Shock therapy: With renovations, Sandia's workhorse Mechanical Shock Facility ready to take on more jobs

By Sue Major Holmes

Sandia's newly renovated Mechanical Shock Facility in Tech Area 3 looks much as it always did from the outside, a tall metal building bumped up against a concrete bunker. But after a year of construction, the facility reopened with two actuators that can take on tests it couldn't do before.

The actuators feature new design principles, largely internal, developed by Mechanical Shock test director Neil Davie (1534). This design produces higher speed shock tests with improved quality for Sandia's shock-testing mission, most of which concern weapons components or subsystems, Neil says.

Senior manager Dennis Miller (1530) says the facility fills a critical gap between tests that can be conducted in small laboratory-scale facilities and those that require the high speeds and energy levels of the Rocket Sled Test Facility.

"The Mechanical Shock Facility can accommodate sizeable test packages and achieve impressive test velocities," Dennis says.

(Continued on page 6)

TEST PREPARATION — Neil Davie (left) and Adam Slavin (both 1534) demonstrate putting a component into a test fixture in front of the Mechanical Shock Facility's new 20-inch actuator, which was part of a yearlong renovation project on the facility. (Photo by Randy Montoya)

NAVAJO storyteller enthralls Sandia audience. See **page 12.**

Sandia LabNews

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Sandia National Laboratories

Entrepreneurial spirit of current, former Sandians honored at ESTT event

By Heather Clark

Ned Godshall's departure from Sandia was an auspicious beginning to a program that encourages researchers to take technology out of the Labs and into businesses.

Godshall, who left Sandia in 1994, has founded three successful high-tech startups since being one of the first Sandia employees to leave under the Entrepreneurial Separation to Transfer Technology (ESTT) program. Today, he is president and CEO of Albuquerque-based Altela, a startup that developed an energy-efficient water desalination device that utilizes the same material used to make yard signs.

This month, Div. 1000 VP and Chief Technology Officer Steve Rottler honored Godshall and seven other current and former Sandians at the second annual Entrepreneurial Spirit Awards Luncheon for their participation in the program. The luncheon was hosted by Sandia and sponsored by Technology Ventures Corp.

Jackie Kerby Moore, manager of Technology & Economic Development Dept. 1933, says: "These awards honor the legacy of entrepreneurship at Sandia. ESTT participants create jobs by bringing technologies out of the Labs and turning them into

(Continued on page 5)

Anthony Wingate honored as NNSA Defense Programs Employee of the Quarter

NNSA DEFENSE PROGRAMS has chosen J. Anthony Wingate (422) as Sandia's Employee of the Quarter, an award given to people for going beyond the call of duty in supporting NNSA missions. Anthony, seen here in front of a W76 display at the National Museum of Nuclear Science & History, was chosen for his role in creating a streamlined process that organizations can follow to gain ISO 9001:2008 registration. (Photo by Randy Montoya)

SANDIA'S SOLAR FACILITY receives major facelift. See **page 7.**

Inside

and . . .

That's that

Have you ever gone on vacation, only to remember, sitting there on the beach sipping at that little drink with the umbrella in it, that you never updated your Outlook out-of-office message? Not the end of the world and not really bothersome enough to spoil your vacation, but still, it's a nagging little thing hangs around like the hiccups. You just know that when you get back, you're gonna have some 'splainin' to do to folks who will assume you were ignoring them.

Sure, you could probably go online with your CryptoCard and change your Outlook message — except you didn't pack the card, did you? Or maybe, if you're really lucky, you're someplace where they never heard of email and the nearest cyber café is 20 miles away down a rutted road. Anyhow, when you're away, it's just a good idea to let people know not to expect an immediate answer from you.

Regarding the message itself, I've seen a bunch of different approaches: some folks take the straightforward "Won't be back 'til Monday of next week" tack; others seem to delight in sort of rubbing it in: "I'll be in Tahiti for the next two weeks while you're freezing your toes off." While both approaches are perfectly functional, they lack the flair of a really well-crafted message, the kind a political spin-doctor might concoct, one that seems to say a lot but is very short on specifics. The best example of this approach that I've seen came from a frequent correspondent whose recent message read: "I may be back Monday or Tuesday but no later than Wednesday." Now there's a man who likes to keep his options open.

* * *

A win, finally, for the New Mexico Lobos football team. Given their record over the past few seasons, few would argue that the Lobos have been the most gifted athletes in college football lately. But I believe they're among the most courageous sportsmen I've seen in a long time. It's easy to put the pads on when you're on top, when you take the field believing you have a good chance of winning. But how hard must it be to go into each game knowing deep in your heart that you're probably going to get crushed. Knowing you're going to get pounded, but still showing up, still taking the hits, still taking the inevitable ridicule from so-called fans, most of whom couldn't carry your cleats and are not worthy to.

I'm not a fanatic college football fan, but I keep an eye on what's going on. I must admit, in watching the Lobos' struggles over the past few seasons, I've been tempted more than once to get a laugh around the watercooler at the team's expense. But that's a cheap shot and I know it. I remind myself, instead, of the words from Teddy Roosevelt:

> "It is not the critic who counts; not the man who points out how the strong man stumbles . . . The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and again, because there is no effort without error and shortcoming . . . his place shall never be with those cold and timid souls who neither know victory nor defeat.

There are ways besides winning to bring glory on yourself and on your program. So here's to the Lobos. Thanks, gentlemen, for representing our hometown team with guts and grace in a thankless situation. Regardless of how the score comes out, you're winners to me.

* * *

Members of our media relations and communications team frequently escort members of the news media to various locations around the Labs to conduct interviews with our researchers. A couple of weeks back, my colleague Mike Lanigan was escorting a reporter out to the robotics sensor range in Tech Area 3 to get some information for a news story. On the way back, Mike and the reporter came to the intersection of Wyoming and Pennsylvania. As they slowed down, they noticed a coyote ambling along the side of the road, a not unfamiliar sight around Sandia's more remote locations. Anyhow, just as Mike and the reporter approached the coyote, they watched as it stopped at the edge of the road and very conspicuously looked to the left, looked to the right, and then trotted across Pennsylvania Avenue. The reporter exclaimed, "Did you see that? He looked both ways before crossing. He actually looked both ways!" Mike shrugged and said "Sure; we take safety very seriously at Sandia."

* * *

Didn't we just celebrate Thanksgiving two months ago? Weren't we just eating pumpkin pie and turkey sandwiches? Where's the year gone? Anyhow, I hope all of you find time to be with your families and friends over the holiday weekend and that you have had many occasions over the past year to be thankful for good friends and good fortune.

See you next time.

— Bill Murphy (505-845-0845, MS0165, wtmurph@sandia.gov)

Sandia LabNews

Sandia National Laboratories

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Recent Patents

Note: Patents listed here include the names of active and retired Sandians only; former Sandians and non-Sandia inventors are not included. Following the listing for each patent is a patent number, which is searchable at the US Patent and Trademark Office website (www.uspto.gov).

* * *

Juan-Carlos Jakaboski (5944), Steven Todd (5437), and Chance Hughs (5916): Projectile-Generating Explosive Access Tool. Patent No. 8,037,828.

Yarom Polsky (6916): Sliding Pressure Control Valve for Pneumatic Hammer Drill. Patent No. 8,006,776.

Mark Tucker (6932): Reduced Weight Decontamination Formulation Utilizing a Solid Peracid Compound for Neutralization of Chemical and Biological Warfare Agents. Patent No. 8,022,265.

Stephen Conrad (6924): Method and System for Conserving Power in a Telecommunications Network During Emergency Situations. Patent No. 8,036,720.

Esteban Yepez (5964), Dennis Roach (6620), and Kirk Rackow (6624): Mountable Eddy Current Sensor for In-Situ Remote Detection of Surface and Sub-Surface Fatigue Cracks. Patent No. 8,013,600.

Alexander Tappan (2554): Nanocomposite Thermite Ink. Patent No. 8,048,242.

THE GEOLOGICAL SOCIETY OF AMERICA®

WIPP, Yucca Mountain expert Peter Swift elected Fellow of Geological Society of America

Peter Swift (6224) has been named a Fellow of the Geological Society of America (GSA). GSA members are elected to fellowship in recognition of distinguished contributions to the geosciences.

PETER SWIFT

Peter was elected "for his distinguished contributions to the science and program management in the area of geological repositories for nuclear wastes."

Peter and other newly elected Fellows were honored at the GSA Annual Meeting in Minneapolis Oct. 9-12.

Peter has spent most of his career at Sandia in nuclear waste repository programs, developing a reputation as one of the Labs' primary subject matter experts for geologic disposal of nuclear waste.

Early in his career, Peter served as an expert on paleoclimates and future climate change for the Waste Isolation Pilot Plant. Subsequently, he served in increasingly responsible roles in the WIPP and the Yucca Mountain project, where, from 2000 to 2006, he managed the Yucca Mountain postclosure performance assessment and served as a primary technical spokesperson for the project.

From 2006 to 2010, when work was halted on the Yucca Mountain Project, Peter served as the DOE Office of Radioactive Waste Management Lead Laboratory chief scientist, focusing on ensuring the integrity and credibility of the scientific basis for the postclosure portions of the license application submitted by DOE to the NRC in June 2008.

Peter is currently the National Technical Deputy Director of the DOE Office of Nuclear Energy Used Fuel Disposition Campaign, providing technical direction for DOE's R&D program on storage, transportation, and disposal of used fuel at nine national laboratories.

Retiree deaths

Warren E. Pierce (age 90) . . . . . July 1
Ernst Henry Ahrens (82) . . . . . July 7
Eugene B. Springer (87) . . . . . July 19
Robert W. Durkee (93) . . . . . July 23
James Davis McClure (78) . . . . . July 25
Michael Schalit (81) . . . . . July 26
Gordon J. Dodrill (72) . . . . . July 26
Hermann A. Wente (82) . . . . . July 26
George W. Hosking (88) . . . . . July 27
David Gallegos (81) . . . . . July 27
Robert T. Petersen (90) . . . . . July 28
Lloyd I. Burright (90) . . . . . July 28
John P. Watterberg (95) . . . . . July 29
Arnold C. Starsburg (94) . . . . . Aug. 3
Cornelio S. Padilla (93) . . . . . Aug. 5
John Stephen Benapfl (65) . . . . . Aug. 8
Donald W. Johnson (80) . . . . . Aug. 10
Tony Gabaldon (83) . . . . . Aug. 13
Miles B. Leeman (82) . . . . . Aug. 14
James B. Walston (91) . . . . . Aug. 18
Gilbert R. Marguth (77) . . . . . Aug. 19
Max B. Marrs (65) . . . . . Aug. 24
Richard A. Newell (69) . . . . . Aug. 25
William W. Tarbell (65) . . . . . Aug. 29
Leon M. Gordon (85) . . . . . Aug. 31
Ernest J. Ramirez (82) . . . . . Sept. 2
Elizama A. Espinoza (73) . . . . . Sept. 2
Lyle K. Porter (86) . . . . . Sept. 9
William H. Ling (67) . . . . . Sept. 16
J. Fern Robinson (82) . . . . . Oct. 1
Christine J. Roth (62) . . . . . Oct. 2
Frank J. Tuffs (91) . . . . . Oct. 15
Horace M. Poteet (81) . . . . . Oct. 16
David L. Trapp (80) . . . . . Oct. 19
Michael Paul McFadden (58) . . . . . Oct. 22
Albino Cleto Bustamante (77) . . . . . Oct. 29
Murray Silverman (91) . . . . . Nov. 2
Joe L. Garcia (80) . . . . . Nov. 2

Seeing microbes as individuals

By Patti Koning

Microbes, the most abundant life form on earth, live everywhere — in air and water, in extreme heat and freezing cold, in soil and rocks, and inside our bodies, where they outnumber human cells by a factor of 10:1. Despite this ubiquity, we know very little about microbes because the vast majority, 90 percent to 99 percent, cannot be cultured and characterized using traditional laboratory techniques.

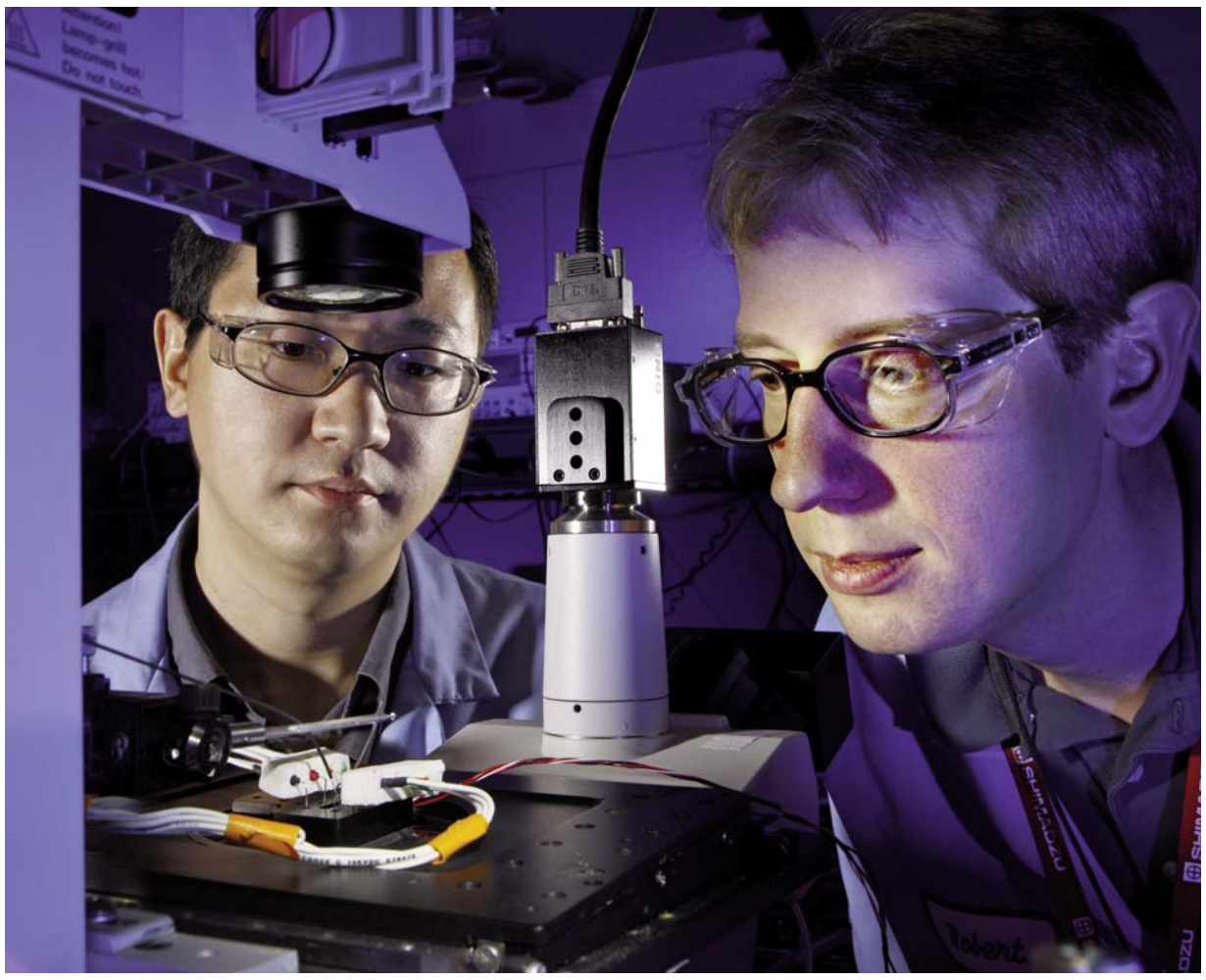
One solution to this problem is to take culturing in the laboratory, in the traditional sense, out of the picture.

"Our idea is to develop culture-independent techniques for the microbial communities that are hard to access using existing technologies, whether it's because the sample is too small or the environment is too complex to replicate in a lab," says Anup Singh (8621).

One of the harshest environments is at the Hanford Superfund Site in southeastern Washington state, where cleanup, described as one of the largest and most complex projects in the country, has been ongoing since plutonium production ceased in 1987. A multitude of cleanup strategies are being employed at Hanford, including bioremediation.

"With our device, once you insert the cell sample, the whole process is contained, so the chance of introducing contamination is very low."

— Peng Liu



STUDYING MICROBES ONE AT A TIME — µFlowFISH, shown here with researchers Peng Liu and Robert Meagher, is an integrated microfluidics device that combines fluorescence in situ hybridization (FISH) and flow cytometry, enabling single-cell analysis. The device, currently being used to analyze samples from the Hanford Superfund site, could become a powerful tool in understanding bacteria from the human microbiome. (Photo by Randy Wong)

"There is evidence to suggest that naturally occurring bacteria in harsh environments like Hanford may be cleaning up some of the contamination," says Robert Meagher (8621). "If we could somehow harness and leverage the bacteria's capability to assist in cleanup, that would be huge. But first, you have to understand the bacteria, what they are doing, and what we can do to encourage that natural process."

There has been a lot of research over the years using traditional microbiology techniques, including culture-independent techniques like PCR and micro arrays, to understand the dynamics of that microbial community. While that work has yielded some good information, Robert says a complementary approach is needed, one that looks at the bacteria on a single-cell basis.

"When you work with a large sample from a place like Hanford, you have radionuclides from the uranium that was processed there and many different heavy metals," Anup says. "On a broad level, you can see what is there and what is happening, but you can't connect any particular function back to specific bacteria. This shotgun approach can give you a lot of information quickly, but not much detail."

Over the past year, the Sandia team adapted fluorescence in situ hybridization and flow cytometry onto an integrated microfluidics device, called µFlowFISH, that can analyze small samples, one cell at a time. "With our device, once you insert the cell sample, the whole process is contained, so the chance of introducing contamination is very low," says Peng Liu (8621). "It's also very efficient because all of the operations are automated and can work with such small sample volumes."

The team analyzed two samples of less than 100 microliters each, taken from the Hanford site at different times of the year (October and February), and looked for changes in population of *Pseudomonas*, which is believed to play an important role in the microbial community. As a proof-of-concept, they compared those results with analysis of the same samples performed by traditional benchtop methods and found them to be in excellent agreement. These results were published in a paper titled "Microfluidic fluorescence in situ hybridization and flow cytometry (µFlowFISH)" that appeared in *Lab on a Chip* in August.

While the paper focuses on the ability to analyze very small samples, the ability to study cells one at a time has other advantages. "With population-level measurements, subtle differences between bacteria can get averaged out," says Anup. "Bacteria can react differently to the same thing, just like people. There is a lot of value in determining the common mechanisms that bacteria use to cope with a common stressor and the things that change from cell to cell. The only way to get this information is to look at each cell individually."

In addition to environmental samples, the researchers are also analyzing microbes found in the human body.

"In recent years, there is a growing awareness that microbes within our body do much more than was previously thought," says Robert. "For a long time we only studied the bacteria that made us sick, but the vast majority of microbes in our bodies are not pathogens. They are supposed to be there, and some of them are helpful to us, but we're just beginning to understand how."

Just like microbes from harsh environments, many of these microbes are difficult to culture and analyze. The Sandia team is collaborating with the New York University College of Dentistry on an oral cancer study. Evidence suggests that bacteria normally present in the mouth may have an indirect role in the onset or progression of the disease.

The link is not as simple as the presence of a particular bacterium causing oral cancer. Rather, it's likely a very complex chain of events.

"For example, some small change in the mouth allows a certain type of bacteria to colonize, which changes the environment of the mouth, and causes the body to respond in a particular way," explains Robert.

Conventional microbiology methods focus on the most abundant bacteria found in a sample. "If there are 15 bacteria, for example, current techniques might allow you to look at only five that make up 99 percent of the population," says Anup. "The other 1 percent are just noise in your experiment. But if you look at those five and cannot correlate them with what is happening, it begs the question, who are those other 10 bacteria and what are they doing? This is where we come in."

"In recent years, there is a growing awareness that microbes within our body do much more than was previously thought."

— Robert Meagher

The device could be a powerful tool in fighting foodborne illnesses. It took health officials in Germany more than a month to characterize the source of the recent E. coli outbreak, which killed at least 50 people.

"They were able to culture the bacteria, which was very lucky," Anup says. "But if you can't culture the bacteria — which could happen — then you could be treating people in ways that cause more harm than good."

Anup says he expects that the team will complete a device that can take a single cell all the way to sequencing within the next two years.

"That would yield biological information that you can't find anywhere else," he says. "We don't know where it will lead, but we can begin to pose different, more specific questions."

Sandia CaliforniaNews

Anthony Wingate honored as NNSA Defense Programs Employee of Quarter

By Sue Major Holmes

NNSA's Defense Programs has chosen manager J. Anthony Wingate (422) as Sandia's Employee of the Quarter, an award given to people for going beyond the call of duty in supporting NNSA missions.

Anthony was chosen in August for his role in creating a streamlined process that organizations can follow to gain ISO 9001:2008 registration, a process that Center 400 recently used in obtaining its registration in less than half the time and cost of typical registrations. The International Organization for Standardization (ISO) program is a worldwide industry standard that emphasizes customer satisfaction through quality management practices, focusing on following the best processes for every step.


J. ANTHONY WINGATE

"It's a way of measuring that you're doing what you say you're going to do and that you have confidence or evidence in place to support it," says Anthony, head of subsystem and component quality in Surety Assessment and Engineering Center 400.

He and manager Dennis Owens (424), co-leader on the project commissioned by Center 400 Director Rick Fellerhoff, believe any Sandia center can improve engineering management practices by following the approach created for Surety Assessment and Engineering's successful ISO process. Anthony and Dennis say they wanted to address affordability and cut implementation time.

Dennis, who nominated Anthony, says the process can't be done by one person alone. He says it starts by forming a team, and "Anthony was a great partner to make this happen."

He also says the recognition given Anthony demonstrates to others at Sandia that ISO registration can be done faster and with fewer resources. The key, he says, is keeping in mind the idea of preventing and reducing defects when designing a quality management system.

ISO registration varies by such factors as the size and mission of an organization, but can take more than two years and run hundreds of thousands to millions of dollars, Dennis says.

The center's template narrowed the team to a few key people and stressed that designing a quality assurance process is as important as engineering a product. Dennis says the final focus is on managing better.

"This process has opened our eyes to where we are today and where we want to be in our future and what that looks like," he says.

Anthony says streamlining takes on added importance in this era of tighter budgets.

The more efficient process was planned and carried out in three events. The first, lasting two days in July 2010, developed a centerwide quality management manual — integral to the ISO process. While some manuals run 50 to 60 pages, Dennis interpreted ISO's standard to mean manuals should be no more than 10, Anthony says.

Advance planning brought together a team to study good and not-so-good manuals, which ultimately allowed team members to develop a 10-page quality manual, he says.

"The intent is to have every resource on a team, whether it's facilities, management, someone from budget, and whatever you need, to achieve the planned output," Anthony says. The newly created manual was tweaked and finalized over another week, and a second two-day event the following month worked out procedures to implement it.

The third meeting in late fall 2010 focused on department-level procedures — in essence, individual department plans.

Anthony and Dennis say those procedures are critical, and that the system must balance what's common to the whole organization with the autonomy of each department. To accomplish their goal, they also used Lean Six Sigma principles, which can help solve challenges in NW missions or mission support, such as HR or ES&H in nuclear weapons and Work for Others programs.

"Organizations are dynamic. People are changing, the work is changing," Dennis says. "We are a center of various technical capabilities and as customer requirements change, each department can respond appropriately without having to change the whole quality management system design."

An independent auditor litmus-tested the results, then ISO's formal British Standards Institution (BSI) auditing process began. BSI did its audit early this year, making what Anthony describes as "minor adjustments." Registration came through in March.

The NNSA award was "an amazing honor for me," says Anthony, who has been with Sandia 16 years. "I generally do what I do because I like to do it, I see the value in doing it, and if it can help a greater cause, I give my full support."

Employee death

James Emery was an avid outdoorsman in every season

James (Jim) Emery (5542) died Oct. 31. He was 59 years old and had been at Sandia four months as an employee and about 19 years as a contractor.


JIM EMERY

"Jim worked in Dept. 5542 as a software test engineer on one of Sandia's largest and most important programs, helping to make it one of our proudest successes," says Div. 5000 VP Jeff Isaacson. "His technical expertise, creativity, and keen wit will be missed by all who were fortunate enough to know him as a friend."

"Jim was a contractor for two years before I hired him as a Sandia employee four months ago," says his boss, Lorraine Baca (5542). "All of his peers loved working with him and enjoyed his very dry, but quick sense of humor. He had recently bought a little red sports car. I told him that I was surprised because he struck me as a truck or jeep kind of guy. He just laughed and said, 'Nope, I'm a sports car kind of guy.' He was so proud of his new car."

Charles (Mike) Williamson says Jim was an avid outdoorsman in every season. "He loved being outdoors and enjoyed camping, fishing, hiking, skiing, and hunting," says Mike. "His favorite season was the current season, and his favorite outdoor activity was anything he could do this weekend. He would get excited about the first snow on the ground and skiing, but he would get just as excited when the ice was breaking up at the beginning of fishing season. Always the engineer, he tweaked every piece of sports equipment to make it work perfectly. When he got his compound bow, he initially struggled to understand all the variables. In the end, he could reliably hit a 3-inch circle from 30 yards. His satisfied smile when he spoke about figuring out the issues, and mastering the skill was infectious.

"Jim was very intelligent and had a strong work ethic," Mike adds.

Jim grew up in a small town in Pennsylvania and worked as a ship welder, an auto mechanic, and had served in the Army in Vietnam. He did not attend college until his 30s, but found his niche and earned two masters degrees in different math disciplines.

"As hard as Jim worked, he tried to have a work/life balance," says Mike. "When Friday came, he had plans to be someplace outdoors, doing something he loved."

Keen wit and impish humor

Marie Kuhne (5542) and Jim not only worked well together, they were good friends. "He was a statistician and could easily understand abstract concepts," she says.

"A few weeks ago Jim brought in his new ski helmet. He was an avid skier and had recently purchased season ski tickets for the Sandia and Santa Fe ski areas, thinking it was going to be a great ski season."

"We shared fishing stories," says Tony Perea (5516). "I had given Jim directions to a couple of secret spots I go to catch big fish, but he had gotten sidetracked on his way, locating some other stream or lake and never made it. On the day he died, I was ironically drafting an email to invite him to go salmon snagging with a group from Sandia. Nonetheless, he will be with us in spirit when we make that trip on Veterans Day."

Danielle Argiro (5517) says Jim was always smiling and cheerful. "He had beautiful twinkly blue eyes," she says. "He had a great outlook on life and always had something positive to say. I never heard him say anything negative about anyone."

"Jim was thoughtful and intelligent, and possessed the sort of keen wit and impish humor that made him easily approachable," says Lisa Wilkening (5517). "To Jim, the context of the work and the people who worked with him mattered as much as the tasks — sometimes more so. He was a good teacher and a wonderful mentor. His technical expertise and thoughtful analysis contributed tremendously to the successes achieved by our program. It will be hard to move on without him in the months ahead.

"Jim was a genuine, honest, and kind human being. No matter the challenges he experienced in his own life, the personal elements of the lives of others were just as important. Nothing was contrived, no grudges held, no trusts broken. He was my friend, in the best sense of the word. I will miss Jim, my co-worker, but I will miss Jim, my friend, far more."


JIM EMERY, seen here in a photo taken during a bike trip several years ago, was an avid outdoorsman with a impish sense of humor.

"My friend Jim was a fighter," says Aleksandra Faust (5542). "His willingness and strength to overcome whatever life brought was inspiring. Jim enjoyed the perfect moment. Life hit him hard at times, and Jim sought and found moments that put everything else in perspective and made it all right — something as simple as a cat purring in his lap, or solitude on top of a mountain. It's that simple perfection that made him happy and kept him going. The story of his life ended abruptly and prematurely. He was just ramping up for new adventures and new chapters. It's unfortunate they will be left untold."

"We will all miss Jim," says Mike, "but I will try to think of it as Jim's Friday off, and he just left to go be with nature."

— Iris Aboytes

Entrepreneurs move Labs technology to the marketplace

(Continued from page 1)

products that benefit society and keep US industry competitive, but they also return to Sandia with best practices that help the Labs become even more effective and efficient."

When Godshall left Sandia, he says, "everybody thought I was nuts."

Since then, he's served as chairman of the board of directors for Advent Solar Inc., and he's helped develop a biomedical drug-delivery device, a fuel cell battery, and AltelaRain®, which uses one-third the energy of conventional thermal distillation.

Godshall says that Altela employs 41 people now and by the end of the year, he'll employ 50 people as demand grows for his technology from natural gas producers, particularly in the Northeast's Marcellus basin.

While Godshall has had a lot of business successes, he also tells of hard times after leaving Sandia, such as when payroll was tough to make during the recent economic downturn. But he thinks having a technical expert who cares about the product is the best way to keep startups in business.

"Anybody is worth 1,000 good ideas," he says, "but the hard part is not that. It's having the passion and the stick-to-it-iveness to make that business go."

Godshall is among 139 Sandia employees who have participated in the program since 1994. ESTT alumni have started 44 companies — 38 in New Mexico — and expanded 48 companies, including 21 in New Mexico.

The ESTT program guarantees Sandia employees reinstatement if they return within two years, and employees can request an extension for a third year.

Tom Anderson is another former Sandian who was honored at the luncheon. He says encountering some of the first haptic devices when he started working at Sandia in 1995 was a "wild, life-changing experience."

In 2000, Anderson licensed Sandia technology that became part of the design for the 2007 R&D 100 Award-winning Novint Falcon, a video game controller that gives players the ability to feel weight, shape, texture, dimension, dynamics, and force when playing touch-enabled games. The Falcon also is used to train medical and dental students in surgical and dental procedures, Anderson says. The company is developing the Novint XIO, an arm-length exoskeleton for gamers.

"ESTT is an amazing program to help people get things going, to give them some flexibility and security, which is one of the toughest things in starting a new business," Anderson says. "The idea of technologies coming out of the Labs and turning into consumer and commercial applications, to me, is one of the best things that we can do with our money."

THE SOON-TO-BE-RELEASED Novint XIO controller brings haptics technology to the next level. Former Sandian Tom Anderson launched Novint several years ago to introduce haptics to consumer and professional computer users.

FORMER SANDIAN and longtime entrepreneur Ned Godshall examines the chase portion of a distilled water assembly that forms part of AltelaRain®, an energy-efficient water desalination device developed and sold by Altela Inc. Godshall is president and CEO of the Albuquerque startup. (Photo by Randy Montoya)

Last month, Anderson left Novint, which brought in a new CEO, but he will remain on the company's board and work as a consultant on the technology. And, like a true entrepreneur, he is exploring new business ventures.

"Anybody is worth 1,000 good ideas, but the hard part is not that. It's having the passion and the stick-to-it-iveness to make that business go."
— Ned Godshall

Safety net an important factor

Not all Sandians are suited to the business world and some ESTT participants return to the Labs after giving entrepreneurism a try.

Mary Crawford, a physicist and senior scientist who researches light-emitting diode, or LED, lighting, left under ESTT in 2000, but returned after working for two years in Tampa, Fla., at the now-defunct Uniroyal Optoelectronics.

Mary says having that safety net of being able to return within two to three years was important for her when deciding to leave under ESTT. When Sandia asked her to return after two years, she agreed. (ESTT participants also can decide themselves to return.)

Her experience in business has benefited the Labs. Mary says at Sandia she worked on LED devices, while at Uniroyal she gained experience with the growth of LED materials, so she can now better bridge the gap between the two specialties.

Mary's experience at Uniroyal helped her suggest and help implement valuable changes to Sandia processes.

These changes "enabled us to be much more efficient. . . . I worked with other people on this, but I think it was a very valuable contribution," she says.

"I now understand very intimately what we have that they could benefit from . . ."
— Mary Crawford

Mary says she also grew professionally during her time at Uniroyal by gaining a better understanding of small-business culture.

"At Sandia, we have a lot of interactions and discussions with small businesses in my field, and I now understand very intimately what we have that they could benefit from and also why Sandia would want to work with them," she says.

For ESTT participants who return to Sandia, Mary says re-integrating into the Labs can take time in terms of re-establishing projects and resources.

In spite of this challenge, Mary supports ESTT.

"It's almost like you can't lose because on the one hand, if a person leaves and doesn't come back, in some small or big way they've augmented US industry and competitiveness," she says. "On the other hand, if they come back, I think their experiences will be beneficial to Sandia."

Sandians honored at ESTT luncheon

In addition to Mary Crawford, Tom Anderson and Ned Godshall, the following people were honored at the recent ESTT luncheon:

Jeff Tsao left on ESTT in May 2000 to become vice president of research and development at the Los Angeles-based startup E2O Communications. Jeff helped E2O, which specialized in high-speed optical data links for fiber-optic communications, develop a long-wavelength VCSEL technology. After a year of commuting weekly between Albuquerque and Los Angeles, Jeff returned to Sandia as a member of technical staff in September 2001, joining a group working on the then-emerging area of solid-state lighting. E2O was subsequently acquired by JDSU.

Todd Christenson, a former researcher in the electromechanical engineering and advanced semiconductor technology groups, co-founded Albuquerque-based HT MicroAnalytical Inc. after leaving Sandia in May 2003 under the ESTT program. The company's president and chief technology officer, Christenson invented the company's basic fabrication technology. He has 34 patents.

David M. Keicher went out on ESTT in January 1997 as a principal in Optomec Inc. to commercialize the Laser Engineered Net Shaping (LENS) technology developed at Sandia. The commercialization of the LENS technology along with a proprietary electronics printing technology have allowed Optomec to increase revenues from $200,000 per year to around $9 million in 2011. Dave, formerly the company's vice president and chief technology officer, returned to Sandia this year as a system project engineer in ELNG & NG Monitor Life Cycle Engineering Dept. 2732.

Rob Bryan, a former senior member of technical staff at Sandia from 1990-92, became a successful entrepreneur and business executive. He currently is the managing director of Avalon Solar LLC, a utility-scale, photovoltaic project development company with projects in the US, Europe, and Asia. The company is developing a 35-megawatt solar PV power plant outside Tucson, Ariz., among other projects.

Jim Novak, senior manager for Tailored Operational Support Group 5950, left Sandia in 1996 to start SenSolve Inc., which licensed one of his 11 patented sensing technologies from the Labs. Jim returned to Sandia in 2003 and has served in several management positions.

Shock facility

(Continued from page 1)

Mechanical Shock went back into operation in mid-September, and Neil and Adam Slavin (1534) say its test schedule is filling up. The facility is part of the Validation and Qualification Sciences Experimental Complex, where components are subjected to abnormal environments to make sure they will perform safely and reliably under all kinds of conditions.

The actuators are similar to a large hydraulic cylinder with a piston and piston rod. Mechanical Shock's two actuators are operated pneumatically, however.

Here's how it works: You pressurize the chamber behind the piston with nitrogen gas held in equilibrium by means of a special seal. You park a 750-pound ram sled — a large block of gold-colored aluminum — up against the actuator on a sled track and park the target sled about 15 feet down the same track. A valve is opened, breaking the seal and sending high pressure rushing into a chamber. That propels the piston out at hundreds of miles an hour, shooting the ram sled into the target sled, which has the test item bolted to the side opposite the collision.

"The higher speeds provide an expanded mission space to do tests we couldn't do on an actuator before. Overall, the shock pulses that we can produce are more repeatable and higher quality."

— Neil Davie

The shot occurs in mere milliseconds. You'd miss it if you blinked while watching the closed-circuit television housed in a horseshoe-shaped bank of controls in an adjoining room.

A different operating principle

Mechanical Shock's new 20-inch actuator — the measurement refers to the internal piston size — uses a fundamentally different operating principle than the aging 18-inch actuator it replaced, Neil says.

"Because of the design changes, we are able to get significantly higher speeds," which he says was a key reason behind renovating the nearly 50-year-old facility that was last refurbished in the 1980s.

"The higher speeds provide an expanded mission space to do tests we couldn't do on an actuator before. Overall, the shock pulses that we can produce are more repeatable and higher quality," Neil says.

The new actuator can accelerate sleds at up to 350 feet per second, although in the first weeks after reopening it ran tests at about 200 feet per second along the 120-foot track that replaced the previous 90-foot track.

Speed, the weight on the sleds, and the felt, rubber, or plastic cushioning mounted between the sleds determine the shock pulse exerted on the test item, Neil says. Impacts simulate shock ranging from tens of G's to several thousand G's. A recent test used 10 inches of felt, taped into a stack, to produce a 4,000 G shock.

"We go through lots of yellow tape (securing felt pads to sleds)," jokes Adam, who will take over when Neil retires Dec. 23.

A 12-inch actuator built in 2005 served as a prototype for evaluating the new design. The prototype replaced an older 12-inch actuator and is used for testing smaller components.

"The new actuators are more reliable and the new sleds are more reliable, so we spend more time on working on the true mission of shock testing and not so much on the care and feeding of the hardware," says Adam.

The renovation eliminated a twin-rail track, which Neil says was difficult to align and prevented sleds from gliding smoothly. Now the sleds travel on a precision-machined and aligned monorail, a sophisticated version of a design used at Sandia decades ago, he says.

The actuators are operated at pressures up to 5,000 psi using nitrogen gas converted from liquid nitrogen stored on-site. Neil says the nitrogen supply system has the advantage of being clean and more rapidly replenished, lessening the turn-around time between tests compared to the high-pressure air compressor it replaced.

It was "a risky leap of technology" to turn to the new actuator design because the machine alone cost more than $1 million and the pneumatic seals are being used well beyond speeds approved by the seal manufacturer, Neil says.

The rest of the work included such things as the nitrogen system, fire suppression, safety systems, and general renovation, says Paul Schlavin (4822), Test Capability Revitalization (TCR) project manager. TCR is aimed at revitalizing large-scale test capabilities to allow the Labs to continue to lead in stockpile stewardship, weapon design and modeling, and simulation science.

Rod May (1505), program manager on the Mechanical Shock renovation, says TCR work will bring many of Sandia's large-scale test facilities up to current standards and allow them to operate for the next 10 to 15 years.

Upcoming TCR projects include more work on Mechanical Shock, plus work on the 10,000-foot Rocket Sled Track, Large Centrifuge, and Vibration facilities, all in Tech Area 3, and the wind tunnel in Tech Area 1's Experimental Aerosciences facility, Paul says. He breaks it down this way: Phase 1 (2001-2005) completed projects on the Aerial Cable and Thermal Test Complex, while Phase 2 (2005-2013) has plans to upgrade facilities and equipment in both Tech Area 1 and Tech Area 3.

Some years, Mechanical Shock might do 10 to 15 projects, each needing five to 10 tests, Neil says. Each program also might require calibration shots to adjust test parameters to its particular needs.

Neil and Adam estimate the renovated facility can do up to five shots a day. They predict a busy future with upcoming programs.

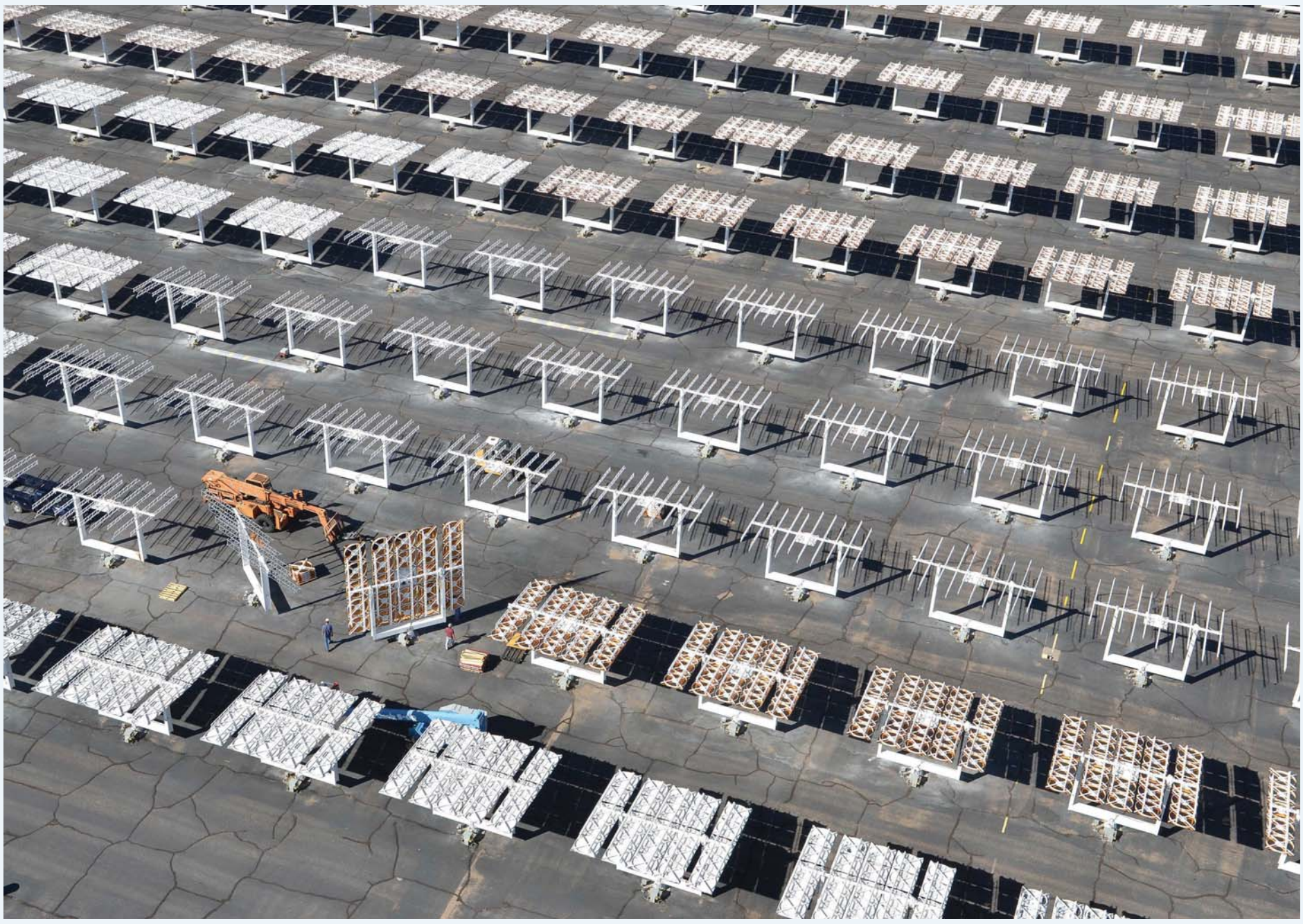
That makes Neil's upcoming retirement after 33 years at Sandia bittersweet.

"My previous manager said, 'Neil, you can't retire. You have all these new toys to bring up to speed and use to develop new techniques with,'" he says.

SHOCK TESTING — Technologist Michael Beabout (1534) tightens a test fixture on a target sled in preparation for a shot with the Mechanical Shock Facility's new 20-inch actuator. Mechanical Shock reopened in September after a yearlong renovation. (Photo by Randy Montoya)

Sandia honors all veterans

RETIRED US ARMY LT. COL. JOHN G. TISSLER, recipient of the Army Distinguished Service Cross and a Sandia retiree, was the guest speaker at a Sandia event marking Veterans Day 2011. The event, rich in ceremony, honored America's 25 million veterans and took special note of Sandia's 834 armed forces veterans in New Mexico and California. (Photo by Randy Montoya)



Solar facility upgrade

$17.8 million in stimulus funds at work at Sandia's National Solar Thermal Test Facility upgrade project

Photos by Randy Montoya

From high atop the National Solar Thermal Test Facility Solar Tower (NSTTF), technicians can be seen replacing heliostat mirrors. The $3.7 million project, which is more than two-thirds complete, is part of a larger, nine-part, $17.8 million American Recovery and Reinvestment Act stimulus fund renovation of the NSTTF. The NSTTF is the only research facility of its kind in the nation, and the upgrades are needed to support the emerging concentrated solar power industry, expand research and development capabilities for public and private research, and provide state-of-the-art testing capabilities in a timely, cost-effective manner.

The NSTTF was built in 1976 and had been using many of its original components, including the heliostat glass, until recently. Eight full-time technicians are replacing the 5,450 heliostat mirror facets that make up the NSTTF's 218 heliostats. The replacement mirrors are technologically advanced and provide greater reflectivity, increasing peak flux by up to 15 percent. Technicians are able to replace four to six heliostats per week, and have completed canting and alignment of 143 heliostats.

A second large project currently under way at the NSTTF is a new Molten Salt Test Loop, which will support development and commercialization of molten salt components for solar power plants. Molten salt, when heated by concentrated solar energy, enables cost-effective thermal storage when the sun isn't shining. A third project is the Test Bed Heliostat, which will provide accurate measurements of how the heliostat and its components perform in various conditions and environments. Construction is expected to be completed early next year. — *Stephanie Hobby*

SANDIA'S SOLAR TOWER, seen in this 2006 photo with heliostats in standby mode, is the largest facility of its kind in the nation. When the latest round of upgrades is completed, the facility will be able to offer expanded research and development capabilities for public and private research.

Sandia names chief officers for privacy, risk

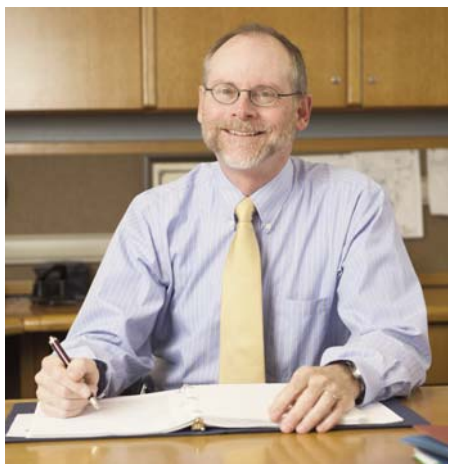
New privacy officer says Sandia increasing vigilance in protecting personal information

By Sue Major Holmes

Chief Privacy Officer Rusty Elliott (11100) says Sandia has always acted to protect people's personal information, but it's increasing its vigilance because the risks surrounding privacy aren't the same as they've been in the past.

"The risk is changing due to a number of elements. A major one is the ubiquitous nature of the information and the free exchange of the information via new technologies and services," he says.

When Kim Sawyer, deputy Labs director and executive VP for Mission Support, announced Rusty's appointment in August, she said Sandia must stay ahead of privacy issues and protecting personal information.



SANDIA'S NEW CHIEF PRIVACY OFFICER, Rusty Elliott (11100), says the Labs has always acted to protect people's personal information, but vigilance is increasing because the risks surrounding privacy aren't the same as they've been in the past. (Photo by Randy Montoya)

Last year, Sandia discovered private information had been stored on an internal system without proper access controls. Although there was no evidence the information was compromised, the event prompted the Labs to take a number of actions including developing an 18-point action plan led by the chief information officer to enhance protections associated with personally identifiable information (PII).

The plan, which got under way early this year, included improving processes of how the Labs protects such information.

A three-element approach

Rusty describes a three-element approach: administrative enhancements dealing with Sandia's own privacy procedures and adherence to legal requirements including laws and DOE directives; technological enhancements including new data protection tools; and — what he views as the most important part — increased PII awareness on the part of members of the Sandia workforce.

"In the past, at Sandia and elsewhere, this was approached as a cybersecurity issue. Now we and others are realizing it is a stand-alone issue around privacy. And so the approach has become more broad spectrum," Rusty says.

Earlier this year, the Labs published a new procedure, IM100.2.6 "Control Personally Identifiable Information," and an associated PII definition. Sandia also has taken steps to improve access control and monitoring "to make sure that the people who have access to information including PII are the people intended to have it," Rusty says.

The 18-point plan also included creating a process to ensure that subcontractor companies agree to apply privacy standards and notify Sandia if there is a loss of control of PII.

Sandia also has rolled out a data loss protection tool that, for example, detects Social Security numbers in unencrypted emails. The tool intercepts outbound messages, preventing them from going out until the sender corrects the problem.

But to Rusty, the strongest defense is staying alert to the risks of inadequate protection of personal information. A new PII module aimed at raising awareness has been added to COM100, and Rusty expects more communications about privacy issues as the program matures.

"In the past, at Sandia and elsewhere, this was approached as a cybersecurity issue. Now we and others are realizing it is a stand-alone issue around privacy."

— Rusty Elliott

"There are lots of opportunities for making improvements going forward," says Rusty, who has been with Sandia's Legal Division for 14 years and, in addition to his role as chief privacy officer, advises the corporation on information, cyber, and security law.

Throughout society, privacy risks are evolving, for example, with regard to the rapid growth of online games and social media — forums in which people choose to participate. The question, Rusty says, is at what point might people want to stop sharing information. "The difficulty is establishing where the barriers and the boundaries need to be."

Many types of information associated with a person can have privacy impacts. There's growing awareness of identity theft, but also other problems that can arise when personal information becomes a commodity exchanged in the marketplace, Rusty says.

He is urging Sandia workers to talk to a manager or contact him if they run into situations at the Labs that make them uneasy about how personal information is being protected — or if they see something they'd like to point out as a good practice others could follow.

When information about people is freely shared, "a mosaic can be created enabling someone to figure out a lot of things about individuals, including who they associate with, what their patterns of activity and habits are, and where and how they spend their money.

"At Sandia we certainly honor and acknowledge people's desire to engage with one another in the changing Internet environment and more broadly. At the same time, Sandia must protect information consistent with the public interest and consistent with Sandia's responsibilities as an employer and custodian of PII," Rusty says.

Sandia has published its definition of Personally Identifiable Information in its corporate dictionary, and Sandia procedure IM100.2.6 controls the application of the definition.

PII is information that can be used to distinguish or trace an individual's identity, is collected and maintained for the purpose of conducting official Sandia business, and is not solely comprised of information that is available to the general public, including:

- Social Security number
- Driver's license number
- Passport number
- Other federal- or state-issued identification card number
- Bank account number (with or without routing number, access code, or Personal Identification Number [PIN])
- Financial or benefit account number in combination with any required code permitting access
- Background information or verification reports or credit report, including consumer reports
- Medical or health information, including biometric, biomonitoring, or genetic information
- Employment history including ratings, salary, wage, deduction information, and disciplinary actions
- Security clearance history or related information
- Criminal history
- Date of birth or age
- Place of birth
- Mother's maiden name
- Race or ethnicity

One means of distinguishing or tracing an individual's identity is to include the first name or the first initial and last name of an individual in combination with any of the listed information. PII does not include information that is on Sandia computing resources as a result of incidental personal use of computing and information resources or other assets.

Corporate risk officer takes anticipation to a new level

By Nancy Salem

Pat Smith has had a long career at Sandia studded with pivotal jobs. She's been director of site operations at Sandia/California, and acting VP of divisions 3000 and 9000 in New Mexico. In September she was named the Labs' director of mission support and corporate governance.

Pat has again been tapped for a key role: Sandia's corporate risk officer. It's a new position and one in which Pat will work in collaboration with Sandia leadership to identify and address potential events, actions, or conditions — internal and external — that might prevent Sandia from achieving its mission objectives.

"RISK IS THE FUNDAMENTAL building block of assurance," says Sandia Corporate Risk Officer Pat Smith. (Photo by Randy Wong)

"It's very important that an organization like Sandia address risk," Pat says. "Risk is the fundamental building block of assurance. We need to know what our risk is, the magnitude of what could happen, what the consequences are, and how to respond and monitor our progress so that Sandia can achieve its strategic objectives, goals, and commitments."

Sandia has risk policies and processes in place for all levels of management. As corporate risk officer, Pat will address the enterprise level of risk. "Focusing on the high-level, corporate-level risks takes it up a few notches," she says.

Determining what risks require executive dialog and attention is an obvious, but critical, step in the process. Although some risks will roll up through Sandia's management review processes, it will be just as important for leadership to address those risks that cut across multiple programs and operations, or that exist at the interfaces and could otherwise fall through the cracks.

"I want to make sure we have a mutual understanding of our enterprise-level risks and that the actions we are taking are doing what we want them to do, which is to lower or mitigate uncertainties that can negatively affect our success," Pat says.

The effort is in the early stages. A formal description establishing official roles, responsibilities, accountability, and authorities is being drafted and will be reviewed by Kim Sawyer, deputy Labs director and executive VP for Mission Support.

"The corporate risk officer role is perfectly aligned with the scope of corporate governance," Kim says. "Pat will undoubtedly provide the enterprise insight and awareness of risks that need to be prioritized for the Laboratories leadership."

While details still need to be fleshed out, Pat is clear about what her role is not.

"I do not decide what the risks are, and I do not own the risks," she says. "I will ensure that the processes, including identifying, trending, analyzing, responding, and monitoring, are implemented and that enterprise-level risk is given the attention it deserves."

Corporate risk officer is a role within Pat's position as director of the recently established Mission Support and Corporate Governance Center 700. Pat came to Sandia/California in 1981 with a master's degree in technical writing from Rensselaer Polytechnic Institute. At the California site, Pat was a division supervisor in publications (1985) and human resources (1987), and was promoted to director of human resources and business operations (1999). In December 2000, other organizations were consolidated and the center was expanded to what is currently Center 8500, Site Operations. Pat served in acting VP roles in Div. 3000 in 2007 and Div. 9000 earlier this year.

As corporate risk officer, Pat will divide her time between the New Mexico and California sites.

"It's a great advantage to have experience at both sites so that I can bring a one-lab, multisite perspective to this corporate role." Pat says. "The challenge will be to not just create a list of risks that reside in a PowerPoint presentation, but to stimulate thoughtful and deliberate discussions about how Sandia anticipates and prepares for risks that could keep us from meeting our mission commitments."

Sandia-chaired Graph500 rankings extend reach in 'big data' supercomputing world

By Neal Singer

The number of supercomputers now entered in the Sandia-chaired Graph500 competition has risen to 50, up from nine in its initial release a year ago and 29 five months ago, says Richard Murphy (1422), chair of the Graph500 steering committee.

The latest rankings were released Nov. 15 in Seattle at SC2011, the international conference for high-performance computing (HPC).

"Companies are interested in doing well on the Graph500 because large-scale data analytics are an increasingly important problem area and could eclipse traditional high-performance computing in overall importance to society."

— Rich Murphy

The NNSA/SC Blue Gene/Q Prototype II placed first on the list and is the first NNSA winner. Sandia itself placed four machines in the top 25: Sandia's Ultraviolet platform placed 10th, using custom software; Red Sky dropped from eighth to 13th; and Dingus and Wingus, the insouciantly named Sandia prototype (Convey-based field programmable gate array, or FPGA) platforms, placed 23rd and 24th.

The Graph500 rates supercomputer performance on "big data" scaling problems rather than on pure computation, as the Linpack Top500 and other benchmarks do. Graph500 machines are tested for their ability to solve complex problems involving random-appearing graphs, rather than for their speed in solving large but straightforward arithmetic problems.

Such graph-based problems are found in the medical world, where large numbers of medical entries must be correlated; in the analysis of social networks, with their huge numbers of electronically related participants; and in international security, where huge numbers of containers on ships roaming the world and their ports of call must be tracked.

"Companies are interested in doing well on the Graph500 because large-scale data analytics are an increasingly important problem area and could eclipse traditional high-performance computing in overall importance to society," says Rich. The committee is given input by 30 international researchers. Changes are implemented by Sandia, the Georgia Institute of Technology, the University of Illinois at Urbana-Champaign, Indiana University, and others.

Big-data problems are solved by creating large, complex graphs with vertices that represent the data points — say, people on Facebook — and edges that represent relations between the data points — say, friends on Facebook. These problems stress the ability of computing systems to store and communicate large amounts of data in irregular, fast-changing communication patterns, rather than the ability to perform many arithmetic operations. The Graph500 benchmarks are indicative of the ability of supercomputers to handle such complex problems.

Rank	Institution	Machine
1	NNSA and IBM Research, T.J. Watson	NNSA/SC Blue Gene/Q Prototype II
2	Moscow State University	Lomonosov
3	GSIC Center, Tokyo Institute of Technology	TSUBAME
4	Forschungszentrum Jülich	Jugene
5	Argonne National Laboratory	Intrepid
6	Parallel Computing Lab / Intel Labs	Endeavor (Westmere)
7	IBM Research, T.J. Watson	IBM BlueGene/Q
8	Lawrence Berkeley National Laboratory	Hopper
9	Lawrence Berkeley National Laboratory	Franklin
10	**Sandia National Laboratories**	**ultraviolet**
11	SGI	SGI Altix ICE 8400EX
12	SGI	SGI Altix UV 1000
13	**Sandia National Laboratories**	**Red Sky**
14	Intel	Endeavor (Sandy Bridge)
15	Texas Advanced Computing Center	Lonestar
16	VU University, Amsterdam	DAS-4/VU
17	Moscow State University	BlueGene/P
18	Oak Ridge National Laboratory	Jaguar PF
19	Georgia Tech	mirasol
20	Pittsburgh Supercomputing Center	Blacklight
21	Swiss National Supercomputing Centre	Todi
22	**Sandia National Laboratories**	**Dingus**
23	**Sandia National Laboratories**	**Wingus**
24	Convey Computer Corporation	Vortex
25	Bielefeld University, CeBiTec	Convey01

Feedback

Readers ask about: Noise-cancelling headphones; Pandora; office supply fairs; Travelocity issue; 'view paycheck' option

Q: *Are noise-cancelling headphones, such as Audio Technica ATH-ANC1 QuietPoint Active Noise-Cancelling On-Ear Headphones, allowed in Sandia limited areas?*

A: Sorry. Noise-cancelling headphones have an active microphone and, therefore, are not allowed in the limited areas. *— Paul Keller (4242)*

* * *

Q: *Is use of Internet radio (Pandora, etc) allowed at Sandia? I was under the impression from when I started years ago that this answer is no, but several newer employees have said that they heard yes; some even said it was HR employees who told them it was acceptable.*

A: Corporate policy IM100.1.2 used to include the following restriction under the Manage Music Files and Music Devices activity: "Do not access Internet radio via any Sandia network, as it is not considered to be Incidental Personal Use of Sandia's information technology resources." This restriction was removed from the policy on 7/14/2011. Internet radio/streaming audio from sites such as Pandora is now allowed, but must comply with Provisions for Allowable Incidental Personal Use of Information Technology Resources as identified in IM100.1.1. *— Eric Thulin (9611)*

* * *

Q: *I would like to suggest an office supply fair that could occur bi-annually. A designated room would be chosen and organizations could bring their extra office supplies to set out in the room. Organizations that have a need for such supplies could pick them up without having to spend money to order new supplies or going through Reapp [now called Reutilization]. At the end of the day Reapplication could come and take all unclaimed office supplies. This would both save Sandia money by reusing office supplies and streamline the reapplication process. Guidelines could be set up such that no office furniture is brought, and perhaps at the end of the day unused supplies could be donated to local schools instead of going to Reapplication.*

A: Several years ago, Corporate and Strategic Purchasing coordinated Labs wide swap meets at the Coronado Club in which Sandians could drop off items they no longer needed and others could pick them up at no cost. These types of events required the coordination of several different entities, including Logistics (for moving large items or many boxes), Procurement, Reapplication, venue location, and several other dedicated Sandians. However, with the closing of the Coronado Club we are very limited in where we can hold this type of large event. These swap meets were very successful in the past and we will look for opportunities to coordinate something similar in the future. *— James Romero (10248)*

* * *

Q: *When using the Travelocity system for travel arrangements, you are required to insert a project/task number. However, the PTN only gets charged when the traveler submits an expense voucher. Can the PTN requirement be removed?*

A: Thank you for your question. The project and task is used at the booking stage to first, ensure the traveler and arranger have considered that there is budget to go on the travel. If there is no budget for the travel the trip should not be booked. Second, the project/task number is used for reporting purposes that are essential to managing the travel program and also used for data provided to senior level management. If you have further questions, do not hesitate to contact our travel helpline for more information. The travel helpline is 505-844-8000. *— Jeff Mortimer (10507)*

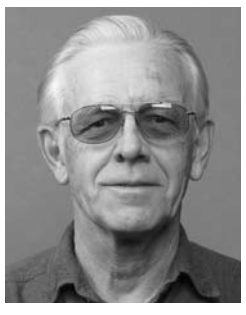
* * *

Q: *Why has the "view paycheck" option gone back to the old web way of displaying our paycheck information. The PDF files are far more useful for personal record keeping, and easier to manage. In fact, this was the one benefit I can think of that we got by "upgrading" Peoplesoft. Can PDFs be made available again; printing these pages into a PDF is quite a pain.*

A: All paychecks are made as PDF documents. After pay is confirmed, paychecks can be viewed by employees, but we run the vacation accrual jobs and then we run the job that generates the paychecks in PDF form. There is about an hour gap between the time that employees can see the paycheck and when the paychecks are made into PDF forms. If you see that the paycheck is not yet a PDF form, wait an hour or so and go back into the system and you will have the PDF at that time. *— Dan Berry (10502)*

Retirees

New Mexico *photos by Michelle Fleming*
California *photos by Randy Wong*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Paul McKay
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Gary Romero
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Timothy Evans
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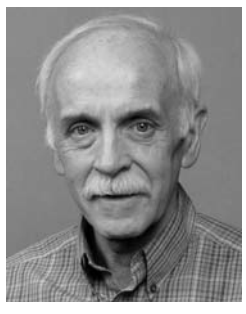
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Bill Drotning
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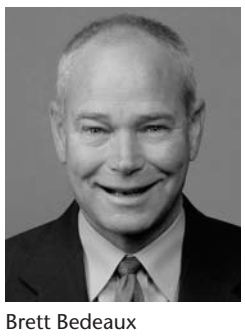
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Wendell Jones
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Gerald Knorovsky
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Stephen Montgomery
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Barry Schoeneman
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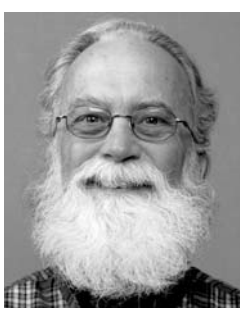
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Ralph French
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Rick Heintzleman
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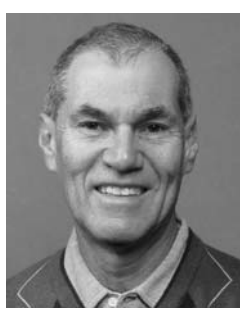
Charles Randour
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Joseph Roesch
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Cynthia Williams
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Tim Mirabal
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David Seidel
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Paul Atencio
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Dori Ellis
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Ellen Lemen
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Milton Vernon
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Nora Armijo
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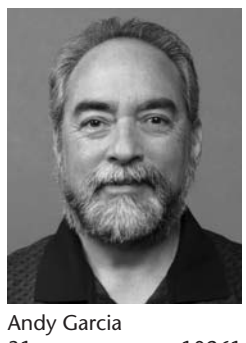
Andy Garcia
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Ronald Jones
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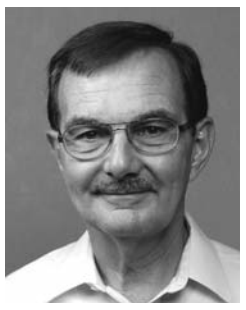
Ron Diegle
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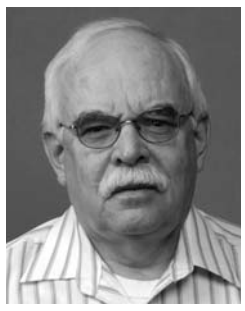
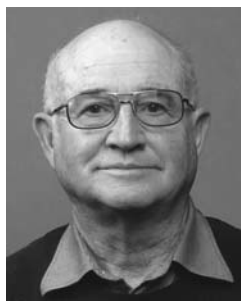
David Myers
30 1700


Walter Wolfe
30 1515


Ted Wolff
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Rita Shortman
29 10502


Jeff Miller
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Arian Pregenzer
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Berny Willeto
28 10502


James Allen
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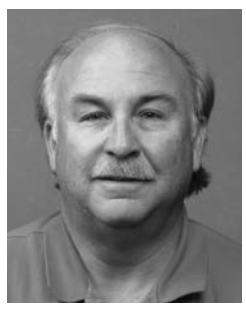
Dan Caton
27 2142


Robert Clevenger
27 8510


Robert Kipp
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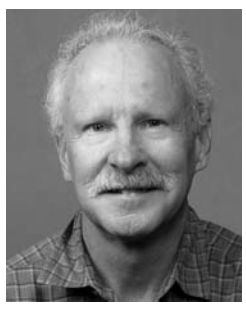
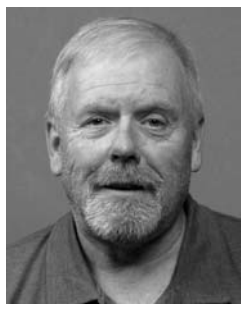

John Scott
26 4824


Brenda Wickham
26 2733


Suzette Beck
25 850


Bill Edgar
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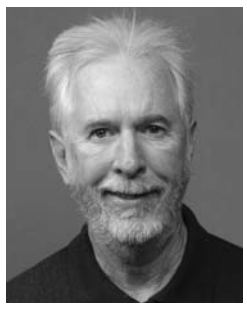
Marion Scott
25 2300


Mark Smith
25 5946


Bruce Varnado
24 6833


David Goodnow
23 5645

Sandia Classified Ads

MISCELLANEOUS

ARMORED JACKET, XL, black & yellow, removable armor & lining, like new, $85 OBO; iPod Shuffle, 4 GB, stainless steel, w/accessories, $65 OBO. Fonseca, 232-7091.

SEWING MACHINE, '11 Singer Futura1000, 4-in-1, embroidery, quilting, surger, software, attachments, hoops, carrying case, paid $1,000, asking $600. Thompson, 291-3248.

HEATER, Edenpure, Gen3 model 1000, never used, factory refurbished, still in delivery box, $99. Padilla, 286-4466.

SOFA, leather, 84-in., beige, loose pillows, comfortable, looks good, $200; coffee table, glass top, 2 end tables, glass inserts, $200 OBO. Cronin, 299-6747.

HOT TUB, Jacuzzi, '02, 5+ person, teal quarite, ozonator, cover w/lifter, 1 owner, great condition, $1,800. Clark, 505-890-8108.

ORGAN, Lowry, 20-bass accordion & formal dining room set, excellent condition. Patton, 286-5238.

CAMPER SHELL, LEER, lt. Adobe metallic, first Ford Superduty long bed, 2 wks. old, felt liner, large sliding windows, paid $1,500, asking $800 OBO. Dwyer, 271-1328.

FIREWOOD, Ponderosa pine, full cord, free delivery in town, $300. Valencia, 269-2449, ask for Keith.

COUNTRY HUTCH, $100 firm; 2 old 1950 cabinet TVs, $75 ea., old china hutch, needs work, $50; electric dryer, $175; trailer stove, hooks up to propane, $100. Willis, 304-5034.

AIR HOCKEY TABLE, w/electronic scoring, arcade quality, barely used, makes a great gift, $300 OBO. Levy, 803-4040.

ARTIFICIAL CHRISTMAS TREE, pre-lit, 9-ft., 1,000 lights, good shape, just too big for home, $30 OBO. Roesch, 505-281-9751.

RECLINER CHAIR, La-Z-Boy, gray leather, fair condition, $50. Senseney, 620-6737.

MOTORCYCLE SAFETY VEST, Icon military-spec, reflective mesh, orange, like new, $30. Littlewood, 505-340-6824, ask for Dave.

CRAFT FAIR, Saturday, Dec. 3, 9 a.m.-4 p.m., La Cueva High School, 7801 Wilshire Ave. NE, 200 crafters. Bullington, 505-220-7113.

POOL TABLE, slate, Olhausen, 8-ft., York model, barely used, excellent condition, $1,500 OBO. Heck, 681-1314.

Wii, 34-PC. BUNDLE, too much to list, like new, see at craigslist #2676701281, $275. Richter, 896-9534, ask for John.

MOBILITY CHAIR, Jassy electric drive, w/high profile cushion, slightly used, $1,500. Bentz, 857-0728.

APPLE iPHONE 4, black, 32 GB, AT&T, w/OtterBox, like new, always protected, $375. Scott, 505-301-6554.

CRICUT CARTRIDGES, new, w/all packaging, Happily Ever After (Disney princess) & Tinkerbell, $15 ea. Martinez, 792-3608.

FOOTBALL TICKETS, 2, Cowboys, home game, vs. New York Giants, Sunday, Dec. 11. Maes, 259-6092.

TREADMILL, ProForm 770EKG, good condition, $300; Yamaha tuner, NEC surround sound amps, Bose speakers, Sony CD-recorder. Helfrich, 255-9580.

SCANNER, Epson Perfection 4490, 4800 x 9600 dpi, slides & negatives, USB 2.0, http://bit.ly/uiatBx, $40. Hall, 280-4344.

GREAT BOOKS of the Western World, 54 vols., w/bookcase, $50/all. Sheldon, 888-5971.

BEAD & TAPESTRY LOOM, Mirrix, 22-in., complete, like new, $280. Ayers, 505-349-1793.

MOTORCYCLE GEAR, ladies, BMW pant/jacket suit, boots, gloves, helmet, $300/all. Carlson, 259-4070.

COUCH & LOVE SEAT, white leather, good condition, $100. Zelnio, 877-1465.

TIMESHARE, Maui, available, Dec. 5-19, major discount of $150/night, located at The Whaler on Kaanapali Beach. Flores, 263-8225.

AMP HEAD, Marshall JCM 600, 60-W, w/Avatar 2x12 w/Eminence speakers, clean to crunch range, $500. Abeyta, 505-573-8195.

SIBERIAN HUSKY, female, 11 mos. old, all shots, needs good home, $125; dorm refrigerator, paid $125, asking $40. Herrera, 833-5035.

GAS STOVE, Norge, $50; iron wood stove, $65; antique wood closet, $75; new queen air mattress, $75. Gonzales, 296-8006.

JUICER, Breville, ~4 yrs. old, barely used, paid $250 new, asking $75. Ward, 292-1618.

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 0165 (Dept. 3651)**
- **DELIVER: Bldg. 811 Lobby**
- **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.

GOLF CLUBS, ladies/beginners, bag, 3,5,7,9 putters, driver, 3 wood, $1,500. Underhill, 294-5774.

CUMMERBUNDS, 3, red, black, silver, $5 ea. Crouch, 400-9143.

SKI WEEKEND CONDOS, Pagosa Springs/Durango: 1-bdr., $80-$100/night; 2-bdr, $130-$150/night, call for availability, no pets. Fernandez, 505-238-4722.

ESTATE SALE, furniture, paintings, jewelry, household items, Saturday, Nov. 19, serious buyers only. Galbraith, 505-269-2889, ask for Kate.

RADIAL ARM SAW, Sears Craftsman, w/cabinet storage below, $100. Bickel, 822-0951.

FOOTBALL TICKETS, 2, Ariz. Cardinals vs San Francisco Sunday, Dec. 11; Seattle, Sunday, Dec. 1. Chavez, 250-4477.

CRAFT FAIR, benefits Sandia High School band, Saturday, Nov. 19, 9 a.m.-4 p.m., at Sandia High School, >100 vendors. Montoya, 296-4268.

TWO-WHEEL TRAILER DOLLY, $22; 75-ft., 12/3 electrical wire, on wheel, $15; various hitch balls. Horton, 883-7504.

DSLR CAMERA, Sony Alpha 300, 2 lenses w/case, great starter camera, 10.2 MP, $500. Maheras, 280-5113.

TRANSPORTATION

'08 MAZDA TRIBUTE SUV, sport edition, 5-spd. manual, many extras, 35K miles, extra clean, $13,200 OBO. Smith, 505-296-1908.

'10 JEEP LIBERTY LIMITED, 4x4, loaded, 18/22-mpg, light sandstone metallic, 19K miles, excellent, $21,500. Sturgeon, 505-975-6565, ask for Kerry.

'03 JETTA SPORTWAGON GL, diesel, 5-spd., ~50-mpg, new Goodyears, carrier racks, looks & runs like new, 144K miles, $11,500/offer. Everett, 505-269-8449.

'97 CHEVY MALIBU SS, AT, 3.9L V6, 18-in. wheels, 26-mpg, blue, 82K miles, $11,000 OBO. Martin, 505-715-3144.

'01 SATURN SC2, 3-dr. coupe, silver, nice looking, sporty, needs work to get running, $2,100 OBO. MacCormic, 967-7891.

'03 HONDA ODYSSEY EX MINIVAN, V6, very clean, 78K miles, great car, $7,900. Mulkern, 453-1508.

'30 MODEL A FORD, Deluxe Coupe, w/rumble seat, driven regularly, $11,000. Long, 296-2590.

RECREATIONAL

GIRL'S BICYCLE, 24-in., Mountain Trex w/Barbie bell, excellent condition, $110. Strauch, 803-6805.

BOY'S BICYCLE, 24-in., good condition, minimal use, paid $350, asking $100 OBO. Smith, 888-5184.

'08 HONDA CRF70F, low hours, garage kept, great starter bike, very good condition, $900 OBO. Zarick, 898-8840.

MEN'S MOUNTAIN BIKE, Titus Loco-Moto, 26-in., large frame, full suspension, $1,000 OBO. Orlando, 321-0302.

REAL ESTATE

3-BDR. HOME, 2 baths, manufactured home, 1,661-sq. ft., w/1,500-sq. ft. building, Elephant Butte, on 1/4 acre, MLS# 20119693, zip 87935. Kerr, 575-650-4802.

3-BDR. HOME, 2 baths, 1,200-sq. ft., Westside/Cottonwood Mall, newly remodeled, oak hardwood floors, sites.google.com/site/10628pueblo, $148,650. Read, 505-270-6501.

3-BDR. HOME, 1-3/4 baths, 1,625-sq. ft., updated, walk to Georgia O'Keeffe & Eisenhower, $216,900. Marquez, 489-1598 day, 228-4200 evening.

MOBILE HOME, Elephant Butte, fenced lot, adjacent to BLM land, beautiful western views, close to lake, $52,000. Boone, 505-227-3361.

3.5 ACRE HOME SITE, Sandia Park, well, electric, phone, ready-to-build, $175,000 terms. Mihalik, 281-1306.

40 ACRES, southern Colorado, 8,000-ft. elevation, off-grid, rolling piñon hills, Del Norte, Colo., $67,500. Loucks, 604-1254.

2/3-BDR. HOME, 1,250 sq. ft., refrigerated air, North Valley, bike trail accessible, less than comps in neighborhood, $160,000. Garcia, 505-301-8902, ask for Linda.

3-BDR. HOME, 1-3/4 baths, 2-car garage, 2,.200-sq. ft., upgrades, fruit trees, 3605 Holiday Court NE, FSBO, $215,000. Torrez, (505)-489-1478.

WANTED

FIREWOOD, chopped or whole, would like enough to fill a car, will pick up. Schoenherr, 920-655-1577.

FABRIC, lace & trim needed, for girl's history club, to design & create period correct costumes. Sotelo, 298-0358.

TAPE CAMCORDER, Sony mini DV, fully operable, preferably DCR-H32 or DCR-H42 or similar model that uses mini-DV tapes. Thompson, 505-292-2877.

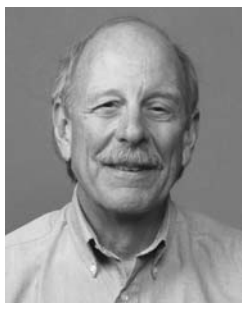
Retirees

New Mexico *photos by Michelle Fleming*

California *photos by Randy Wong*

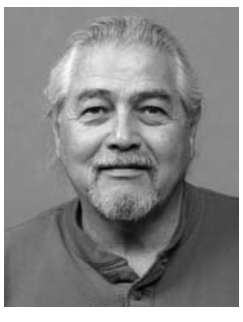
Anna Nusbaum
23 9535

M. Wayne Davis
21 1100



Albert Bendure
19 4135

Jeffrey Mahn
19 413



Phil Reyes
18 2556

Barbara Williams
18 1612

Jenny Dubbs
17 10648

Mileposts

New Mexico *photos by Michelle Fleming*

California *photos by Randy Wong*

Dan Hardin
35 8231

Clayton Pryor
25 9543

Jackie Silva
20 1631

Jodi Maheras
15 10650

Rick Maurer
15 8511

Leanna Minier
15 2554

Benjamin Mar named a 'most promising engineer' by American Indian Science & Engineering Society

By Iris Aboytes

Benjamin (Ben) Mar (5337) received the American Indian Science & Engineering Society (AISES) award in the most promising engineer/scientist category in ceremonies held at the AISES National Conference in Minneapolis on Nov. 10-12.

The award winner must be a professional engineer or scientist with less than five years experience since being awarded a degree. The candidate's early technical contributions should already indicate a promising career.

AISES works to increase the representation of American Indians and Alaskan Natives in engineering, science, and other related technology disciplines. Through the quality and reach of its programs and the longevity and devoted commitment of its family, AISES is a leader in advancing science, technology, engineering, and math (STEM) opportunities for Native Americans. AISES members come from more than 200 tribal nations.

Ben helps develop and deliver ruggedized computing solutions for both space-based satellite systems and traditional weapon applications. These applications require the development of high-performance hardware and Application Specific Integrated Circuit (ASIC) devices along with small amounts of analog circuitry. Ben's four-year career at Sandia also has involved working on a variety of projects including fiber optic transceiver space qualification, component failure analysis, satellite board design and test, asynchronous communication research, and firmware design for multiple platforms.

Ben first came to Sandia in 2004 as an intern after he learned about the Tribal Energy Program through AISES. Ben and three other interns traveled around the Southwest learning how tribes used existing renewable energy or how the tribes planned to use renewable energy in the future.

Ben earned his bachelor's degree in electrical and computer engineering from Worcester Polytechnic Institute in 2005, where he began his active participation in AISES. After graduating, Ben participated in Sandia's Master's Fellowship Program, earning his master's degree in computer engineering from the University of New Mexico.

Ben was born and raised in Albuquerque. He is Cherokee and Irish from his mother and Chinese from his father.

"Both sides of my family migrated from their homelands and eventually came together in New Mexico," says Ben. He was raised by his mother, Kathy, with the help of his grandparents. While Kathy taught school, his grandparents took care of him before and after school.

"My mother always wanted the best for me," says Ben. "She encouraged me to go into engineering even though I dreamt of being a marine biologist as a kid. I enjoyed math and science classes so I decided to try it out, and it turns out that it is a good fit."

In addition to his work at Sandia, Ben is Sandia's current American Indian Outreach Committee chairman and has contributed to the community through Sandia's Dream Catcher Science Program and other educational programs. Ben says, "There is no better way to give back than to encourage the next generation to explore new possibilities and to show by example that it can be done."

BEN MAR has been honored by the American Indian Science & Engineering Society with a most promising engineer award. (Photo by Randy Montoya)

Honoring Native American Heritage Month

Navajo storyteller Sunny Dooley enthralled, enchanted, and amused a near full house at the Steve Schiff Auditorium with childhood stories, as told by her grandfathers and grandmothers. After Dooley's presentation, pueblo pastries and tea were served. The first 100 attendees were given 2012 Native American art calendars. The event, presented to mark Native American Heritage Month, was hosted by Sandia's American Indian Outreach Committee.

Photos by Randy Montoya