoughts revolved around the triumph of the moment — the great success of the project, the realization that the success could indeed mean the end of the war,” Ben recalled. He came to Sandia after the war, sustaining a long career in field test and serving as a mentor in the Weapon Intern Program after he retired.

Glenn Fowler retired as a Sandia VP in 1983, having been at the Labs since 1945 when it was still attached to Los Alamos as Z-Division. At Sandia he headed up test operations before going on to serve as VP of field test, research, special programs, and systems. An electrical engineer, Glenn joined the Radiation Laboratory at MIT in 1941, developing working radar models before moving on to the Pentagon. In early 1945, he was assigned to Los Alamos. Responsible for positioning the two observer/instrumentation aircraft, he was in one of them during the Trinity test. “I was sitting in the navigator’s seat just behind the pilot and since he naturally circled to the left, I had a front row view of the shot. It created the biggest fireball that had ever existed till then. And I

remember thinking — it sounds corny now, I guess — ‘Here’s the start of a new era.’”

It is worth noting that, while there was a pause while the fireball and shock wave rolled out in the New Mexican desert that morning, there was no pause in the other activities aimed at ending the war in the Pacific. Two days earlier, the first parts of the Little Boy gun-type weapon began the journey to Tinian Island in the Pacific. On July 16, President Truman waited in Potsdam for news of the shot’s success (or failure) to use in his negotiations with British Prime Minister Winston Churchill and Soviet Premier Josef Stalin. And on Okinawa, preparations continued for the launch of an Allied assault into Japan. Trinity was not just a historic moment, it was a moment in a series of critical historic events.

The origins of Field Test

But Glenn and the others were not wrong. The nuclear age was born in the first nuclear test. And Field Test, as Sandia would know and develop it, was essentially created at Trinity, as well. Trinity also introduced new instrumentation to field testing, laying down blueprints for both technology and practices that Sandia’s field testers would develop, use, refine, and improve in support of both nuclear testing and the environmental testing of non-nuclear components and systems.



JIM WALSTON SKETCH of Glenn Fowler, prepared on the occasion of his retirement.

The majority of nuclear weapons developed and released to the world’s stockpiles in the wake of World War II built off of the basic implosion design of the plutonium device tested at Trinity. Little Boy (the uranium weapon), which was used with great confidence in its design, was a less efficient weapon and was not so thoroughly pursued.

Trinity thus opened a door to succeeding events, none of which were inevitable but all of which hinged on the advent of the nuclear age. That door opened to the end of World War II, to the nuclear arms race portion of the Cold War, to the postwar nuclear weapons complex, and even the creation of Sandia.

The participants didn’t know all of that — they weren’t sure what was coming, just that it would be different and that their role was significant.



THE GADGET lifted onto the tower at Trinity.



TRINITY BASE Camp.

(Photo by Ben Benjamin)



Trinity 70th Anniversary Events:

The Technology Symposium, Corporate Archives & History Program, and Video Services have assembled a series of events to mark the 70th anniversary of the Trinity test.

- Thursday, July 9, noon-1 p.m.: Alan Carr, Los Alamos National Laboratory historian, "Project Trinity: The Myth, The Legend, The Legacy," Bldg. 810 auditorium
- Monday, July 13, 11-11:30 a.m.: A preview of the "Cold War Warriors" documentary, Bldg. 810 auditorium. Produced by Myra Buteau and incorporating interviews conducted by Al Chabai with Sandians who worked at the Nevada Test Site, this is an insightful review of Sandia's field test capability and a tribute to those who sustained it.
- Friday, July 17, noon-1 p.m.: Jon Hunner, New Mexico State University, "Trinity: Changes in the Land," Bldg. 810 auditorium.



SERGEANT BEN BENJAMIN AND COLLEAGUE T/5 George Economu preparing instrumentation calibration charges for use in the 100-ton explosive shot.

Jumbo at Trinity and Sandia's Own Bob Henderson

Early planning for Trinity included addressing the recovery of active material in case the explosives detonated but there was no nuclear yield. Early in 1944, plutonium was in short supply and there was a concern of wasting it should the test be unsuccessful. Several solutions for recovery were investigated before the final decision was made to pursue containing the shot in a steel vessel, nicknamed Jumbo.

Bob Henderson and Roy Carlson designed Jumbo. Bob, who would serve as a Z-Division leader and ultimately retire in 1974 as a Sandia VP and the Labs' chief engineer, was also involved in the design of the molds for Fat Man's explosive lenses and the Trinity tower.

As designed, Jumbo was 25 feet long and 12 feet in diameter with 14-inch-thick walls; it weighed 214 tons. Finding a steel manufacturer willing and able to meet specifications was difficult, but Babcock and Wilcox of Barberton, Ohio, took on the challenge and by spring of 1945 Jumbo was on its way west by rail. It traveled on a specially built flat car to Pope, New Mexico. From there it rode to the Trinity site on a 64-wheel trailer.

The final decision not to use Jumbo was made just before the test, when it was suspended from a wooden tower placed 800 feet from ground zero. It was undamaged by the blast, although the tower collapsed. It was later blown apart in a different activity, but remains at the Trinity site as a reminder of the contingencies in wartime planning.



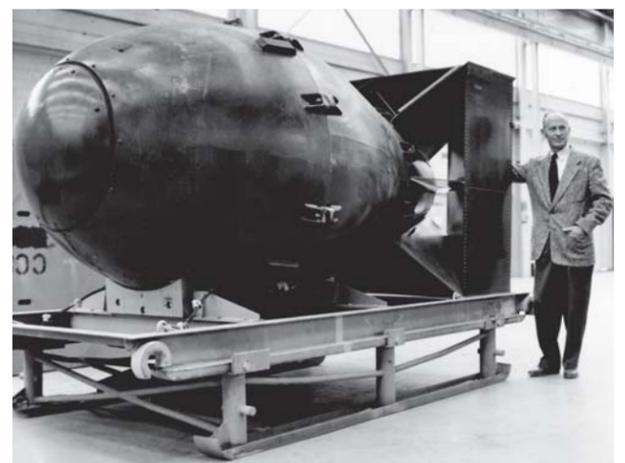
SANDIA VICE PRESIDENT BOB HENDERSON, key engineer at Los Alamos and responsible for designs of Jumbo and the test tower at Trinity.



JUMBO RUMBLING ACROSS NEW MEXICO on its specially designed 64-wheel trailer.



A YEAR AFTER TRINITY, the Z-Division assembly group was in the Pacific. The group was largely composed of Los Alamos veterans. Seated in front, from left: Phil Dailey, Kenneth O. Roebuck, Arthur Machen, Ira "Tiny" Hamilton, Bryan Arthur. Back row: Roger S. Warner, Maj. Robert L. Roark, Col. Jack Sutherland seated, Glenn Fowler (kneeling), Alvin Van Vesse, William O. McCord, Gene Eyster seated.



ART MACHEN WITH A MODEL of Fat Man.

ALWAYS/NEVER

Sandia documentary tells story of nuclear weapon safety, security

By Sue Major Holmes

Photos from Always/Never documentary



CREWS REMOVE SOIL DURING CLEANUP of a crash site at Palomares, Spain, in 1966. A B-52 and a refueling tanker collided, killing all but four crew members and sending four B28 nuclear bombs plummeting to earth. Three were recovered on land and the fourth was recovered from the Mediterranean Sea off the Spanish coast. Casings of two of the bombs are on display at the National Museum of Nuclear Science & History in Albuquerque.

immediately at the president's command.

Always/Never by Sandia filmmaker Dan Curry documents Sandia's crucial role with wide-ranging interviews that tell the story from many viewpoints, including the military, academics, other laboratories, and those who oppose nuclear weapons. Among those interviewed are the late former Defense secretaries Robert McNamara and James Schlesinger; Bruce Blair, co-founder of Global Zero, which seeks to eliminate nuclear weapons; and Stanford University senior fellow Scott Sagan, author of *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons*. In addition, more than a dozen active and retired Sandia designers and engineers told their stories for the camera, many for the first time publicly.

"We decided to place

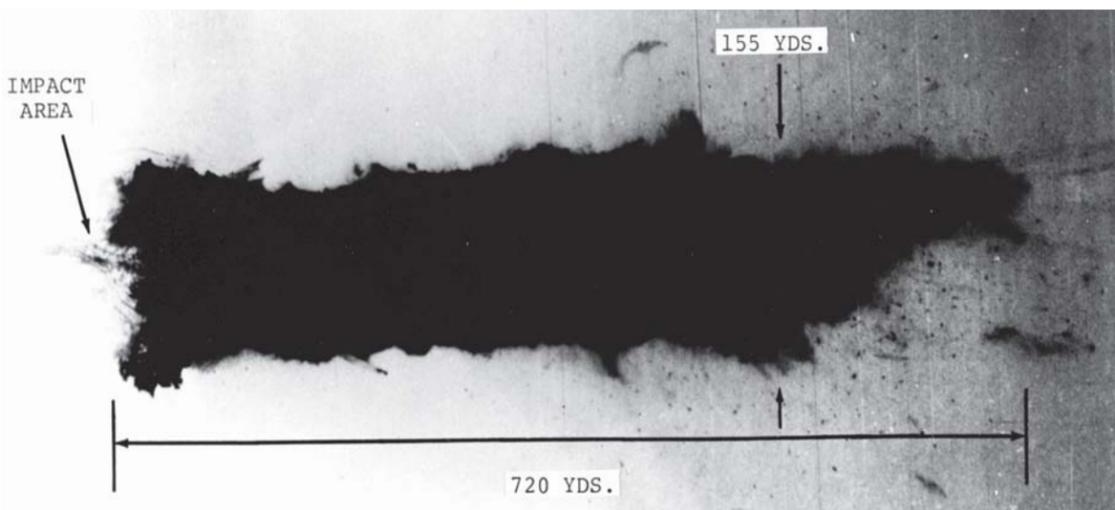


THIS IS ONE OF FOUR B28 bombs that fell to earth after the collision of a B-52 and a refueling tanker over Palomares, Spain, in 1966. Three of the bombs were recovered on land and the fourth from the sea off the Spanish coast.

Sandia has released its documentary, *Always/Never: The Quest for Safety, Control, and Survivability*, which showcases rare historical footage and interviews with a wide range of experts to describe how national security laboratories improved the safety and security of nuclear weapons from the dawn of the nuclear age to the end of the Cold War.

US policymakers decided after World War II that the nation would rely heavily on nuclear weapons as an essential strategic deterrent. At the same time, they wanted assurances that weapons in the stockpile would always work if called upon but could never detonate as the result of accident, equipment failure, human mistake, or malicious intent — hence the title of the film.

Nuclear weapons must work in extremely complex and often harsh environments. While they could remain dormant for decades, they must be available



DEBRIS FIELD FROM THE CRASH of a B-52 that caught fire over Thule, Greenland, in 1968, shows how widely the wreckage scattered. The crew bailed out and the plane crashed on the ice. The high explosives detonated in the four bombs it carried, but the nuclear packages did not.

Sandia's achievements alongside those of Los Alamos and Livermore national laboratories. Additionally, those achievements had to be placed in the context of a much larger historical framework, one shaped by NATO and US policy and military operations, international politics, and world events," says Dan, who spent years gathering interviews with dozens of the key players in the nuclear policy of the era.

Video can be viewed on YouTube

The video is available on YouTube at <http://tinyurl.com/q9lvdec>.

The nuclear weapons history told in the film spans 1945-1991 and examines the geopolitical events of the Cold War and how those events drove the history of nuclear weapon design and engineering.

Always/Never tells the story of the push and pull between nuclear policy, technology, and operations. While the Eisenhower administration shared nuclear weapons with NATO allies, for example, the Kennedy administration

wanted greater assurance weapons could be employed only with presidential consent. Sandia developed Permissive Action Links (PALs) as a practical way to improve presidential control. PALs, as an engineered barrier to prevent an unauthorized person who obtained access to a nuclear weapon from being able to use it, made a major contribution to global security.

"It's important to preserve this history for generations without the experience of living through WWII or the Cold War," says Deputy Laboratories Director and Executive VP for National Security Pro-

grams Steve Rottler. "Exploring key aspects of the past interaction between technology, military requirements, and national policy may contribute to a better understanding of what it will take to sustain the nation's nuclear deterrent in an uncertain future. This film captures the history that drove the development of a science-based philosophy, set of principles, and structured engineering approach for assuring the safety, security, and reliability of US nuclear weapons. Our commitment to the Always/Never paradigm still pervades Sandia today."



CREWS CLEAN UP DEBRIS from the crash of a B-52 near Thule, Greenland, in 1968.



A COMPUTER-GENERATED IMAGE shows a controller for a Permissive Action Link (PAL), developed by Sandia in 1960 to prevent unauthorized use of nuclear weapons. The controller is plugged into an atomic demolition munition.

Emergency Responders train for 'worst day' scenarios

Story by Lindsey Kibler • Photos by Randy Montoya

With thousands of employees in hundreds of unique facilities, planning for emergencies is a vital step in ensuring worker safety, but one that may be overlooked due to the complexity of Sandia's work environments.

"When we are called out, we are responding to someone's worst day, but we want to keep that worst day from happening in the first place," says Emergency Response Team (ERT) member Robert Sanchez (4236-1). "While every Sandian is responsible for his or her own safety, we can help ensure their safety by evaluating their work areas and planning ahead together."

Each Sandia emergency responder has at least 15 years of experience in technical rescue, hazardous materials, and emergency medicine, with Emergency Medical Technician-Basic (EMT-B) national licenses and New Mexico and Nevada EMT-B licenses. The responders also maintain certifications in such areas as rope rescue and confined space rescue. They follow a rigorous weekly training cycle to stay current on rescue tactics, techniques, and procedures and to familiarize themselves with new equipment.

Stronger training

When Dale Larez (4236-1) was put in charge of the technical rescue program a few years ago, he identified a need for more realistic training that would focus on work areas and emergencies specific to the Sandia workforce.

"When I came to work in this group, the training was mostly classroom-based. Sometimes technical instructors would be brought in for training, but there wasn't consistency. We didn't want to wait until trainers were available, so we looked at how we could strengthen our training," says Dale, who is now the group's principal technical rescue trainer.

He and Robert started by reviewing existing emergency response plans and formal standard operating procedures (SOPs). Changing the SOPs and plans would not be a quick fix, they realized, but it would make training more consistent and useful.

"It takes months of work to plan one hour of training due to the complexity and work planning to do the training safely, but it's training that's necessary. It sets a new standard for how a job is done," says Robert.

One of the most important changes, Dale says, is that responders are required to complete at least two hours of training a week, every Monday, rain or shine.

"In the past 18 months, we have not missed a scheduled training activity due to real emergencies," Dale says.

Mandated training is more than videos, PowerPoint slides, and knot-tying in a classroom. Dale decided to involve the facility customers in the training; they helped Emergency Management develop the improved training regimen.

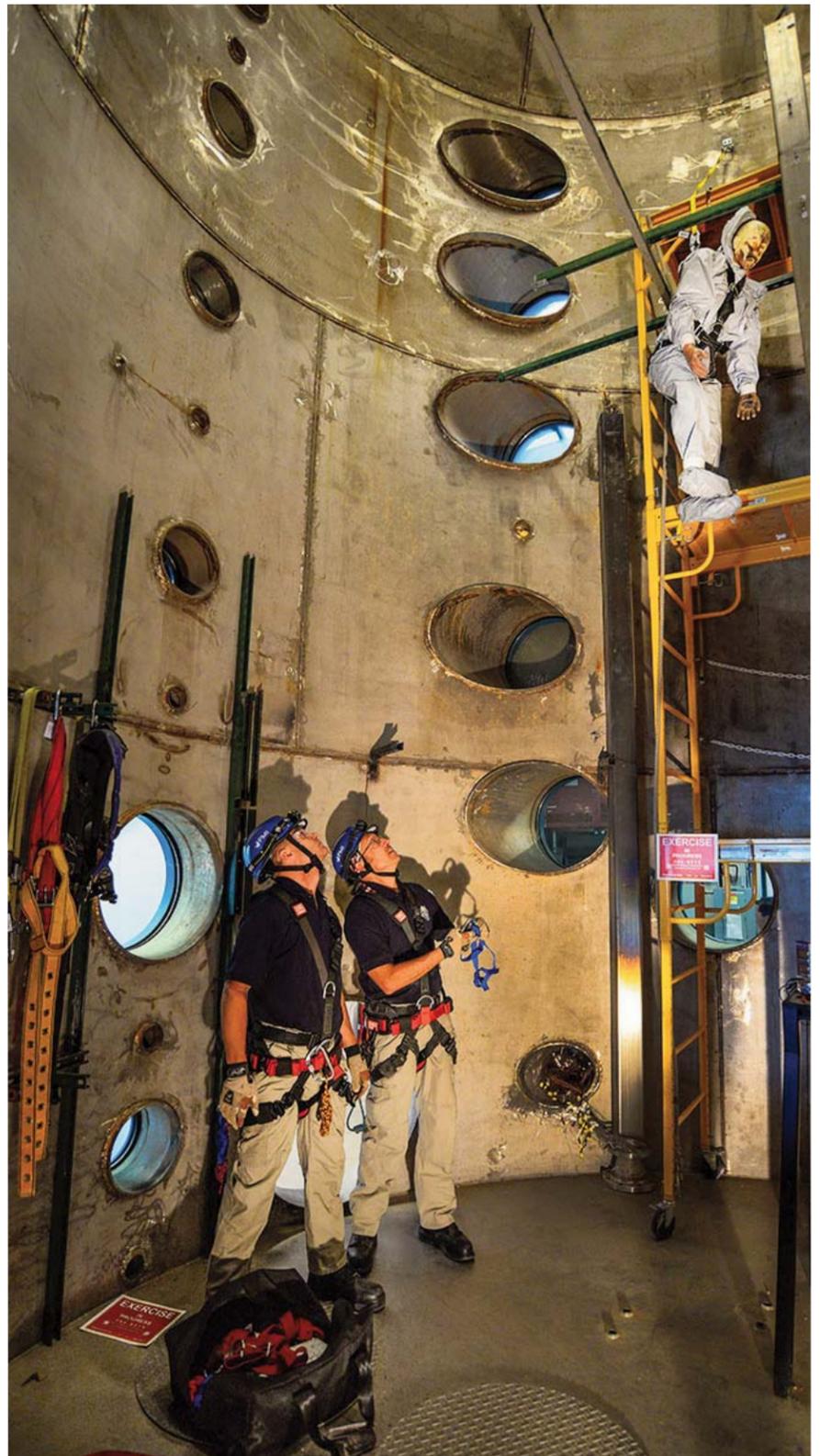
Customer-driven training

"By partnering with facility owners, we can better understand their needs for emergency response if we were to be called out. This is especially important in high-hazard facilities, where there is the potential for emergencies to occur in a number of different areas, and with a number of different hazards," says Dale.

Dale and Robert successfully completed the first version of customer-based input training in May. They worked with Greg Koenig (6223) to identify possible emergency scenarios at the Nuclear Energy Work Complex Cylindrical Boiling facility and Surtsey sites.

In each scenario, ERT personnel were dispatched to a thermal technology development area where they faced work hazards, as well as a patient who needed evacuation and immediate life-saving measures.

"Having a customer say 'This is what we do in or around this equipment and this is what could happen here that would concern us' is important to our planning," says Dale. "We modeled this training set on three types of emergency or rescue scenarios our team would see if they were called to this site. The squad moved in and immediately had to assess the safest and most efficient way to make contact with the patient, evacuate him, and begin emergency medical care in the shortest amount of time."



IN A TRAINING EXERCISE at Sandia's Cylindrical Boiling facility designed to be as close to a real-world situation as possible, first responder Troy Hamby (left) and Lt. Victor Marquez (both 4236-1) try to determine the best way to rescue an injured "patient" from atop a high scaffold.

'No one right way'

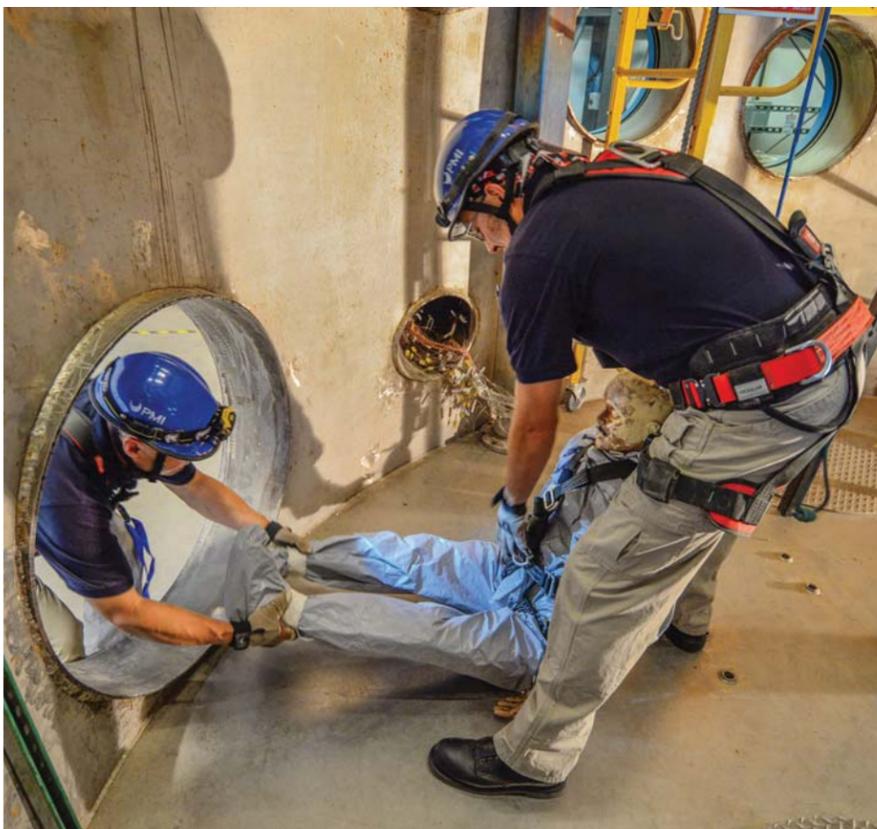
In one scenario, a man slipped while strapped into a harness on scaffolding inside a facility. After the ERT arrived, the group of four had to decide the best way to reach him: approach from the bottom; climb the scaffolding and lower him; or approach from the top, with one rescuer rappelling to the victim while others acted as safety backups.

"With this scenario, there are different ways to approach it. There's no one right way to get the patient down safely but, aside from the rescue, we are looking to make sure the team is thinking about the medical component of the rescue. When you have a patient who is suspended in a harness, you're going to have suspension trauma. The responders have to be aware of that and ensure that the patient is not laid down — the rush of blood can overload the heart and he could die," says Dale.

The training allows Dale and Robert to assess how teams work together while evaluating individual skills.

"We have highly trained and skilled teams that can respond at a moment's notice, and we want the workforce to know they are in the best hands should there be an emergency. We also need their feedback so we can prepare these teams for any situation they might face. This is a fluid business — situations can change on the fly — and we want to ensure that our responders are prepared," says Robert.

Facility owners interested in discussing potential work area-specific emergencies, or arranging joint training and/or high-hazard training, are encouraged to schedule an appointment by contacting John Ledet at (505) 845-3372 or jfledet@sandia.gov.



EMERGENCY RESPONDERS Lt. Victor Marquez, right, and Troy Hamby during a Sandia exercise use extreme care in removing an injured "patient" from Sandia's Cylindrical Boiling facility.

Make the most of your retirement benefits

Note: The information here was provided by Sandia's HBE organization to make employees aware of benefits options related to retirement planning.

By Lucia Long

This July, HBE and Sandia's Pension Fund and Savings Plan Department are focusing on financial wellness to help employees understand some of the choices involved in preparing for retirement and leveraging tools and resources provided by Sandia so they can make confident decisions about retirement.

One in four employees missed out and did not save enough to receive their full employer match. In 2014, the average amount of employer match not received was \$1,336 per employee (or 2.4 percent of annual income), which in 20 years adds up to \$42,855 per plan participant. In total, more than 1 million employees left more employer matching contributions unclaimed (\$1.4 billion) than claimed (\$1 billion).

— Financial Engines study

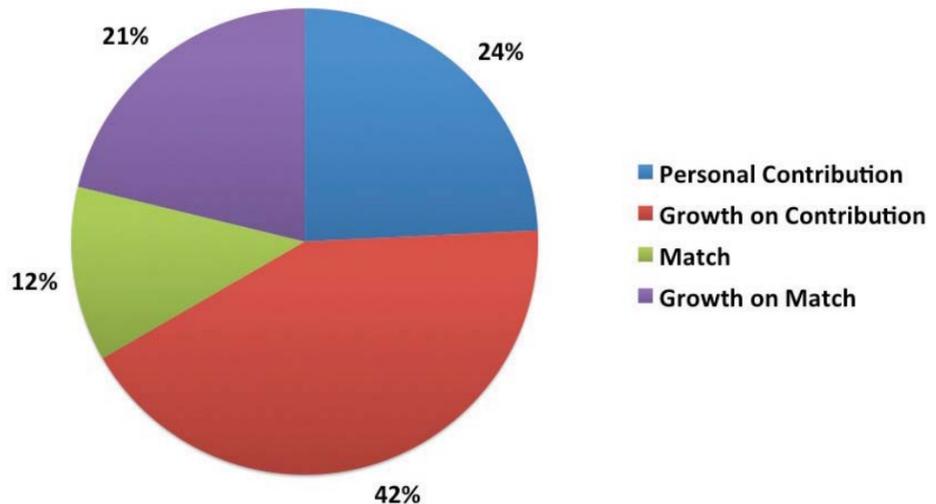
From estate planning and beneficiary designation to planning for retirement with the pension calculator and learning about 401(k) investment options, there are many resources to help employees make the most of retirement benefits.

Don't miss out

A recent national study from Sandia's investment adviser, Financial Engines, revealed that:

1. **One in four employees missed out** and did not save enough to receive their full employer match. In 2014, the average amount of employer match not received was \$1,336 per employee, or 2.4 percent of annual income, which in 20 years adds up

Importance of employer match in total retirement savings



"Our goals are to successfully prepare all employees so they can retire when they choose to and know that their families are taken care of in the event of an unexpected death."

to \$42,855 per plan participant. In total, more than 1 million employees left more employer matching contributions unclaimed (\$1.4 billion) than claimed (\$1 billion).

2. **Younger employees** were much more likely than others to miss out on at least part of their employer matching contribution. Approximately 30 percent of younger employees miss out on the employer match compared to 16 percent of older employees.

"Our goals are to successfully prepare all employees so they can retire when they choose to and know that their families are taken care of in the event of an unexpected death," says Cara Waymire (3513), manager of AMT, Retirement, and Employee Services. "As a result, we have targeted our financial wellness programs to educate and encourage employees to take advantage of employer match contributions and other available benefits such as beneficiary planning, estate advice, and independent investment advice."

How to boost your savings rate

For employees seeking to save more for retirement, Financial Engines suggests the following:

- **Know your plan.** Find out how your employer 401(k) match is designed and strive to save at least enough to get the full match. Sandia matches 2/3 of your contribution, up to your contribution of 6 percent.
- **Get professional help.** If you have access to professional investment help (online advice or managed accounts), take advantage of that benefit. Sandia has hired Financial Engines to provide free online advice, or a fee-based professional management service — your choice.

- **Ask a financial adviser.** Talk with a financial adviser who has a legal commitment as a fiduciary to put the interest of their clients ahead of their own. Financial Engines is a fiduciary.

- **Commit to save more** when you can. If you aren't getting the full match today, consider increasing your savings rate when you get your next raise and each raise thereafter until you reach your 401(k) contribution limit, or sign up for automatic escalation of your savings. Saving 15 percent of your income is the new 10 percent. Historically employees were told to save at least 10 percent of their annual salary to appropriately save for retirement. That's no longer enough. In 2015, employees should save at least 15 percent of their salary to appropriately save for retirement.

Employees have many options to make the most of their retirement benefits. Jane Farris (10520), senior manager of Sandia's Pension Fund and Savings Plan, suggests a very simple piece of advice: "Save 'til it hurts. In other words, make retirement savings a strong priority."

The earlier you start saving for retirement, the more comfortable your future will be.

Start small — attend an event! (See box below for schedule.)

Financial Wellness events

- (NM) July 8: MetLife Estate Planning Workshop, Bldg. 810 CSNAC Auditorium, Noon-1 p.m.
- (NM) July 15: 401(k) Investment Options Presentation, Bldg. 962 Auditorium, Noon-1 p.m.
- (NM) July 22: Fidelity & Financial Engines Demo Days, Bldg. 832, Rooms A&B, 10:30 a.m.-1:30 p.m.
- (All sites) July 29: Pension Calculator Presentation, Bldg. 810 CSNAC Auditorium, Noon-1 p.m.
- (CA) August 11-13: SNL-CA Financial Wellness, more information to come.

Enroll for events through hbe.sandia.gov

Congratulations, Jill



SWAN — the Sandia Women's Action Network — congratulates Jill Hruby upon her appointment as the first woman director of an NNSA laboratory.

We are proud of you!

Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads

MISCELLANEOUS

PAINTBALLS, ~3,500, varied colors, & chest protector, photos available, \$75. Brock, 366-1943.

MOVING & MUSIC SALE, June 26-27, 9 a.m.-4 p.m., 34 Monticello Dr. NE, Carnuel, tables, desks, huge collection of print music, instruments, more. Brady, 299-6164, leave message.

SHREDDER, Sears Craftsman, 5-hp, \$125. Chorley, 296-1454.

PATIO TABLE, & benches, teak, \$150. Hesch, 505-400-0916.

MOBILITY SCOOTER, Go-Go Elite Traveler, call for photos, purchased May '08, batteries replaced '13, paid \$1,070, asking \$600. Creange, 710-7517.

NAMBE, made in the USA, vintage Nambe Ware & Nambe décor, 30 pcs., prices negotiable. Shapnek, 505-366-4586.

MICROWAVE, Samsung, 1100-W, \$30; medium microwave, \$40; Tiffany copy lamp, \$75; adjustable shelf, cherry, \$50; small antique curio, oval glass, \$150. Willis, 505-304-5034.

FILL DIRT, clean, you load & haul. Stevens, 293-5704.

TIRES, 2, Continental Extreme Contact, DWS 205/45x16, 8/32 of 10/32-in. tread, \$115/both. Beer, 505-350-3455.

OFFICE DESK, distressed, sacrifice for \$600; love seat, like new, \$325. Scott, 505-301-6554.

POOL TABLE, Brunswick, oak, w/slate top, tan felt, balls, 5 cues, w/bridge & holder, \$1,750 OBO. Donnelly, 505-250-5146.

STEPLADDER, 12-ft., wood, stored indoors, very good condition, \$50. Northrop, 884-4718.

MOTORCYCLE TOURING SUIT, Revitt, waterproof, large, good condition, located in California, \$100. Wass, 510-793-1188.

WINE CABINET, Vinotemp 400E, wood finished, single door, lock. Schmitt, 856-1280.

LAWN TRIMMER, Troy-Bilt TB20CS, 2-cycle gas, runs great, \$65. Olbin, 275-2681.

CAR-LIFT HAULER, for truck/RV, \$100; contractor's 12-ft. metal scaffold, w/6-ft. tri-leg supports, \$200; 2-drawer file cabinet, \$20. Garcia, 280-5815.

MATTRESS & BOX SPRINGS, queen, Sealy, clean, excellent condition, \$100 ea.; La-Z-Boy sofa, medium brown leather, recliner, \$600. Drebing, 293-3335.

KNEE WALKER, 4-wheel, w/basket & seat cover, very good condition, \$100 OBO. Eaton, 288-1480.

DINING SET, counter height, table w/6 chairs, great condition, like new, \$450 OBO. Valdez, 999-0100.

FURNITURE, dining room buffet, \$150; appliances, range, over-range microwave, dishwasher & refrigerator, \$150 ea. or \$500/set. Wagner, 505-690-2028.

5TH WHEEL HITCH, Husky 16K., no rails, \$200. Ashworth, 505-281-1824, jon@ashworthballooning.com.

HIGH-ALTITUDE HOME BREWER, Bunn, model BX-BD, 10-cup, used but in great condition, \$50. Willis, 286-1937.

TRANSPORTATION

'98 JAGUAR VANDEN PLAS, 89K miles, mint condition, excellent mechanical, \$4,200 OBO. Medeiros, 505-280-2601, ask for Sue.

'06 BMW 530xi SPORTS WAGON, leather, premium, lighting, sports & cold weather pkgs., 65K miles, excellent condition, \$15,600. Schwarz, 505-323-9006.

'03 TOYOTA MATRIX XR, white, all maintenance records available, <60K miles, excellent condition, \$5,200 OBO. Wang, 293-0930.

'94 PONTIAC FIREBIRD FORMULA, convertible, AT, green, leather, LT1, alarm, 12.5K original miles, almost perfect, \$13,500. Campbell, 294-6000.

'11 SHELBY GT500 MUSTANG, supercharged, 6-spd., gray, SVT performance pkg., Ford premium care warranty, \$45,000 OBO. Johnson, 505-720-0994.

How to submit classified ads
DEADLINE: Friday noon before week of publication unless changed by holiday. Submit by one of these methods:
 • EMAIL: Michelle Fleming (classads@sandia.gov)
 • FAX: 844-0645
 • MAIL: MS 1468 (Dept. 3651)
 • INTERNAL WEB: On internal web homepage, click on News Center, then on Lab News link, and then on the very top of Lab News homepage "Submit a Classified Ad." If you have questions, call Michelle at 844-4902. Because of space constraints, ads will be printed on a first-come basis.

Ad rules

1. Limit 18 words, including last name and home phone (If you include a web or e-mail address, it will count as two or three words, depending on length of the address.)
2. Include organization and full name with the ad submission.
3. Submit ad in writing. No phone-ins.
4. Type or print ad legibly; use accepted abbreviations.
5. One ad per issue.
6. We will not run the same ad more than twice.
7. No "for rent" ads except for employees on temporary assignment.
8. No commercial ads.
9. For active Sandia members of the workforce, retired Sandians, and DOE employees.
10. Housing listed for sale is available without regard to race, creed, color, or national origin.
11. Work Wanted ads limited to student-aged children of employees.
12. We reserve the right not to publish any ad that may be considered offensive or in bad taste.

'13 KIA OPTIMA SX, turbo engine, heated/cooled leather seats, tinted windows, excellent condition, \$24,000. McEntire, 505-681-5848.

'13 HONDA FIT, AT, silver, sips gas, practically new, 8,500 miles, \$14,500. Bentley, 505-228-2512, call or text.

'93 VOLVO MODEL 850 GLT, loaded, <110K miles, excellent condition, never been in a collision, \$24,000 firm. Jorgensen, 298-6079.

'81 MERCEDES BENZ 380SLC, silver, grey leather, <54K miles, garage-stored, collectable, \$15,500 OBO. Davis, 505-322-3915.

'09 KIA RONDO LX, 7-passenger car/van, 86K miles, tinted windows, new windshield, \$9,500 OBO. Fonseca, 505-400-5784.

'99 TOYOTA COROLLA CE, AT, AC, 1 owner, great mpg, 98K miles, very dependable, \$3,900. Marron, 505-345-4006.

RECREATION

BICYCLE, men's Schwinn Sanctuary, like new, \$75. Langwell, 382-3591.

'07 GENUINE BUDDY 125 SCOOTER, new carburetor, new battery, 2.5K miles, \$1,500. Rios, 505-379-8453.

'14 HARLEY-DAVIDSON FLSTN DELUXE, 103Cu, custom, sand/canyon brown metallic, Sampson Fishtail pipes, 1,758 miles, \$17,995. Velasquez, 505-620-6062.

'05 ITASCA SUNOVA, model 29-R, Class A, Ford V-10, 32.5K miles, clean, no cruise, Socorro, \$29,900. Yingst, 575-835-0749.

'09 HONDA VT7502CZ, black, garage kept, 2K miles, excellent condition, \$4,000 OBO. Romo, 255-6246.

REAL ESTATE

3-BDR. HOME, 1-1/2 baths, new roof, new stucco, tile accents, large laundry room, carport, storage shed, ~3.4-acre, in Taos, FSBO, \$142,200. Gallegos, 505-898-9614.

3-BDR. TOWN HOUSE, 2 baths, 1,648-sq. ft., 2-car garage, up-grades, <3 yrs old, Bear Canyon, \$219,999. Brewer, 505-459-3870.

2-BDR. HOME, 2-1/2 baths, 1,300-sq. ft., loft, refrigerated air, build in '05, 13620 Keesha Jo SE, 87123, \$144,000. Roach, 505-573-7677.

3-BDR. HOME, 2 baths, 1,687-sq. ft., newly build, 2 mos. old, 98th & Ladera NW, moving, must sell, \$235,900 OBO. Joseph, 505-515-5997.

5-BDR. HOME, 3-1/2 baths, 3-car garage, 5,170-sq. ft., Four Hills, great views, build in '08, \$625,000. Mohagheghi, 505-321-3399.

3-BDR. HOME, studio, 3-car garage, much more, custom Keough, 2x6 construction, http://tinyurl.com/qa5y9ya, 166 Target Rd., Corrales. Wood, 505-270-5940.

4-BDR. HOME, 3 baths, 3-car garage, on open space, on 0.4-acre lot, cul-de-sac, near Sandia Labs. Dybwad, 270-5888.

2-BDR. HOME 1-3/4 baths, skylights, fireplace, remodeled, gated community, 5 mins. to Kirtland & I 40, \$142,500. Tobyas, 505-288-2221 or 505-274-1932.

4-BDR. HOME, 3 baths, custom, North Four Hills, http://goo.gl/VLvyJF for more info, on temporary assignment for Sandia, \$1,500/mo. Kucera, 402-212-9690.

3-BDR. HOME, 2 baths, 1,755-sq. ft., 2-car garage, Far NE Heights, near Albuquerque Academy, MLS#842182, \$235,000. Rivera, 227-4876.

FOR RENT, going on assignment for Sandia, 4-bdr. home, 2-1/2 baths, 2,965-sq. ft., landscaped, <2 miles to Labs, available mid-Aug., \$1,500/mo. Chavez, 505-385-2574.

WANTED

MOVING BOXES, all sizes, will pick up. van Berkel, 899-2738, call or text.

LADDER, lightweight, sturdy, easily portable, to reach high ceilings. Kaplan, 298-7953.

EMPTY WINE BOTTLES, any size/shape, for wine festival display, will pick up. Chavez, 505-385-6442.

OAKLEY SUNGLASSES, frames & lenses, especially Blades, Razor Blades & M frame. Hanks, 249-1931, call or text.



Sandia, Georgia Institute of Technology form academic collaboration

By Jim Danneskiold

Sandia and The Georgia Institute of Technology have signed a five-year memorandum of understanding (MOU), establishing a strategic collaboration that seeks to solve science and technology problems of national importance.

Sandia President and Laboratories Director Paul Hommert and Georgia Tech President G. P. "Bud" Peterson signed the document at the Centergy Building on the Georgia Tech campus.

The MOU has three principal goals: solve major national problems; engage talented researchers to work on practical, complex problems early in their academic careers; and introduce new ideas and technologies into the marketplace through jointly developed intellectual property. MOUs such as this one seek to build strong ties between major national research universities and federally funded research and development centers, such as Sandia.

"We will build on the existing strong relationship between Georgia Tech and Sandia. The MOU brings together one of the outstanding engineering programs in the nation and one of the most accomplished engineering laboratories in the world," Paul said. "Our goal is to foster an environment that advances innovation and impactful technical solutions."

Peterson added, "This MOU furthers Georgia Tech's research strategy, which is focused on the pursuit of transformative research, strengthening collaborative relationships, and maximizing the economic and societal impact of our research."

Jill Hruby, Sandia VP for Energy, Nonproliferation



SANDIA PRESIDENT and Laboratories Director Paul Hommert and Georgia Tech President G. P. "Bud" Peterson sign a five-year memorandum of understanding at the Centergy Building on the Georgia Tech campus. The MOU establishes a strategic collaboration that seeks to solve science and technology problems of national importance. Behind Paul is Div. 6000 VP Jill Hruby, who will become Sandia president and Labs director on July 17. Jill developed many of the current collaborative programs with Georgia Tech.

& High-Consequence Security, has developed many of the current collaborative programs with Georgia Tech. "It is exciting to see the long-term collaboration between Georgia Tech and Sandia move to an even higher level," Jill said. "I'm confident the common culture and research interests at our institutions, combined with the focus that comes from this MOU, will produce innovative solutions and high-quality research."

Among the technical frontiers of common interest to Sandia and Georgia Tech researchers are energy

and grid security, advanced manufacturing, computer science and data analytics, microsystems and sensors, cybersecurity, and materials science.

Sandia and Georgia Tech have been collaborating for many years, most recently in computer science and advanced computer architectures, energy systems, manufacturing, and materials science. Many Georgia Tech students and faculty spend time at Sandia, while Sandia counts many Georgia Tech graduates among its staff members.

Georgia Tech has 12 core research areas, many of which correspond to some of the major research foundations and mission areas of Sandia.

The MOU will provide opportunities for students and faculty to experience research work at a national lab; enable joint recruiting of top graduate students, postdoctoral fellows and faculty; increase transfer of technology from Sandia and the university to the private and federal sectors; and build collaborations that address nationally significant problems.

Both institutions will take multidisciplinary approaches to solving national problems and developing new technologies. Georgia Tech is known for its ability to break down traditional academic barriers and assemble interdisciplinary teams, while Sandia's scientific research and systems engineering approach form the foundation for the Labs' seven decades of contributions to national security.

Opportunities for joint faculty appointments and for research sabbaticals are expected to enhance collaborations further, Paul and Peterson said.

Pride afloat

Sandia steps up profile in city celebration of gay rights

Story and photos by Lindsey Kibler

The evening before this year's Albuquerque Pride Parade, a group of Sandians decorated a float to join dozens of others on the annual march down Central Avenue in support of the gay, lesbian, bisexual, and transgender (GLBT) community. It was Sandia's first-ever float in the parade.

"I am glad to see each and every one of you come together for this," said Sandia President and Laboratories Director Paul Hommert, who stopped by to see the entry made up of two pickup trucks and a trailer illustrating the "Color Our World With Pride" theme. "You are an integral part of the Labs and it's important you understand how valuable you are not only as a Sandian, but as a person."

Sandia had a booth at previous PrideFest celebrations at Expo New Mexico, where the parade ends. "Believe it or not, a lot of people we talk to think because they are gay they aren't able to get a security clearance," says Chris LaFleur (6231), a co-chair of the Sandia GLBT Networking Group. "By being a part of Albuquerque Pride, we can reach an entire community that we may not have been able to with traditional recruiting methods."

In addition to the booth and float about 50 members of the networking group, employees of the National Museum of Nuclear Science and History, family members, and GLBT supporters marched in the June 13 parade. "Fifty people is huge," Chris says. "It shows how the culture is shifting."

Paul told the float team that the Pentagon's recent addition of sexual orientation as a protected class under the Military Equal Opportunity Policy is an important step in acknowledging diversity and promoting inclusion. "It is empowering to have the support and encouragement of the executive leadership and to be recognized as valuable members within the organization," Chris says. "It is important that people feel comfortable and accepted when they come to work every day."

The Sandia float got a warm reception along the parade route, says Aseneth Lopez (5532), another co-chair of the networking group. "There were Labs employees in the crowd who were surprised to see us," she says.

"The amount of support we received, especially from unexpected sources, was more than we could have imagined," Chris says. "This visibility in the community and at the Labs was a powerful sign that things are moving in the right direction."



FIRST EVER — Sandia's float lined up with others to begin the Pride Parade down Central Avenue.



SUPPORT FROM THE TOP — The Sandia Pride Parade float crew is joined by Laboratories President and Director Paul Hommert, standing at the back. "You are an integral part of the Labs," he told the group.



FLAG BEARERS — From left, Guillaume Pascal Loisel (1683), his spouse Casey Hedglin, and Andres Sanchez (6633) carried the Sandia/Lockheed Martin flag in the miles-long parade down Albuquerque's Central Avenue.



CROWD PLEASERS — From left, Laura Perlichek (3657) joined Georgia Bettin (6912) and her daughter Sophie Diouf in greeting enthusiastic spectators from the Sandia float.



GETTING WITH THE PROGRAM — Supporters from the National Museum of Nuclear Science & History joined the parade fun.



OUT FRONT — Sharissa Young took the wheel of a truck pulling the Sandia float along the parade route.



A mom's story

Sharissa Young talks about gay pride from a deep well of emotion. "What it means to me is I'm the last generation of New Mexicans whose children have to call them 'aunt'," she says.

Sharissa (151) moved to the state in the late 1980s with a woman she met and fell in love with in high school in Missouri. "Back then it wasn't OK to be in a same-sex relationship," she says. "It didn't exist, so there was a lot of societal secrecy and denial about our true selves."



PAINFUL CHAPTER — Sharissa Young (151), shown here on the Sandia float the Albuquerque Pride Parade, had to hide her anguish when she lost her partner and son in a short span of time. But she persevered. "I've seen the tide turn," she says.

The couple lived together quietly in Albuquerque and raised a son, Travis. "He was my partner's child but we brought him up as ours," Sharissa says. She looked into adoption but state law at the time stated there was one maternal and one paternal right to a child, and women could not have paternal rights. "I could not adopt him unless she gave her maternal rights to me, which would not have accomplished the goal," Sharissa says. "The law made it impossible for two women to be legal parents of a child."

So Sharissa was "legally a stranger," she says. But in the household Travis had two parents, two moms. "I was a parent and he was my son," she says. "He considers me his mom."

Because Sharissa and her partner could not be open about their relationship for fear of retaliation they decided their son would refer to Sharissa as his aunt when he went to elementary school.

Sharissa's partner died suddenly when Travis was 8 years old. Her partner's family took him back to Missouri. "I had no legal rights," Sharissa says. "It was excruciatingly painful to me to lose my wife and my son at the same time. I couldn't even talk to anyone at work about it because our relationship was not openly acknowledged."

Sharissa says her only option was to not alienate her partner's family and work to stay involved in Travis's life. They are close to this day, and he now has a son of his own. They both call Sharissa aunt.

"That's my story and that's what it was like back then," says Sharissa, who has worked at Sandia 26 years in departments ranging from environmental restoration to energetic materials. "I've seen the tide turn. I'm proud today that I can say who I am and have the same rights as other people in New Mexico. It's the right thing to do." — Nancy Salem

Inclusive GLBT community

Sandia's Gay, Lesbian, Bisexual, and Transgender Networking Group was founded in the late 1990s and is open to all Sandians. It welcomes new members and allies, a term used to describe people who support the GLBT community. Its goal is to contribute to a safe, hospitable, supportive, and productive workplace for all employees regardless of sexual orientation, gender identity, race, national origin, gender, religion, age, veteran status, physical and mental challenges, and marital status. More information is at <http://info.sandia.gov/glbng/>.