

## Meet John Myers

**Sandia's Senior Director for HR and Communications brings an upbeat attitude to work every day.**



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# Sandia LabNews

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# Charting new routes to renewables

**Sandia speeds transformation of biofuel waste into wealth**

By Jules Bernstein

**A**sia-led team has demonstrated faster, more efficient ways to turn discarded plant matter into chemicals worth billions. The team's findings could help transform the economics of making fuels and other products from domestically grown renewable sources.

Lignin, the tough material left over from biofuel production, contains compounds that can be converted into products like nylon, plastics, and drugs. It is one of the main components of plant cell walls, and gives plants structural integrity as well as protection from microbial attacks.

Products made from converted lignin could subsidize biofuel production, making the cost of biofuels

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**SANDIA BIOENGINEER** Seema Singh examines a tobacco plant that has been genetically engineered for the easy extraction of important chemicals. (Photo by Dino Vournas)



In the aftermath of a deadly fire, one warm coat . . . 3



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## Sandians take home five R&D 100 Awards

The winners of the 55th annual R&D 100 Awards — an international competition that recognizes the 100 most exceptional innovations in science and technology from the past year — were announced Nov. 17. The R&D 100 Awards have long been considered the most globally prestigious recognition of invention and innovation.

Here are the five Sandia recipients:

- HADES: The High-Fidelity Adaptive Deception & Emulation System
- Ultra-Wide-Bandgap Power Electronics
- The Microgrid Design Toolkit (MDT)
- SolidSense Gas Analyzer (with the University of New Mexico)
- Control System for Active Damping of Inter-Area Oscillations (with Montana Tech and the Bonneville Power Administration)

— Details in the next Lab News



## HADES uses alternative reality to mislead hackers



VINCE URIAS is a member of the HADES team that has just won an R&D 100 award. (Photo by Randy Montoya)

By Neal Singer

**THE NOVELIST** Fyodor Dostoevsky once postulated that the devil no longer employs fire and brimstone but instead simply tells you what you want to hear.

Cyber researchers Vince Urias, Will Stout, and Caleb Loverro move with that second option when it comes to foiling a hacker. Rather than simply excising a discovered intruder, they deploy a recently patented alternative reality, aptly dubbed HADES (High-fidelity Adaptive Deception & Emulation System), which feeds a hacker not what he needs to know but what he wants to believe. HADES has just won a 2017 R&D 100 Award presented annual by *R&D Magazine* (see box at left).

"Deception is the future of cyber defense," says Vince. "Simply kicking a hacker out is next-to-use-

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## SANDIA CELEBRATES NATIVE AMERICAN HERITAGE MONTH

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**AISES honors Sandians Laurence Brown, Ginger Hernandez for careers of service, accomplishment**

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## That's that

I've had security on my mind lately. And safety too, for that matter. I'll get to the reasons why down below.

We've all seen over the past couple of years how the security measures in our day-to-day work environment have changed.

DoD's DBIDS identification system – implemented at bases around the world – aims to give the military a better handle and more control over who is coming and going in its facilities. It has complicated life for some of us at Sandia as it requires us to jump through extra hoops to bring visitors into our worksites. But if one can set aside for a moment the minor personal inconvenience, the logic of the system makes a lot of sense.

When I first started at Sandia, base access was as simple as having a decal on your windshield; that was all the base pass you needed. That was a more trusting time – probably too trusting if you get right down to it. Let's face it – given what we do and what the Air Force does on this base, it ought to be hard to get on the site.

9/11 was a wake-up call as far as base access was concerned. Security was tightened up immediately and has evolved over the years to meet the perceived threat.

Meanwhile, at Sandia we're dealing with an almost mind-boggling escalation of the potential security threats we face, threats that didn't exist a generation ago. All of us have been impacted in various ways – for example, the requirement that we use smart card authentication to access our computers is a new development. Is it a bit burdensome? Maybe, but given the stakes, is it a reasonable requirement? Seems so to me.

I don't need to go into the details about what we're dealing with – we've all read about the cyberattacks against both the private sector and government computer systems. We've all read about how our personal information has been compromised, probably more than once. And we know that Sandia, given our mission, is a prime target of cyberattacks. We can imagine the rogue's gallery of players who would love to penetrate our cyber defenses and steal whatever they can get.

I don't have a clue as to how we fight off those attacks but I think of Horatio at the Bridge, heroically holding back a ceaseless assault. The stakes could hardly be higher and our cyber defenders deserve every bit of admiration and appreciation we can send their way. They literally keep us open for business every day.

After an unfortunate first-hand experience, I've come to a new appreciation of the need for security. I'll never grouse again about what our experts at Sandia and KAFB think they need to do to protect us and our work. Last week, my wife and I were the victims of a home invasion. That's a strong word, but I don't really know how else to describe it. Without getting specific about what happened, I can tell you that, first, no one was hurt, and second, the invaders didn't get away with much of value besides one of our cars and a purse that contained all the usual stuff: credit cards, driver's license, house and car keys, a bit of cash, and some other forms of ID.

This was a bitter dose of lessons learned, lesson number one being that had we taken some common sense measures years ago, it's possible, even likely, that we could have avoided being victims. Lesson two is that if your keys and credit cards are stolen, it's a real hassle to sort it out. Had we been a bit more thoughtful about where to keep those things inside the home, the thieves might not have found them before they were scared off.

Here's my personal plea: Please do whatever you can within your own budget constraints to protect your home. Think security doors, alarm systems, a big dog, whatever. I interviewed Sandia master safe technician Steve Highland a couple of years back and he made the point that every safe can eventually be defeated; safes are rated by how long it takes to breach one, how much time it buys you to catch the bad guy. Likewise with home security. You probably can't make your home break-in proof, but you can make the prospect of trying so daunting that the bad guy decides to move along.

My attitude was always that home invasions were something that happened to someone else. Not so. It happened to me and could well happen to you. So please, as a holiday gift to you and your family, do the research, make the investment, and protect what's important to you. I'm already sleeping better and I'll bet you will too.

See you next time.

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

**BEWARE THE TEXT-POCALYPSE**  
Livesafe.sandia.gov

## Is your device controlling you?

**T**exting while driving is against the law in New Mexico and California. Common sense dictates that walking while texting or scrolling on your phone is dangerous. The dangers of cell phone misuse are obvious, and the propaganda is ubiquitous.

The national marketing of distracted driving has been smart:

- Arrive alive, don't text and drive
- No texts, no wrecks
- Friends don't let friends text and drive
- The "Walking Distracted"

### The data is compelling:

- The National Safety Council reports that cell phone use while driving leads to 1.6 million crashes each year.
- Nearly 330,000 injuries occur each year from accidents caused by texting while driving.
- Texting while driving is six times more likely to cause an accident than driving drunk.
- One out of every four car accidents in the United States is caused by texting and driving.
- Pedestrian fatalities are on the rise, with nearly 5,000 pedestrians killed and an estimated 76,000 injured in traffic collisions in the United States (in 2012).

### Let's rise above the national average.

There is plenty of evidence showing we have an unhealthy attachment to our smart phones. Can you NOT look at your phone when the notification goes off?

It is our goal with this campaign to examine our habits and present compelling reasons for putting away our devices. In addition, we hope to rally the workforce to commit to the #dontpickitup pledge.

## Multitasking is hazardous to your health.

When you try to do two things at once, your brain is forced to shift focus.



See how the likelihood of a car accident increases while performing these common activities.

Turn your phone off when you get into the car to avoid temptation.



Find a safe place to pull over and pick up a dropped item or something behind you.



Choose a voice activated GPS to avoid taking your eyes off the road.



First arrive safely, then check your hair or makeup.



Eat before you get into the car so you can focus on the road.

LIVESAFE



## Lab News rack locations

**The Lab News is delivered to newspaper racks in the locations listed below every other Thursday afternoon.**

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Bldg. 822, south entrance  
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Bldg. 880, Aisle D, north lobby  
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Bldg. 894, east entrance, lobby  
Bldg. 898, east lobby  
Bldg. 887, lobby  
Bldg. 891, lobby  
Bldg. 836, lobby  
Bldg. 831/832 north lobby  
Bldg. 861, Cafeteria lobby  
Bldg. 870, lobby  
Bldg. 823, lobby  
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IPOC, lobby  
CGSC, lobby  
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## Sandia brings warmth to Northern California fire relief

**Story and photos by Michael Padilla**

As residents in Northern California adjust to life after one of the state's most devastating wildfires, many of them still lack the necessities to stay warm as the cold months approach.

To help meet this need, Sandia/California employees donated more than 200 coats to assist our northern neighbors as part of the Sandia Gives campaign in partnership with One Warm Coat, a San Francisco-based nonprofit that provides those in need with free warm coats.

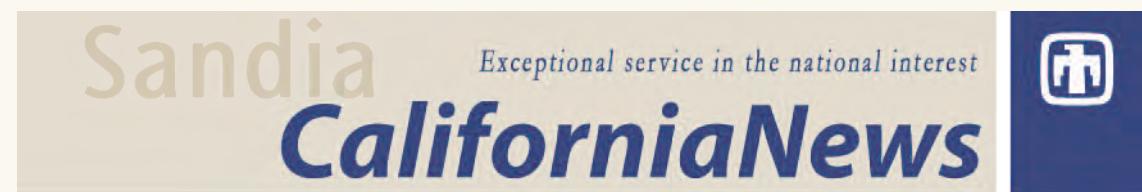
Krissy Galbraith from Sandia's California Communications group spearheaded the coat drive once again for the California site. This was Krissy's sixth annual coat drive at Sandia and her 12th overall on behalf of One Warm Coat.

Fierce winds in October drove flames that killed at least 43 people and destroyed 8,900 houses and other buildings across Northern California.

"We decided to donate the coats collected from this year's One Warm Coat drive to residents in Northern California," says Krissy. "The devastation of last month's fire really hit close to home, and it was obvious our neighbors would greatly need the coats."

In addition to the 200-plus coats, Sandia/California workforce members donated hats, scarves, blankets, and bedspreads during this year's Sandia Gives coat drive.

Other nonprofit organizations register with One Warm Coat to receive coats. This year, Sandia's contributions to One Warm Coat will be distributed by Redwood Gospel Mission in Santa Rosa, California, during its Thanksgiving event, which is expected to host up to 5,000 people.



SANTA ROSA STRONG — Community residents show resilience in wake of fire.



SANDIA BUSINESS DEVELOPMENT and licensing specialist Rachel Wallace donated 23 coats to Sandia/California's One Warm Coat drive.  
(Photo by Krissy Galbraith)



KRISSEY GALBRAITH, left, delivered more than 200 coats to Redwood Gospel Mission in Santa Rosa, California.



# Biofuels

(Continued from page 1)

more competitive with petroleum. Unfortunately, lignin's toughness also makes it difficult to extract its valuable compounds. Scientists have wrestled for decades with deconstructing it. As a result, lignin often sits unused in giant piles.

Sandia bioengineer Seema Singh and her team have demonstrated two new routes to lignin conversion that combine the advantages of earlier methods while minimizing their drawbacks. The team's recent findings are described in the journal *Scientific Reports*.

## "We basically skipped three quarters of the steps we were doing previously by engineering the plant to grow intermediate chemicals."

### A chemical/biological hybrid path forward

To break the bonds between compounds that make up lignin, scientists have either employed chemicals or tiny organisms such as bacteria or fungi. The gentler biological methods do enable the production of specific targeted compounds. But to fully break down lignin using this approach can take weeks or even months.

Conversely, harsh chemicals can deconstruct lignin in hours or even minutes. But this method requires expensive catalysts and is sometimes toxic, and therefore unsustainable. Worse, chemical methods lead to a mixture of compounds that each appear in extremely small quantities.

"You get a little bit of a whole lot of various chemicals when you break down lignin this way," Seema says. "The quantities yielded are not terribly useful."

Her team has demonstrated two new techniques that incorporate the speed of a chemical method and

the precision of a biological one. In both cases, Seema's team ultimately produced high-value chemicals that currently are derived only from petroleum: muconic acid and pyrogallol.

Muconic acid can easily be turned into nylon, plastics, resins or lubricants, and pyrogallol has anti-cancer applications. Together, Seema reports these chemicals have a combined market value of \$255.7 billion. "Muconic acid is what we call a platform chemical. From there, creating new products is really just a matter of imagination," she says.

### Bioengineering further shortens the conversion process

The team's first new conversion method is a multi-stage process that begins by pre-treating lignin with a

weak solution of hydrogen peroxide and water. Intermediary molecules vanillin and syringate result from the treatment.

A strain of *E. coli* specially modified by Sandia microbiologist Weihua Wu then consumes these middle-stage compounds, several additional compounds emerge in the mix, and ultimately the process results in the two final chemicals.

However, Seema was not satisfied with the amount of muconic acid yielded from this process., so she and her team challenged themselves to find a way to maximize their muconic acid yield, and tested a second conversion method.

The second method skips the process of having to break down the lignin altogether. Instead, the team genetically engineered a tobacco plant. As it grows, the plant produces high amounts of intermediate compound protocatechuic acid, or PCA. Then, the only steps remaining were to extract that PCA and use the engineered *E. coli* to make the muconic acid.

"We basically skipped three-quarters of the steps we were doing previously by engineering the plant to grow intermediate chemicals," Seema says. "PCA can be easily extracted from the modified tobacco and converted into muconic acid with little effort."

This plant engineering route is not only more efficient, but it also successfully solves the team's self-imposed challenge of maximizing muconic acid yield by as much as 34 percent over previous conversion methods.

### Hybrid methods key to future efforts

Sandia funded the majority of the work on this project through its Laboratory Directed Research and Development program. The tobacco plant engineering work was done by Seema's collaborators from the feed-

stock division at the Joint BioEnergy Institute in Emeryville, California, including Dominique Loque and Aymeric Eudes.

Seema directs the biomass pretreatment program at the institute, which is staffed by scientists from a consortium of laboratories including Lawrence Berkeley National Laboratory. She says she believes future research into increasing lignin's economic value will be heavily influenced by her team's demonstrations.

The biggest challenge in this field will be further maximizing the yield of valuable chemicals, and the rate at which they can be yielded. "Everyone understands that hybrid approaches are key to lignin valorization," Seema says.

Industrial adoption of this technology will depend on the ability to quickly produce large amounts of high-value product. "If you can only make milligram amounts in a month from a bug, that just won't cut it," Seema says. "You want the organisms to make kilogram amounts in less than an hour, ideally."

them. Our intent is to introduce doubt. If they get something, is it real or is it fake? The worst horror for an adversary is the identical world, but changed. Can we introduce more work for them?"

HADES can operate in multiple modes, says Vince, from a small organization without resources to a large company. The Department of Homeland Security's Cyber Security Division has worked with Sandia on deployment.

Like any technique, HADES has its limitations. While the simplest deceptive environment can be instantiated on a small private computer, environments of greater fidelity require more CPU and memory resources, and may thereby reduce the number of virtual environments deployable on a single server.

What the IT and cybersecurity communities want, he says, is what he wants: "To stop the [information] bleeding and get actionable intelligence: What is an adversary looking for, what did they get, and how did they get it?"

The technique has allowed the researchers to locate malware an adversary has placed in a system, and is capable of active attack.

### About HADES

*From Sandia's Intellectual Property website*

Until now, no single, integrated suite of tools has provided a comprehensive solution for

detecting, deceiving, engaging, and analyzing the cyber adversary. HADES provides analysts the ability to isolate an attack while collecting raw intelligence

about threat actors and their tools, tactics, and procedures. This increased awareness, and the ability to adjust the deception environment to provide the attacker with a realistic environment

that is both challenging and evolving, enables cyber security professionals to better defend their networks from current attacks, learn their attacker's methods and motives, potentially identify their attacker, and increase the adversary's "work factor"—the time and resources the adversary must expend to successfully breach a cyber system. In an era of increasing sophistication among cyber criminals and state-sponsored threat actors, HADES could lead to a dramatically improved cyber security posture for American enterprises.



SANDIA CYBER RESEARCHERS Will Stout, left, and Caleb Loverro, along with colleague Vince Urias, have developed HADES, the High-fidelity Adaptive Deception & Emulation System, which has just won an R&D 100 Award.

years ago with a three-year Laboratory Directed Research and Development grant.

## "A hacker informing his boss that he's discovered a problem doesn't do his reputation much good, he's discredited."

A hacker informing his boss that he's discovered a problem doesn't do his reputation much good, he's discredited. And then the adversary must check all data obtained from us, because they don't know when we started falsifying."

Furthermore, when a hacker finally puzzles out that something is wrong, he must display his toolkit as he tries to discern truth from fiction.

"Then he's like a goldfish fluttering in a bowl," says Vince, "He exposes his techniques and we see everything he does."

The Sandia work, patented in October, began five

"It used to be that technologically we couldn't move a visitor to a different reality without them knowing," says Vince, "but there's been a radical change in networking in the last 10 to 15 years, from hardware to software. With the ephemerality of the network fabric, I can change realities without a hacker knowing."

Adversaries want data that helps their situational awareness. "But when we change data in our fake world, we devalue information and set up eventual inconsistencies."

To do this, he says, "We move to another location in the Cloud and build a slightly different world around

# Making strides with small business

## Supplier open houses in first year create partnerships between Sandia, businesses

By Manette Newbold Fisher  
Photos by Randy Montoya

**M**ost Sandia employees probably haven't wondered where the office products on their desks came from, but if they were to follow the supply chain, they just might find a story behind those pens and binders.

All Schneider pens, for example, come from Stride Inc., an Albuquerque company where some employees with disabilities take long bus rides to work, and then package, assemble, and ship those supplies. Their bosses watch for them to arrive every day, embrace them with smiles, ask how they've been, then give them responsibilities in quality assurance, shipping, and receiving.

For years the small business has made its mission to hire people with special needs to manufacture products, some of which find their way to another Albuquerque-based business, Sandia Office Supply, the Labs' office supplier. Recently Stride president and CEO Kerry Bertram turned to Sandia's open house for businesses to figure out how to get more products made by its workers into the hands of the Labs' workforce.

In the year since Sandia created open houses for businesses, more than 330 visitors from more than 260 companies have sought to learn more about doing business with the Labs, says supplier diversity advocate Eric Lochausen. Bertram was one of these visitors. She talked to Sandia's Marie Myszkier, a supplier diversity advocate, and the conversation led to Stride getting a chance to put more of its products to use at the Labs.

Helping Stride work more closely with Sandia is one example of what organizers hope the open houses achieve for the Labs and New Mexico.

Open houses are held the second Tuesday of every month in two sessions, one in the morning and one in the afternoon. The first 20 minutes are dedicated to educating visitors about working with a federal contractor. The rest of the time is used for networking and matchmaking sessions, where business owners can speak with subcontract managers, supplier diversity advocates, other Sandia personnel and members of the Small Business Procurement Technical Assistance Program.

### Why Stride?

"We've done business with Stride for years and years and years," says Todd Sandoval of Albuquerque's Sandia Office Supply. He says he likes the way Bertram does business and helps the Albuquerque community.

"And also the fact that they are a local manufacturer. I mean literally, they are the only local manufacturer represented in our catalog of more than 25,000 items. So it's a big deal," Sandoval says.

Stride's story begins with Bertram's mother, Barbara Brennan, who had a son with hydrocephalus. Joey never walked or talked, was blind by the time he was 3, and died shortly before his 8th birthday. That experience made Brennan want to help people with disabilities and give them a chance to work. She and her husband purchased RC Ink in 1988 and renamed the company Stride to highlight the strides employees make in their development and quest for independence.

"When my husband and I started the business, we knew there were a lot of people with disabilities who would make good workers, and we were right," Brennan says.

On any given day, Vaden, who experienced health issues in college that led to a disability, works the blister card machine that packages items like pens. Peter, who is on the autism spectrum, packages items. He can pick up a handful of pens and know exactly how many he's holding



STRIDE EMPLOYEES work on quality assurance at the small, woman-owned business in Albuquerque. Everyone who works at Stride gets paid time off and retirement, and is eligible for pay increases.



STRIDE INC., which employs many disabled workers, is the only local manufacturer represented in Sandia Office Supply's catalog of more than 25,000 items. "When my husband and I started the business, we knew there were a lot of people with disabilities who would make good workers, and we were right," says Stride cofounder Barbara Brennan.

just by their weight, Bertram says. Diana, who was diagnosed with schizoaffective disorder, also packages supplies. She's determined to confront discriminating stigmas surrounding mental illness. James, who is also on the autism spectrum, started as an assembler and was promoted to a shipping specialist. He backs up Victor, who was diagnosed with a communication disorder.

Everyone who works at Stride gets paid time off and retirement and is eligible for pay increases, Bertram says. Robert, diagnosed with epilepsy, worked his way up in the company and is now a member of the management team and no longer receives government assistance.

### Open houses offer networking, sit-downs for suppliers

During a busy September open house, Sandia's Small Business Program manager Del Salazar greeted New Mexico business owners and answered questions. Networking groups formed while visitors sipped coffee and picked up flyers for more information. Sandia advocates and subcontract managers sat down to personally talk with suppliers as well.

Representatives from the Waste Isolation Pilot Plant in



Carlsbad, New Mexico, gave a presentation to visitors in September; a few months earlier, Sandia hosted representatives from Los Alamos National Laboratory in northern New Mexico. Del says Sandia has received positive comments about such educational portions of open houses.

"Each session is an opportunity to learn how to do business with Sandia" she says. "We also invite our resource partners and offer them the opportunity to provide education as well. The feedback from our suppliers is that the education component is value added to their visit with us."

Open houses attract a wide array of businesses, from those who don't know how to do federal contracting to those who are very seasoned. Marie says the Small Business Procurement Technical Assistance Program or the Small Business Administration will help, and they try to make sure all questions are answered.

"I believe the greatest success is providing small, local businesses the opportunity to actually meet Sandia subcontract managers and supplier diversity advocates," Eric says. "Sandia has always seemed such a mystery for suppliers and they did not know how to initiate contact prior to the open houses."



PETER packages products at Stride.



JAMES works as a shipping specialist at Stride.



## Sandia joins KAFB to mark Native American Heritage Month

Photos by Randy Montoya

Several hundred Sandians and others who work on Kirtland Air Force Base turned out Nov. 9 to celebrate Native American Heritage Month at KAFB's Hardin Field.

The event, jointly sponsored by KAFB 377th Mission Support Group and Sandia's American Indian Outreach Committee (AIOC), commenced with an opening prayer and greetings from Sandia Labs Director Steve Younger, NNSA Sandia Field Office Manager Jeff Harrell, and Col. Mike Harner, commander of the 377th Mission Support Group. Chris O'Gorman, senior manager in Sandia's stockpile and systems organization, conducted a smooth program as the emcee for the event.

Entertainment was provided by Sandian Ron Hoskie, a renowned flutist who has entertained audiences around the state for many years and has long been a welcome fixture of Sandia group celebrations. The adult drum and dance performances were by Family of Southern Trail from Hogback, New Mexico, with head man Shawn James and head lady Shirlene Chee. The Little Eagle drum and dance group, made up of students from Jemez Day School and led by Malcolm Yepa, also performed.

While taking in the performances, attendees were able to enjoy traditional foods catered by Dee's Native Grub from Tohajilee, New Mexico.

According to event co-organizer Sherman Begay, "The Sandia/Kirtland Native American Heritage Month event was very successful thanks to the great partnership among the various resources and teams from Sandia and the base. Our goal was to celebrate and share an awareness of the deep tradition and rich culture of indigenous nations. The beautiful performances included background information to emphasize the importance of the performances. It was especially gratifying to us to watch the Little Eagles youth group perform. They proudly demonstrated that Indigenous youth will continue to protect and carry on these traditions for future generations."

"The AIOC and KAFB's 377th Mission Support Group already look forward to next year's celebration, which will build on this year's successful event and turnout."

— Bill Murphy



# Sandians honored by American Indian Science and Engineering group

**By Bill Murphy • Photos by Randy Montoya**

**S**andia researcher Ginger Hernandez and Tribal Government Program Manager Laurence Brown have been honored by the American Indian Science and Engineering Society, AISES, for their career accomplishments. Ginger is the recipient of the AISES Technical Excellence Award and Laurence has received the Government Partner Service Award.



SANDIA RESEARCHER GINGER HERNANDEZ has been honored by the American Indian Science and Engineering Society with its 2017 Technical Excellence Award.

According to the AISES website, the Technical Excellence award winner is deemed to have made a significant contribution to science, engineering, or technology by having designed, developed, managed, or assisted in the development of a product, service, system, or intellectual property. Ginger is a PhD chemist who assesses emerging technologies for the Department of Energy.

The Government Partner Service Award "is not lightly bestowed," according to the notification sent to Laurence informing him of the honor. "This award is a symbol of our appreciation for your hard work and contributions to the mission of AISES. We are humbled by your passion, service, and commitment to provide opportunities for Natives in STEM."

## Ginger Hernandez

Ginger earned a doctorate in inorganic chemistry from Texas Tech University after receiving her undergraduate degree at the University of Central Florida. From 1998-2010, she taught chemistry part-time at Central New Mexico Community College while also working full-time at Sandia. As a volunteer with the Dream Catchers Science program, she taught concepts of physical science by making and analyzing peanut brittle and building flutes.

Ginger came to Sandia in 1994 and spent the first six years of her career managing a materials characterization laboratory. In 2000, she transferred to the firing set capacitor group. "During that time, I also worked on a number of projects that supported a critical national security program for an external government customer," she says. "That experience sparked my interest in Sandia's work that provides data analysis and assessment to various government agencies. I wanted to be a part of that group and in the fall of 2009, I saw my opportunity — a posting for a technical analyst. Shortly after joining the Technical Assessments department, I became a team lead over a group of analysts who address evolving technical capabilities in a particularly unstable and dangerous region of the world. This is where I work today."

Ginger, whose ancestry is of mixed Anglo and Cherokee background, says that as a child she didn't have much exposure to her Native heritage.

"My grandparents struggled with their Cherokee identity because they grew up in a time when they were afraid of being identified as native. My Granny, who has significant Cherokee blood from both her mother and her father, played down — or sometimes outright denied — her heritage. As an adult, I'm trying to piece together who I am and

## AISES Mission



The American Indian Science and Engineering Society (AISES) is a national, nonprofit organization focused on substantially increasing the representation of American Indians, Alaska Natives, Native Hawaiians, Pacific Islanders, First Nations, and other indigenous peoples of North America in science, technology, engineering, and math (STEM) studies

how I fit into my Native community."

Ginger says she is "incredibly honored" to be chosen for the AISES award. "But more so, I'm grateful to learn about the AISES community and begin to interact with them," she says. "I look forward to getting more involved in helping students succeed in STEM. At the 2017 national AISES conference, I learned about many resources to help encourage and develop students in STEM career paths. I wish I had known about AISES when I was in college; I could have used their support."

Ginger has words of advice and encouragement for students interested in working in the technical arena. "Getting a STEM education can be tough and overwhelming at times, but hang in there," she says. "Never give up. Surround yourself with positive and encouraging people. Distance yourself from toxic influences. Your efforts will be well worth it because a STEM education will provide you with endless opportunities to earn a good living doing interesting and meaningful work."

## Laurence Brown

Laurence came to Sandia in 1989. Prior to that he worked for IBM for three years in Tucson after earning his BS degree in chemical engineering from New Mexico State University.

"I came to Sandia through the One Year On Campus program and went to Stanford for my MS in materials science and engineering," he says.

Laurence's first job at Sandia was in the thin film and brazing department. After a one-year Entrepreneurial Leave of Absence in 1995, he returned to the same department working on cooperative research and development agreements that intersected organizations across the Labs. Since 2002, he has been with Sandia's Government Relations organization, focusing primarily on tribal government relations and tribal energy development.

Laurence became involved with AISES in 1986 while at IBM, became a Sequoyah Fellow (lifetime member) in 1989, and continued his very active AISES involvement at Sandia.

"I was instrumental as one of the founding members, developing charters and bylaws, of the first AISES professional chapter, the New Mexico Chapter, in 1991," he says.

Laurence served on the AISES board of directors in the mid-1990s and continued his involvement afterward as active member of the AISES Corporate Advisory Council, often along with a Sandia executive champion. He has held his current national leadership role with the AISES STEM organization, as chair or co-chair, since about 2009.

While on the Corporate Advisory Council, Laurence was instrumental in developing the AISES Professional Awards program that began in 2004. Since that time, Sandia has had eight AISES Professional Award winners.



LAURENCE BROWN, a member of the Navajo Nation, is the 2017 recipient of the Government Partner Service Award presented by the American Indian Science and Engineering Society.

"AISES has been an important part of my profession development and the network of student and professional contacts contributes to the success of my Tribal Relations work at Sandia," Laurence says. "AISES has been and continues to be the only game in town for diversifying our talent pool with top American Indian and Alaskan Natives in STEM."

"The AISES Government Partner Service Award means a lot to me with the recognition at the national conference that celebrated the 40th Anniversary of AISES."

# John Myers

(Continued from page 12)

John hit his stride at Honeywell, especially appreciating the fact that as a Fortune 75 company it had global operations, affording him the opportunity to travel and learn about cultures around the world.

"Once I started going to different countries and experiencing their cultures, it was just fascinating to me," he says. "I really enjoyed learning and understanding why they did things the way they did them."

In those years, John's theme song could have been Johnny Cash's "I've Been Everywhere."

"When I had to get a security clearance for one of the jobs I had at Honeywell," he says, "I pulled out my



**IN A SERENDIPITOUS INTERSECTION** of his job description at Honeywell and his own inclinations, John has enjoyed traveling to more than 30 countries around the world. One of his favorites is China, where this picture was taken during a stop at the Great Wall.

old travel vouchers and realized I that had been to 32 countries in the previous 10 years."

Favorite places in his travel log include Italy, China, and Singapore, which especially appealed to him because of its melting pot culture unified by widespread use of English as the common language.

## A successful merger

One of the high points of John's Honeywell career

came with his role in a successful acquisition of a satellite communications company. It was a complex deal, John says, with half the company to be merged with the Aerospace division and half to another business unit.

"It was vitally important that this merger succeed," John says. "This was a critical juncture for Honeywell Aerospace — this was important technology going forward and it really had to be done well."

John was the HR lead for the merger, a process that took almost two years to complete. "The CEO of Honeywell at the time said this was probably the best acquisition the company had ever done. I took a lot of pride in knowing that and in watching it going forward ever since — that merger has been instrumental in helping Honeywell achieve some of its strategic goals and will have a major impact on the value of Honeywell for years and years to come."

John has found the move from Honeywell to Sandia to be satisfying.

"I love Sandia's values, its ethics, and integrity," he says. "Being in HR, I'm a people person. And I've found that the caliber of the people I interact with — my staff, the leadership team, and Sandians across the Labs — is just outstanding. That's what kept me at Honeywell for 20 years and that's one of the biggest things that I've really enjoyed about Sandia, the quality of the people. Their desire to make a difference. Their thoughtfulness and the concern people have for one another here."

In his role at Sandia, John says he is gratified to be part of a leadership team that will build on Sandia's legacy and leave it better and stronger than it is today.

"What I'd like to do is to continue that legacy. Our job in HR, Communications, and the Employee Health Services organization, which are the three areas that I own, is to continue to make Sandia a great place to work and a wonderful environment that allows people to use their skills to the utmost. And to make a difference that we can all be proud of."

## Bucket lists and a blessed life

When John came to Albuquerque at the beginning of 2017 to begin work on the transition of the Sandia M&O contract from Lockheed Martin to NTESS, Tammy stayed behind in Phoenix to sell their home and wrap up things in Arizona. The Phoenix house sale closed in late October and the couple are now house-hunting in Albuquerque.

John and Tammy have been married for 36 years. They have four daughters and seven grandchildren — so far.

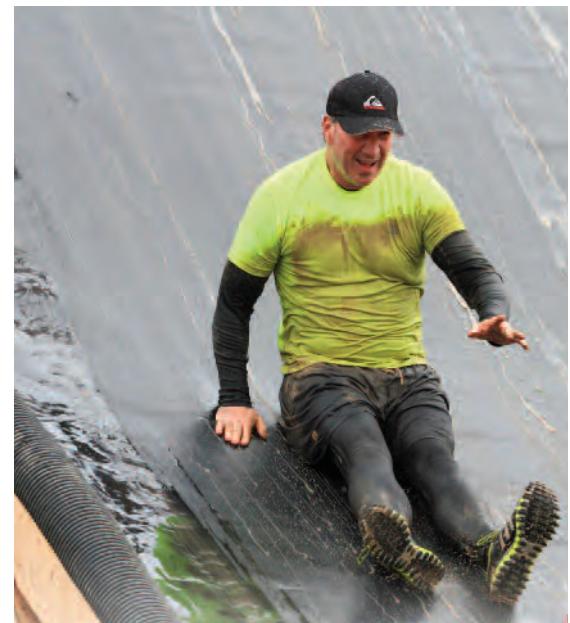
"I grew up in a family of two boys, so to go from a family of all boys to all girls was a learning experience, as you can imagine," he says.

When he finds time away from work John and his wife enjoy riding their bikes and hiking in the mountains. And high on his bucket list is to earn his private pilot's license, a process he began years ago but which has been on hold for the past eight months or so. To date, he has logged about 60 hours of flight time and a few solos, but has to complete his ground school

requirements to qualify for his license.

A Detroit kid from the 1960s, John has a special affection for the Motown sound, but he enjoys jazz and soft rock, too. He enjoys reading American history, especially books about the nation's early history.

"I've found a lot of inspiration reading about Washington and Adams, Thomas Jefferson, and Abraham Lincoln. Reading about the challenges they faced and how they stayed true to their principles in their darkest hours and the great things happened because of that — those are inspiring to me."



**RUGGED MANIAC** — John has been active in sports since he was a kid spending his summers on the Canadian shores of Lake Erie. These days, one of his go-to athletic pursuits is competing in Rugged Maniac events, which runs competitors through a several-kilometers-long obstacle course.

Another bucket list item? A trip with Tammy to Australia and New Zealand with lots of beach time tossed into the mix.

"I've had a pretty happy life," John says. "I had good parents who didn't get divorced and loved their kids. I grew up in that environment, so I had a happy childhood. I've been married to a wonderful woman for 36 years and have great kids. Having grandchildren has been wonderful. I've had some great professional experiences. Serving that mission for the church for two years, not thinking of yourself and serving others — that was a wonderful, fulfilling experience. Serving others is just fun. So those are happy moments. I've been a very blessed and fortunate person."

Over the years, John has held onto that inner spark his classmates recognized in him all those decades ago.

"I try not to be a negative person or see the glass as half-empty. I'm a half-full sort of guy," he says, "because life is a great thing and we ought to embrace it and enjoy it to its fullest."



## 3 Safety Tips for Inclement Weather

### 1 MINDFULNESS!

Plan your walking route carefully. Avoid distractions. **Use only the cleared paths and avoid walking across the snow and ice.** When exiting a vehicle, move slowly, look before you step, and use the vehicle for support.

### 2 APPROPRIATE FOOTWEAR!

Wear **footwear that has good traction** with thick soles and wide, low heels. On snowy, icy, or rainy days wear boots to work and change after getting your to work location. Also, be sure to remove snow from your shoes before entering any building.

### 3 USE HANDRAILS!

**Always use handrails** when going up and down stairs.



Sandia  
National  
Laboratories

# Diagnosing supercomputer problems

Sandia, Boston University win award for using machine learning to detect issues

By Mollie Rappe

A team of computer scientists and engineers from Sandia and Boston University recently received a prestigious award at the International Supercomputing conference for their paper on automatically diagnosing problems in supercomputers.

The research, which is in the early stages, could lead to real-time diagnoses that would inform supercomputer operators of any problems and could even autonomously fix the issues, says Jim Brandt, a Sandia computer scientist and author on the paper.

Supercomputers are used for everything from forecasting the weather and cancer research to ensuring US nuclear weapons are safe and reliable without underground testing. As supercomputers get more complex, more interconnected parts and processes can go wrong, says Jim.

Physical parts can break, previous programs could leave “zombie processes” running that gum up the works, network traffic can cause a bottleneck, or a computer code revision could cause issues. These kinds of problems can lead to programs not running to completion and ultimately wasted supercomputer time, Jim adds.

## Selecting artificial anomalies and monitoring metrics

Jim and Vitus Leung, another Sandia computer scientist and paper author, came up with a suite of issues they have encountered in their years of supercomputing experience. Together with researchers from Boston University, they wrote code to re-create the problems or anomalies. Then they ran a variety of programs with and without the anomaly codes on two supercomputers — one at Sandia and a public cloud system that Boston University helps operate.

While the programs were running, the researchers collected lots of data on the process. They monitored how much energy, processor power, and memory was being used by each node. Monitoring more than 700 criteria each second with Sandia’s high-performance monitoring system uses less than 0.005 percent of the processing power of Sandia’s supercomputer. The cloud system monitored fewer criteria less frequently but still generated lots of data.

With the vast amounts of monitoring data that can be collected from current supercomputers, it’s hard for a person to look at it and pinpoint the warning signs of a particular issue. However, this is exactly where machine learning excels, says Vitus.



**COMPUTER, HEAL THYSELF** — Computer scientist Vitus Leung and a team of computer scientists and engineers from Sandia and Boston University won the Gauss Award at the International Supercomputing conference for their paper about using machine learning to automatically diagnose problems in supercomputers. (Photo by Randy Montoya)

## Training a supercomputer to diagnose itself

Machine learning is a broad collection of computer algorithms that can find patterns without being explicitly programmed on the important features. The team trained several machine learning algorithms to detect anomalies by comparing data from normal program runs and those with anomalies.

Then they tested the trained algorithms to determine which technique was best at diagnosing the anomalies. One technique, called Random Forest, was particularly adept at analyzing vast quantities of monitoring data, deciding which metrics were important, then determining if the supercomputer was being affected by an anomaly.

To speed up the analysis process, the team calculated various statistics for each metric. Statistical values, such as the average, 5th percentile, and 95th percentile, as well as more complex measures of noisiness, trends over time, and symmetry help suggest abnormal behavior and thus potential warning signs. Calculating these values doesn’t take much computer power, and helped streamline the rest of the analysis.

Once the machine learning algorithm is trained, it uses less than 1 percent of the system’s processing power to analyze the data and detect issues.

“I am not an expert in machine learning, I’m just using it as a tool. I’m more interested in figuring out how to take monitoring data to detect problems with the machine. I hope to collaborate with some machine learning experts here at Sandia as we continue to work on this problem,” says Vitus.

Vitus adds that the team is continuing this work with more artificial anomalies and more useful programs. Other future work includes validating the diagnostic techniques on real anomalies discovered during normal runs, says Jim.

Due to the low computational cost of running the machine learning algorithm these diagnostics could be used in real time, which will also need to be tested. Jim says he hopes that someday these diagnostics could inform users and system operation staff of anomalies as they occur or even autonomously take action to fix or work around the issue.

This work was funded by NNSA’s Advanced Simulation and Computing and DOE’s Scientific Discovery through Advanced Computing programs.

# Sandia computational scientist Steve Plimpton receives IEEE Computer Society’s 2017 Sidney Fernbach Award

By Neal Singer

Steve Plimpton, a computational scientist at Sandia’s Center for Computing Research, has been named recipient of the IEEE Computer Society’s 2017 Sidney Fernbach Award for “high-performance computer simulation frameworks that have advanced research in materials science, chemistry, biology, and other related areas.”

The citation, while accurate in scope, hardly portrays the depth of Steve’s contributions.

Bill Camp, retired Sandia computational director and winner of the IEEE’s 2016 Seymour Cray computer engineering award, has written, “One cannot overstate the pioneering aspects of [Steve’s] work. He developed highly successful scalable methods in so many areas of supercomputing applications that it is hard to remember them all. He is perhaps most widely known in the science community for his work on ... molecular dynamics: His LAMMPS codes and Eco-system are so successful that it is hard to believe that there was just one person at the core of what has become a major community spanning several scientific disciplines, from materials science to chemical physics to molecular biology.”

Wrote Steve’s manager Veena Tikare, “Steve designs computational methods and frameworks for massively parallel computing platforms ... that allows other computational scientists to easily implement their own models .... Frameworks Steve has designed have enabled advances in modeling and simulation by entire communities of computational scientists in biology, chemistry, materials and chemical engineering, physics, and related disciplines.”

Open-source codes Steve played a major role in developing include SPPAKS (modeling of materials processing at the mesoscale), and SPARTA (modeling of turbulence and flow in low-density gases). The most widely



STEVE PLIMPTON

more deserving candidate for the Fernbach Award.”

Says Steve, “It’s an honor to be recognized for what has been the most satisfying part of my career at Sandia: helping create software tools — applications and libraries — that other people find useful for modeling science and engineering problems. That work has been a collaborative effort with many great scientists and software developers, many of whom are at Sandia. So I want to share credit for this award with all those folks who have been so enjoyable to work with over the years, many of whom have become good friends.”

“I also want to say thanks to the past and present management of our center, where I’ve spent my whole career, almost 30 years. They’ve had the vision to make high performance computing an integral part of what Sandia does, and create an environment where someone like me, who straddles physical sciences/computer science/math while being expert in none of them(!), can fit in and make an impact.”

Steve was formally recognized at the SC17 Conference Awards Plenary session in Denver on Nov. 14 and presented a special invited talk at a technical session on Nov. 15.

A Fellow of the American Physical Society, Steve has also been honored with a special session at the Minerals, Metals & Materials Society annual meeting for the development of LAMMPS. He received his PhD in applied and engineering physics from Cornell University in 1989.

The Fernbach award, established in 1992 in memory of HPC pioneer Sidney Fernbach, recognizes innovative approaches that produce outstanding HPC results. It is one of the highest awards of the IEEE, which has more than 423,000 members in 160 countries and according to its website “is the world’s largest technical professional organization dedicated to advancing technology for the benefit of humanity.”

used is LAMMPS, a molecular dynamics code that has a world-wide community of thousands of users and hundreds of code contributors.

Wrote former Sandia computational director Bruce Hendrickson, “Steve ... is selfless to a fault, always giving credit to others. Because of his broad and deep technical impact, his leadership and his service, I can think of no

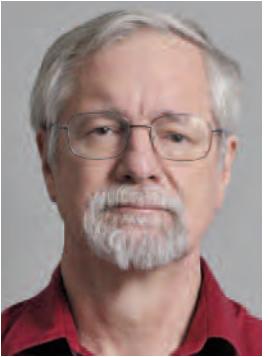
## Mileposts



New Mexico photos by Michelle Fleming



Craig Boney



Jerry Cap



John Henfling



Anthony McDonald



David Schroeder



Mark Diltz



David Gardner



Kevin Zavadil



Sherri Clark



Berta Lomadofkie



Jim Redmond



Jeff Young



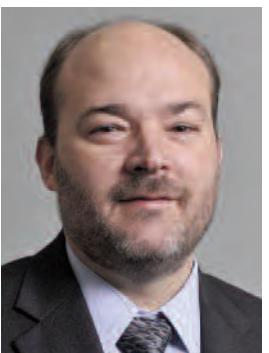
Richard Baird



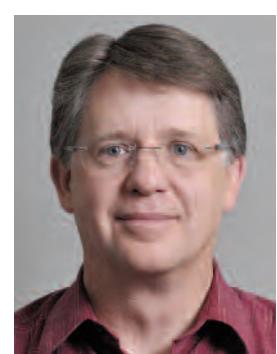
Rhonda Dukes



Stan Hall



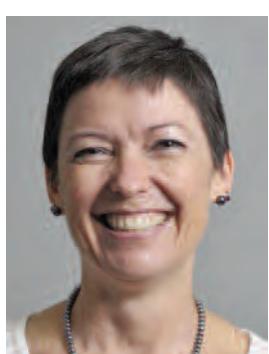
Colin Hamman



Doug Johns



Barbara Anne Lewis



Catherine Putelli



John Rodriguez



Bridget Sipes



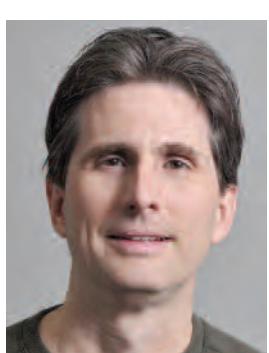
Tom Swiler



Jeremy Banks



Randy Dillard



Dan Dolan



Peter Duran



Jason Follingstad



Mike Holmes



New Mexico photos by Michelle Fleming



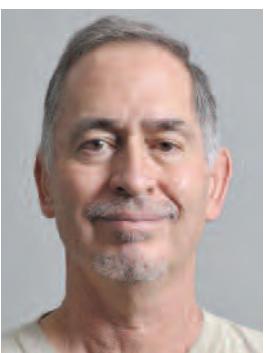
Paul Gabaldon



Paul Attermeier



Rik Holman



Anthony Baca



Dawn Abbott



Neal Fornaciari



Dorothy Stermer



Gilbert Aldaz



Beverly Eppinga



20

# SANDIA CLASSIFIED ADS

**Note: Dec. 8 will be the final issue of the Lab News for 2017; there will be no Lab News on Dec. 22. The Classified Ad deadline for the Jan. 5, 2018, Lab News will be Tuesday, Dec. 12, at noon.**

## MISCELLANEOUS

BREAD MAKER, WestBend, 1-1/2 lb. dough & bread, like new, \$10. Locher, 296-8392.

YOUNG AT HEART DICKENS VILLAGE/CONCERTS, Nov. 24-25, Dec. 1-2, Nazarene Church on Paseo, details at <http://www.yahchoir.org>. Martin, 858-3009.

DINETTE SET, 7-pc., w/leaf & matching hutch, maple, beautiful, can send photos, \$650. Lopez, 401-1422.

BEDSPREAD, queen/king, 120" W x 114" L, w/mauve roses, hardly used, photo on request, \$40. Colgan, 344-3776.

BICYCLE WORK STAND, used once, \$30; 2 bicycle carry racks, for auto or truck, \$30 & \$40. Wells, 505-292-0179.

MAT CUTTER, Logan, compact, new, \$45; floor model card spinner, w/2 attachments, \$75; table model spinners, 2 ea., \$35 ea.; Epson 600, used, \$20. Jacobson, 505-898-1397.

ALBUQUERQUE SALUTES SANDIA BASE, 1965 & 1966, unofficial directory & guides, \$24. Anderson, 232-2167, [smander3@gmail.com](mailto:smander3@gmail.com).

TWIN BED W/TRUNDLE, metal frame & headboard, w/mattresses, bedding available, \$75 OBO. Hartwigsen, 505-459-1540, [bandone\\_1@hotmail.com](mailto:bandone_1@hotmail.com).

CD JUKE BOX, NSM, coin-operated, holds & comes w/100 CDs, photo available, \$800 OBO. Gutierrez, 505-934-2062.

DRUM SET, 5-pc., like new, \$200. Leathe, 860-841-5177, text or call.

ELLIPTICAL, NordicTrack A.C.T., w/iFit, used <1 hr., excellent condition, \$700. Fritz, 505-269-5348.

FOLDING SHOP CRANE/ENGINE HOIST, 1-ton. capacity, Harbor Freight, lightly used, \$60. Cochran, 842-1528.

GAS DRYER, Maytag Neptune, bisque/light almond color, one owner, nice condition, \$150. Ludwig, 856-5111.

CAMPER SHELL, LEER, fiberglass, navy, aluminum truck bed extender, fits Ford F150 '04-'08, \$250. Lebien, 505-459-4074.

FLOOR JACK, for automobile, 3-ton, low profile, unopened, \$80. Wolfgang, 505-414-1483.

TIRE CHAINS, 1 pr., 265/70/18, \$140; Goodyear Wrangler LT 265/70/18 spare tire, never used, \$80. Schroeder, 917-4526.

WEIGHT BENCH, w/leg attachments, bars & weights, you pick up, free. Brooks, 268-2038.

DINING TABLE, 60" x 40", butcher block top, 6 chairs, fabric covered back & seats, \$200. Gideon, 264-1023.

CORK PURSE, from Portugal, latest fashion, 12" W x 14" H, Cork Bags, model Beja-Hawaii, brand new, \$95. Wagner, 505-504-8783.

SNOWBOARD, 2017 Lib Tech TRS XC2, 157 cm, intermediate to advanced, lightly used, \$250. Echert, 505-948-3079.

CHILD CAR SEATS, 3, \$50 ea.; microwave, \$25; double child stroller, \$100; single child stroller, \$50. Walkington, 505-301-5175.

WASHER/ELECTRIC DRYER SET, Electrolux, high-efficiency, w/pedestals, white, just over 2-1/2 yrs. old, \$600. Post, 280-453.

FARMERS BENCH, "Norecs", Egyptian antique, beautiful, hand-carved, only 4 remaining, \$500 ea. Montgomery, 918-0980.

VINTAGE CARNIVAL GLASS, 7-qt. punch bowls w/ladies, cups, hooks, blue or marigold, original boxes, never used, \$50 ea. Michaels, 892-2450.

## 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](mailto:classads@sandia.gov))
- FAX: 844-0645
- MAIL: MS 1468 (Dept. 3651)
- INTERNAL WEB: From Techweb search for 'NewsCenter', at the bottom of that page choose to submit an ad under, 'Submit an article'. 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.

CUSTOM BDA UTILITY TRAILER, 2015, 4' 4" x 6', excellent condition, located in East Mountains. Willmas, 505-281-9124.

FURNITURE, solid oak, excellent condition: hutch, \$675; dining table w/chairs, \$1,350; king bdr. set, \$650; entertainment center, \$150; prices OBO, photos available. Lucero, 926-1086.

MONTCLAIR CHINA, Lenox, 12 five-pc. sets, w/serving plate, all excellent condition, \$500 OBO. Walker, 505-994-0555.

UTILITY TRAILER, flat bed, ~6' x 10', \$150. Foehse, 401-9491. GRIZZLY DUST COLLECTOR SYSTEM, industrial air filter, numerous hoses, connectors. ~\$3K value, very lightly used. Make offer. Amend, 505-453-4751.

'08 BMW X5, 3.0L, AWD, loaded, moon roof, silver, leather, 125K miles, NADA \$12,525, asking \$11,000. Farmer, 505-228-3595.

'13 TOYOTA HIGHLANDER LIMITED, 4WD, full warranty to 125K miles or 2021, 76K miles, \$24,800 OBO. Sahlstrom, 541-224-3869.

## RECREATION

STARCRAFT TRUCK POP-UP CAMPER, heater, refrigerator, gas or electric, AC, gas cook top, fits 7-ft. truck, \$4,000. Hibray, 821-3455.

'99 FLEETWOOD RV, Discovery 36T, diesel, slide out, 59K miles, well maintained & lovely, \$25,000 OBO. Heine, 505-280-6594.

## REAL ESTATE

3-BDR. HOME, 2 baths, ~1,600-sq. ft., built in 2012, Volterra neighborhood, modern, walk-in closets, energy efficient, \$220,000. Martin, 623-687-7673.

3-BDR. HOME, 3 baths, new floors, new master bath, new windows, new appliances, NE neighborhood (87122), \$279,000. Wilcox, 505-400-1289.

3-BDR. HOME, 1-3/4 baths, extra room for storage & large workshop, updated corner lot, large backyard access for RV, near Kirtland, \$129,500. de la Fe, 459-4685.

## WANTED

GOOD HOME, 2 Terrier-mix dogs, 7 & 8 yrs. old, spayed, ~70-lbs. Cox, 505-299-2963.

MEN'S GOLF CLUBS, right-handed, used. Castle, 505-504-4614.

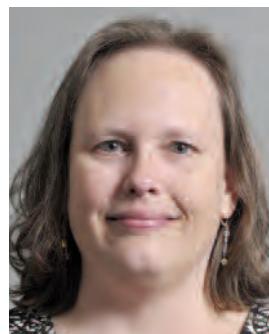
MOVING BOXES, all sizes. Gonzales, 345-0329, leave a message.

## Mileposts



New Mexico photos by Michelle Fleming

## Mileposts



Jessica Keller



Steve Kubica



Callie Lovato



Mark Naro



Mark Overberg



Mark Pinkalla



Michael Plowman



Rudy Sanchez



Dorothy Saucedo



Ian Smith



Shane Snedigar



Michael Starr



Weldon Teague



Charles Villamarin



Jason Wertz



# Power of positive thinking

**By Bill Murphy**

In high school, John Myers was voted class optimist by his fellow students. He wore that as a badge of honor at the time, a title to live up to, and says the description still fits to this day.

"Obviously life can be challenging but I've always tried to be a very positive person," he says. Even when things don't go as planned, John tries to see the situation in a positive light.

"We can learn from our disappointments and grow from them," he says. "They ought to not be viewed as negatives. I have a turn-lemons-into-lemonade philosophy and I've tried to be that way my entire life. I hope that people see that side of me."

John, who heads up Sandia's HR and Communications Div. 3000, got off to a good start in life, spending his childhood in the Detroit area during the school year and, when school was out, reveling in endless summer fun at the family cottage on the Canadian side of the border on Lake Erie

"There was a yacht club there where I took swim-

In that internal debate over which career path to pursue, law enforcement ultimately won out.

## BYU and a mission to California

John had converted to the Mormon faith at age 18 and decided to go to Brigham Young University to study law enforcement with a minor in Spanish. While at BYU, he took a two-year break from school to complete a mission for the church in largely Spanish-speaking communities in California.

"I taught religious values and principles to the families in their communities for two years and became pretty fluent in Spanish."

The church mission was spiritually fulfilling but there was a corollary benefit that became apparent soon after he returned to school at BYU: Thanks to his Spanish proficiency he met Tammy, the woman who would become his wife.

"We'd met at a park through some mutual friends," John recalls. "She's Hispanic, from Puerto Rico, and she had a letter from her grandmother written in Spanish that she couldn't read." That wasn't uncommon at that



ASSOCIATE LABS DIRECTOR JOHN MYERS heads up Sandia's HR and Communications Div. 3000. "I try not to be a negative person or see the glass as half-empty. I'm a half-full sort of guy," he says, "because life is a great thing and we ought to embrace it and enjoy it to its fullest."

(Photo by Randy Montoya)

## Upbeat attitude sustains John Myers in his career and his life

ming and sailing lessons," he recalls. "My dad bought us a little sail boat, so I'd spend my days as a kid swimming and sailing. And there was a golf course nearby where they charged like 30 bucks for the whole summer to play as much as you wanted, so my cousins and I would golf all the time, sometimes practically from dawn to dusk."

It was a happy life. "My earliest memory is probably when I was 3 or 4 years old. I was on the front lawn of our house — me and some friends or cousins — and we were chasing my dad around, grabbing his leg and trying to tackle him and he would tickle us. So my earliest memory is of my dad and just having fun family time together."

John's father was in sales and his mother raised John and his brother at home until they grew older, at which time she took a job as an executive assistant in the local school district.

John describes himself as "an OK student. I wasn't a great student, but I wasn't a total deadbeat, either. Junior high was tough — 7th and 8th grades are just an awkward age — but I had a lot of fun in high school."

John was involved in sports in high school, playing basketball and golf, and he enjoyed an active social life.

"I made a lot of friends in high school; we did a lot of things together — we'd go to dances and parties and games, things that typical high school kids do. I had good experiences."

Like all high school students, there came a time when John had to start thinking about his future. With some coaching by a guidance counselor, he figured out he was interested in either law enforcement or oceanography, "about as far apart as they can be, I guess, but for some reason I liked both of those."

time, John notes. Hispanic kids were often actively discouraged from speaking any language other than English.

"Anyhow, she asked me to come over and translate that letter for her, in return for which she promised to make me dinner. So, free dinner, get to use my Spanish, spend some time with a beautiful young woman — what's not to like, right? So I helped her translate the letter, she made me a delicious meatball sandwich, and it kind of went from there and we eventually got married."

Meanwhile, John graduated from BYU with his law enforcement degree and went to work as a criminal investigator for the Internal Revenue Service — the IRS — mostly in internal affairs. In that role, among his other responsibilities he investigated employee misconduct cases.

"Every year the IRS would hire hundreds of part-time, seasonal employees just to open tax returns,"

## Organizational Behavior beckons

John remembered that at BYU he had enjoyed a class in organizational behavior; in fact, he recalled it as being maybe his favorite class ever. With a plan in mind and a new vision for his future, John returned to BYU and earned a master's degree in the subject. Upon graduation, with his batteries recharged and with a renewed sense of optimism, John took a job with a boutique consulting firm doing organizational design and large-scale change management consulting.

One of John's clients was impressed with his work and convinced him to come to work for his small healthcare company in Colorado. "I had helped them redesign their business; they liked what I had done, and thought



JOHN AND TAMMY met through mutual friends while students at Brigham Young University. On their first "date" Tammy fixed John a meatball sandwich and he helped her translate a letter from her grandmother written in Spanish. They've been married 36 years with four daughters and seven grandchildren — so far.

John recalls. "We would train them, saying, 'We're going to test you, we're going to offer you money, you're going to see tax returns coming in with money; don't be tempted to take it because if you do you're going to end up going to jail.'"

Inevitably, every year, a handful of these employees would try to beat the system and end up paying the price. "There was one lady in particular who would change the 'IRS' on the payee line of checks to 'MRS' and then add her name and go cash them. She'd been doing that for a while when we finally caught on. We ended up arresting her. But it was creative."

After five years of being immersed in the seamy side of things and busting malefactors, John decided he'd had enough. Interacting with a criminal element was taking its toll, not least on his home life.

"You end up interacting with people who aren't very ethical or honest or are not outstanding citizens, let us say. I was starting to get cynical. You start to see the worst in people. It really hit home when Tammy said to me one day, 'I'm your wife, you don't interrogate me.' I just felt like it was having a negative influence on me even though I pride myself on not being that kind of a person. When you live in that mindset day-in and day-out it affects you."

It was time — maybe past time — for a career change.

I could continue to add value to their leadership team."

That job didn't last long. He liked the work but the healthcare industry didn't resonate with him. "I worked for them for about a year and decided to leave," John recalls. "That's when I got hired by Allied Signal, which soon acquired Honeywell and kept the Honeywell name."

He served as an internal organizational development consultant with Honeywell in Phoenix, which worked out well for him. His oldest daughter was about to start high school and John and Tammy thought it would be good to settle in one place for a while so that during high school their kids would have some consistency.

"We thought that was important for them," he says.

## A valued skill set

Over time, as he transitioned from organizational development into an HR business partner role, his internal clients found his organizational development skills very useful.

"It was gratifying for me that they appreciated my skill set and even more gratifying that I felt like I was adding value to the company and helping the leaders I supported find success," he says.



JOHN AND HIS WIFE love to hike; one of the prettiest spots he's visited is Havasu Falls in the Grand Canyon.

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