

Sandia wins awards for tech transfer to Cray, Stirling Energy Systems

Federal Laboratory Consortium annual meeting held in Albuquerque

By Heather Clark

Look at the results and it's easy to see why Sandia has received two national awards from the Federal Laboratory Consortium for Technology Transfer for its partnerships with Cray Inc. and Stirling Energy Systems, Inc.



Sandia and Cray joined forces in 2001 to build the Red Storm supercomputer, the predecessor of the Seattle, Wash.-based company's line of Cray XT supercomputers. In 2009, Jaguar, a Cray XT5 supercomputer housed at Oak Ridge National Laboratory, won the prestigious Gordon Bell Prize for parallel computing performance. And, Franklin, a 350-teraflop Cray XT4 system at Lawrence Berkeley National Laboratory, was ranked 11th fastest in the world, according to the award nomination.

Since starting its collaboration with Sandia, Stirling Energy Systems (SES) has signed contracts to provide 1.85 gigawatts of solar power from its concentrating solar power system, the SunCatcher™. The company also is planning to build the world's largest solar energy generating system on about 6,500 acres in southern California. The 750-megawatt Imperial Valley Solar plant will power 562,500 homes in the San Diego area by 2014.

The Federal Laboratory Consortium (FLC) presented Sandians with the awards April 29 at its national meeting in Albuquerque.

"Sandia has always done well in these recognition awards and it's an indication of our ability to transfer technology to industry," says Hal Morgan, senior manager for Industrial Partnerships and Strategy Dept. 1930.

For more about Sandia's work with Stirling Energy Systems and Cray Inc. see the stories on page 5.



Take charge of your health care . . . Learn how health reimbursement accounts — HRAs — fit in to Sandia's new health care plan, scheduled to go into effect next January. Details on page 9.



EERILY EMPTY INTERNATIONAL AIRPORTS, frustration over canceled flights, and an 18-hour car trip through four countries; this was how several Sandians described being stranded by an ash plume spewing from a volcano in Iceland that shut down airspace over much of Europe. Read more in a story on page 6. (Photo by Josh Hallett)

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JENNIFER GRANATA AND MICHAEL QUINTANA, seen here at Sandia's National Solar Thermal Test Facility, recently led a workshop on photovoltaic systems integration to encourage the use of PV power. Read about the workshop on page 3. (Photo by Randy Montoya)

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Sandia Tiger Teams 'brave sleet and snow' to educate cities on solar energy options

Urban solar energy: Not just for hot water anymore

By Neal Singer

If you think of solar as a photovoltaic panel or hot water heater on a residential rooftop, forget it. Or at least, expand it.

The third annual Solar America Cities meeting in Salt Lake City in mid-April gave the impression of a solar industry, like Gulliver, beginning to free itself from Lilliputian tie-downs.

There were panel discussions, and even reports of deployment, of solar for defense against terrorism, armed attack, and natural disaster.

There were reports on removal of restrictive legislation — one requiring million-dollar insurance policies for homeowners choosing photovoltaics — and of more utility companies providing solar-use data.

There was White House emissary Cyrus Wadia, with a PhD in energy resources from University of California, Berkeley, and "happy to take a break from [his research field of] aqueous nanoparticles," deliver-



ing a keynote speech in which he said in part, "I'm here to listen to you. I'm trying to understand if there's something we can do from the White House."

And through it all, like yeast in bread or superheroes without capes, the Sandia solar Tiger Team members (along with peers from the National Renewable Energy Laboratory, CH2M Hill-Critigen, Oak Ridge National Laboratory, New Mexico State University, and the Florida Solar Energy Center) led

(Continued on page 4)

Tom Hunter sees unprecedented challenges for the future, cautions against complacency

By Heather Clark

In a recent all-hands meeting, Sandia President and Labs Director Tom Hunter told an audience of Sandians that he looks forward to the next few years, but cautioned employees not to become complacent in meeting the nation's security challenges.

Tom said the next few years will be "an unprecedented time" at Sandia where the Labs will be expected to deliver more to meet the nation's security challenges.

"It's really important to stress how much the country is depending on us, how they're looking to us to deliver even more and to be more effective in doing so," he said.

Tom made the comments in an upbeat



TOM HUNTER at the April 20 all-hands meeting. (Photo by Randy Montoya)

(Continued on page 3)

That's that

Over in the front lobby of Bldg. 800 – the point of entry for most of our high-level visitors to the Labs – there are plaques on the north wall honoring the service of two quintessential Sandians, Glenn Fowler and Bob Henderson. Both men began at the Labs before it was Sandia, back when we were still Z Division of Los Alamos Laboratory. The plaques concisely describe the contributions these two men made to Sandia and the lasting impact of their careers. Each plaque also features a memorable quote. Glenn's in particular resonates with me. It's presented in the form of "Fowler's Law" and it says, "No matter what the rules say, don't do anything stupid."

Based on my own experience, I'd say that you can certainly do something stupid by following the rules . . . or by not following them. The trick is to know the difference, to know when to go by the book and when to throw it out. All of which reminds me of the old adage that's been attributed to, among others, Simon Bolivar: "Good judgment comes from experience and experience comes from bad judgment." Let's just say I've got lots of experience.

The quote on Bob's plaque is perhaps a bit less colorful than Glenn's, but no less compelling, "Unless you understand what is around you, you can't possibly hope to survive in the future." In a nutshell, that comment summarizes one of Sandia's key roles, one highlighted in the 2010 Strategic Plan: "When we achieve our highest goal, we are widely recognized as a national leader in preventing technological surprise, in anticipating threats, in providing innovative, science-based systems engineering solutions to our nation's most challenging national security problems . . ." As Bob's quote implies, then, the nation really does rely on us.

Speaking of situational awareness, I read something the other day; maybe you saw it, too. A former high-level associate of Osama bin Laden is reported as saying that the Al Qaeda leader was caught by surprise by the US response to the 9/11 attacks. Bin Laden, the story goes, thought the suicide attacks in New York, Virginia, and Pennsylvania would frighten people and perhaps cause some disruptions in the economy. He had no clue that the Twin Towers would come down; that wasn't part of the plan. Bin Laden has been living in a cave ever since; I bet that wasn't part of the plan, either.

When Stephen Hawking weighs in on something, anything, it's probably a good idea to pay attention. Last time in this column, I wrote about a new book called *The Eerie Silence*. It's about renewed efforts to find intelligent life in the universe. Stephen Hawking isn't sure SETI – a proactive search for extraterrestrial intelligence – is such a great idea. At least, that's how timesonline.co.uk is reporting his comments in an upcoming British documentary. According to the *Times* story, Hawking is quoted in the documentary as saying, "We only have to look at ourselves to see how intelligent life might develop into something we wouldn't want to meet," and concludes that trying to make contact with alien races is "a little too risky."

Science fiction has long dealt with the issue of alien visitation, of course, and historically, the genre has offered up conflicting visions: that espoused in *Close Encounters* and *ET*, in which the aliens are enlightened uber-beings, bearers of goodness and light; and that expressed in films like *The Thing* and *Independence Day*, in which the aliens have no intention of playing nice. Those who embrace the first vision tend to think that any species intelligent enough to master interstellar technology must by definition have overcome the seven deadly sins, so to speak. Those on the other side – Hawkings' side? – say that's all well and good but they remember, too, that *To Serve Man* . . . is a cookbook!

See you next time.

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

Inventors? Meet investors at Technology Ventures Corporation's upcoming symposium



Technology Ventures Corp. (TVC) will give investors from across the country a chance to meet inventors and entrepreneurs who think their technologies could be good investment opportunities and future businesses.

The 17th annual Technology Ventures Equity Capital Symposium will be held May 19-20 at the Embassy Suites Hotel in Albuquerque. The symposium includes a tour of Sandia, a DOE lab poster session, a reception and presentations by 19 cutting-edge technology companies seeking equity funding.

This year, the 19 presenters will come from New Mexico, Idaho, Tennessee, Washington, and Wisconsin to share their business ideas in industrial energy, business products and services, electronics and instrumentation, information technology and software, biotechnology, and consumer products and services.

Historically, one in three of the presenting companies at the symposium gets funded.

TVC is a nonprofit, charitable foundation, funded by Lockheed Martin and DOE to commercialize technologies and create jobs.

For further information about the symposium, call 505-843-4110 or register now online at www.techventures.org.



TECHNOLOGY VENTURES CORP. President Sherman McCorkle at the 2009 TVC Equity Capital Symposium. McCorkle has described TVC as "a unique engine in economic development — using federal funds to create value for both innovators and early stage investors. We're proud that our support from Lockheed Martin and the DOE has allowed us to help so many technology entrepreneurs create and finance viable businesses."

Asian Pacific American Heritage Month observed May 22

Asian Pacific American Heritage Month will be celebrated at the National Museum of Nuclear Science and History Saturday, May 22, 10 a.m.-3 p.m. with dances, crafts, displays, and music celebrating cultural traditions, ancestry, and native languages.

Entertainment will include martial arts demonstrations, children's crafts, a Japanese floral display, lectures, and free food sampling. The Asian Leadership & Outreach Committee has allocated a number of free admissions (first-come, first-served) for Sandia employees and contractors. To reserve your free tickets, send your name, organization and whether you want one or two admissions to ALOC

by COB Friday, May 14. ALOC also has limited discount coupons for the event; you pay \$5 instead of \$8 for adult admission, pay at the museum on the day of the event. Let organizers know if you need the discount coupons and how many. Your free admission tickets and the discount coupons will be sent via internal mail. Questions to Chui Fan Cheng (2661) at 505-845-9397 or cfccheng@sandia.gov.



REMINISCENCES of Nanjing, a pen and ink drawing from c. 1707. The image is featured on the official Asian Pacific American Heritage Month website at <http://asianpacificheritage.gov>.

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Sandia leads reliability workshop for the growing field of photovoltaic systems integration

By Stephanie Hobby

If you build a car using the finest automotive parts but don't connect the engine's energy to the wheels, you won't get very far. Similarly, installing state-of-the-art photovoltaic (PV) panels is an exercise in futility unless the power sources are expertly connected to the grid.

As the nation increasingly turns to solar power, utility companies turn to photovoltaic integrators to reliably and safely transmit that power from the panels to the grid, and, ultimately, the customer. While PV has been used for decades nationwide, integrating such an unprecedented amount of PV-generated power is relatively uncharted territory.

Sandia's PV team and DOE recently hosted a workshop specifically for PV systems integrators in San Jose, Calif., to encourage the adoption of reliability tools in the growing area of photovoltaics in the US energy portfolio. The program focused on mitigating risk, reducing the levelized cost of energy, and improving the appeal of PV systems by calculating the relationships between initial cost and performance, long-term reliability, and lifetime costs.

"Sandia's program focuses on systems-level work, and we are reaching into Sandia's historical knowledge of applying reliability methods to complex systems," says Sandia researcher Jennifer Granata (6335). "Providing reliability tools and leadership in this area is really needed within the industry, and it was a natural fit for us to lead this workshop."

The two-day workshop included representatives from 15 integrator companies. "I was pleased with how much the national laboratories are doing, how interested they are in integrator input, their willingness to employ resources, and their desire to ensure their work has relevance to real-world construction issues," says Peter Molloy, senior estimator with Stellar Energy, a California-based solar energy integrator. Ensuring that Sandia's tools and research are relevant to construction issues has been one of the researchers' goals for years.

"Open discussion with stakeholders was very useful," says Sandia researcher

Michael Quintana (6338). "We have been building and adapting tools that we would like the industry to adopt, and this workshop provided us with valuable feedback about what is helpful and how we can continue to advance the state of the art in PV systems reliability."

Jennifer and Michael are compiling the feedback and will distill it into specific program areas to help meet some of the industry's current needs.

Determining expected energy production and related costs over the life of a system is one such need that Sandia is addressing. Over the past two years, Sandia's PV team has developed a suite of reliability tools specific to PV systems, including models, failure assessment tools, and databases of field performance and reliability.

During the workshop, integrators showed particular interest in the model currently under development, which will provide integrators with a design tool to determine what to expect in terms of energy production and related costs over the life of a system installed in a given location, considering weather, performance, and reliability of each component type. That information will provide integrators with a range and an idea of how many kilowatt-hours will be generated over the systems lifetime, which companies seeking funding from bankers and investors can use.

"The reliability tool suite will help investors understand what the return on their investment will be," Jennifer says. "In turn, we expect to see increased funding for photovoltaic power sources."

The team is looking forward to hosting another workshop within the next year; the last time Sandia was involved in bringing integrators together in a forum was in the late 1990s.

"This was long overdue," Michael says. "The US research and development strategy has long focused on developing new PV module technologies and improving efficiencies. However, the technology does not get deployed until the system does, so it's imperative that the system functions well as a whole. We're pleased to provide our systems R&D expertise to help advance this industry."

All-hands meeting

(Continued from page 1)

hour-long talk before answering a number of questions submitted both by email and from the audience at his first all-hands meeting of the year at the Steve Schiff Auditorium on April 20.

Tom discussed the Labs' accomplishments, recent national events affecting the Labs, our current recruiting and hiring status, the new governance system, and recent leadership changes.

'Challenges are ever before us'

Tom also highlighted a number of recent Labs successes, but advised employees not to take them for granted. "Our challenge is to remain a world-class laboratory. And I'm pleased to report that's where we are. Even though today's picture looks quite good, the challenges are ever before us," he said.

With the nuclear weapons program potentially set to grow, Tom said Sandia needs to make sure enough qualified employees are in place. The Labs has always had a robust hiring program, and this year is expected to be above average.

Tom also said Sandia is getting support from DOE to boost partnerships with the DoD, the Department of Homeland Security, and other agencies.

With \$800 million to \$900 million of work annually being done outside the DOE, Sandia is setting the pace for interagency cooperation, he said.

Among the many Labs' accomplishments Tom mentioned, he noted specifically the success of the recent sled track restart and congratulated the team for the safe and successful test at Sandia's Rocket Sled Track Complex. He also discussed the start of construction on the Combustion Research Facility's 8,400-square-foot Combustion Research Computation and Visualization building, which is expected to be completed by the end of this year, and the Labs' recent ISO 9001 registration by the British Standards Institute following a comprehensive audit last October.

Summarizing the Labs recent performance and looking to the future, Tom said, "I'm looking forward to a time when we can say this was our finest hour. We not only met the challenges of today, but also the challenges of the future."

Tom will have an all-hands meeting with California Sandians later this spring.



TOM HUNTER

Neville Moody, Julia Phillips named Fellows of Materials Research Society

The title of MRS Fellow honors those MRS members who are notable for their distinguished research accomplishments and their outstanding contributions to the advancement of materials research worldwide. The maximum number of new Fellow appointments each year is limited to 0.2 percent of the current MRS membership.

Neville Moody, a researcher in Hydrogen and Metallurgy Science Dept. 8222, has been named a Fellow by the Materials Research Society (MRS). He is one of 29 new MRS Fellows named this year, including fellow Sandian Julia Phillips.

According to the MRS citation, Neville was selected "for outstanding research characterizing the deformation and fracture of materials, for service shaping the quality of professional society activities, and for mentoring generations of students, professors, and researchers."

Neville earned his PhD in materials science from the University of Minnesota in 1981. After joining Sandia that same year, his research focused on the determination of hydrogen effects on deformation and fracture in titanium, stainless steels, and superalloys, employing experimental testing, modeling, and simulation techniques. For the past 15 years his research has included the study of deformation and fracture on the submicron scale in thin films and small volumes.

Neville has given more than 100 invited presentations and authored or coauthored more than 170 publications, including invited reviews and a chapter in an encyclopedia on comprehensive structural integrity.

He has co-organized three International Conferences on Hydrogen Effects in Materials, three regional materials and welding technology conferences, numerous Materials, Metals & Materials Society (TMS) and MRS symposia on hydrogen effects, fracture of titanium alloys, and nanomechanical behavior of materials, and cochaired the 2005 MRS Spring Meeting in San Francisco.

He is on the board of review for Metallurgical and Materials Transactions and is an active member of several committees of MRS and TMS. He is also a Fellow of ASM International.

— Patti Koning



NEVILLE MOODY

Julia Phillips, director of Nuclear Weapons Science and Technology Programs (1200), has been named an MRS Fellow "in recognition of research accomplishments in thin-film heteroepitaxy, national/international leadership in materials science, and contributions to help shape the MRS organization."

Julia joined Sandia as a manager of a materials science organization in 1995. Between 2001 and early 2010 she served as director of Sandia's Physical, Chemical, and Nano Sciences Center. Her concurrent duties at Sandia included overall leadership of the Laboratory's Office of Science program. Prior to coming to Sandia, Julia spent 14 years at AT&T Bell Laboratories as a staff member and technical manager.

Julia was elected to the National Academy of Engineering in 2004 and to the American Academy of Arts and Sciences in 2005. She is a Fellow of the American Physical Society and the American Association for the Advancement of Science. She received the 2008 George E. Pake Prize for outstanding achievements in physics research combined with major success as a manager of research and development.

Julia currently serves as a member of the National Academy of Engineering (NAE) Council and the Board of Directors of the American Association for the Advancement of Science.

In her career, Julia has served in leadership and advisory capacities on professional associations. She chairs the Advisory Review Board for *Journal of Materials Research* and has served on the editorial boards of *Applied Physics Letters*, *Journal of Applied Physics*, *Applied Physics Reviews*, and *Journal of Materials Research*. She has published more than 100 papers and holds five patents.

Julia holds a PhD in applied physics from Yale University and a BS in physics from the College of William and Mary.

— Neal Singer



JULIA PHILLIPS

Solar America Cities

(Continued from page 1)



NOW I GET IT — Marissa Reno instructs at one of the many workshops at the third annual Solar America Cities meeting in Salt Lake City. (Photo by Neal Singer)

discussion groups and circulated through the 175 invitation-only attendees from government, industry, and nonprofits. The researchers urged more extensive and frequent communications among industries, cities, counties, states, retailers, and inventors. They questioned results possibly too good to be true and were available in general to assist the spread of solar options in 25 US cities selected through a DOE competition.

The discussion was about down-home, nitty-gritty problems of solar deployment, though technical advances were also reported. (Particularly imaginative was the moonlight sensor: an idea to smarten LED streetlights so that they dimmed and brightened with the waxing and waning of the moon. For perspective, there are 30,626 streetlights using energy every night in metropolitan Albuquerque, according to a Public Service Company of New Mexico representative contacted by the *Lab News*.)

The mayor of Pittsburgh issued a proclamation praising Sandia solar researchers for work in jumpstarting solar projects in the three-river city (see below).

Sandia teams worked several projects with host Salt Lake City.

One was a study to see whether photovoltaics could reduce the need to handle peak-time electrical loads by building a bigger substation and installing thicker overhead electric lines to carry the increased current through a suburban neighborhood. To date, the studies conducted by Abe Ellis (6335), Mark Ralph (6324), and Garth Corey (1655) indicate that residential home solar could not provide enough additional electricity, but larger collectors on nearby commercial buildings might.

In another Utah effort with national implications, a Sandia team is responding to the desire of a large-scale commercial home builder for a simple standard method to compute the added value of solar to the sale price of a house. Lack of such standards make the sale of houses with solar equipment problematic, because the value of the energy provided by the systems is not understood or captured in the sale price.

Other solar problems call upon Sandia's role as trusted technical advisor. Sometimes solar homebuilders present figures of unusual solar efficiency to homebuyers. On the one hand, Tiger Team members like the idea of large-scale homebuilders making solar equipment standard, rather than optional, on their homes. It means solar would be considered a mass-market player in housing, rather than the occasional entry from an energy rebel. But the Sandia team — Beth Richards (6733), Dick Fate (6473), Howard Passell (6733), Marlene Brown (5737), and Jeff Zirzow (6339) — at the SAC meeting want to see data on such claims. One simple tool against overstating efficiencies, says Marlene, is 'we'll look at the utility bills over a number of months and see how much is actually saved, compared with comparable non-solar houses.'

Solar for emergencies

Then there was discussion of solar techniques to

handle disruptions of ordinary life. Andrew Beldon, speaking for the organization Solar Boston, discussed the installation in his city of solar-powered evacuation routes. In a disaster that disrupted normal utility operations, solar photovoltaics could power electrical message boards displaying the most up-to-date information from city managers. The information would reach the signs through dedicated fiber optic lines. Solar-powered cameras at intersections could provide city managers real-time information about the condition of traffic. Solar-powered traffic lights could prevent traffic snarls — a potentially life-or-death problem in an evacuation — and solar streetlights with battery storage could provide light at night.

Andrew McAllister of the California Center for Sustainable Energy, described the role solar could play in providing lighted, powered shelter for San Diego residents during any of the area's many fires. Bill Young

25 Solar America Cities Partnerships

U.S. DEPARTMENT OF ENERGY



from the Florida Solar Energy Center talked about the role of solar in providing a dry, secure place with lights and refrigeration for food in the event of hurricanes or other utility-disrupting disasters.

What's next?

But what happens when the initial three-year funding for the Solar America Cities runs out this year?

The idea, according to DOE SAC program lead Hannah Muller, is to transition to a solar-sophisticated outreach group that will take the lessons from the original 25 cities and apply them to cities nationwide.

Meanwhile, DOE has granted additional funding under the American Recovery and Reinvestment Act to many of the original cities to implement a variety of special projects aimed at further facilitating wide-scale commercial deployment of solar technologies.

DOE's umbrella Solar Market Transformation Program will also continue using national laboratory expertise to solve solar implementation problems in cities across the country.

Sandia team lead Vipin Gupta (6338) in closing urged attendees to stay involved by frequently visiting the DOE Solar America Cities online website (www.solaramericacities.energy.gov/resources) and interacting via the social networking site known as SAmCIN (Solar America Cities Information Network) that was set up just for them.

Vipin, who will spend more time with Sandia's solar "glitter" project (see *Lab News*, Dec. 18, 2009), also passed the baton to Beth Richards, who will lead Sandia's upcoming Tiger Team efforts.

Has the tipping point passed, where solar can continue to rise on its own without sinking back into the swamp when unsupported by tax breaks and DOE grants?

"If we knew that," says Marissa, "we'd be rich and famous."

List of active Sandia solar tigers:

James Allen (1523), Ed Baynes (6418), Sandra Begay-Campbell (6338), Garth Corey (1655), Tom Bosiljevac (4821), Marlene Brown (5737), Stephen Dwyer (6732), Abe Ellis (6335), Dick Fate (6473), Sig Gonzalez (6335), Robert Gross (12316), Vipin Gupta (6338), Mary Kay Phillips (106603), Armando Fresquez (6335), Phillip Fuerschbach (0511), Charlie Hanley (6335), Cliff Ho (6337), Geoff Klise (6733), Greg Kolb (6335), Scott Kuszmaul (6335), Chuck Marken (6733), Howard Passell (6733), Larry Pratt (6335), Mark Ralph (6324), Marissa Reno (6733), Beth Richards (6733), Dan Riley (6335), Lisa Sena-Henderson (6338), Tommy Vigil, Jr. (10669), Jeff Zirzow (6339)

Pittsburgh honors Sandia solar team

The city of Pittsburgh has honored Sandia solar researchers for training city staff to install and maintain solar thermal and photovoltaic panels on city facilities.

The formal proclamation, signed by Mayor Luke Ravenstahl, recognizes the Sandia researchers "who braved sleet, snow, ice, and frigid temperatures to assess buildings and provide solar energy education."

Marissa Reno and Howard Passell (both 6733) accepted the document on behalf of their team from Jim Sloss, Pittsburgh energy utilities manager, at the third annual Solar America Cities meeting in Salt Lake City on April 13. Other Sandians honored by Pittsburgh are Geoff Klise (6733), Jeff Zirzow (6339), Jeannette Moore (2734), and Chuck Marken (6734).

"The Sandia researchers were assigned to us by the Department of Energy to provide us with technical assistance, and we wanted to honor them with a little gift," Sloss told the *Lab News*.

Pittsburgh is one of 25 cities selected by DOE for its Solar America Cities (SAC) program, which aims to remove the barriers to the growth of solar energy technologies across the US.

The Sandia researchers are part of DOE's so-called solar Tiger Teams that arrive upon request to solve specific problems, and then return to their respective research institutions.

"The entire Solar America Cities program has been an extremely effective collaboration between the federal government and cities," says Howard, "intended to quickly and dramatically increase the market penetra-

tion of solar technologies."

"There had not been much solar development in Pittsburgh," says Marissa, "but as a result of the work the city has done in the SAC program, the list of solar projects and initiatives in Pittsburgh has grown considerably. We hope that Pittsburgh will continue down the path it has started on and continue to grow its solar program."

Early in the project, city of Pittsburgh staff and the Sandia Tiger Team staff collaborated on a regional conference titled "Solar in Cold, Cloudy Climates" that educated city planners and engineers from cities in the Pittsburgh area on solar approaches appropriate for that region. Later in the project, Pittsburgh facilities staff were trained in installation techniques for solar hot water technologies. They installed one solar hot water system on a Pittsburgh fire station and have plans to install three more on other stations.

Upcoming training in photovoltaic installation technologies will include an actual installation, with two more planned after that.

A 3-megawatt solar farm is in the planning stage. The city is also using SAC funding to construct an interactive solar mapping website that will highlight their solar achievements and share solar information. And the city is hiring a "solar ambassador" whose work will be dedicated to advancing solar in Pittsburgh.

The three-year program, in which approximately \$550,000 was shared between the city of Pittsburgh and Sandia, ends in May.

— Neal Singer



MARISSA RENO re-enacts accepting the city of Pittsburgh's proclamation in praise of Sandia Labs from Jim Sloss, Pittsburgh energy utilities manager. Looking on approvingly are Sandia's Howard Passell (far left), Lindsay Baxter, Pittsburgh sustainability coordinator, and Jason Kimbitis, Pittsburgh city planner. (Photo by Neal Singer)

Sandia's work with Cray and Stirling Energy Systems honored at Federal Laboratory Consortium annual meeting

Stories by Heather Clark

SunCatcher at Sandia

The SunCatcher™ technology makes it possible for large power facilities to provide clean, reliable, cost-effective, and sustainable solar-electric power to communities, address renewable energy-portfolio targets, and tackle global climate change by reducing carbon emissions, according to a nomination submitted for a Federal Laboratory Consortium (FLC) awards program.

Sandia was recognized recently by the FLC for its tech transfer work with Stirling Energy Systems (SES) and the SunCatcher technology.

Steve Cowman, SES chief executive officer, says Sandia's relationship with the Scottsdale, Ariz.-based company was essential for attracting investments of about \$200 million over the past two years from a firm with which he was previously associated.

"The product has been significantly enhanced and improved by virtue of the collaboration and partnership that we have with Sandia," Cowman says.

The close-knit collaboration started in 2003, when SES sent a prototype solar dish and two part-time engineers to Sandia's state-of-the-art National Solar Thermal Test Facility (NSTTF), says Chuck Andra (6337), Sandia's lead project engineer. Sandia made space and equipment available, and provided access to technical personnel to help SES develop, test, and refine their dish engine system, he says.

"That was so successful and they learned so much about their own dish from our work that it quickly blossomed into a proposal for a mini-power plant of six dishes," Chuck says.

In 2006, DOE approved a cooperative research and development agreement (CRADA) with SES.

The openness demonstrated by representatives from both partners allowed technology transfer to flow in two



THE SUNCATCHER™ is the outcome of a collaboration between Sandia researchers and engineers from Stirling Energy Systems, who work together at the National Solar Thermal Test Facility in Albuquerque. This radial design is being produced today.

(Photo by Randy Montoya)

directions, enhancing the skills of Sandia's researchers while contributing to the development of a commercial product for SES, the partners say.

Sandia's technical expertise helped SES drop 4,000-6,000 pounds of steel from what was a 16,000-pound structure and halved the number of mirrors from 80 to 40, which reduced construction and maintenance costs.

The Sandians also convinced SES to use a radial design with pie-shaped mirrors, the design the company is producing today, Chuck says.

"It's much more efficient structurally, it's quicker to assemble and it's better optically," Chuck says. "That was one of the big payoffs of our interaction with them."

Eventually, 20 full-time SES engineers and technical staff

worked at NSTTF. The engineers learned from each other, building and troubleshooting together. Sandia contributed its expertise in solar engineering, particularly in the area of solar optics, but Stirling gave Sandians the opportunity to work directly on real hardware owned by SES, fine-tuning their ideas so they would work in real-world applications.

"It's a closer collaboration than we've ever had before," Chuck says. "We're actually sitting in on the design process, working with their engineers and mentoring people."

In 2008, one of the original SunCatchers set an efficiency record for converting solar energy to electricity by achieving a 31.25 percent net efficiency rate that topped a 1984 record of 29.4 percent.

The collaboration is ongoing. Gaining a better understanding of optics and speeding up the automatic alignment of the dish's mirrors so they will work for rapid deployment of large-scale generating plants are areas for further research, Chuck says.

"We're learning at Sandia whether these techniques are even going to work and we're developing intellectual property that we'll be able to market to other companies," Chuck says.

Cowman and Chuck agree that without the partnership, there would be no SunCatcher.

"If it hadn't been for Sandia, we would have had a technological curiosity rather than a commercial project," Cowman says.

Cray and Sandia: Partnering to create Red Storm and successor systems

When Cray and Sandia joined forces in 2001 to build the Red Storm supercomputer, there were no commercial supercomputers that targeted complex simulations, says Sudip Dosanjh (1420), senior manager of Computer & Software Systems.

Sandia was recognized recently by the Federal Laboratory Consortium for its tech transfer work with Cray.

Initially, the customer-supplier relationship between Sandia and Cray was switched. Sandia was unable to find a provider for the supercomputer architecture, so the Labs supplied the architecture and several fundamental technologies and Cray's engineers jointly created the system with the Labs and built the hardware to Sandia's specifications, says Ron Brightwell (1423), manager of Scalable System Software.

In spite of that initial role reversal, the two partners built what later became one of the best massively parallel processing systems in history: the Cray XT series, according to the award nomination. These systems have had significant national impact.

"The NNSA's partnership with Cray has been important to both the nation's nuclear security and to national supercomputing competitiveness. The government's investment in Red Storm and the XT line of supercomputers has afforded scientists unprecedented capabilities for exploring long-standing problems," says Robert Meisner, head of NNSA's Advanced Simulation and Computing program.

Red Storm's development took about two and a half years, about a year less than the typical vendor schedule.

Peter Ungaro, Cray's president and chief executive, credits Sandia for the speed of the development. "We would have gotten there, but we definitely wouldn't

have done it in the timeframe that we got there with Sandia, and we wouldn't have built as good of a product, if we had done it ourselves," he says.

The partnership included a Work for Others (WFO) agreement, licenses, and jointly held patents.

Sandia developed several technologies that have been or still are being used in the Cray XT computers, including a Portals networking layer that enables processors to communicate; the Catamount Lightweight Kernel to improve processing and data access performance; and the Compute Processor Allocator that optimizes how processors are assigned to computing jobs.

Red Storm enabled Sandia and the DOE to meet its computing needs by using tens of thousands of processors working in parallel for several weeks on a single problem.

The Cray XT technology has proven effective at solving a wide range of science and engineering problems related to climate change, fusion, material science, nanomaterials, biology, and astrophysics, according to the nomination.

There also have been economic benefits from the partnership. Before collaborating with Sandia, Cray was striving to stay competitive in the volatile supercomputing market, according to the nomination. Since introducing the Cray XT, company statistics show it has sold more than 1,200 XT cabinets to more than 80 customers worldwide.

"The international success of Cray's XT line demonstrates that there is a strong commercial and government demand for highly scalable systems," Sudip says.

Hal says the partnership with Cray has provided a much-needed supplier in the high-performance computing market.

Meisner says the DOE partnership with Cray will continue through the purchase of the Cielo platform, which will be jointly managed by Los Alamos National Laboratory and Sandia.

And, the two partners view the Cray-Sandia partnership on Red Storm as a potential model for the next supercomputing challenge: exascale computing, where systems can handle a million trillion operations per second.

FLC: National forum for Sandia's tech transfer professionals

Sandia's technology transfer professionals discussed how they are bringing the Labs' ideas to the marketplace with peers from across the country at the Federal Laboratory Consortium's recent national meeting in Albuquerque.

The Federal Laboratory Consortium (FLC) — a nationwide network of more than 250 federal laboratories and centers and their parent departments and agencies — provides a forum for its members to develop strategies for technology transfer. The national meeting was April 26-29.

Jackie Kerby Moore, manager of Technology & Economic Development Dept. 1933, is Sandia's representative to the FLC. About 55 to 60 Sandians work to directly support technology transfer at the Labs.

Jackie says the FLC convenes meetings for technology transfer professionals, recognizes their best practices and provides training. "I think that's where their strengths are," she says.

Dick Fairbanks (1933), who runs the Entrepreneurial Separation to Transfer Technology program, says FLC's panel discussions, like one Hal Morgan (1930), senior manager for Industrial Partnerships and Strategy, is moderating about public-private partnerships, help the audience understand what is possible.

"If there are barriers or people have perceived barriers about transferring technology, FLC's service to them is putting on a national meeting that shows how it can be done," Dick says.

During the national meeting, Sandia employees also attended the Department of Energy's Technology Transfer Working Group, which covered issues related specifically to DOE labs.



ARCHIE GIBSON, a team leader on the Computer Operations Team, works inside the Red Storm supercomputer, the result of an award-winning partnership between Cray Inc. and Sandia.

(Photo by Randy Montoya)

Stranded

Volcanic ash plume delays about 20 Sandians' homebound flights from Europe

Smoke billows from Iceland's Eyjafjallajokull volcano in mid-April. The ash cloud rose into the jet stream and drifted across Europe, leading to cancellation of more than 100,000 flights and causing disruptions that affected travel plans around the globe. About 20 Sandians in Europe were directly affected by the delays. (Photo by Henrik Thorburn via Wikimedia Commons)

Story by Heather Clark

Eerily empty international airports, frustration over canceled flights, and an 18-hour car trip through four countries — this was how several Sandians described being stranded by an ash plume spewing from a volcano in Iceland that shut down airspace over much of Europe.

When Iceland's Eyjafjallajokull volcano began erupting April 14, about 20 Labs employees traveling mostly in and through Europe were stranded, says Suzette Beck, the International Travel Program lead in International Business Operations Dept. 4031.

The volcano's eruption sent a plume of grit into the jet stream that caused more than 100,000 flights across Europe to be canceled, according to media reports.

Suzette says Sandians tried to travel to Spain to catch flights out of Europe, one person considered flying in the other direction through Singapore to reach Albuquerque, and one employee took the train to Italy to visit family while waiting for the airspace to reopen.

"They were trying to get home any way they could," she says.

Wendy Clayton (6753) found herself, a coworker, and a Los Alamos National Laboratory colleague stuck in Bucharest after completing work for the Second Line of Defense program in Romania. They took an 18-hour car trip through Romania, Hungary, Austria, and Germany to reach Munich and catch a flight home after being stuck for five days.

Wendy says she and her travel companions kept looking for "silver linings." They weren't sleeping in an airport, they didn't have to wash their clothes in a sink, and the hotels in Bucharest lowered rates for stranded

travelers, she says.

"What else can you do but laugh," Wendy says. "Nobody there did it to us."

Empty airport

Ray Lemke (1641), a physicist, made the best of his time in Frankfurt following a conference to sightsee and improve his German.

"I actually started to understand some of what people were saying to me at the end of the second week," he says. "For me, the only hard part of it all was just the first days when things were very uncertain."

Ray says he initially thought the ash cloud was affecting only England, so he checked out of his hotel and went to the Frankfurt airport April 16, thinking he was heading home.

"When I got there, the Frankfurt airport, which is usually a madhouse, was eerily quiet," he said. He discovered his flight was canceled and the airport closed hours later.

Ray made a plan to travel through Spain, but later reconsidered when it became apparent that everyone else was doing the same thing. He says he spent about 50 minutes on the phone trying to get another flight. Eventually, Ray got a reservation for April 19, which was rescheduled to April 22, the day he returned home.

'Unsettling' uncertainty

Clint Atwood (1932), who manages the Lockheed Martin/Sandia Technical Partnerships Program, was stranded for five days in London after participating as an invited international expert reviewing manufacturing research projects for the United Kingdom's Engineering and Physical Sciences Research Council, the UK equivalent of the National Science Foundation.

When the airspace over the United Kingdom was closed, Clint says he had no idea how long he would be stuck when the ordeal started.

"The unsettling part of it was, they closed the airspace due to the ash being blown over the United Kingdom by the jet stream, so I knew the jet stream wasn't going to change in the near term, unless a storm from the south blew the jet stream north," he says. "What they were basically telling you was they had no idea when you were ever going to get a flight home."

While some people might think it's not so bad to be stuck in London, Clint says he wasn't able to relax because of the repeated cancellations and uncertainty.

"I had no desire to go anywhere except the airport and get the heck out of there," he says. "In the back of your mind, you think, 'Until that volcano stops spewing ash, I can't go home.'"

Clint says he was "very grateful" to Jennifer Byers (4031), who emailed him to let him know she and Sandia were aware of the situation and not to worry.

Should employees find themselves caught up in a natural or manmade disaster while on travel, they should contact their manager, which they are required to do once a day under normal circumstances, Suzette says.

The International Travel office also emails travelers and their managers if they are alerted to an emergency situation in a country or regions where Sandians are traveling, she says.

"If I see something that shows that they might be in harm's way, I'll email them and their manager and ask 'Are you OK?'" she says.

In the end, Clint, Wendy, and Ray all arrived back in the US safely.

Clint put it well in an email sent the day he landed in Albuquerque: "It's great to be home."

"I had no desire to go anywhere except the airport and get the heck out of there."

— Clint Atwood

Advice for traveling Sandians . . .

Clint Atwood, Wendy Clayton, Ray Lemke, and Suzette Beck have advice for Sandians traveling internationally to avoid hardship in case of long-term delays:

- If you have a prescription, take along more pills than you think you will need.
- Check the news often and seek out different news sources.
- Borrow a BlackBerry device or laptop from Laptop on Foreign Travel (LOFT), which can be used to check flight status. The department prefers two weeks' advance notice, but will try to accommodate all requests. Their website is <http://loft.sandia.gov/>.
- Use Skype software on laptops to save money when you need to make long-distance phone calls.

- If you can, fly with only carry-on luggage. This makes it easier to fly standby if you need to.

- Take advantage of being a preferred customer of a certain airline. Preferred customers are told about seats that regular customers never hear about when demand is high.

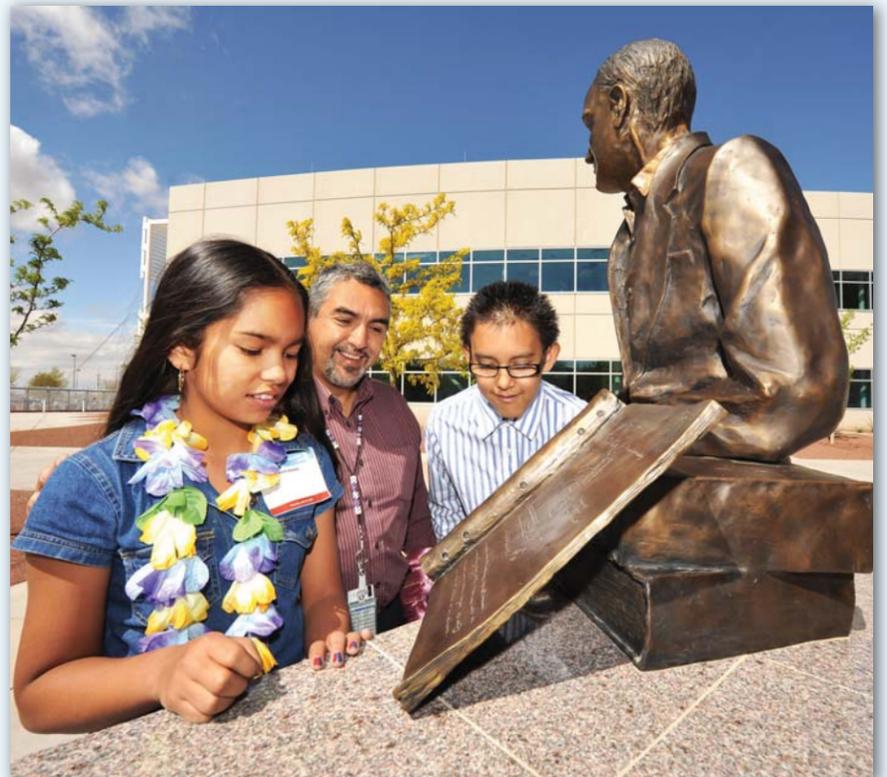
- Call International SOS for help with medical emergencies or travel assistance, such as lost documents or advances of emergency personal cash. The phone number depends on the countries where the travel is located.

- If you are delayed, you may contact Treasury & Travel Services Dept. 10507 to receive an emergency increase of funds to your corporate travel card or other travel-related assistance.

Sandia NewMexicoNews Photos by Randy Montoya



AVATAR? — No, it's a 3-D virtual reality demonstration about weapon use control systems.



KENDRA KEAHBONE, in foreground, reads the plaque honoring Sandia pioneer Willis Whitfield, inventor of the laminar air flow clean room. With Kendra are her father Kenneth Keahbone (9342) and her brother Kameron.



COLORING YOUR WORLD — Visitors enjoy a hands-on exhibit of Sandia's work in solid-state lighting that illustrated different ways to create white light from single-colored LEDs.

Take Our Daughters and Sons to Work Day 2010 drew an enthusiastic response at the New Mexico and California sites, with 230 kids participating in activities in California and 1,237 kids in New Mexico. This event is more than a career day — it is an enriching experience designed to show children the value of education and to inspire them to reach for their own professional futures. For many participants it was a chance not only to spend quality time with their children, but also to interact with colleagues in a different way. In addition to Take Our Daughters and Sons to Work Day activities, April 22 also featured a number of Earth Day-related events.

Take Our Daughters & Sons to Work Day

Sandia CaliforniaNews Photos by Randy Wong



MAILE SASAKI, daughter of Darryl Sasaki (8621), creates slime from common household ingredients.



RUSS KELLMAN (8513-1) and his son Dean work together to make a medieval catapult from a milk carton, rubber bands, and a pencil.



TANNER ELLIS, stepson of Bobby Smith (8513-1) tests out his medieval catapult with marshmallows.



DAVE BREKKE (8517) helps Brian McKnight, Dustin Mattos, and Tommie Brown experience suiting up with personal protective equipment.



HALEY HARTLEY, stepdaughter of Tara Hartley (8522), tests a "bristlebot" on the race track.

Employee death

Pat O'Neill was on a mission to do things right

Patrick O'Neill (12420) died on April 17. He was 54 years old and had been at Sandia more than 30 years.

"Pat was the longest-serving corporate investigator in the history of Sandia, with 15 years," says manager Mark Ludwig (12420). "He conducted investigations into waste, fraud, and abuse, and workplace violence issues. Before coming to Corporate Investigations in 1995, Pat was a captain in the Sandia Protective Force. He knew every nook and cranny of this Lab and just about everybody who worked here at one time or another.

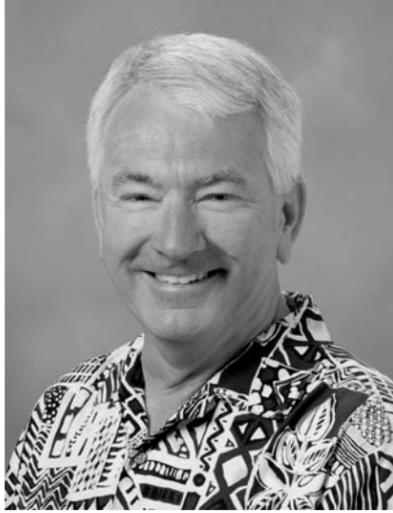
"Pat was promoted to manager in Corporate Investigations in 2009. He always put his country and Sandia ahead of his own needs. During difficult situations, his first thought was what potential impact the situation could have on the country and Sandia.

"When people were in crisis, they knew to call Pat," adds Mark. "They knew they could count on him. No matter the state of affairs, Pat kept a cool head and could diffuse a difficult, hard situation."

"Pat's greatest love was his family," says his sister, Sheila O'Neill (10549). "Sean, his son, describes his dad as a 'giant among giants.' They were always skiing, fishing, and hiking. He was his daughter Meaghan's biggest fan, cheering her on at soccer and basketball games and track meets. He was proud of the way he and wife Melissa, his college sweetheart, raised two independent kids with strong morals. We were all blessed to be part of his life."

"I knew Pat for more than 23 years," says director Linda Duffy (3300). "I met him when he was a captain in the Protective Force and I was a graduate student working as an exercise physiologist. He had a caring and compassionate attitude. When I became the manager of our Employee Assistance Program and Pat was in Corporate Investigations, Pat would refer employees who were going through difficult times to our program. He did so without judgment and with the sole intention of getting the individuals help. Pat was my go-to guy when we had concerns about an employee's well-being. He would locate them, and get them the care they needed.

"Pat often saw people at their very worst, but he never lost his sense of humor or his love for Sandia and the work we do to serve the nation. He had great instincts about people. He was a trusted resource for me throughout my



PAT O'NEILL

"When I became the manager of our Employee Assistance Program and Pat was in Corporate Investigations, Pat would refer employees who were going through difficult times to our program. He did so without judgment and with the sole intention of getting the individuals help. Pat was my go-to guy when we had concerns about an employee's well-being. . . ."

— Benefits Center 3300 Director Linda Duffy

career. More importantly, he was a friend," says Linda.

"His white hair, Hawaiian shirts, great sense of humor, vast knowledge on many topics, dedication to his job, and his fairness and generosity defined Pat," says Kathy Congable. "His generosity did not end at Sandia. He spent many years as a leader and mentor to young men and boys with the Boys Scouts of America."

His smile and his positive outlook impressed Dr. Deborah Grady (3334). "Pat was always friendly, cheerful, and upbeat," says Deborah. "Once, we were having a difference of opinion on a certain case and he offered to bet me a Costco ice cream cone on it, which was a favorite of his. The bet was on and it turns out that Pat was right. The sad part is that I never had the chance, or made the chance, to get Pat his Costco ice cream cone. I would run into Pat walking on Hardin Field at lunch, around Sandia, or Medical and he would say 'Hey, Doc, where's my ice cream cone? Pay up.'"

Pro Force Captain Pablo Montoya says that Pat was a man of high integrity. "He was on a mission to do what was right," says Pablo. "He never wavered. Right was always right and wrong was always wrong."

"I loved how Pat always went the extra mile to help people," says Deb Menke (3334). "Our conversations would usually end with Pat saying life is good and I will bet you a cone."

"Pat was a member of my Comprehensive Security Briefing Team, one of a group of a dozen people who come in twice a month to give a briefing," says Fran Armijo (4217). "He was a man of high principles, who always put the best interest of Sandia Labs first. He was like a Don Quixote, always fighting windmills. One man scorned and covered with scars still strove with his last ounce of courage to reach the unreachable stars; and the world was better for this."

— Iris Aboytes

Business Rules Symposium draws enthusiastic response from across DOE

Discussions aimed at sharing ideas and information

By Linda Gillis

Representatives from NNSA's Sandia Site Office and from eight DOE contractor labs, plants, and test sites converged on Albuquerque recently for the first-ever Business Rules Symposium.

Cohosts Joe Polito, VP of Enterprise Transformation Div. 9000, and Phil Newman, senior manager in Requirements Management Dept. 9003, welcomed attendees to the symposium, which was designed to encourage information-sharing about best practices in developing institutional business rules.

According to Phil, the need for such a symposium became apparent during Sandia's business rules redesign project. That project ultimately led to the FY09 release of the new Corporate Policy System. The project, while it ended successfully, would have been helped had there been a more formal process for sharing ideas and information among DOE facilities.

During the Corporate Policy System project, Sandia did some benchmarking with other DOE sites. It became apparent at that time, Phil says, that many institutions were working on improving their own business rules program.

All agreed that DOE and NNSA contractors have unique challenges in terms of the quantity and complexity of regulations, contracts, customer sets, and usage issues. Those challenges, all agreed, go far beyond the issues usually discussed at large private-sector conferences.

Phil and his team determined that hosting an event for all DOE contractors would be a great opportunity to leverage collective expertise. The idea resulted in a symposium agenda that focused on the sites' differing approaches, lessons learned, challenges, solutions, and future goals.

During the event — held at Sandia/New Mexico — representatives from several facilities demonstrated their business rules programs. Sandia's Corporate Policy System, which Phil demonstrated, was well-received by attendees. Sandia executives, other managers, and staff from across the Labs presented special topics and facilitated breakout sessions.

Representatives from most of Sandia's nine policy areas attended the two-day event and served as subject-matter experts.

Says Phil, "The positive feedback from the attendees was very gratifying. In fact, an effort is under way by an individual from Lawrence Berkeley National Laboratory to investigate follow-on activities that will help us continue to share information."

Interested in learning more? Requirements Management Dept. 9003 is compiling a CD of presentations and take-aways for symposium attendees. Members of the workforce can email Linda Gillis at lkjgill@sandia.gov to get these files.

May is Electrical Safety Month

May is National Electrical Safety Month, and Sandia is teaming up with the Electrical Safety Foundation International (ESFI) to launch a public awareness campaign to educate key audiences about the steps to take in order to prevent electrical fires, injuries, and fatalities in the home and the workplace.

The most recent statistical data from the National Fire Protection Association indicates an annual average of more than 53,000 electrical home structure fires, claiming more than 450 lives, injuring more than 1,400 people, and causing more than \$1.4 billion in property damage. In the workplace, electrical hazards are the cause of another nearly 4,000 nonfatal injuries.

"Eliminating electrical hazards begins with education and awareness," says ESFI president Brett Brenner. "National Electrical Safety Month is a time for all of us at home and work to reexamine our surroundings and determine what steps we can take to prevent the hundreds of deaths, thousands of injuries, and billions of dollars in productivity and asset [losses] that occur each year because of electrical hazards."

This year's campaign will focus on one key electrical safety issue during each week in May:

- **Renovating the Right Way** (May 2-8): Whether you are a first-time do-it-yourselfer or a "weekend warrior," practicing safe habits can reduce your risk when it comes to home electrical work. Use ESFI's Electrical Safety Workbook (<http://tiny.sandia.gov/pe4db>) to conduct a basic electrical safety audit of your home.
- **Staying Safe at Work** (May 9-15): Use ESFI's new Office Safety Checklist (<http://tiny.sandia.gov/48ys7>) to perform a basic electrical safety inspection at work and keep your office safe from electrical hazards.
- **Educating Your Children** (May 16-22): Do your children know what it takes to stay safe when it comes to electricity? Visit ESFI's Kids Corner (<http://kids.esfi.org/>), a new online resource that features teaching tools and educational resources to teach kids about electrical safety.
- **Remembering Electrical Safety in the Field** (May 23-29): Use ESFI's Never Assume Safety Series (<http://tiny.sandia.gov/jmwjt>) to give you and your coworkers the right frame of mind when it comes to safety in the workplace. From job planning to arc flash awareness, this one-of-a-kind video program is a must for anyone working with or near electricity!

For more information, go to the ESFI website (esfi.org) or Sandia's internal "May is Electrical Safety Month" website at <http://tiny.sandia.gov/7bhlh>.



TAKECHARGE → Take Charge Corner

Health Reimbursement Accounts (HRAs)

Note: This information provided by Sandia's Benefits organization.

In the last edition of the Take Charge Corner, we looked at Sandia Total Health — Sandia's new consumer-directed health plan (CDHP). We learned that this new plan comprises a comprehensive health-care coverage and a Health Reimbursement Account (HRA) to which Sandia contributes.

The tax-free HRA gives you direct access to your health care dollars and the benefit of paying for some of your out-of-pocket expenses. The amount of money allocated to your HRA is determined by 1) your coverage category/tier and 2) if you have taken a biometric screening and health assessment. See the following table for HRA allocations:

Coverage Category	Annual allocation of HRA dollars if biometric screening and health assessment are taken ¹	Annual allocation of HRA dollars if biometric screening and health assessment are NOT taken ¹
Primary Covered Member only	\$250	\$0
Primary Covered Member + Spouse or Child(ren)	\$500	\$250
Primary Covered Member + Spouse + Child(ren) (also referred to as family)	\$750	\$500

¹ This is the only amount that will be placed in your HRA during the calendar year and may be used for any combination of network and nonnetwork covered health services, including eligible prescription drugs purchased through Catalyst Rx.

The HRA account should not be confused with a Flexible Spending Account (FSA). HRA funds may only be used for medical and prescription expenses that are eligible under Sandia Total Health. In addition to medical and prescription expenses, FSA funds may be used for dental and vision care.

And unlike FSAs, any unused dollars in your HRA at the end of the plan year will be rolled-over for use the next year.

Examples

Your HRA dollars can be used to pay for eligible expenses, including eligible prescription drugs, up to the amount allocated to your HRA.

Example 1:

You complete a biometric screening and health assessment and you have single coverage at the beginning of 2011. Sandia allocates \$250 to your HRA. During the course of the year, you incur \$150 in eligible medical services (no prescription drug purchases). Your in-network deductible is \$750, so the entire \$150 of health services you received is subject to that deductible. You may use your HRA to cover the deductible amount.

Because your HRA balance is sufficient to cover the entire \$150 of your annual healthcare costs, you effectively have no out-of-pocket costs. Plus \$100 of the remaining HRA funds will be rolled over to 2012.

Example 2:

You have enrolled yourself and your spouse but have not completed a biometric screening and health assessment for 2011. You do not receive your \$250. Sandia allocates only \$250 to your HRA for your spouse; therefore, you start the year with a balance of \$250. During the course of the year, you and your spouse incur \$600 in eligible expenses. Your in-network deductible is \$750 per person, up to \$1,500 for you and your spouse. The entire \$600 of health services you and your spouse received is subject to the deductible.

The HRA can be used to reimburse \$250 of you and your spouse's annual health care costs. You had \$600 in costs; the first \$250 of the deductible is reimbursed by the HRA. This means that you must pay an additional \$350 to cover the rest of the bill.

Getting the maximum Health Reimbursement Account contribution

Sandia Total Health members must complete the biometric screening and health assessment to ensure they receive the maximum HRA contribution. Getting your maximum HRA contribution is as easy as 1-2-3:

1. Employees can schedule a biometric screening with one of Sandia's physicians at an on-site clinic. Employees not near an on-site clinic and pre-Medicare retirees can print a biometric screening form from www.sandiacharge.com/retirees/pre-medicare. Bring the form with you to your primary care physician.

2. Complete your biometric screening (such as blood pressure and cholesterol testing), and

3. Take a confidential online health assessment (a questionnaire about your health)

Find more information about biometric screenings and health assessments at www.sandiacharge.com/employees/using.

How the Health Reimbursement Account works

If you don't spend all your HRA dollars in a calendar year and you remain enrolled in the Sandia Total Health Program for the following year, any HRA balance remains in the HRA for the next calendar year. The maximum balance in an HRA at the beginning of any new year is capped at:

- \$1,500 for primary covered member only coverage
- \$3,000 for primary covered member plus spouse (or same gender domestic partner) or plus child(ren) including same-gender domestic partner child(ren)
- \$4,500 for family coverage



Health Reimbursement Accounts empower consumerism

The HRA encourages you to become more aware of your health care costs and to make active decisions on your health care spending. Since Sandia Total Health gives you the power when it comes to your health care spending, it will be important for all Sandians to become smarter consumers of health care services when looking for the best care at the best price.

More information about Sandia Total Health and the HRA can be found at www.SandiaTakeCharge.com.

If you have any questions about the biometric screening, health assessment, or Health Reimbursement Account, contact Sandia's Health, Benefits & Employee Services Customer Service at 505-844-HBES (4237).

Feedback

Update on the current state of the pension fund; when will PeopleSoft 9.0 be implemented for timecards?

Q: A year ago when the market was at its lowest we were regularly being reminded that Sandia would have to contribute a significant amount each year to keep the pension plan alive. On one presentation I recall seeing a figure as high as \$200M/year. However, in the last 12 months my personal 401(k) account has recovered almost everything that it lost and I'm hoping/assuming that the pension fund saw a similar increase. Could you please give us an update on the current state of the pension fund, and if the predicted Sandia contributions have been reduced due to this recovery?

A: The level of contributions that must be contributed to Sandia's pension plans is actuarially determined each year. When calculating those required contributions, Sandia's actuaries must recognize both the value of the assets in the pension trust and the value of the benefit obligations, or liabilities. The net present value of future pension liabilities is required to be calculated using a discount rate equivalent to corporate bonds yields. So, although capital markets

rebounded in 2009 and Sandia's pension fund earned a return of roughly 22%, corporate bond rates also declined during the year which had the effect of increasing the value of the pension liabilities and offsetting much of the asset gains. In addition, although the pension assets grew during the year, the absolute value of the pension liabilities also increased as plan participants earned an additional year's worth of pension benefit. Consequently, although the funding status of the pension fund improved modestly after 2009, Sandia is still projecting that it will be required to make substantial contributions to the Retirement Income Plan over the next several years.

— Mark Biggs, (10520)

Q: Regarding PeopleSoft 9.0, could you please tell me the week ending date for the first timecard submittal using PeopleSoft 9.0? In other words, for what week ending time-card period will PeopleSoft 9.0 be implemented?

A: The current Electronic Timekeeping (ETK) application will be available until June 17. The new time-keeping application in PeopleSoft v9.0, called Time and Labor, will be available on June 21. Time must be entered for the week of June 18-June 24 no later than 7:00pm MST on June 24. Training on the Time and Labor application will be provided through the online course ETC100 starting in mid-May. More information about the PeopleSoft v9.0 upgrade can be found at <http://upgrade.sandia.gov>.

— Ty Christie, (9544)



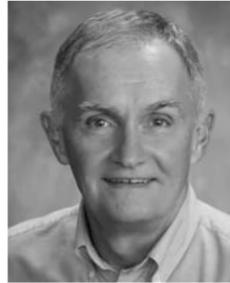
Timecard Deadline

June 2010 → Employees should not submit ETK timecards dated after Thursday, June 17. Any time-cards after this date will not transfer into the new PeopleSoft Time and Labor application.

<http://upgrade.sandia.gov>

Mileposts

New Mexico photos by Michelle Fleming
California photos by Randy Wong



Robert Bradshaw
35 8223

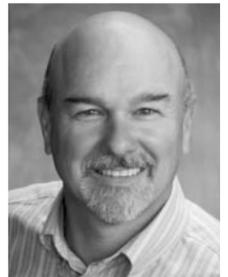


Martha Campiotti
35 8360

Recent Retirees



Harvey Ogden
40 6325



Art Hayes
39 8243



Rex Eastin
30 8135



Marilyn Hawley
30 8116



Robert Monson
30 8244



Thomas Prast
30 8135



Janet Bauerle
33 2957



Karen Jefferson
25 8112



Sandra Klassen
25 2957



Lawrence Trost
30 545



Dean Williams
30 8945



David Zanini
30 8224



Dominic Montoya
25 2114



Donald Sheaffer
25 8136



James Strickland
24 1433



Troy Delano
20 8123



Kenneth St. Hilaire
25 8362



Stephanie Ball
20 8527



Donna Davis
20 8945



Kevin Ewsuk
20 1715



Cheryl Lari
20 8136



Andrew Orrell
20 6800



David Peercy
20 12321



Steven Rice
20 8224



Albert Sandoval
20 8517



Michelle Hekmaty
15 8656



Judith Hurtz
15 8522



Laura Lang
15 12857



Sherry Stone
15 10667

Retirements

Retiring and not seen in the *Lab News* pictures: Marcia Roybal Anderson (10626), 20 years; and Richard D. Parker (48432), 31 years.



50 years ago . . . Sandia Laboratory has applied to AEC, Washington, D.C., for certification of a new all-time AEC safety record set by Sandia this week when the previous record of 11,175,509 man-hours without a disabling injury was surpassed. The old record was made in 1958 by General Electric, Lockland, Ohio. The Sandia record is at 11,371,302 employee-hours without a disabling injury.

40 years ago . . . An AEC patent application has been filed for an improved electrooptic ceramic which can be used to generate black and white

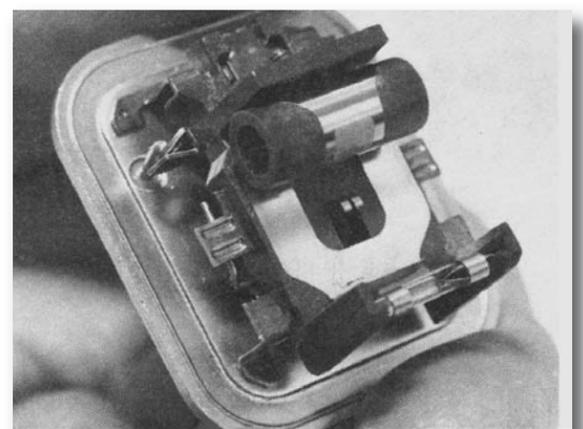


INVENTOR GENE HAERTLING (2713) displays samples of new transparent ferroelectric ceramic.

and color images. The new material — the first transparent ferroelectric ceramic ever produced — is expected to remove many of the technical problems which have delayed application of ferroelectric ceramics to memory and display devices similar to those used in computer systems.

30 years ago . . . Recent advances in both electronic design technique and electronic technology have resulted in a **new and less expensive safety system for nuclear weapons**. These new safety systems gather data during the entire delivery cycle of the weapon, comparing the actual environment with the one in which the weapon is designed to function. At the last possible moment — provided all environmental and internal and external signal requirements are met and verified — the safety system permits the weapon to arm and fire. One of the key elements in these new safety systems is the trajectory-sensing signal generator.

20 years ago . . . A Sandia invention — the rolamite — was invented for the weapon program in the mid-'60s by former Sandian Don Wilkes. **Rolamites are now used in some new Chrysler vehicles as acceleration (impact) sensors** in airbag actuation mechanisms. TRW Technar in Irwindale, Calif., builds and markets the mechanisms that contain the rolamites.



AIRBAG ROLAMITE manufactured by TRW Technar. Chrysler uses rolamites to actuate airbags in some of its new vehicles.

10 years ago . . . Researchers at Sandia and the University of Kentucky are **developing enabling technologies for a new thin-film, ultralight deployable mirror** that may be the future of space telescopes and surveillance satellites. Made out of a "smart" material that changes shape when struck by electrons fired by a computer-controlled electron gun, it is a whole new approach to space mirrors.

Lifestyle change helps transform Chunky Monkeys into Hunky Monkeys

Story by Iris Aboytes

"We are not quite there yet, but we are on our way. There is the place we all want to be health-wise."

— Paul Keller, Team captain (4242)

Paul and his coworkers Gary Moses, Tom Rodgers, and Phil Sandoval (all 4242) make up the Chunky Monkeys. The Chunky Monkeys is one of HBE's Biggest Loser teams.

The Biggest Loser competition is a six-month HBE program designed to create a healthier you. There are 88 teams in this year's competition.

Together the Chunky Monkeys have lost 125 pounds, 40½ inches, and their BMI (body mass index) is down 15.22 points. Phil and Paul's blood pressure is each down 30 points.

"I decided to lose weight when I started having problems tying my shoes," says Paul. "I took advantage of Sandia's discounted membership for Defined Fitness.

"Phil was our catalyst to join the Biggest Loser competition. We're in this competition to win, both individually and as a team. There is no way we can fail. We will win."

Numbers off the chart

"My cholesterol and triglycerides [the fat in the blood] were high," says Tom. "Even with medication my numbers were off the chart. Part of it has to do with my family history, but it didn't take long after starting the program to discover that my poor diet and lack of exercise were just as much to blame. My goal is to get rid of my medication, even though my doctor thinks I'm not being realistic. I aim to prove him wrong."

"When my wedding ring would not fit anymore, I knew I had to do something," says Phil. "As coach of the Dodgers, a Little League team, and the Jaguars, a peewee football team, my kids were leaving me in the dust. I had no energy, was short of breath, and perspired a lot. Now I am not working as hard, and I leave them in the dust. My wedding ring is almost too big."

Gary says he bought bigger clothes. "When those bigger clothes became smaller clothes, I knew I needed to make a change," he says. "Today I am getting smaller clothes."

The team members say their success has only been possible because of their support system. Their families and coworkers have been encouraging. Their coworkers have posted "don't feed the monkeys"

posters around the office. Members of their families have joined their quest for a healthier lifestyle. Many have also lost weight.

"I'm so proud of these guys working so hard to lose weight and get in shape," says their manager, Anthony Aragon (4242). "I think they're an inspiration to the entire center."

"It is not a diet that we are on," says Paul. "It is a lifestyle change. There is nothing we can't eat. With the help of Betzi Hitz (3334) and Amy Cincotta (3334), health professionals in Health, Benefits, and Employee Services (HBE), we have learned about healthy eating and exercise, and how they work together. Did you know that 3,500 calories equal a pound of fat? Going out to eat, many meals contain about 4,000 calories. My plate was always clean."

"The weight loss success of the Chunky Monkeys is an excellent example of what can happen when all the pieces conducive to lifestyle change come together," says Betzi.

"Not only am I committed to supporting our group, I am determined to become a healthier person," says Tom. "When the alarm goes off at 3:30 a.m., I push play on my DVD player and do my exercises."

Gary has a home gym and has started going on bike rides, some as far as 20 miles.

"My wife Wynn is my inspiration," says Phil. "She and I work out to Wii Fit on the Wii and go on walks."

The Chunky Monkeys say they exercise about an hour a day, every day. "I hate working out," says Paul. "But I get to the gym each morning when it opens and know that getting through my workout means the worst part of the day is over. My wife, Leslie, and 16-year-old daughter, Ashlyn, are becoming gym rats, too."

The body engineering and nutrition classes they have attended through HBE have taught them about portion control. Their meals are loaded with green, lots of vegetables.

They don't always have lunch together, but when they do, each one usually has a salad with maybe chicken or turkey. Tom occasionally eats bison instead of beef. "It is much leaner," he says.

"The competition is not over yet," says Paul, "but we are already winners. We are all healthier. We are all lighter. We eat better. We have more energy. The biggest bonus is that hopefully our enthusiasm and hard work has spilled over and motivated others to join our quest for a healthier lifestyle. We feel great!"



Sandia's Annual HBE Employee Health and Fitness Day

Health, Benefits, and Employee Services (HBE) invites Sandians to celebrate Fitness Day on May 19, 11 a.m. to 1 p.m., at Hardin Field.

Join HBE professionals for a trip around Hardin Field with a fitness twist.

Whether you are an avid exerciser

(11 a.m.) or a

novice exerciser (noon), this event is intended to be fun and instructional for everyone. The Thunderbird Café's cart will be available to provide healthy snacks.



PHIL, GARY, PAUL, AND TOM, aka the Chunky Monkeys, are on their way to becoming the Hunky Monkeys.

(Photo by Michelle Fleming)