



ROB LELAND, right, discusses the capabilities of the just-dedicated Red Mesa supercomputer with Enterprise Transformation Div. 9000 VP Joe Polito, left, and National Renewable Energy Laboratory Director Dan Arvizu. Rob is director of Computation, Computers, Information, and Mathematics Center 1400. (Photo by Randy Montoya)

Defense-scale supercomputing comes to alternative energy research

Red Mesa supercomputer efficiently models renewable energy research

By Neal Singer

Red Mesa, when combined with its architecturally similar Sandia parent Red Sky, reaches a LINPAC speed of 500 teraflops, making it the 10th fastest computer in the world.

Improved energy extraction from sun, wind and other renewable resources could take decades if researchers had to rely solely on physical testing.

Instead, Sandia and DOE's National Renewable Energy Laboratory (NREL) on April 7 formally dedicated the 180-teraflop, highly efficient Red Mesa supercomputer to simulate and model a number of these problems.

Welcoming 40 visitors to the ribbon-cutting event in Tech Area 1, Joe Polito, VP of Enterprise Transformation Div.

9000, congratulated Golden, Colo.,-based NREL, Sandia, Sun/Oracle, Intel, and DOE/Sandia Site Office on creating "a state-of-the-art computing platform to address pressing energy problems for the country, using the most energy-efficient supercomputer in the country."

Red Mesa, when combined with Red Sky, its architecturally similar Sandia parent, reaches a LINPAC speed of 500 teraflops, making it the 10th fastest computer in the world.

(Continued on page 4)



Sandia LabNews

Vol. 62, No. 7

April 23, 2010

Managed by Lockheed Martin for the National Nuclear Security Administration



Connecting behaviors to attitudes about safety is Labs' next big challenge



STEVE ROTTLER talks safety at the Sandia Spring Manager Forum. (Photo by Randy Montoya)

By Chris Miller

Steve Rottler, VP of Science & Technology and Research Foundations Div. 1000, says Sandians generally have very positive attitudes about safety in the performance of their work. It's translating those attitudes into positive behaviors where problems arise.

"Everybody I meet has a positive attitude about safety," Steve said during a presentation titled "The Path to a Culture of Safety" at Sandia's Spring Manager Forum earlier this month.

"I never detect a negative attitude about safety. By that I mean Sandians express a deep sense of responsibility for their personal safety and the safety of their coworkers," Steve said. "But, I also detect, because I see it with my own eyes, behaviors that

(Continued on page 5)

Bldg. 750 earns Energy Star certification



IN EARNING EPA'S ENERGY STAR CERTIFICATION, Sandia/New Mexico Bldg. 750 is recognized as ranking in the top 25 percent of similar facilities nationwide for energy efficiency. Pictured here are David Bryant, left, and Ralph Candelaria optimizing the settings on HVAC equipment in Bldg. 750's engineering spaces. See story on page 2. (Photo by Randy Montoya)



Helping small business

Through the New Mexico Small Business Assistance Program, Sandia has provided technical expertise to almost 1,600 small businesses in New Mexico since 2000 and has helped create or retain more than 1,000 jobs. Read more in a story on page 7.

Also inside

- Carolyn Pura: From designing weapons to negotiating arms reductions as part of START team 3
- Event expands girls' horizons for math, science 5
- Industrial Partnerships annual report 8
- Benefits: Take charge with biometric screenings 9
- Learning Expo highlights education options 10



Diversity gala

The winds were calm and white puffy clouds dissipated, leaving a clear blue sky . . . a perfect day for Sandia's Diversity & Inclusion Conference Gala sponsored by Sandia's Diversity and Inclusion Office. Story and photos on page 6.

That's that

Enrico Fermi in 1950 famously posed what became known as the Fermi Paradox: "Where is everybody?" He was talking about extraterrestrial life. If the universe is teeming with intelligent civilizations, he wondered, why haven't we met anybody yet?

Fifty years ago this year, we started formally looking for the answer. It was in 1960 that legendary astronomer Frank Drake first deliberately turned his radio telescope to the task of seeking out signs of extraterrestrial intelligence. SETI – the search for extraterrestrial intelligence – has come a long way since then, but still not a peep from any cosmic neighbors.

Regarding SETI, I came across a review for what looks to be a fascinating book. It's called *The Eerie Silence: Renewing Our Search for Alien Intelligence*. The author, Paul Davies, has been closely involved in SETI for 30 years. In an interview posted on Amazon.com, Davies comes across as a singularly level-headed and realistic researcher. He suggests that traditional SETI may be the wrong way to look for signs of life out there; not a bad way, but too limited a way.

It's clear from the interview that Davies would love to find signs of life and he has some intriguing ideas about how we can do a better job at the task, but he's wary of claims that can't be backed up by hard fact. And to date, he notes, there's no evidence of life anywhere but on our own home planet. However, it's also clear that he subscribes to that dictum sometimes attributed to Carl Sagan: the absence of evidence isn't evidence of absence.

Here's a quote from the interview: "My book advocates a massive expansion in SETI, not by doing more of the same (though that is good, too) but by shifting the focus toward the search for general signatures of intelligence . . . these signs might be very subtle and require our best scientific analysis to detect. Discovery in science favors the prepared mind, so this book is a wake-up call to all scientists to start thinking about how a signature of alien technology might impact on their field of research. I'm also hinting that a signature of alien technology might already lurk in an unexplored database in fields as diverse as astrophysics, geology, and microbiology."

To date, then, Fermi's question is still unanswered. Perhaps it never will be. But regarding intelligent life in the universe, I'm with Arthur C. Clarke, a sage I've quoted more than once in this space: "Sometimes I think we're alone in the universe, and sometimes I think we're not. In either case the idea is quite staggering."

* * *

My colleague Mike Lanigan puts together our "This Month in the Past" feature for the *Lab News*. As such, he's always perusing back issues of the newspaper looking for interesting items to pass along. The other day, browsing through the April 4, 1980, *Lab News*, Mike came across a rather curious classified ad in the Wanted section: "RATTLESNAKES, dead or alive, minimum 24" long, dead less than 12 hrs., \$5 each."

What's up with that? I figured it must have something to do with collecting venom, which I further figured must last no more than 12 hours after the snake dies. Being the enterprising newspaper reporter I am, I dialed the phone number listed in the ad. (I know it's an old number, but lots of folks at Sandia have been in the same house for 30 years.) No luck. And no enlightenment.

So I'm left wondering: Did this guy get any snakes? And more to the point: Who's gonna risk their hide catching rattlesnakes for a \$5 bounty? Not me. Not even in inflated 2010 dollars.

See you next time.

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

Sandia LabNews

Sandia National Laboratories

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

Albuquerque, New Mexico 87185-0165
Livermore, California 94550-0969
Tonopah, Nevada • Nevada Test Site • Amarillo, Texas •
Carlsbad, New Mexico • Washington, D.C.

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

Bill Murphy, Editor 505/845-0845
Randy Montoya, Photographer 505/844-5605
Mike Janes, California site contact 925/294-2447
Michael Lanigan, Production 505/844-2297

Contributors: Neal Singer (845-7078), Iris Aboytes (844-2282), Patti Koning (925-294-4911), Stephanie Holinka (284-9227), Julie Hall (284-7761), Darrick Hurst (844-8009), Stephanie Hobby (844-0948), Heather Clark (844-3511), Michelle Fleming (Ads, Milepost photos, 844-4902), Dept. 3651 Manager: Chris Miller (844-0587)

Lab News fax 505/844-0645
Classified ads 505/844-4902

Published on alternate Fridays by Media Relations and Communications Dept. 3651, MS 0165

LOCKHEED MARTIN

Lab News Reader Service

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

Retirees (only):

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

Others:

To receive the *Lab News* or to change the address (except retirees), contact Michelle Fleming, Media Relations and Communications Dept. 3651, 505-844-4902, email meflemi@sandia.gov, or Mail Stop 0165, Sandia National Laboratories, Albuquerque, NM 87185-0165.

Employees:

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

Web users:

The *Lab News* is on the external web at www.sandia.gov/LabNews. *Lab News Interactive*, accessible on the internal web, is at: <https://info.sandia.gov/newscenter/interactive>.

Sandia Bldg. 750 earns EPA Energy Star recognition

It's not easy being green. If it were, every building in the country would wear the EPA Energy Star, the prestigious badge of honor that signifies protecting the environment through superior energy efficiency.

In earning the EPA Energy Star certification, Sandia/New Mexico Bldg. 750 is recognized as ranking in the top 25 percent of similar facilities nationwide for energy efficiency. It is the first building at Sandia/New Mexico to earn the EPA recognition.

Applying for Energy Star certification, says Israel Martinez, manager of Facilities Engineering Dept. 4821, is part of a larger effort to certify Bldg. 750 under the Leadership in Energy and Environmental Design for Existing Buildings Operations and Maintenance (LEED EBOM) green-building rating system.

"Bldg. 750 was selected for Energy Star recognition and as a LEED EBOM pilot project for a number of reasons," says Israel, citing occupant support, building age and occupancy type, good energy performance, and availability of metered data for the single-story, standard office facility.

Efforts to improve energy performance included retrocommissioning the building systems, installation of occupancy sensors, raising occupant awareness about energy consumption, and the use of "smart" surge protectors to manage plug loads.

"Retrocommissioning — that is, tuning up the heating, ventilating, and air-conditioning [HVAC] systems — in combination with the other actions, reduced energy consumption in the building by 25 percent," Israel notes.

Other components of the LEED EBOM system that have been implemented in and around Bldg. 750 include work to the exterior of the building, installation of resource-efficient landscaping, encouragement of alternative commuting options, monitoring and control of water consumption, application of renewable energy sources, monitoring and management of indoor air quality, attention to occupant comfort, and use of green cleaning methods.

The LEED EBOM project documentation has been submitted for review, and results are expected in June.

"As we go forward," Israel says, "our aim is to ultimately bring every facility we can into LEED certification. We've just started this journey."



EPA'S ENERGY STAR energy performance scale helps organizations assess how efficiently their buildings use energy relative to similar buildings nationwide. A building that scores a 75 or higher on EPA's 1-100 scale is eligible for the Energy Star. Products and buildings that have earned the Energy Star reduce greenhouse gas emissions by meeting strict energy-efficiency specifications set by the government. For more about Energy Star, go to www.energystar.gov/buildings.

Sandia's Health, Benefits, and Employee Services (HBE) invites you to:

SAVE THE DATE

Monday, April 26, 2010

11:30 a.m. — 12:30 p.m.

UNM Continuing Education Conference Center
1634 University NE, Albuquerque, NM

2011 Retiree Healthcare Benefits Presentation for Sandia Employees

and Family!

We understand that decisions concerning retirement are never easy. That's why Sandia HBE is holding this informational presentation and inviting all **non-represented employees** considering retirement in 2010 to join us along with their spouses and significant others who can assist them in the decision-making process.

Bring your family members and significant others to learn more about the changes to Sandia's retiree health care benefits in 2011.

Your Health. Take Charge.



For more information contact HBE Customer Service - 505-844-HBES (4237)

Chuck Mueller receives SAE award for diesel engine research

By Mike Janes

Sandia engine researcher Chuck Mueller (8362) has been presented with the 2009 Society for Automotive Engineers (SAE) John Johnson Award for Outstanding Research in Diesel Engines. The award came at the 2010 SAE World Congress awards ceremony on April 13 in Detroit.

Chuck was recognized for his paper "An Experimental Investigation of the Origin of Increased NO_x Emissions when Fueling a Heavy-Duty Compression-Ignition Engine with Soy Biodiesel." The paper addresses a key barrier to the broader use of biodiesel, an important emerging fuel that has the potential to enhance US energy security while reducing carbon oxide, unburned hydrocarbon, particulate matter, and greenhouse-gas emissions from on- and off-highway engines.

Professor André L. Boehman of Pennsylvania State University served as second author on the paper, while



CHUCK MUELLER

Glen C. Martin, a former postdoctoral student at Sandia now at Caterpillar Inc., served as third author.

The SAE John Johnson Award recognizes the authors of an original and outstanding technical paper presented at an SAE meeting on the subject of diesel engines in the on- or off-road industries. The paper must be published in one of SAE International's journals and must address research advancements in diesel engines regarding efficiency and low emissions achieved by innovative experimental and modeling research of the engine, fuel and/or aftertreatment systems.

Chuck's paper uses experiments and modeling to evaluate the various combustion-related mechanisms that have been proposed to explain the increase of biodiesel NO_x (nitrogen oxides) often found when the fraction of biodiesel increases in blends with conventional diesel fuel. The paper concludes that, while many of the hypothesized processes could play roles, the primary mechanism appears to be that the in-cylinder ignition and combustion with biodiesel blends is closer to stoichiometric (i.e., less fuel-rich), which leads to higher in-cylinder temperatures via several pathways, and the higher temperatures lead to higher NO_x emissions.

The SAE award, which includes an honorarium in the amount of \$1,000 for the lead author, is funded through a contribution from John H. Johnson, an expert in the field of diesel engines. He is a presidential professor with the Department of Mechanical-Engineering Mechanics at Michigan Technological University (MTU).

Carolyn Pura comes full circle, from designing weapons to negotiating arms reduction

By Patti Koning

With much fanfare, President Barack Obama and Russian President Dmitry Medvedev signed the new Strategic Arms Reduction Treaty (START) on April 8 after a year of intense negotiations. Last April, when the two presidents issued a joint statement to begin bilateral intergovernmental negotiations to work out a new, comprehensive, legally binding agreement on reducing and limiting strategic offensive arms, Carolyn Pura (8211) listened with interest.



STARTING TEAM — Kurt Siemon (DOE), Marina Gross (State Department), Carolyn Pura, and Greg Dwyer (DOE) take a break from the START treaty to enjoy the Swiss Alps.

"When I heard that news, I thought, the people who have to work on that have a tremendous challenge," she says. "Little did I know I'd be one of them."

START was a treaty between the US and the Soviet Union on the reduction and limitation of strategic offensive arms. Negotiations were initiated by President Ronald Reagan in 1982 and the completed treaty was signed on July 31, 1991, by President George H.W. Bush one month before the coup attempt that led to the collapse of the USSR five months later. That treaty is referred to as START; the short-hand for what Carolyn and her colleagues have worked on is "START Follow-On."

Sandia California News

Carolyn retired from Sandia in 2006 after a 30-year career in which she led the W89 test program, helped stand up the Department of Homeland Security's nuclear countermeasures program, headed up Sandia's borders program, and worked in Washington, D.C., supporting arms control negotiations, nonproliferation, and treaty development. Since retiring, she has continued consulting for DOE's Office of Dismantlement and Transparency.

She also helped found Little Flock Children's Homes, a nonprofit organization that opened an orphanage in Chennai, India, in 2006 (see the August 29, 2008, issue of *Sandia Lab News*). She was in India last summer when her sponsor at DOE asked if she'd be willing to go to Geneva in the fall to help negotiate the follow-on to the START treaty, focusing on inspections.

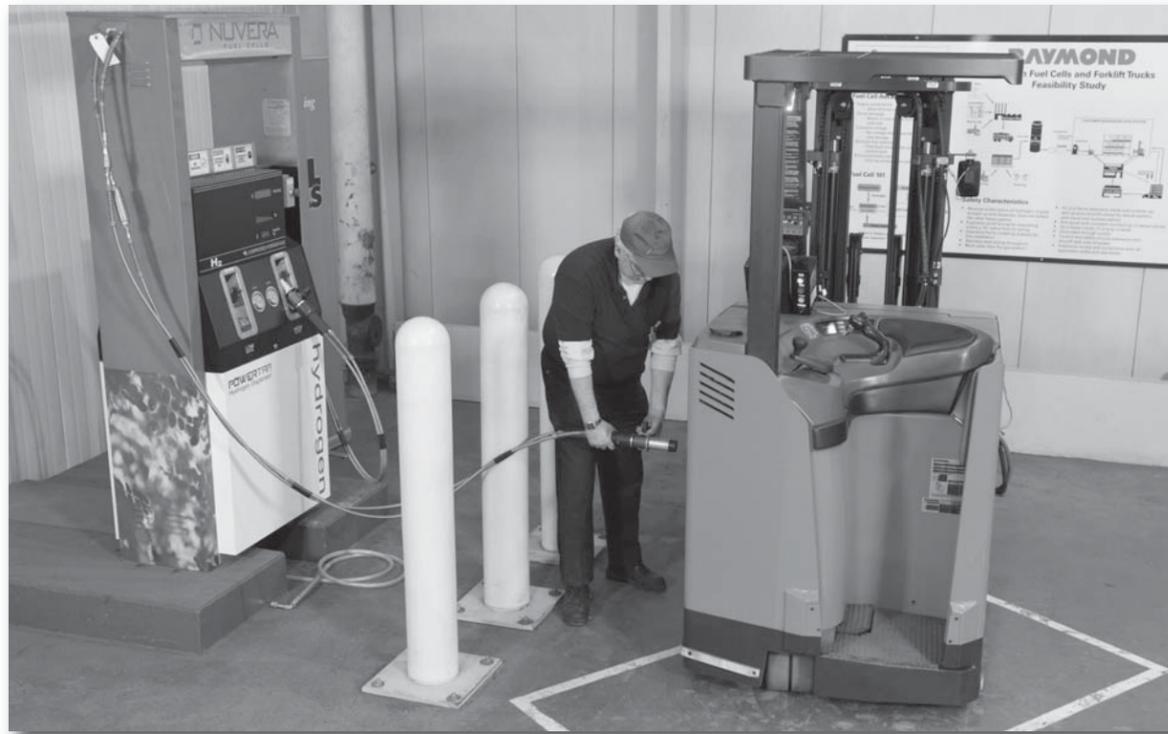
"It has been the opportunity of a lifetime and a real culmination of the work I've done over the years. Watching the signing ceremony brought such a deep feeling of satisfaction," she says. "When I was working in the weapons program years ago, it seemed impossible to think of the Cold War ending or a peaceful relationship with the Russians."

Carolyn was working as a weapon designer during the nine years between the proposal and ratification of START 1. Ten years ago, she helped set the direction of verification measures while on assignment with the Defense Threat Reduction Agency.

"Verification measures are a big part of any treaty. In anticipating a treaty even beyond this one, we've been developing techniques to measure radiation on each other's stockpiles without divulging classified information," she says.

A team of about 40 people represented the United States in the talks. Carolyn and Mona Dreicer of Lawrence Livermore National Laboratory joined federal employees John Dunn, Greg Dwyer, Tim Evans, and Kurt Siemon as the DOE contingent. In addition to Carolyn, Stan Fraley (5900) was in Geneva supporting the talks as a member of the State Department team.

Sandia workshop to focus on codes development for hydrogen-powered industrial trucks



A POWEREDGE FUEL CELL-POWERED FORKLIFT TRUCK is refueled at Nuvera's PowerTap hydrogen dispenser. An April 28 workshop organized by Sandia will help identify the key areas of R&D that are necessary to enable the deployment of hydrogen fuel cell systems for industrial trucks and other applications. (Photo courtesy Nuvera Fuel Cells)

By Mike Janes

Sandia will host a workshop April 28 for industry and code development organizations designed to address research barriers to hydrogen-powered forklifts and other near-term fuel cell market applications.

The workshop will include a number of participants, including industry leaders from Plug Power, Nuvera Fuel Cells, and Air Products, who will address challenges they face in deploying new products. Plug Power develops, manufactures, integrates, and services proprietary fuel cell solutions for pallet trucks, counterbalance rider trucks, narrow-aisle reach trucks, and other industrial trucks. Nuvera Fuel Cells provides innovative fuel cell products for the material handling market, as well as cost-effective on-site hydrogen generation and refueling equipment. Air Products is the world's largest supplier of merchant hydrogen and an industry leader in hydrogen fuel infrastructure.

"This workshop is a rare opportunity for equipment manufacturers and integrators to come together with

the code development community to discuss the challenges of a new, nonautomotive application space for hydrogen fuel cells," says workshop organizer Daniel Dedrick (8365), program manager for hydrogen codes and standards. "Our intent is to populate the code development effort with those companies actually developing products and services, as those companies are the ones who really understand the operating environment and the technologies in question."

Presentations by Plug Power, Nuvera Fuel Cells, and Air Products are expected to focus on product utilization and market transformation to hydrogen fuel cell systems. Code development agencies such as the National Fire Protection Association, Underwriters Laboratories, and CSA Standards will provide insight into existing gaps in hydrogen codes and standards.

The expected outcome of the workshop, says Daniel, is for the code development organizations, the industrial stakeholders, and the R&D community to collectively identify the key areas of R&D necessary to enable the deployment of hydrogen fuel cell systems for a variety of everyday applications.

Red Mesa

(Continued from page 1)

In just six weeks, NREL researchers solved a cornstalk-to-energy problem on Red Mesa that formerly would have taken six months.

"We need supercomputing," said Steve Hammond, director of NREL's Computational Science Center, "to help us learn to transform forestry and agricultural by-products into fuels and energy more rapidly and economically. We also need to better understand the fuel-injection atomization process, and thermochemical conversion technologies in general. And we need to learn how to minimize waste products like tar, which are expensive to clean up in the biomass gasification process and that we shouldn't be creating in the first place."

"Let's get the job done"

"The country faces great energy challenges," NREL Director Dan Arvizu said. "Their complexity and long-term nature will require huge private and public investments. Helping that happen is part of the

"Lab partnerships are difficult; we know that. But we've progressed [in aligning the respective expertise of the two labs] because of a feeling of 'Let's get the job done.' With good researchers, you don't have to force a collaboration. It happens naturally."

— NREL Director Dan Arvizu

mission of NREL.

"Meanwhile, lab partnerships are difficult; we know that. But we've progressed [in aligning the respective expertise of the two labs] because of a feeling of 'Let's get the job done.' With good researchers, you don't have to force a collaboration. It happens naturally."

Said Rob Leland, director of Computation, Computers, Information, and Mathematics Center 1400, "We're at the end of the machine-development stage and at the early states of starting the science-and-discovery journey for this partnership we've put together. That's exciting to me."

The congressional directive to DOE put the situation clearly: "The Department is directed to use \$12,000,000 . . . to execute an existing memorandum of agreement with Sandia National Laboratories for supercomputing equipment and capacity to support the National Renewable Energy Laboratory's Energy Efficiency and Renewable Energy-based mission needs. Numerical simulations on high-performance computers enable the study of complex engineering systems and natural phenomena that would be too expensive, or even impossible, to study by direct experimentation. This resource will be located at Sandia to take advantage of the [Labs'] more than 20 years of experience with high-performance computing hardware and software development. The Committee expects both laboratories to contribute in their respective areas to science and energy excellence."

Feedback

How will new health care law affect Sandia health insurance premiums?

Q: How will the new health care law affect health care insurance premiums for Sandia employees? The briefings indicate an expected increase of 8 percent per year. Will the new law cause premiums to go up more, stay the same, or go down?

A: In the near term, health reform legislation should not have a large effect on insurance premiums for Sandia employees. In 2011 and 2012, only a few provisions will take effect, and some of these provisions have previously been incorporated into our plans. During these years, we may see a slightly higher increase in premiums than what we would have otherwise experienced, but overall the health reform impact should generally be minor. The minor cost impact we will likely see in the next few years will be the result of some additional dependents added to the plan, because all dependent children up to age 26 who don't otherwise have access to employer-sponsored coverage will be eligible to join



OFFICIALS from Sandia, DOE's National Renewable Energy Laboratory, Sun/Oracle, Intel, and DOE/NNSA Sandia Site Office during dedication of the 180-teraflop, highly efficient Red Mesa supercomputer. In the center holding scissors are, left, Div. 9000 VP Joe Polito, and right, NREL Laboratory Director (and former Sandian) Dan Arvizu. (Photo by Randy Montoya)

The commission's decision was seconded in a dedication speech by former Sandian and current Intel chief technology officer for high-performance computing Bill Camp, who led the design of Sandia's Red Storm supercomputer, the most oft-copied supercomputer in the world.

"Even though other labs may have more money to spend on computing," he said, "when [leaders] in our industry chose an innovative national lab to work with, they consistently chose Sandia Labs."

Sandia worked with Caltech and N-Cube, Camp recalled, to develop the first parallel processing computer. Sandia also designed the first teraflop computer, ASCI Red. "This is an area where you have to eat your own product," he said. That is, "you can't grow high-performance computing without using previous high-performance computing." Red Mesa, he implied, was in that tradition.

Operational innovations make Red Mesa a kind of "green" machine, said John Zepper (9326). "Typically at a supercomputer," he said, "standing on one side on it, you need to wear a bathing suit due to the hot air, and on the other, a parka due to the cold air." Because rectifying huge cooling inequities produce huge power bills, an innovation used on Red Mesa produced the Glacial Door — a door capping each cabinet that keeps cooling mechanisms within a few inches of the heat source. Witnesses to the ribbon cutting, test-strolling the aisles of the supercomputer, detected no change in temperature. With the new improved airflow system, air exiting the array of supercomputer cabinets is actually slightly cooler than when it came in.

Changes save millions of dollars

Other improvements included a better electrical power distribution system that allowed for easier installation and removal of electrical wiring. The Red Mesa

machine is configured with an all-optical, connector-based Infiniband network.

"Our changes, both in software and hardware, will save millions of dollars over the life of this machine," John told the group.

These changes only came about, noted Rob Leland, because "vendors were willing to take technical and economic risks that permitted us to deploy a dozen significant innovations. This [off-the-shelf computer and its accompanying innovations] represented quite a big risk and vendors were willing to go on this journey with us because they saw strategic value to their business. And so we got price points that were remarkable, which means value to the taxpayer."

Mark Hamilton of Oracle concurred. "We made a

"We made a complete solution out of off-the-shelf but best-of-breed components integrated from multiple sources, creating one of the fastest computers in its hardware, cable, switching, storage, and software."

— Mark Hamilton, Oracle

complete solution out of off-the-shelf but best-of-breed components integrated from multiple sources," he said, "creating one of the fastest computers in its hardware, cable, switching, storage, and software."

The benefit to Oracle: The company, having proven out the innovations on Red Mesa, is introducing the same innovations in smaller Oracle machines.

Said Margie Tatro, director of Energy Systems Center 6200, "Dan Arvizu and Rick Stulen signed an MOU to bring high-performance computing to the renewable energy mission. I want to thank DOE, as well as the urgency and relevancy of our partners in the private sector, for helping Sandia and NREL overcome obstacles and make this happen."

Capturing hearts and minds

Megan McCluer, DOE program manager for wind and hydropower technologies, brought up another subject to model: energy transmission. "When the source isn't at the load center, how do you get supply to demand when it comes at different frequencies, voltages, phases, meanwhile avoiding congestion issues and optimized to lowest cost?"

"We have to capture the public's hearts and minds by investing in resources that make a difference to the consumer," she said.

"We look forward to many years of productive collaboration working together on nationally important energy supply problems," said Joe Polito, summarizing the partnership.

NREL is DOE's primary national laboratory for renewable energy and energy efficiency research and development. NREL is operated for DOE by The Alliance for Sustainable Energy, LLC.

— Mary Romero Hart (3332)

'Expanding Your Horizons' brings girls to math, science, engineering

Event sponsored by Sandia, organized by New Mexico Network for Women in Science and Engineering

By Stephanie Hobby

Kneeling on the floor, Sandian Elizabeth Lopez (2114) reviews the index cards laid out before her. "One, zero, one, zero . . ." she counts. A group of teenage girls hovers nearby, anxious for the verdict. "Very good! You just did a successful binary conversion," Elizabeth says, causing furrowed brows to melt into relieved smiles.

Down the hall, half a dozen girls connect wire-wrapped plastic film canisters to a computer. As they begin to shake the magnet inside, waves appear on the screen.

"See how the amplitude of the wave corresponds to your movement?" asks Sandian Nedra Bonal (6734). "A geophone works the same way, but it measures ground motion." The girls shake the canisters harder, and the on-screen waves explode with wild seismic activity.

Mastering challenging math and science concepts on a Saturday morning might be a tough sell for many teenagers, but organizers of the annual Expanding Your Horizons workshop say that making math and science fun and relevant is just as important as the concepts being presented.

"I'm passionate about education. I think it's important to get students interested in math, science, and technology. I really want to make this fun and show them some of the different career paths that are out there," says Nedra, who has a PhD in geophysics and has been teaching EYH workshops for the past three years.

This event, which was sponsored by Sandia and organized by the New Mexico Network for Women in Science and Engineering (NMNWSE), brought together more than 100 middle and high school girls and parents from around the state. Sandia/California and Lawrence Livermore National Laboratory co-organize two EYH conferences every year. One is for Tri-Valley each February and the other is for San Joaquin each October. Both events average 350-400 participants and 20 Sandia volunteers each.

The workshops are designed to encourage girls to pursue careers in science, technology, engineering, and math, or STEM. During the half-day session, girls have the opportunity to meet and interact with professional women in those

fields during small group workshops.

"I think a lot of girls have the potential to do well in engineering, but a lot of times, they don't get exposed to it, so doing something like this is very rewarding," says Elizabeth, a computer scientist. "To reach one girl and help her decide to pursue engineering makes this worthwhile."

National studies indicate that boys and girls report equal interest and confidence in STEM subjects in elementary school, but by the sixth grade, girls begin to perceive them as subjects for boys, and their interest starts waning. To address those concerns, EYH offers simultaneous programs for parents and educators to discuss preparing and paying for college and sustaining student interest in math and science.

Rich Lemieux is the father of two participants, Renee, 13, and Elizabeth, 11. As a retired Air Force veteran with a degree in electrical engineering, Rich has made a point to keep his daughters engaged in math and science — the family is currently in the process of taking apart an old computer to build a new one. Rich is glad his children are able to explore new fields and meet other women in technical

careers. "Both of my daughters are good at math and they love this kind of thing," Rich says. "Girls know they can do this work until society starts telling them they can't. It's great for them to see successful women in those roles." Rich also pointed out that while the girls were having fun with the activities, he was interested in learning about financing college and scholarships.

Cassie Alumbaugh, a 10th grader from Jarales, says the workshops have been important in selecting her career path. She has interest in forensics, but is leaning toward a career in pediatric nursing. "I've done this two times in the past and have had a lot of fun with it," Cassie says. "Science and math are really interesting; I like to experiment a lot and see what I can do. I will definitely come to EYH again in the future."

"Events like EYH provide ideal opportunities for Sandia to fuel student interest in technical careers," says Amy Tapia (3652), Sandia's K-12 education program manager. "We hope these workshops will encourage some of these young women to consider a career at Sandia in a few years."



SANDIAN NEDRA BONAL (6734) demonstrates how to build a simple geophone out of plastic film canisters, wire, and magnets during the "Making Waves: Geophysics from Antarctica to Your Home" workshop. (Photo by Stephanie Hobby)

Safety culture

(Continued from page 1)

are inconsistent with the attitudes."

Steve provided a graphic illustration of that during his presentation. A photo taken at the sled track the day before the Oct. 9, 2008, accident that seriously injured one worker, showed two people sitting on the track in front of the rocket. The two men were performing diagnostics on the test package, consisting of two thermal batteries and a hardened data recorder known as the HiCapPen, which was connected to the front of the rocket motor. The photographer who took the photo was standing in the path of the rocket and Steve said other people, while not seen in the photo, were also standing nearby.

"When I see this picture it really troubles me," Steve said, noting that it conjured up memories as a youth when he learned the proper handling of a gun, including "never point a gun at anyone, loaded or unloaded."

The rocket motor, Steve said, essentially was not "cocked" since no electrical energy was connected to it. However, he added, it was considered to be "loaded."

"Organization 1500 has worked diligently over the

"Sandia is on a safety journey. As such, safety must be part of our culture and it must be instinctive for everyone at the Labs. We must reach the point where success in the mission is inseparable from our values of safety and security. Success with the mission and reaching that success safely are one. Everyone must go home every night as healthy as the moment they walked through the door to lab that morning."



— Chief Operating Officer Al Romig on safety at Sandia

past year and a half to drive this out of the culture," Steve said. "And I can tell you that having worked closely with them over the last nine months, the organization is well beyond this kind of behavior."

Turning attitudes about safety into positive behaviors requires making safety a value that is fully integrated into the Labs' culture, Steve said.

And what does safety as a value look like? Steve said Sandia's leadership embraces four things that collectively add up to treating safety as a value.

The first is "safety is owned by everybody." "We are doing quite well there," Steve said. "I haven't met anyone at the Laboratory who doesn't feel they own safety."

The second is "safety is integrated into our policies, our practices, and our products," something Steve maintained Sandia also does well.

The third is "safety enables our mission and is critical to the success of our business objectives." This is where it begins to get a bit more problematic, Steve said. Some of the discussion during the Q&A period after Steve's presentation focused on how Sandia sometimes separates operational work, including safety, security, and business operations, from the mission work, rather than fully integrating it to ensure a successful outcome.

The fourth is "safety is part of our culture, not a set of imposed rules." This is where attitudes about safety translate into actual positive behaviors.

"Safety becomes intrinsic to the way we do work only when our behaviors are elevated to the same importance as our attitudes," Steve said.

Steve focused the final part of his presentation on the three crucial behaviors or actions that Sandia's leaders must take to make safety an explicit part of the Laboratories' culture.



IN A PHOTO TAKEN just one day before the Oct. 9, 2008, sled track accident, test personnel are seen sitting in front of a sled track rocket engine that is fully fueled.

The first consists of asking oneself, "How could this go horribly wrong?" This is done during each step of the work by employing positive steps and conducting independent assessments to prevent errors.

The second is to embrace and promote the motto, "There is no such thing as an anomaly."

"After the sled track accident, how many were tempted to say that doesn't apply to my organization?" Steve asked. Accidents, Steve said, can and do happen while carrying out the most routine work under seemingly safe circumstances.

The third is to recognize that safety is an attribute of an operational system, achieved by intentional design. The completion of processes and procedures is necessary in any task, but other factors, such as whether the work tools are engineered for safety and having an understanding of how human factors — generally one's state of mind — influence completing an operation safely, must also be taken into account.

"It starts with how you think about how you approach your work and the behaviors you exhibit in your work," Steve said.

"We have, over much of our history, tended to think of safety, security, and quality as a separate set of requirements," Steve said. "In every program I was involved in, while safety, security, and quality were always on the table, they were always on the table a lot later than the actual technical requirements. We should think up front about how we are going to manage all those requirements in order to have a successful outcome. And only when we approach it that way will things really begin to change at Sandia."

Spring Manager Forum



LABS DIRECTOR TOM HUNTER during the annual Spring Manager Forum discusses challenges facing the Labs in the years ahead. The forum, held this year at Embassy Suites Hotel, provides Sandia's management team an opportunity to hear about and discuss leadership issues and address matters of common concern. During the forum, Div. 1000 VP Steve Rottler made a compelling case for integrating safety more systemically into Sandia's culture. (Photo by Randy Montoya)

Diversity Gala

Laughter and frivolity welcome Sandians

Story by Iris Aboytes • Photos by Marie Brown

The winds were calm and white puffy clouds dissipated, leaving a clear blue sky. The sun cast its rays to warm a long white tent. It was a perfect day for Sandia's Diversity & Inclusion Conference Gala. Laughter permeated the festive atmosphere.

Sponsored by Sandia's Diversity and Inclusion Office, the gala was held 11 a.m.-1 p.m. on April 8. It concluded the Diversity & Inclusion Conference, which included a logo contest and various workshops.

Executive VP Al Romig and Div. 11000 VP Becky Krauss shared their diversity perspectives and various outreach committees set up their tables with information about the events respective to their committees.

Did you know that the American Indian Outreach Committee (AIOC) is looking forward to this year's Dream Catcher Science Program held at National American University? Their goal is to take the mystery out of science and to help encourage the future involvement of children in engineering, math, and science. The program gets everyone involved with hands-on activities.

HBE suggested to attendees that now might be a good time to get biometric screening, no need to wait. Some attendees took HBE up on their offer and had their blood pressure checked. Look to the upcoming HBE Physical Fitness Day on May 19.



THE WINNING ENTRY for the Diversity & Inclusion office logo was designed by Michelle Lopez (2737).

Attendees voted on the Diversity & Inclusion office logo. A contest before the gala yielded 16 logo entries and attendees voted on their preference (see image above).

Directors Dave Palmer (12400) and David Williams (9500) scooped ice cream for attendees. David Williams first handled the toppings and became so proficient he was promoted to ice cream scooper. "Service with a smile," was his motto as he tried to persuade each ice cream lover to take an extra scoop. He himself had removed the calories for the day. Tomorrow would be different, but today was a freebie.



Dave Palmer took a more serious approach. He talked about ice cream and calcium and how they go hand in hand. It was hard not to believe him.

Director George Rhyndance (3600) took a much more proactive approach, acting as the cheerleader who encouraged people to come to the ice cream table. Bowl in hand, he encouraged bananas first — they have potassium, after all. Even Al was enticed to taste the ice cream.

There were lots of giveaways. Did you need a badge holder — a red one with the heart of diversity in it? A sewing kit, just in case David Williams' calorie obliteration did not work on your scoop.

Across the miles, a mirrored event was being held at the California site. Both sites were able to participate in the various workshops.

Chairperson for the event Marie Brown (12005) welcomed everyone. "The conference served as a great venue to connect people with each other," says Marie. "Sandians were quick to comment about the informa-

tion presented in the various workshops. It took all our Sandia/New Mexico and Sandia/California outreach committees in addition to the Corporate Diversity Team and Executive Diversity Council to make our first diversity conference a success."

When asked why the gala was held, Esther Hernandez, Diversity & Inclusion program manager (12005), stated, "One of my favorite quotes, by an unknown author, is, 'Diversity is the one true thing we all have in common. Celebrate it every day.' Our diversity conference week was dedicated to awareness, networking, and learning skills that we can apply daily. The gala was about celebrating our similarities, our differences, ourselves, and especially the beauty of what can happen when we all come together.

"Thank you to the members of the Corporate Diversity Team, Executive Diversity Council, and planning committee members who participated in making our first diversity conference a reality. Thank you Sandians for making it a success."



New Mexico Small Business Assistance Program helps 320 small businesses in 2009

By Heather Clark

Dennis Salazar discovered a burst attic pipe had caused thousands of dollars of damage to the walls and floors of his house about a decade ago. The disaster inspired Salazar, now chief executive of ICE-LOC®, to invent a dense sponge-like tube that can be inserted into pipes to prevent them from rupturing in cold weather.

But getting customers to buy the product proved difficult, so the Bosque Farms company turned to Sandia for help. Kevin Fleming (5434), Chris Colburn, and Rosa Montoya, who all worked for Explosives Projects/Diagnostics Dept. 2554 at the time, created a video that showed ICE-LOC's elastomer core prevented ruptures in subzero temperatures, while a pipe without the core exploded.

ICE-LOC was one of 320 small businesses in 25 New Mexico counties that received help to solve technical challenges in 2009 under the New Mexico Small Business Assistance Program (NMSBA Program).

A partnership of Sandia, Los Alamos National Laboratory, and the state of New Mexico, the program connects scientists and engineers with New Mexico businesses in exchange for a state gross receipts tax credit. In 2009, the tax credit was nearly \$4.3 million — about \$2.4 million for Sandia and \$1.9 million for Los Alamos.

"We are proud of our partnership with Los Alamos National Laboratory and the state of New Mexico in support of small businesses throughout New Mexico," says Steve Rottler, VP and chief technology officer (1000). "Most small companies do not have access to the world-class technology and expertise available at the labs, and the NMSBA Program provides them that access."

ICE-LOC was one of nine companies honored this month at the NMSBA Program's annual Innovation Celebration, attended by more than 200 people — the largest attendance the event has had to date — at Bishop's Lodge in Tesuque. The companies lined the conference room with displays of their products or posters and computer presentations explaining their work.

ICE-LOC's product is an environmentally safe, Food and Drug Administration-approved core that is inserted into pipes. When water freezes, it expands and can form ice plugs that exert several thousand pounds of pressure per square inch on pipe walls. The core inside the pipe can compress and allow the ice inside to expand as needed, preventing the pipes from bursting. The core returns to its initial diameter when the ice thaws, ICE-LOC president Louis Herrera says.

To better demonstrate the product's effectiveness, Kevin, Chris, and

Rosa tested ICE-LOC's product in a controlled environment at minus 30 degrees Fahrenheit. Using a high-speed camera, they videotaped a side-by-side comparison of two pipes. The pipe without ICE-LOC exploded, while a pipe fitted with the protective core remained intact.



ICE-LOC CEO Dennis Salazar with samples of the waterline inserts he invented. The inserts are intended to protect frozen pipes from catastrophic failure. ICE-LOC worked with Sandia under the New Mexico Small Business Assistance Program during testing of the product.

ICE-LOC used the videotape to show prospective clients the product's performance under extreme cold. With the help of the tape, the company landed a state contract and is in the final stages of being approved for a federal contract so ICE-LOC can be used in schools, government buildings, military installations, municipal sprinkler systems, and a host of other structures, Herrera says.

"The visual presentation produced by Sandia has enabled us to show our product's performance to the market and find a distributor," Herrera says.

Kevin says the labs have super-talented people with good technical ideas, and outside companies know how to develop those ideas into products and market them, a combination that makes for a great partnership.

"I feel Sandia would be remiss in not trying to help those small companies, since they pay income taxes that fund us," Kevin says. "I had a feeling this company had something that potentially could be good for the country."

ICE-LOC is not the only company that has been put on a path to marketability by the NMSBA. Since the program began at Sandia in 2000, it has helped 1,597 small businesses and created or retained 1,020 small business jobs through the end of 2008 that paid an average annual salary of \$39,063. The companies' revenue increased by nearly \$39.7 million and

operating costs fell by more than \$28 million during the same nine-year period. LANL joined the program in 2007.

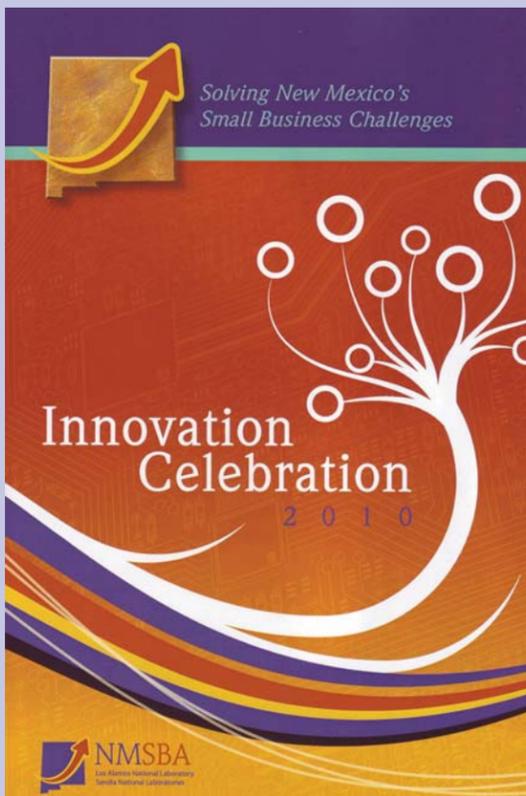
Companies participating in the program must be for-profit small businesses located in New Mexico. The assistance provided cannot be available in the private sector at a reasonable cost. Individual companies in urban Bernalillo County are eligible for up to \$10,000 in assistance measured in lab staff hours. Companies located in rural counties are eligible for up to \$20,000.

The NMSBA Program also contracts with the New Mexico Manufacturing Extension Partnership (NM MEP), the University of New Mexico, New Mexico State University, and New Mexico Tech to provide assistance to companies.

Now that Herrera can show his product's effectiveness using the video from Sandia, he's also thinking about new ways to market ICE-LOC's pipe protector.

"Thank you for believing in us," he says.

Some other businesses helped through Sandia's NMSBA program



• **Dr. Bob Quick and entrepreneur Bill Reeves of Allied Medical** in Albuquerque wanted to better understand their device's ability to decrease healing time and reduce scarring using silver nanotechnology. Darren Branch, an electrical engineer in Biosensors and Nanomaterials Dept. 1714, conducted fundamental research to help the company understand the types of silver species released from their cloth bandage and how applied micro-currents affected the silver distribution. Branch's work will allow the company to optimize the technology's performance. With the assistance the NMSBA Program provided, Quick says Allied Medical is now one step closer to getting its product marketed to help heal animals and humans.

• **The Ramah-Espanola Basin Leveraged Project** assisted water treatment companies by educating its target market — private well owners — about the quality of their drinking water, and by providing the companies with needed data about groundwater quality and treatment options. In the Ramah area, Malcolm Siegel, a scientist in Radiological Consequence Management and Response Technologies Dept. 6772, teamed with local businesses to evaluate water quality on and near the Navajo Reservation. The information provided is being used by the sponsoring companies in both locations to identify potential customers and offer an appropriate, inexpensive point-of-use treatment system, and develop and evaluate innovative treatment technologies.

• **Daniel Barela, a flight paramedic who founded Trinity Medical Corp.** in Albuquerque, invented a medical device that applies pressure to a patient's throat to prevent passive regurgitation and pulmonary aspiration while paramedics perform cardiopulmonary resuscitation. Barela says he got the idea after noticing that there sometimes are not enough hands to place pressure on a patient's throat in emergency situations. Barela turned to Sandia's Organic Materials Department to help choose materials and design the mechanics. Bob Winters (1833), a specialist in innovative prototype fabrication, materials technology, and engineering design, helped develop a device that looks partly like a water faucet and uses spring action precision to maintain appropriate pressure, but has a mechanism to stop the user from turning the handle too far and placing too much pressure on the throat. Barela says he is now seeking an addendum to his patent for the revised prototype.

Helping small businesses

Annual report highlights value Sandia's long-term industrial partners find at Labs

By Heather Clark

Sandia's industrial partnerships in 2009 yielded a hydrogen storage system for General Motors vehicles, improvements on the Lynx synthetic aperture radar in work with General Atomics Aeronautical Systems, Inc., and plans to develop a concentrated solar plant in southern New Mexico with help from eSolar, according to a new report released this month.

The Industrial Partnerships Annual Report highlights the Labs' technology transfer work with these companies and others during fiscal year 2009. The National Competitiveness Technology Transfer Act of 1989 made tech transfer and partnering with industry a formal part of Sandia's mission.

The foundation of these industrial partnerships is the long-term relationships — some lasting more than 15 years — that Sandia has maintained with companies, says Hal Morgan, senior manager for Industrial Partnerships and Strategy Dept. 1930.

"Part of the credibility of our tech transfer program is that we have people who came here many years ago and continue to find great value in working with the Labs. That's a tribute to Sandia's ability to transfer technology and to have important technology that these partners want," Hal says. "I think that's one of the strongest indicators that we have a strong record of transferring technology to industry."

Many of Sandia's partners are well-known companies. They include Boeing Co., IBM, Procter & Gamble Co., Intel Corp., Raytheon Co., Goodyear Tire & Rubber Co.,



HAL MORGAN with a Goodyear tire developed in part using Sandia computer modeling and simulation capabilities. Sandia and Goodyear have a relationship that goes back more than 15 years. (Photo by Randy Montoya)

omy and national security.

Sandia's partnership with General Atomics and its affiliate GA-ASI began in 1996, when the San Diego-based company set out to develop an advanced, light-

pany is also pursuing agreements in Europe, the Middle East, Australia, and South Africa.

Notable accomplishments in 2009

The Industrial Partnerships report gives a snapshot of the program's accomplishments in fiscal year 2009:

- Sandia's industry partners paid the Labs \$56 million, up from \$43 million the previous fiscal year.
- The Labs entered into 20 new agreements with CRADA partners.
- Sandia's WFO activity rose to 83 new agreements.

"I'm pleased that we're managing to maintain this level of agreement activity given the economy. I consider it a real compliment to Sandia's technical organizations delivering critical value because industry is making incredibly hard financial resource decisions right now," says Deborah Payne, manager of WFO/CRADA Agreements Dept. 10012.

Deborah believes the economic recession has meant that Sandia's principal investigators and tech transfer professionals have had to work faster to reach agreements to respond to the changing needs of companies that work with the Labs.

"It appears that because of the economic situation, there's a heightened sense of urgency, of being agile and quick," she says.

International partnership

Deborah also works on international partnerships that help the US fulfill its national security missions.

"There's certainly an acknowledgement — not only at

Industrial Partnerships

and General Motors Corp.

During the past year, Sandia completed a prototype hydrogen storage system for GM vehicles. Sandia researchers designed and demonstrated key features and performance of the storage system, which uses a complex metal hydride material. Sandia's design tools now allow the 100-year-old worldwide auto manufacturer to save significant costs and time when developing hydrogen storage systems for vehicles.

And, the two partners collaborated on the 90-Billion Gallon Biofuel Deployment Study, which found that plant and forestry waste, along with dedicated energy crops, could sustainably replace nearly a third of US gasoline use by 2030, assuming continued investment in technical and scientific progress.

The long-term partnership began when GM executives visited the Labs in the mid-1970s, after they heard about the Labs' concept for the Combustion Research Facility (CRF) at the Livermore site. The alliance operates through various cooperative research and development agreements (CRADAs), Work for Others (WFO) agreements, and government funding through programs conducted primarily at the CRF.

A two-way street

Industrial partnerships enhance Sandia's ability to execute the Labs' core national security missions in nuclear weapons, supporting the warfighter, energy security, and homeland security. At the same time, they enrich the technology and research and development base of the partner companies and strengthen them financially, according to the annual report.

In a partnership that started in 1996 and grew in 2008, Sandia and General Atomics Aeronautical Systems, Inc. (GA-ASI) are now exploring ways to improve the Lynx® synthetic aperture radar (SAR). Future upgrades could allow the radar to image seaborne targets, to conduct three-dimensional imaging and for radio-frequency tagging — both for combat identification and precision strike applications. The partnership bolsters the US econ-

weight SAR system. At that time, GA-ASI was producing the MQ-1 Predator UAV for the Air Force, equipped with an older, less capable non-Sandia SAR radar.

Under a WFO agreement, Sandia and GA-ASI focused on building a SAR that could be integrated better with the Predator's sensor systems and provide higher-resolution images.

The Lynx SAR provides unmatched performance for reconnaissance and surveillance in adverse weather conditions, enhancing the surveillance capability of the Predator and other reconnaissance aircraft, according to the annual report.

Each year, Sandia enters into 30 new industrial partnerships on average and some of these partnerships evolve into long-term collaborations. In fiscal year 2009, Sandia's new partnerships included: Air Products of Allentown, Pa.; NG Electronic Systems Division of Linthicum, Md.; Forest City Residential Group of Cleveland, Ohio; Ultramet, Inc. of Pacoima, Calif.; and Verdant Power, Inc., of Burlington, Vt.

One of these new partnerships was with eSolar of Pasadena, Calif. On the company's executive management team are Craig Tyner and Jim Pacheco, who spent a combined 33 years at Sandia designing, building, and testing concentrating solar power (CSP) systems at Sandia's state-of-the-art National Solar Thermal Test Facility. Tyner retired from Sandia and Pacheco left the Labs through the Entrepreneurial Separation to Transfer Technology program to join eSolar.

Last June, El Paso Electric signed a power purchase agreement for the full capacity of a 92-megawatt CSP plant to be developed in southern New Mexico by NRG Energy, a national Fortune 500 energy provider, and eSolar. When fully operational, the plant is expected to be the first commercial-scale solar thermal project in New Mexico.

The project is part of NRG and eSolar's plans to develop up to 500 megawatts of solar thermal power in California and across the Southwest. eSolar also has development partnerships with other companies to build large-scale plants in India and China. The com-

Sandia, but also at the National Nuclear Security Administration and the Department of Energy — that global security is a critical component of national security," she says.

One successful international partnership has been Sandia's work with the Singapore Water Resources Management Organization (PUB) and the Energy Market Authority (EMA) that provides expertise, software tools, and educational components to address future energy strategies.

Sandia has helped develop a water quality monitoring system called CANARY for Singapore to test for accidental introduction of poor quality water into municipal water systems, as well as intentional injection of chemical, biological, or radiological agents. The software package was first made publicly available in May 2009.

With EMA, Sandia is working to develop dynamic simulation models to determine the trade-offs between cost and greenhouse gas emissions for future electrical generating options for Singapore.

The annual report reflects the traditional technology transfer role for industry partnerships, in which industry comes to the Labs for technical help to be more competitive or for the opportunity to commercialize technology from the Labs, Hal says.

However, from another perspective industrial partnerships play an even bigger role in mission success.

"The national security problems that Sandia is addressing are so complex that one institution or national laboratory cannot solve them on its own. Partnering with other labs and industry is required," Hal says.

Industry is ultimately responsible for delivering products originating from research and technology at the Labs to the government or consumer, and industry also owns the infrastructure for delivering the products, Hal says. Thus, partnering with industry early on can help set the direction for research and provide insights on what it takes for Sandia's technology to have the greatest impact, he says.

This broader role is becoming more and more prevalent in new research models. These include: the DOE Joint BioEnergy Institute (JBEI), a partnership of three national laboratories, including Sandia, and three research universities in the San Francisco Bay Area; energy innovation hubs; and the National Institute for Nano Engineering (NINE), a national hub for nanoscale engineering and education, which will all be reported in future annual reports, Hal says.





Take Charge Corner

Biometric screenings and health assessments

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

Most of you know about Sandia Total Health — Sandia's new consumer-directed health plan. Sandia Total Health will be the only plan design option offered to nonrepresented employees, pre-Medicare retirees, and surviving spouses in 2011. SPA-represented employees will continue to have the option of enrolling in the plan in 2011. It's a key component of our strategy to manage healthcare costs by encouraging healthcare consumerism and improving overall health through an integrated approach to health and wellness. This includes a focus on prevention and healthy lifestyles, the management of chronic conditions, and behavior modification aimed at positively changing risk factors.

In addition to the health benefits we believe all employees will reap from Sandia Total Health, the program also includes a Sandia-funded Health Reimbursement Account (HRA). The HRA gives you direct access to your healthcare dollars and the benefit of reimbursing you for some of your out-of-pocket expenses. The amount of dollars allocated to your HRA is determined by: 1) your coverage category tier; and 2) if you (employee or pre-Medicare retiree) 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.

In an upcoming issue of *Sandia Lab News*, the Take Charge Corner will discuss the Health Reimbursement Account in more detail. In this issue, we'd like to walk through the biometric screening and health assessment processes.

What is the biometric screening?

A biometric screening is a brief health exam that measures a person's risk level for certain diseases and medical conditions. The biometric screening works in conjunction with the health assessment and together provides each employee with a fairly accurate snapshot of current health and risk factors.

The biometric screening measures:

- Abdominal circumference
- Blood pressure
- Weight
- Height

Remember to fast at least 12 hours before your biometric screening. If you routinely take prescribed medicine, you should still take it before your test.

and includes a fasting blood draw to measure:

- Fasting glucose
- Triglyceride
- Total cholesterol
- High-density lipoprotein (HDL)
- Low-density lipoprotein (LDL)

What is the health assessment?

The health assessment is a quick, online questionnaire. The health assessment asks questions such as:

- How would you describe your tobacco use?
- How many alcoholic beverages do you have in a typical week?
- In an average week, how many times do you engage in physical activity?

Upon completion, you will see your health risk category (low, medium, or high) based on the answers you provided. You can receive additional information to help you better manage your health risks. The data gathered is not shared with any other entity and is only used in aggregate form, so that your private information is protected.

Benefits

The health assessment and biometric screening serve a dual purpose. First and most significant, each employee will have an improved understanding of his or her own health. Sandians will also be able to review a snapshot of health risks and can make decisions and lifestyle changes to positively offset those risks.

In fact, according to the *Journal of the American Medical Association*, how we live accounts for more than half of the reasons we get sick and/or how we die.

Accordingly:

- Today's four leading causes of death are all preventable — smoking, poor nutrition, physical inactivity, and high-risk alcohol use
- People with healthier lifestyles live anywhere from six to nine years longer than those with unhealthy lifestyles
- People with healthier lifestyles not only live longer, but also avoid disabilities by up to nine years

How to participate in a biometric screening and take the health assessment

If you completed your health assessment and biometric screening for 2010... Congratulations!

Did you know that you can begin right now to plan for 2011? You have until Nov. 30, 2010, to complete both the biometric screening and health assessment to be eligible for the full Sandia HRA contribution in 2011. That's right — complete your biometric screening and health assessment today and you're set for 2011! If you don't complete a biometric screening and health assessment before November 30, 2010, you will not receive your full share of the Sandia HRA contribution; however, you'll still receive your dependents' share of the contribution.

All current Sandians can take the health assessment by visiting healthassessment.sandia.gov.

Current nonrepresented and SPA employees in New Mexico and California

Current nonrepresented and SPA California and New Mexico Sandia employees can complete the biometric screening without ever leaving your site. Go to SandiaTakeCharge.com and click on the biometric screening & health assessment button at the bottom of the page for more information. Of course, you can always complete a biometric screening through your primary care physician (PCP).

All other current employees and preMedicare retirees

Step 1: Complete the biometric screening before Nov. 30, 2010.

Visit your PCP to get your biometric screening. Keep in mind that it might take some time for the doctor to fit you into his or her schedule, so be sure to schedule your appointment early. And don't forget to bring the biometric screening form with you for your PCP to complete. Biometric screening forms may be printed from SandiaTakeCharge.com >> PreMedicare Retiree Benefits.

Once complete, your physician should fax the biometric screening form to HBE at 505-845-8190, or mail it to:

Sandia HBE
Mail Stop 1015
Biometric Test Result
PO Box 5800
Albuquerque, NM 87185-1015

Once Sandia has received your completed biometric screening information from your PCP, Sandia will flag your account to indicate you have completed the biometric screening.

Step 2: Complete the health assessment before Nov. 30, 2010.

All current Sandians can take the health assessment by visiting healthassessment.sandia.gov.

PreMedicare retirees, depending on your plan:

- **Go to myuhc.com** and click Register Now. Once you've registered, log in and click Health and Wellness, which will take you to your Personal Health Center page. There you'll find the "Take a Health Assessment" link. The health assessment takes approximately 15 minutes to complete, and you will be provided immediate feedback on the current state of your health.

- **Log in to myCIGNA.com** with your User ID and Password. If you haven't registered for myCIGNA.com, you will need to do so before you can take the health assessment. To register, select the blue Register button on the bottom left side of the page and follow the instructions. After you log in, locate the picture of the red apple on the right side of the page. Select the Take my health assessment now link.

- **Log in to kp.org** with your User ID and password. If you haven't yet registered on kp.org, sign up at kp.org/register. After you log in, click on Total Health Assessment under the My health manager section. On the next page, click Start Succeed™ Now.

As previously stated, the data gathered in the biometric screening and health assessment is not shared with any other entity and is only used in aggregate form, so that your private information is protected.

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).



Direct Deposit

June 2010 → With the upgrade to PeopleSoft 9.0, employees will be able to change direct deposit information electronically through HR Self-Service.

<http://upgrade.sandia.gov>

Mileposts

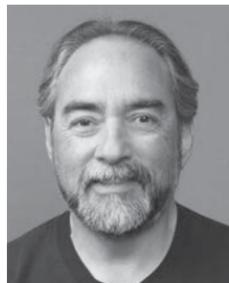
New Mexico photos by Michelle Fleming



T. J. Allard
30 9750



Joe Costales
30 10268



Andy Garcia
30 10264



Gloria Gibson
30 5096

Recent Retirees



Stephen Heaphy
30 4136



Diana Perea
30 9336



Fred Raether
30 10265



Rosemarie Renn
30 5762



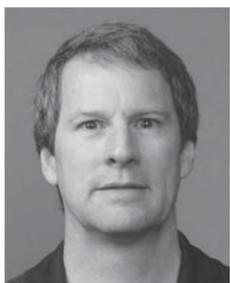
Tom Burford
25 2958



Bob Richards
25 9753



Barry Spletzer
26 6470



Kyle Thompson
25 1522



Anna Trujillo
25 10625



Shirley Bailey
20 9752



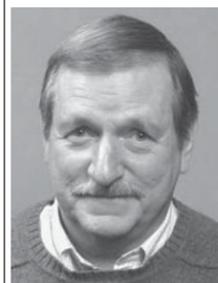
Peggy Clews
20 1746



Larry Friday
20 2995



S. Jill Glass
20 1825



David Thomson
22 1649



Brad Hance
20 1821



Lawrence Irwin
20 5764



Pam McKeever
20 4870



Carol Meincke
20 4853



Anna Schauer
20 2610



Charles Vanecek
20 5578



Robert Burkhart
15 2733



Dominic Martinez
15 6752



Eric Romero
15 9341



Mark Rule
15 10621



Monica Salas
15 10655



Jeffrey Smith
15 1525

MAY 4, 5, & 6

SANDIA'S LEARNING EXPO

2010

Get Ready, Get Set, Go Learn!

Join us for the 1st Annual Learning Expo. Discover learning within Sandia and at universities from across the country.

Expo launches May 4th, with the Education & Training Fair, west of the Steve Schiff Auditorium.

View full event schedule at learn.sandia.gov

THE UNIVERSITY OF NEW MEXICO

NEW MEXICO TECH

THE UNIVERSITY OF WISCONSIN

NM STATE UNIVERSITY

Carnegie Mellon

UNIVERSITY OF NEW HAVEN

ATM

STEVENS Institute of Technology

Cornell University

University Programs
A Program of Corporate Learning and Professional Development
Chart your course!



CHANGE OF COMMAND

Photos by Randy Montoya

Command of US Air Force 377th Air Base Wing at Kirtland Air Force Base changed hands April 16, with Col. Mike Duvall, base commander for the past two years, handing over command to Col. Robert Maness. Presiding at the ceremony was Brig. Gen. Everett Thomas, commander of the Air Force Nuclear Weapons Center at KAFB. In the photos above and directly below, Col. Maness addresses an audience of several hundred people, including members of the military, elected officials, civic leaders, and representatives from organizations housed on the base, including DOE, NNSA/Sandia Site Office, and Sandia. At right, Brig. Gen. Thomas passes the 377th Air Base Wing unit flag to Col. Maness as Col. Duvall looks on. Below right, members of the 377th stand at parade rest during remarks by Col. Maness.

