# North!

**Two Sandia climate study projects are getting a boost this year with the help of $5 million from the American Recovery and Reinvestment Act. Half of the funds will be used to prepare the Atmospheric Radiation Measurement (ARM) program near Barrow, Alaska, for several new instruments. See story on page 3.**


Sandia LabNews

Vol. 61, No. 16 August 28, 2009

Managed by Lockheed Martin for the National Nuclear Security Administration

Sandia National Laboratories


## Facilities management pursues austerity with space utilization efforts

### *Goal: Reduce total square footage*

By Rachel Kolb

To a newcomer, Sandia can seem like a sprawling place, an endless repertoire of buildings and offices. Fortunately, several teams in the Labs' Facilities departments and line organizations are making sure all that space is used to its fullest advantage.

In line with its recent austerity efforts, Sandia has launched a space management initiative, which includes a strategic space management plan. According to Stan Harrison (4850), the senior manager of Sandia's Facilities Management and Operations Center (FMOC) strategic team, in five years Sandia hopes to achieve milestones in several areas. The goals include reduced total square footage, optimal space utilization, improved condition of Sandia buildings, and more energy- and water-efficient facilities.

*In five years Sandia hopes to achieve milestones in several areas.*

*(Continued on page 4)*

### *Inside . . .*



## Tom Hunter: Commitment to safety must be 'a deeply held belief lived every day'

### *Message to Sandians emphasizes personal buy-in*

*Creating and maintaining a safe workplace at Sandia National Laboratories is achieved only through the total commitment of everyone who works at the Labs. Safety begins with a personal responsibility to work safely and to ensure the work environment is free of hazards and unsafe work practices. It is a value that all Sandians must live without compromise, as attested to by Tom Hunter's recent safety message to all members of the Sandia workforce, reprinted below:*

* * *

I want to take this opportunity to express some of my deepest feelings about our laboratory. I have always found great confidence in knowing that Sandia exists to serve the nation. We are guided by high values of service that we all share. We have no other reason for existing — no other motive to guide our actions.

TOM HUNTER

Our values plainly state that we respect each other; and if we respect each other, then we must care about each other. In short, we should always strive to have a caring environment in which each person is respected and supported.

To live this value, we must recognize how important it is to create a truly safe workplace, one in which our care and concern for each other, ourselves, and our families is so profound that we will not accept any situation where work is performed in an unsafe manner. No task, project, or mission is so important that we cannot take the time and effort to assure that we will all return home safely each day.

I can think of no better way to say we care than to demonstrate a profound and deep commitment to safety. This should be a solemn commitment, not simple slogans or rhetoric. It should never be about compliance for the sake of compliance. Nor should our commitment to safety be overly complex. A commitment to safety must be a deeply held belief lived every day, practiced every hour. Many times, I fear that we substitute compliance in our overly complicated environment for a demonstrated belief in our fundamental values.

I take pride in the progress we have made in our safety journey so far. Many indicators are very positive. Yet, some of our people have been injured and, in some cases, seriously. I personally have felt the grief of losing a friend in a vehicle accident. I have seen the impact on families and careers of people who have been seriously injured. All these incidents were avoidable. We should never accept the belief that some accidents cannot be avoided; we must always assume that we can do more to prevent them.

Your leadership team has taken many actions to address our recent experiences in safety. These actions include steps to resolve identified shortcomings. Further, we will be engaging in more systemic change to reinforce a culture of safety. All actions taken by management will be based on the foundation of our care and concern for each and every member of the workforce. We recognize that our actions will succeed only if we engage in open, honest communication and seek to reinforce trust across the entire laboratory.

I am personally committed to doing all I can to demonstrate a deep commitment to safety at Sandia. I expect no less of myself. I ask the same from each member of the Sandia family.

# That's that

Every now and then, if you look, you see something that helps you keep your own life and your own problems and challenges — and blessings — in perspective. In our last issue, we published a story by Patti Koning (8528) about Sandian Rene Bierbaum's mid-life stint with the Peace Corps. It was an excellent feature story and I enjoyed reading it. But what really caught my eye was the caption that went with one of the photos. The photo itself shows several hundred kids in a schoolyard in the Philippines. The kids are all in uniforms; they're all seated on benches and appear to be focusing their attention on something important. The entire image conveys a sense of orderliness and discipline, all conducive to fostering a learning environment.

As I say, though, it was the caption that got me. It reads, "Compostela High School students at 'Math Monday,' a bingo fund raiser. The competition for the grand prize of a 50-kilogram sack of rice was intense."

A 50-kilogram sack of rice. About 100 pounds. Think about it.

* * *

After more than 20 years of photographing Sandians in all manner of situations, Randy Montoya seems to know just about everybody. I'd be willing to bet he's interacted directly with more Sandians in more different work environments over a longer period of time than anyone else at the Labs. I had no idea, though, how popular Randy was around here until he returned from a two-week vacation to find his inbox bursting with — and I wouldn't have believed this if I hadn't seen it with my own eyes — 41,033 new messages.

Let me spell it out for you: forty-one thousand and thirty three. Here's what apparently happened: Randy created an out-of-office message in his Entourage email application. Right before he left, he sent himself a test message. And that created a feedback loop that just kept churning away. And, oh? Those 41,033 messages came in over the course of just 12 hours. Before he left town, Randy discovered what was going on and was able to get CCHD to somehow short-circuit the loop. The lesson for me? Randy may be popular around here, but not *that* popular — except, apparently, with himself.

* * *

In public relations, what you call something can take on huge significance. For example, the marketing genius — probably unsung — who came up with the idea of calling gambling "gaming" belongs in the PR hall of fame. I thought about that the other day when I heard a public service announcement about a state-funded program to help New Mexicans who have developed a gambling addiction. See, when it's fun, it's gaming; when you start spending the milk money and the kids' shoe money on it, it's gambling. Works for me.

* * *

Something in Neal Singer's interview with Div. 1000 VP Steve Rottler from a couple of issues back has stuck with me. Steve said that when he fills out his tax returns, he self-identifies as an "engineer." He's been a successful and effective technical manager for years, but is his heart, he will always be what he started as: an engineer.

That made me think about how I self-identify. Over time, the evolving nature of my work has led me to learn all kinds of skills in editing, design, layout, web design, content management, crisis communications, event planning, even running — for a year — a resort town chamber of commerce. But when I self-identify on my own tax return, what do I call myself? A writer. Same as I did 40 years ago.

How about you? How do you self-identify?

See you next time.

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

***Mission: Hope 2009***

## Retired EVP John Stichman talks about his experience with cancer

On Tuesday, Sept. 8, noon-1 p.m. retired Executive VP John Stichman will keynote the 2009 Mission: Hope program at the Steve Schiff Auditorium. Mission: Hope is a Sandia program that raises awareness about cancer and its impact on work, family, and community. In his remarks, John will discuss the very personal journey that moved him from a lifetime of excellent health to the diagnosis and intensive treatment of leukemia.

JOHN STICHMAN

John will talk about his own approach to the illness. He will share his views on the importance of ongoing personal support, both during treatment and while in remission.

Div. 6000 VP Les Shephard and cancer survivor Dick Fate (6473) will speak briefly about the topic, reminding attendees that donations to fight the battle and find a cure can be made to various agencies through the United Way of Central New Mexico.

John, Les, and Dick agree it is vital that research on treatments and cures for cancer in all its forms continues. They encourage you to attend Mission: Hope at the Steve Schiff Auditorium. *— Jan Kohler (6482)*

# Feedback

## New retirement calculator coming by Sept. 30

**Q**: *With the new changes to the Sandia health care plan, a sizeable number of Sandians need to compare the cost/benefit tradeoff of retirement under the old versus new health care plan or working a few more years. With the currently available information, it is difficult to make that cost valuation. It would be useful to have a web calculation tool for the new versus old health care plan similar to what exists for the pension plan.*

**A**: Sandia has engaged a benefit consulting firm to develop a tool that will allow employees to compare their projected retirement benefits — including the cost of premium sharing for health care coverage — at different dates. We plan to have the tool deployed on Sandia's internal web by Sept. 30. *— Ginny Clark (3330)*

**Employees and retirees**

## UnitedHealthcare on-site representative change

Matt Shivadecker has replaced Beth Ann Seng as the UHC on-site representative for Sandia. Matt will be available for walk-ins or by appointment Monday through Wednesday from 9-11:30 a.m. and 12:30-3:30 p.m. in the benefits office at IPOC (third floor, Rm. G3601). He can be reached by phone at 844-0657 or email at matthew_e_shivadecker@uhc.com. To schedule an appointment, contact Matt directly.

## Retiree deaths

Horace J. Brown (age 90) . . . . . June 1
Emil G. Kadlec (79) . . . . . June 2
Elizabeth J. Ramirez (87) . . . . . June 3
Louis F. Narvaiz (82) . . . . . June 5
Robert T. Finnell (87) . . . . . June 6
Charles W. Demoss (85) . . . . . June 7
Leo A. Baca (86) . . . . . June 8
Paul Clement Kind (85) . . . . . June 9
Morris W. Mote (89) . . . . . June 9
William E. Thompson (81) . . . . . June 9
Hermenes Chavez (93) . . . . . June 10
Charles Lewis (102) . . . . . June 15
Gerald A. Benedetti (72) . . . . . June 16
Ralph T. McRae (88) . . . . . June 22
John M. Wiesen (87) . . . . . June 25
John A. Garcia (86) . . . . . July 3
Frank Bernard Burns (80) . . . . . July 5
Victor C. Krause (85) . . . . . July 7
Robert J. Isidoro (80) . . . . . July 15
Flora M. Burch (88) . . . . . July 18
Vitalia V. Salas (80) . . . . . July 18
Nita R. Ward (88) . . . . . July 24


# 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**
**Chris Burroughs,** Writer . . . . . **505/844-0948**
**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) 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 climate study projects receive $5 million in Recovery Act funding

***Funding will support DOE's Atmospheric Radiation Measurement Program***

SANDIA RESEARCHER MARK IVEY is the site manager for the North Slope Atmospheric Radiation Measurement (ARM) Climate Research Facility on the North Slope of Alaska. Sandia recently received funds from the American Recovery and Reinvestment Act to upgrade the facility near Barrow, Alaska.

By Chris Burroughs

Two Sandia climate study projects are getting a boost this year with the help of $5 million from the American Recovery and Reinvestment Act — the stimulus package. Both are associated with the Atmospheric Radiation Measurement (ARM) program supported by DOE. The teams, led by Mark Ivey (6338) at Sandia/New Mexico and John Goldsmith (6338) at Sandia/California, are receiving $2.5 million each.

Mark says his team's share will be used to prepare the ARM Climate Research Facility (ACRF) near Barrow, Alaska, for several new instruments, including scanning cloud and precipitation radars, improved balloon sounding systems, carbon flux instruments, and several new lidar (light detection and ranging) systems.

One of these, a new high-resolution spectral lidar system (see "What is lidar," below), will allow the researchers to take better measurements of clouds and aerosols and help them build better climate change models. The infrastructure upgrades will include new building platforms, installation of improved power lines, and improved network communications.

## Measuring water vapor

The majority of the funding for John's team will be set aside to develop a new Raman lidar for a permanent facility in Darwin, Australia, and for upgrades on a 15-year-old Raman lidar at a site in the southern Great Plains near Lamont, Okla.

Raman lidar is an active, laser remote sensing instrument used to measure atmospheric water vapor — a measurement important in studying climate change. Water vapor is inhomogeneous and difficult to measure remotely, but Raman lidar enables profiling of water vapor throughout the troposphere.

"We built the first Raman lidar for the ARM site in Oklahoma 15 years ago," John says. "It has functioned so well that program leaders decided they want a copy for the Darwin site. The money from the Recovery Act is making it possible."

### *What is lidar*

Lidar is an optical remote-sensing technology that measures properties of scattered light to find range and/or other information of a distant target. It operates much like radar but measures light pulses instead of radio waves.

## 'Laser lab in a box'

The equipment in Oklahoma is up and running more than 90 percent of the time year-round and is effectively a "turnkey system" — meaning that it requires almost no operator attention.

*"We'll have a chance to continue our research and obtain a more thorough understanding of clouds and their role in climate change in the Arctic. The Arctic has a significant impact on climate all over the world."*

**— Researcher Mark Ivey**

John says it is a "laser lab in a box," housed in a standard shipping container with a window at the top for the laser beam to exit and a telescope and associated optics to measure backscatter radiation. In addition to profiling atmospheric water vapor, the systems developed for the ARM program also profile temperature, clouds, and aerosol particles.

Ivey says the money from the Recovery Act allows the research in Barrow "to take atmospheric measurements that we collect in Barrow and archive in the ARM Climate Research Facility database to a new level."

"We'll strengthen our standing as a world-class atmospheric observatory with our improved radar and lidar equipment," Mark says. "We'll have a chance to continue our research and obtain a more thorough understanding of clouds and their role in climate change in the Arctic. The Arctic has a significant impact on climate all over the world."

ARM is the largest global climate change research program supported by DOE. It was created in 1989 to help resolve scientific uncertainties related to global climate change, focusing on the role of clouds and aerosols.

The national and international research communities conduct research at ARM's three permanent facilities — Southern Great Plains (Oklahoma), Tropical Western Pacific (Australia), and North Slope of Alaska (Barrow) — and a mobile facility. Proposals for use of the facility are reviewed by a science board that makes decisions on which research projects will be conducted at the sites.

## Effort started in 1998

Sandia has managed the ARM Climate Research Facility on the North Slope of Alaska since its inception in 1998. Bernie Zak (6338) did the initial planning of the facilities with staff from DOE and other DOE national labs. Mark took over the role of site manager for the North Slope ACRF in 2006, while Bernie continues as North Slope Science Liaison for ACRF.

Staff from Sandia also played key roles in development of the Atmospheric Cloud and Radiation Stations used at the ARM Climate Research Facilities in the Tropical Western Pacific. They also work closely with ACRF staff at Los Alamos National Laboratory on operations in the Tropical Western Pacific and the first ARM Mobile Facility deployed for a few months to a year at a time at sites around the world.

The ARM program is one of several at Sandia receiving funds through the American Recovery and Reinvestment Act. The *Lab News* will provide additional details in an upcoming issue.

# Naval Research Lab officials tour Sandia's optics labs

## *Visitors briefed on work in advanced optical imaging systems*


Directors from the Naval Research Laboratory (NRL) visited Sandia's Optical Military Systems labs last month to review Sandia's work in advanced optical imaging systems.

The Remote Sensing Division at NRL is collaborating with Cognitive & Exploratory Systems Dept. 6341 to develop a foveated zoom imaging system for small unmanned aerial vehicles under an Office of Naval Research contract. In a foveated imaging system, an optical device has the ability to zoom in and focus on a particular region within a larger field of view.

*"Everyone was very impressed and completely supportive of the work you are doing."*

NRL officials also expressed interest in other adaptive electro-optical/infrared efforts at Sandia. In the photo here, David Wick (6341, left) discusses the development of a 16-inch diameter, variable-focus composite mirror for imaging and laser communication applications with, from left, John Montgomery, Senior Executive Service (SES), director of research at NRL; Rich Bevilacqua (SES), Remote Sensing Division superintendent at NRL; Capt. Bill Schulz, deputy commanding officer at NRL; Kurt Weiler, Radio, Infrared, and Optical Sensor Branch head at NRL; and Capt. Paul Stewart, commanding officer at NRL.

After the visit, Weiler sent an email to the Sandia researchers, thanking them for the tour. "Everyone was very impressed and completely supportive of the work you are doing," Weiler wrote.

# Space utilization

*(Continued from page 1)*

Just why is Sandia rethinking its space standards? According to Stan, the Labs has several space issues that impact its austerity and sustainability goals. First, approximately 40 percent of Sandia's buildings are more than 30 years old. These buildings cost more to maintain, are less suitable to Sandia's current mission, and are less energy-efficient.

Acquiring government funds for new buildings is difficult, and NNSA has recently focused on reducing its space footprint and improving the efficiency and condition of its facilities. Finally, Sandia's identity as a multiprogram laboratory increases its need for high-security buildings.

Sandia has approached its space management initiative in two ways. Since 2007, Structured Improvement Activities (SIAs) were held with each division to understand their space needs and help consolidate space. The FMOC released office space metrics for each division and center to provide focused data.

These metrics were first published in January 2008, and since then office utilization — the number of usable offices that are physically occupied — has improved from 64 percent to 80 percent, mostly due to some very hard work by the line space coordinators. Detailed monthly reports are sent out to each organization, and according to Brad Skinner (4855), who works in Facilities' Strategic Customer Partnerships, many line organizations have tried to improve their performance.

Another bonus of the metrics is that they allow Sandia to determine which projects hold the most promise for improving space utilization. With the help of the data, FMOC has initiated several space-reduction and cost austerity projects, which include terminating the Eubank Research Park lease, vacating the Bldg. 10700 lease, and vacating 22 temporary buildings by consolidating space in Bldg. 823 and other locations. Fourteen other temporary buildings were vacated earlier this year and are being removed from the site. Removal of this space is saving Sandia about $2 million per year in operating costs.

Lynne Schluter (4856), manager of the ITS Strategic Customer Partnership department in Facilities, describes a Lean Six Sigma tool called "6S" that he has found useful. It has been explored in each SIA.

"The six S's stand for sort, straighten, shine, standardize, safety, and sustain," Lynne says. "Many line organizations have taken advantage of this tool to improve the utilization and safety in their laboratory space."

A FIXTURE AT SANDIA for years, T-City, located south of the JCEL building, is slated by Facilities to come down sometime in early FY10 as part of the Labs' space utilization efforts. Occupants of the buildings are being relocated to other facilities. Once the T-City buildings are removed, the site is being looked at for future development.

Implementing these changes has taught FMOC about the role of space at the Labs.

"The primary issue that we faced is that, in our culture, everyone believes they 'own' their space, whether it is office, laboratory, or storage," says Lynne. "Originally, the line did not think about space as a real expense in their budgets." As a result of the SIAs, many of the divisions have formed "space" teams to deal with tactical and strategic needs.

This, Lynne says, is different than many companies and universities where programs need to track and periodically justify their need for space.

"We try to provide space which is fit for our customer's mission use, but not everyone can get a private office with windows," says Lynne. He notes that cubicles and collaborative space are becoming more common in industries that FMOC has benchmarked.

The utilization efforts have improved general Labs awareness about space. According to Stan, as of July 2009 the square footage of space requested is 26 percent less than in 2008, and in FY08 a significant number of space requests were cancelled, resulting in a reduction of 50,000 square feet of requests in FY09 compared to the previous year.

*"I believe that Sandians are pack rats by nature and we have a lot of old and unnecessary stuff in storage around the various sites."*

**— Lynne Schluter**

Sandia's next efforts will focus on the utilization of laboratory space, which is about one-third of the total space at Sandia. Lynne and Stan, among others, are working on collaborative efforts with divisions 2000, 5000, and 6000 to determine a rating system for the line to tell the FMOC how the space meets the mission need in this area.

Any lessons learned?

"We have almost 600,000 square feet of assigned storage space, which doesn't even count the almost 600 transportainers scattered around our sites. I think this is another great 6S opportunity. I believe that Sandians are pack rats by nature and we have a lot of old and unnecessary stuff in storage," says Lynne.

# Black Swan and weapons safety

## *Theory described in 2007 book applicable to Sandia's weapons work, speaker says*

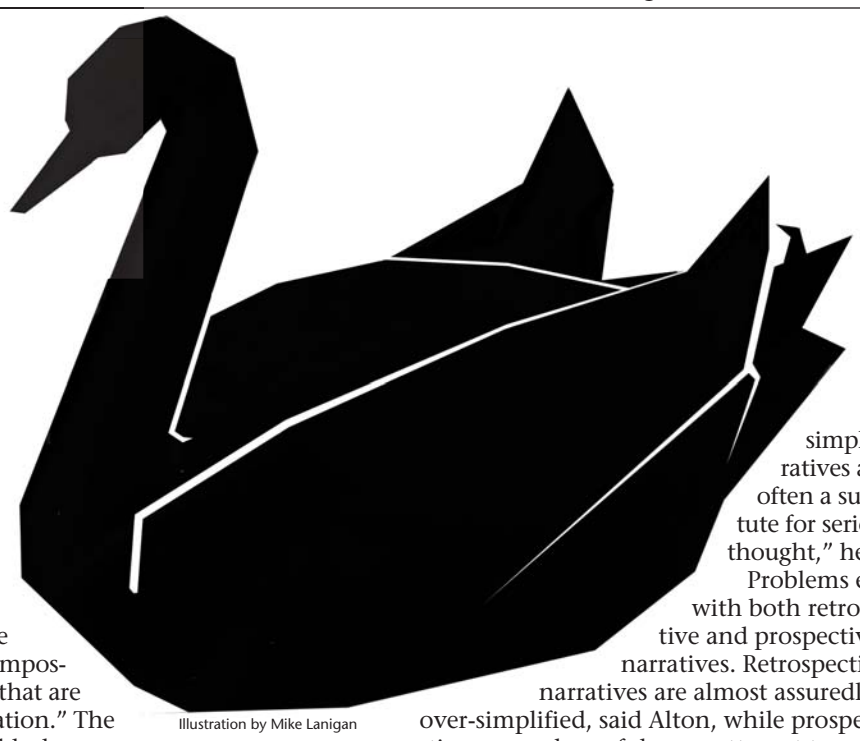


Illustration by Mike Lanigan

By Rachel Kolb

When discussing topics of safety, one common adage is "expect the unexpected." For several reasons, this is easier said than done.

One of those reasons, a phenomenon referred to as the black swan, was the focus of a Sandia Technology Symposium, "The Black Swan and Nuclear Weapon Safety," given by Alton Donnell (411) on July 30. Alton, a former US Army officer and nuclear safety consultant, discussed ideas developed by Nassim Nicholas Taleb in his bestselling 2007 book, *The Black Swan: The Impact of the Highly Improbable*, and related them to the safety challenges Sandia faces in pursuing its mission.

The phrase "black swan," Alton told symposium attendees, derives from the 17th-century English belief that swans could only be white. As such, it is a metaphor for "that which cannot exist." This belief was later belied by the discovery of a species of black swans in Australia, proving that under certain circumstances, the unthinkable can indeed come to pass.

Accordingly, in our modern world a black swan as defined by Taleb is a rare, unpredictable event that carries extreme or catastrophic impacts, but which is retrospectively explicable.

There is, Alton said, a distinction between unexpected and unforeseeable events.

"Low-frequency events are variants of events that occur more frequently," he said, citing the example of a jetliner crash being a less frequent variant of a single-engine plane crash. "These are unlikely, but foreseeable. Events that are unforeseeable include those that are truly impossible or infeasible and those that are possible, but fail the imagination." The latter is what Taleb calls the black swan.

Alton cites author Charles Perrow in *Normal Accidents: Living with High-Risk Technologies*, who concludes that complex, interconnected, and highly coupled systems should be expected to fail. Part of the solution is then to simplify, disconnect, and decouple. Sandia attempts to do that with nuclear weapons safety by using two standards: one that requires the accident be prevented, the second that assumes the accident happened and requires that there be no adverse consequences. Other technologies can benefit by building in this kind of a "firebreak."

Well-known black swans include the Sago mine disaster, the financial collapse of the hedge fund Long-Term Capital Management, and the *Challenger* explosion.

Accidents involving black swans are complex, and Alton warned against understanding them in simplistic terms.

"Humans learn from narratives, which is good, but simple narratives are often a substitute for serious thought," he said.

Problems exist with both retrospective and prospective narratives. Retrospective narratives are almost assuredly over-simplified, said Alton, while prospective narratives are only useful as an attempt to search the possible event space for the unknown and unknowable black swan. Analysts often rely on their own experience and judgment to create event trees — but, as Alton explained, unforeseen scenarios quickly evade any human attempts at prediction.

If the black swan is unknowable, what can we do? The best approach, Alton said, is to change our focus.

"When we focus on probabilities, we gravitate toward an expectation," he said. "Remember Taleb: we oversimplify what we know, and underestimate the uncertainty by compressing the range of possible outcome states."

On the other hand, Alton said, when we focus on possibilities, we can find a balance against our limited experience and our tendency to look at expectations.

The right focus, which considers the effects and consequences of any potential disaster, will help Sandia avoid the catastrophic outcome that follows the occurrence of the black swan.

# Audit directors from across DOE convene in Albuquerque

About 100 DOE internal audit directors, officials from the DOE Inspector General's office and NNSA, and management and staff from other DOE labs and plants converged on Albuquerque Aug. 11-13 for the DOE Contractors Internal Audit Directors (CIAD) 2009 Contractors Meeting. Hosted this year by Sandia and Los Alamos national laboratories, conference attendees came from 27 DOE sites around the country.

Representing the two sponsoring institutions, Sandia Labs Director Tom Hunter and LANL Director Michael Anastasio welcomed the visitors with opening remarks on the first morning of the conference at the Hotel Albuquerque.

ATTENDEES at the 2009 CIAD conference in Albuquerque hosted by Sandia and Los Alamos National Laboratory.

Tom shared with the audience highlights of the Labs' history, taking special note of the fact that this year marks Sandia's 60th anniversary. He provided a brief overview of several ongoing programs and showed a short video of Operation Burnt Frost, where in early 2008, Sandia assisted the US Navy in its successful project to intercept and destroy a nonfunctioning US satellite before it could enter the atmosphere. In a demonstration of the Labs' commitment to community involvement, Tom noted that Sandians contributed more than $3.7 million to United Way in 2008.

CIAD was formed in 1994 as a result of the DOE's Cooperative Audit Strategy. Through CIAD, chief audit executives across the DOE contractor complex share best practices, promote uniform application of standards and requirements, and collaborate to provide independent peer reviews for quality assessment and assurance.

According to David Palmer, director of Ethics and Business Conduct Center 12400 and previously the Labs' Audit Center 12800 director, the conference was a major success. David, who served as one of the conference's hosting audit directors, cited presentations covering a wide range of topics, including the American Recovery and Reinvestment Act and its impact on the DOE community, the DOE Cooperative Audit Strategy, and changes to government auditing standards.

Two presentations that captured the attention of meeting participants were those given by LANL's Todd Conklin and Breda Bova of the University of New Mexico. Conklin provided insight on human performance improvement and how to change perceptions of why incidents such as on-the-job injuries occur. Bova spoke about generational differences in the workplace and how those differences affect day-to-day interactions among coworkers.

Independent Audit and Advisory Services Center 12800 Director Jennifer Plummer, also a conference cohost, attributed the success of the conference to the hard work of many individuals, including Sandians from Center 12800 and Ethics and Business Conduct Center 12400.

For more information on the conference as well as links to many of the presentations provided, visit www.ciad.us.

## *Mayor Chavez lauds back-to-school supply drive*

BACK TO SCHOOL — Albuquerque Mayor Martin Chavez recognized 17 local businesses (with representatives from several of the organizations pictured above) for coordinating school supply drives. Sandia's Office Professionals Quality Council's Community Outreach team, Community Involvement Dept. 3652, and Sandia Laboratory Federal Credit Union collected and distributed school items to eight schools, the New Mexico Children, Youth, and Families Department, and Crossroads for Women. Sandia mail carriers and Transportation Services personnel picked up, transported, and helped with the delivery of the donations. The 17 companies collected 100,000 items. Sandia's total was 23,000. Representing Sandia was Patty Zamora (3652), in sunglasses third from right.

# Energy security media day

SUNCATCHERS SHOWCASED — Sandia engineer Chuck Andraka (6337), right, tells a group of visiting media about the SunCatcher concentrated solar power technology being researched at the DOE National Solar Thermal Test Facility. Sandia has worked with Stirling Energy Systems for the past several years to develop the technology.

Media got a glimpse of the future of transportation and energy the morning of Aug. 19 during Energy Security Media Day, sponsored by Les Shephard, VP for Energy, Security, and Defense Technologies Div. 6000. Some 20 representatives from the media were introduced to several energy technologies being researched at Sandia, including wind, solar, nuclear, biofuels, battery, and solid-state lighting. Les kicked off the morning with an overview of Sandia's work. That was followed by a walking tour of the National Solar Thermal Test Facility, where media saw Stirling Energy Systems' new solar power collection dishes and a Counter Rotating Ring Receiver Reactor Recuperator (CR5 for short).

***Photos by LLoyd Wilson***


TOM WUNSCH, manager of Sandia's Advanced Power Sources R&D Dept. 2546, talks about Sandia's battery research, particularly its study of lithium ion batteries, to a group of reporters.

JIM MILLER (1815) introduces the concept of Sunshine to Petrol to media. Sunshine to Petrol is based on the CR5, invented by Rich Diver (6337, to Jim's right), that will be able to break down atmospheric carbon dioxide into carbon monoxide and oxygen. This step is critical to making liquid fuels from carbon monoxide and hydrogen.

# Overcoming OBSTACLES

***Photos by Randy Montoya***

Sandia's Security Police Officer team demonstrated its prowess in a variety of demanding physical challenges during the 2009 Security Protection Officer Team Competition (SPOTC) sponsored by DOE. This tactical, physical, and skills-oriented firearms competition is open to teams of security protection officers from around DOE.

According to the SPOTC website, the goal is to foster interaction among a wider range of protective forces across the complex, reflect the diversity of DOE, and showcase the abilities of protection officers at all levels. As in years past, military and law enforcement agencies from the US and Canada also were invited to send teams to the competition.

In the photo above, Sandia SPOs Jason Mays, left, Adam Ortiz, and Joey Branch hot-foot it through a high-step obstacle. At right, Joey Branch and Adam Ortiz make short work of a tall fence. In the photo at lower right, Joey Branch and Jason Mays make a dash for cover with a simulated HAZMAT source. In the photo below center, Reese Branch, daughter of team member Joey Branch, was among the hundreds of spectators able to watch parts of the competition. At lower left, team members Joey Branch, Adam Ortiz, Jason Mays, and Miquelo Skelton carry a fallen "colleague" — actually a crash-test dummy — to safety. All the Sandians in the competition are part of Protective Forces Dept. 4211.

When the SPOTC scores were tallied, overall winners were Savannah River/Wackenhut (five-man team), DOE Headquarters (three-man team), and among non-DOE entrants, the team from Bruce Power (a Canadian nuclear generating station). The Sandia team fared well in several events but came up short in the final tally due to a couple of disqualifications.

## *Mark Rodriguez wins best poster at Denver X-ray Conference*

Mark Rodriguez (1822) received the Best Poster award at the Denver X-ray Conference (DXC) last month in Colorado Springs, Colo. Mark's poster, "In situ analysis of $LiFePO_4$ batteries: Signal extraction by multivariate analysis," showcased his team's research using multivariate analysis (MVA) to clarify and identify key phase changes that would otherwise be missed in complex, multiphase battery systems. MVA has the potential to be a revolutionary tool for both X-ray and neutron diffraction analysis of complex real-world materials systems, such as batteries. Mark's collaborators on this work are Mark Van Benthem (1822), David Ingersoll (2546), and S.C. Vogel of Los Alamos National Laboratory. Kathy Rice (10617) assisted in developing the poster.


# Div. 10000 VP and CFO Matt O'Brien joins Leadership New Mexico board of directors

Business Operations Div. 10000 VP and Chief Financial Officer and Matt O'Brien has accepted a position to serve as treasurer of the board of directors of Leadership New Mexico for its 2009-2010 program year. Matt is one of 46 statewide leaders who recently graduated from the Leadership New Mexico Core Program.

MATT O'BRIEN

Leadership New Mexico was founded in 1995 to identify current and emerging leaders throughout New Mexico, enhance their leadership skills, and deepen their understanding of the challenges and opportunities facing the state. The organization's Core Program is designed for statewide business executives. Leadership New Mexico also offers a program for local government and education leaders and a program for emerging leaders aged 25-40.

Matt, who has been in New Mexico since 2007, says he got involved in Leadership New Mexico as a way to learn more about the state and its people.

"I knew that this would be a great opportunity to see New Mexico beyond Albuquerque and would provide me a chance to meet and really get to know a new group of individuals and friends," he says. "I also believed that the faster I could assimilate into the broader community, the more effective I could be as a leader at Sandia and in New Mexico at large."

Matt says the Leadership New Mexico experience was worthwhile both personally and professionally.

"From a personal perspective," he says, "I really valued the opportunity to spend a great deal of quality time with a group of very talented leaders and share experiences about leadership and leading."

On a professional level, he says, "The contacts and friends I have made throughout the nine-month and six-weekend journey have already been invaluable and will continue into the future by way of my position on their board of directors and through the alumni group."

Open to all citizens of the state, the Leadership New Mexico Core Program involves leaders who represent the various geographic regions and communities, from the public, private, government, and nonprofit sectors. Special consideration is given to ensure diversity of geography, race, gender, and occupational background. Employers, community organizations, local leadership programs, or individuals may nominate candidates who demonstrate outstanding leadership potential. Individuals may also nominate themselves.

Matt says that for him, the Leadership New Mexico program was "definitely a great experience. I would recommend it to others at Sandia."

Matt joins David Palmer, director of Ethics and Business Conduct Center 12400, on the Leadership New Mexico 2009-2010 board of directors. David is a 2004 graduate of the program. Since its 1995 inception, a number of Sandians have graduated from the Leadership New Mexico program.

## Feedback

### *Readers ask about compensation, tuition programs, large vehicle access, and more*

***Q:*** *John Slipke's recent announcement about changes in the compensation increase schedule noted that Sandia will be "maintaining its position to market based on this 15-month period." While this may be true, it neglects the obvious disadvantage of extending the period at the current salary. I am also curious about the impact of this schedule on the revised job structure. This update was scheduled for this year, then extended until April 2010. Will it now not be effective until January 2011? This is a long wait to start addressing the clear discrepancies in salary treatment between administrative and technical staff, especially when the qualifications of certain technical staff are suspect. It also relates to a recent question about maintaining the salaries of former managers, since keeping them as technical staff regardless of the nature of their responsibilities keeps their pay at high levels, even if their tenure as a manager" was brief or unsuccessful. These individuals still are paid at levels that others could never hope to achieve through normal salary administration practices. How can this be justified?*

**A:** The recent announcement with regard to the new compensation increase schedule notes that the effective date of increases for nonrepresented Sandians will be January 2010. The new compensation increase schedule will not impact the April 2010 implementation of the new job structure. Given that the new job structure will not be in place until April 2010, the increases in January 2010 will reflect Sandia's current job structure. The new job structure will be based on paying what the market pays for the job a given Sandian performs, and will eliminate pay based on a technical or administrative ladder. While a person's salary will not be reduced if they are being overpaid for the work they are performing, future increases (starting in January of 2011) are likely to be minimal until market salaries are commensurate with their salary. *— Melissa Creange, 3002*

* * *

***Q:*** *Where can I find out about Texas school system tuition reciprocity programs, other similar programs if they exist, and Sandia or Lockheed corporate discounts in general?*

**A:** The University of Texas Memorandum of Understanding (MOU), where you will find the entire contents of the MOU and the points-of-contacts who can answer any questions or provide clarification, can be found at the following URL: https://hrprod.sandia.gov/cfdocs/prod/hris/ctd/apps/cedtweb/up/ut.cfm. Currently, this MOU is the only tuition reciprocity program that is available to regular Sandia employees. Additional information about Sandia's University Programs can be found at: https://hrprod.sandia.gov/cfdocs/prod/hris/ctd/apps/cedtweb/up/addprograms.cfm. For information regarding employee discounts, visit the HBE Employee Discounts webpage at: http://www-irn.sandia.gov/hr/benefits/ misc/discounts.htm. *— Charline Wells (3520)*

* * *

***Q:*** *I would like to use a paper-free system for paychecks but want to keep my own records. Instead of viewing paychecks online, I would prefer to get my paycheck it in email format (body and attached) so I can file it somewhere, archive the email, send home, etc. Is this possible? It seems like if everyone had to view their paycheck, print a copy, save PDF, or whatever every week, cumulatively over the whole workforce, that would use way too much company time.*

**A:** Thank you for your comments. While we appreciate your request that it would be preferable to receive paycheck data via email, Sandia does not view that mode of communication for paycheck data to be the most prudent. The HR Self-Service module was created to help facilitate review of items such as paycheck data, deduction information, W-4 change/review, etc. The current setup for printing paycheck information via our HR Self Service tool is not the most convenient, however, Sandia is working towards a reimplementation of our current payroll software that is scheduled to deploy in April 2010. We are working to facilitate the ability to save the contents in PDF form to an employee's hard drive, or to e-mail it to themselves or print it out. We will be sending communication regarding these changes as we work closer toward their development. *— Donna Kao, 10502*

* * *

***Q:*** *It used to be that when you connected over a slow connection (dial-up and/or VPN) into Sandia, the Windows updates were not automatically pushed down. Recently I was using my laptop at home and the download of required updates made the connection unusable for approximately 30 minutes. Were those updates really that important that they could not have waited five minutes for me to complete an email before taking over my computer? This happened the week after the updates were published. My laptop had not been connected to a network during patch Tuesday week. Can we institute a five-minute countdown that will allow us to finish work prior to mandatory downloading of the updates?*

**A:** While the patching of your system may have been inconvenient in your case, we must ensure that machines connected to Sandia's network are patched to protect against vulnerabilities that could impact everyone's productivity. Currently, customers can control the installation of updates for the first seven days after they are deployed (for Windows, the normal patch schedule is the second Tuesday of every month). seven days, the patches become mandatory for all machines on the network and run at the first available opportunity. You have two options to mitigate the impact of patching on your machine. First, you could get your machine on the network within seven days after the patches are deployed and install them at your discretion. Or second, if you're only going to work on email, you could avoid making a VPN connection to the Sandia network and use webmail, which would not require any updates. Selecting one of these options should help minimize the impact of patching on your productivity. *— Jim House (9342)*

* * *

***Q:*** *I would like to know what is the point of filling out a carpool form and displaying it properly in your vehicle, when more and more vehicles parking in the lot are using expired placards or nothing at all. Sandia SPO or KAFB police do not seem to be able to cite the offending vehicles, and the responses we see on the Feedback page only seem to say that "Sandians are supposed to follow the rules and park accordingly." What's the point if there are no repercussions? I saw a vehicle that was parked and not moved for over a month straight and nothing happened.This seems to me to be abuse of carpool privileges. What can be done?*

**A:** Thank you for your question. The Traffic Safety Committee is currently working on this issue with upper management. We are in the process of attempting to reinstate the Sandia Parking Enforcement program. KAFB law enforcement does not have the manpower to monitor our parking lots unless someone is parking in the state-issued handicapped spaces. Hopefully I can give you a better answer by the end of this calendar year. *— Willie J. Johns, 4122*

* * *

***Q:*** *Just curious — why are larger vehicles (cars, vans) not permitted to access the automated vehicle gate inbound to Tech Area 1 near Gate 8? I notice barricades that prevent larger vehicles from using that gate but carts can fit through. Thanks in advance.*

**A:** The primary reason Gate 8 is restricted to small vehicles is due to our existing Security Condition (SECON). DOE orders mandate certain measures be put in place at each level of SECON. Sandia, along with every other site in the DOE complex, is currently in SECON 3, or Elevated Security Condition. DOE has not reduced the SECON level to SECON 4, Guarded, or SECON 5, Low, since 9/11. Following 9/11, and in response to the elevated SECON, vehicle access restrictions were put in place around Tech Area 1 to protect personnel and property. Safeguards and Security is currently evaluating ways to reduce vehicle access restrictions around TA 1, including those in place at Gate 8, while maintaining a posture that supports SECON 3.

*— Natalie Barnett, 4242*

# Mike Quinlan carries the New Mexico flag to the USGA Senior Amateur Open

## *Senior manager in Facilities ranks among top 156 senior amateur golfers in the US*

When Mike Quinlan, a senior manager in Facilities Operations and Management Center 4800 teed up at the demanding Las Campanas Golf Club in Santa Fe earlier this month, he wasn't playing $2 Nassau — a type of friendly golf wager — with a few weekend golfing buddies.

No, the stakes were somewhat higher: Mike was shooting for a slot in the US Senior Amateur Open, to be played beginning Sept. 12 at the Beverly Country Club just outside of Chicago, Ill.

When the scores were tallied at the end of the match Mike shot a one-under-par 71; that was one stroke shy of the score carded by winner Tom Schultz of Durango, Colo., but still good enough to win Mike a trip to Illinois. The Las Campanas match was organized by the Sun Country Amateur Golf Association as the regional qualifier for the USGA-sanctioned Senior Amateur Open.

The Senior Amateur Open is the premier golf challenge for amateur golfers in the US age 55 and above. It brings together the 156 best senior amateurs from around the country — determined in regional qualifying rounds — to play 36 holes of stroke play. (In stroke play, golfers keep track of their total score; the lower the score the better.) The 64 golfers with the best scores then advance to a match play competition, in which golfers are paired up and play against each other. The winner of a match is the golfer who has won the most holes in an 18-hole game. Through a series of elimination rounds, a winner is determined.

Mike's reluctant to make any predictions about the tournament but feels pretty good about his chances.

"Unlike playing against the professionals at the 2002 Senior Open," he says, "I'm in my element with other good players age 55 and over. I hope to qualify for match play, and if I do so anything can happen from there." (In the 2002 US Senior Open, Mike was playing against such golfers as Tom Watson, Tom Kite, Hale Irwin, Fuzzy Zoeller, and Raymond Floyd, to say nothing of respected pro Don Pooley, who won the match in a playoff round against Watson.)

Mike, who's been at Sandia for 28 years, has been golfing for more than 50 years. He started out playing in his yard and caddying in tournaments for his dad, who was a scratch golfer (that is, a golfer who regularly shoots par or better). He even worked at a golf course in high school.

The Golf Channel on cable television will show excerpts from the USGA Senior Amateur Open beginning Sept. 12.

MIKE QUINLAN (4840) shows off the form that earned him a spot in the 2009 United States Golf Association Senior Amateur Open.

Mike cherishes the memory of his father, for whom golf was so important and who is the central figure in Mike's greatest golf memory.

"When my father passed away," Mike recalls, "his friends had a golf outing and more than 100 of his friends showed up. At the banquet after the round they each got up and shared their best golf memory playing with my Dad. It was a great way to celebrate his life."

Mark Twain famously defined golf as "a good walk spoiled." Mike will have none of that.

"Mark Twain had it all wrong," he says. "Enjoy the walk around the course and don't take bad shots too seriously. We aren't good enough to get upset."

Although Mike has attained some real success on the golf course, he says he never really considered the possibility of turning pro.

"Turning pro? That was never really a consideration," he says. "Professional golf is work. Golf for me is like yoga or meditation; it gives me space to think. Of course I love to compete and am drawn by the basic integrity and values of the game."

### About the tournament

**Entries:**

Open to amateur golfers who have reached their 55th birthday on or before Sept. 12, 2009, and who have a USGA Handicap Index not exceeding 7.4.

**Starting field:**

156 players

**Schedule of play:**

- Saturday, Sept. 12 — First round, stroke play (18 holes)
- Sunday, Sept. 13 — Second round, stroke play (18 holes)

*After 36 holes, the field will be cut to the low 64 scorers, who will advance to match play.*

- Monday, Sept. 14 — First round, match play (18 holes)
- Tuesday, Sept. 15 — Second round, match play (18 holes), Third round, match play (18 holes)
- Wednesday, Sept. 16 — Quarterfinals, match play (18 holes), Semifinals, match play (18 holes)
- Thursday, Sept. 17 — Final, match play (18 holes)

**The champion receives:**

- A gold medal and custody of the Frederick L. Dold Trophy for the ensuing year. The runner-up receives a silver medal; the other semifinalists and medalist receive bronze medals
- An exemption from local qualifying at the next US Open Championship
- An exemption from sectional qualifying at the next US Senior Open Championship, if still an amateur
- An exemption from sectional qualifying at the next two US Amateur Championships
- An exemption from sectional qualifying at the next two US Mid-Amateur Championships
- An exemption from sectional qualifying at the next 10 USGA Senior Amateur Championships
- An exemption from sectional qualifying at the next two US Amateur Public Links Championships, if otherwise eligible

# Song and dance man: Tim MacAlpine finds magic with music

By Iris Aboytes

There is magic in the sound, says Tim MacAlpine (9514). Tim is a member of The Summit, an Albuquerque-based barbershop quartet. "I enjoy making music that is more magical than the sum of its parts," he says, referring to the invisible fifth voice — the overtone. It's truly magical."

Tim sings tenor. His long-time barbershop companions include lead Shawn Mondragon (known to many as DJ Chaz Malibu), baritone Matt Vaive, and bass Marco Gonzalez. They perform at barbershop events and private functions in the Midwest and Southwest. The Summit will be singing in Chorus of the Comstock barbershop chapter's annual show in Carson City, Nev. In September. They have recorded three CDs, six radio commercials, and a Powerball TV commercial.

Tim's love of music began when he was in elementary school and sang in the school choir. Back then, Tim says he was always a ham and class clown.

THE SUMMIT — Tim MacAlpine (9514, left), with fellow members of the barbershop quartet The Summit. Other members of the group include, clockwise from Tim, Marco Gonzalez, Matt Vaive, and Shawn Mondragon.

Tim left Texas A&M after discovering he had a talent and love of dance and headed to New York to try his hand in musical theater. "Music has always moved me," he says.

"Professional theater was exciting but waiting tables and auditioning and not getting parts was disheartening. I wanted a more stable job." Tim had worked as a junior programmer before attending A&M. When he heard about a small computer-based training company that was hiring people, he decided to apply.

He was hired and left New York to work in Connecticut. Connecticut didn't feel like home, and since the New York theater scene was no longer part of his life, Tim moved to Albuquerque. He had heard it was a good place for IT professionals.

Tim applied for many jobs. With luck on his side, he got a job with a contractor who had a slot open at Sandia. After a few years as a contractor, he became a Sandia employee in 1998.

"I am currently a business software requirements analyst," says Tim. "I have served as a Macintosh and Novell tech supporter, a server administrator, a member of the original corporate Windows/NT server group, and the project lead and codeveloper of the MetaGroup Utility.

As much as he enjoys his job, Tim loves his music. It affords him a perfect balance, he says.

"After a good practice or concert, I am totally energized," he says. "My goal is to feel as comfortable matching software to business needs as I do singing with the quartet."

Tim got into barbershop singing through his work associations at Sandia. "My boss, Bill Chambers, introduced me to barbershop harmony when the Duke City Sound [then the Duke City Chorus] was forming." He sang in his first quartet with Sandian and close friend, Curtis Keliia. In 2002 Tim joined The Summit. "The rest is history," he says. "We sometimes call it a four-way marriage. It's a team sport for sure. Even when we have disagreements, we always put the music first."

When Tim moved to Albuquerque, he wanted to dance again. When he looked for advanced level classes he was directed to Edye Allen's Dance Expose.

"They didn't offer classes, but I joined the company and train and perform with them," says Tim. "I've started doing musicals to tie the singing and dancing together again. It's all about the music."

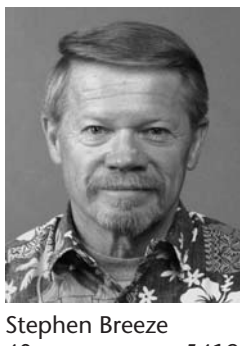
Tim no longer yearns for New York, but rather for The Summit and their next gig. His creative juices constantly flowing, Tim lends his voice to some of Sandia's awards programs and videos. He can also claim to have danced on stage with VP Al Romig when Dance Expose performed as part of a Sandia event at the Hispanic Cultural Center.

"Al has a great stage presence and a terrific sense of humor," he says. "It is a great memory."

The Summit will be performing at the KiMo Theater Aug. 28-30. "Come hear the magic," says Tim.

# Mileposts

*New Mexico photos by Michelle Fleming*
*California photos by Randy Wong*



Stephen Breeze
40 5419

John Vandyke
40 1423

Ann Louise Hodges
35 5212

## Recent Retiree

Patricia Tode
18 6774

David Werling
35 5356

Joseph Woodworth
35 1671

Mario Candelaria
30 4843

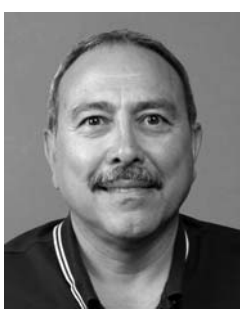
Nancy Dhooge
30 2542

Steven Hatch
30 241

Karen Marlman
30 4242

Rick Pepping
30 1344

David Sinton
30 4121

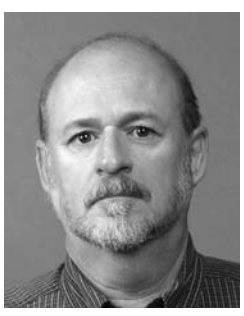


Mark Aguilar
25 2623

Edwin Bryce
25 2433

J. Douglas Clark
25 5732

Thomas Davis
25 5097



Terry Ernest
25 1733

Charles Gabaldon
25 4126

Lyle Golightly
25 4825

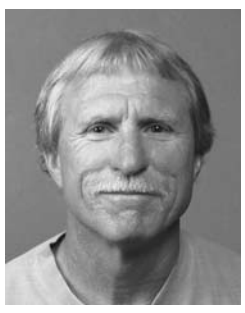
Anthony Griego
25 5733

Regina Jaramillo
25 2719

Susan Jensen
25 10627

Christopher Knight
25 4847

Michael Martinez
25 1825



Randy Rembold
25 5736

Cathy Richey
25 423

Donald Schofield
25 4133

Keith Vollmer
25 2732

Cathy Vortolomei
25 2997

Jay Clise
20 9548

Philip Kegelmeyer
20 8962

Laura Lenberg
20 9324

Christopher Mullaney
20 4136

James Potter
20 1672

Malcolm Stringer
20 2913

Scot Swanson
20 1731

Richard Grant
15 1822

James Gruetzner
15 5444

Gabe Gutierrez
15 8514

Sidney Gutierrez
15 4100

John Hatley
15 6452

Carmen Pancerella
15 8965

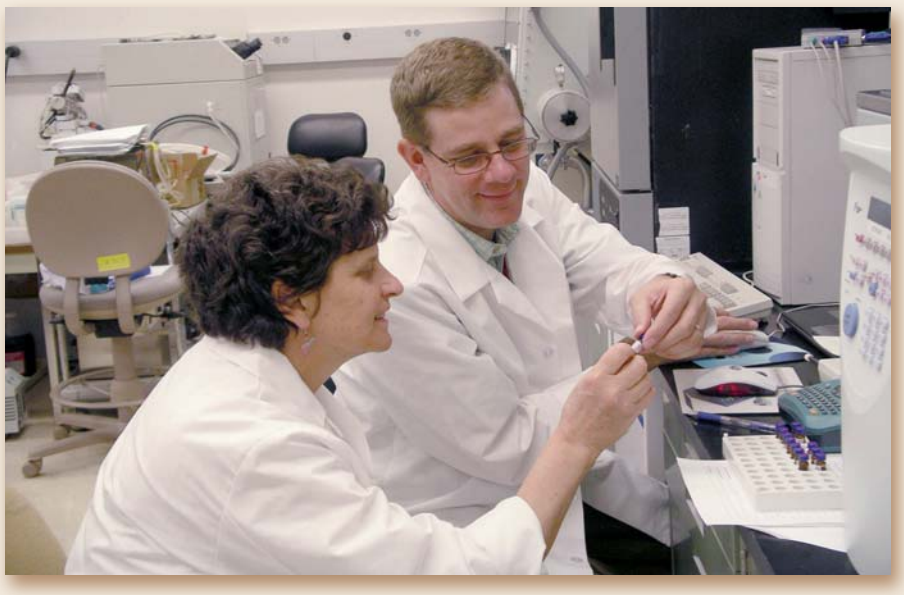
James Peery
15 1400

Darryl Sasaki
15 8651

# Department of Energy's Academies Creating Teacher Scientists (ACTS) shares Sandia research with teachers

By Iris Aboytes

Thanks to their experiences at Sandia, 31 teachers are better prepared to teach applied science at school this year. The teachers participated in DOE's Academies Creating Teacher Scientists (DOE ACTS) summer program. DOE funds this three-year program at several laboratories throughout the complex including Sandia/New Mexico and Sandia/California.



CURTIS MOWRY (1822) and Ellen Loehman from Jefferson Middle School load gas chromatograph autosampler for surface acoustic wave (SAW) device testing.

The goals of the ACTS program are to enhance teachers' content knowledge; to expose them to real-life research to assist them in teaching applied science; to better prepare teachers to encourage students to pursue science, technology, engineering, and math careers; and to encourage them to become science leaders in their schools and districts.

Teachers receive a $3,200 stipend for their work in the program. They are also eligible to receive up to $2,000 in classroom materials and up to $2,000 for professional development activities during the following school year.

Sandia/California conducted the program for the first time this summer and included 10 teachers.

"The mentors, the lectures, and the class lessons were all instrumental in the value of what we gained this summer," says participant Kari Salomon. "Our students will have even better teachers next year and will have science topics much more current than those in the textbooks."

The four-week program at Sandia/California involved learning about basic science related to unique scientific and engineering activities. Topics included transportation/combustion energy, hydrogen science, chemistry related to homeland security, and nuclear weapons-related topics.

"We took advantage of our location in the Bay Area and scheduled weekly outings to our science institution partners like the California Academy of Sciences, Exploratorium, The Tech Museum, and NASA Ames," says Ray Ng (8248).

The focus of the ACTS program at Sandia/New Mexico is to improve middle school teachers' understanding and knowledge of emerging trends in water resources, energy development and growth, and impacts on the environment, with an emphasis on sustainability.

Joining experts in these fields, teachers participated in a short research experience, took field trips and tours, and heard a variety of speakers — all aimed at improving their understanding of water and energy

TEACHER ELLEN LOEHMAN prepares calibration curve for measuring chemical sensitivity of microsensors.

challenges and potential solutions, science and engineering careers, and strategies for better preparing students for the workforce. By videotaping their ACTS experiments, participants were able to develop and implement professional development opportunities for other teachers. Pedagogy content focused on systems thinking/dynamics.

"We strive to provide content knowledge through experiential learning, using resources that are unique to our national laboratory," says Amy Tapia (3652), Sandia/New Mexico program manager. "One of the most rewarding aspects is providing an environment where teachers can expand their own knowledge of scientific applications and rejuvenate their love of science."

The ACTS program selects teachers from throughout the nation. Participating teachers this year came from California, New Mexico, Alaska, Ohio, Georgia, Minnesota, Kansas, Oregon, Colorado, and Pennsylvania.

"I have really appreciated being part of this program for the past three years," says Joshua LaClair, who this year completed his final summer as an ACTS teacher. "It has changed me into a better educator. I hope this program continues to offer other teachers the same experience."

# Sandia's HMTech Program helps students Take Flight

By Imani Bardel (HMTech participant)

*(Imani Bardel was one of this year's participants. She is 14 years old and attends Hope Christian School. She won a Sandia-sponsored writing contest when she was in 6th grade and was chosen to talk about her experiences.)*

What makes you dream? How do people think? What is it about these questions that move people to act on the things that capture the imagination? The whole world of flight has captured people's imagination since the beginning of time.

Hands-On, Minds-On Technologies Program, a Sandia-sponsored four-week summer camp for students in grades 6-12, opened the world of flight to 28 students. Take Flight, a course designed to help answer any or all of these questions, was the theme of this year's program.

The program is designed to encourage students to develop and pursue an interest in science, math, or technology. Among the goals is growing more technologists, engineers, and scientists.

June 6 was our first day of class. This was the 65th anniversary of D-Day, where more than 160,000 Allied troops took part in the Normandy landings.

IMANI BARDEL participated in the 2009 Hands-On, Minds-On Tech program sponsored by Sandia.

John Allen, an original Tuskegee airman, was one of our presenters. He was part of the Tuskegee experiment. When Allen was a young man, the military leaders accepted the opinion of psychologists, who had told the world that men of color could not fly, that they did not have the intelligence, courage, or dexterity to operate instruments of war.

Allen's fighter squadron accompanied more than 200 sorties, protecting the heavy bombers to and from their missions. They never lost an aircraft. He made a career of the military and performed many exceptional tasks. He attributes his success and promotions to his ability to read.

Kelvin Bowen, who recently retired from the Air Force, was one of our Taking Flight class instructors. He served in the Air Force for 47 years and has flown nearly 4,000 hours in a B-52. He has been an instructor, navigator, pilot, and evaluator. His advice to us was: "Don't forget to maintain your center of gravity. Advancement for tomorrow requires education, discipline, respect, and a personal drive."

We visited the Airworthiness Assurance Non-Destructive Investigation Validation Center, where we were able to examine structures that add to integrity when checking for airworthiness. We learned how Sandia supports the FAA by examining aircraft to make sure that any airborne equipment and systems operate without significant hazards to the crew, passengers, or the general public.

In one of my face-to-face interviews, it was not long before I discovered that the interview was turned around and the topic became me and the kinds of things that motivated me — my hobbies, my expectations, my desires for when I am a professional. The world of flight does capture your imagination. It is made up of people who act on their passions and want to share with others.

Taking Flight instructor Coby Davis (2614) says "The true role of a teacher is to become obsolete, to let students explore and get engaged in a topic, to find the things that connect with them. Under these conditions you get new ideas, and new ideas create independent thinkers. I like working with the students. If as a volunteer [to this program] I do the right thing, the reward is that the students learn how to learn and eventually exceed the teacher's material."

Writing this news story was like telling my parents how I spent my day at school.

## They did it!

The Riding4Hope Mackovjak cycling team (David, John, James, and Skip) departed from Silverdale, Wash., on June 28 and arrived in Virginia Beach, Va., as planned on Aug. 9 (see June 19 *Lab News*). They biked 3,900 miles in 43 days.
Designed to bring awareness to the Wounded Warrior Project and the Boys and Girls Clubs of America, they surpassed their goal of raising $10,000 for the organizations.
"It was quite an adventure and awesome journey," says David. "The countryside was awesome. The Grand Tetons and Grand Canyon were phenomenal. We got to see moose, elk, and even a grizzly bear. Meeting people along the way was wonderful. The pain and suffering has long been forgotten." On his way back home, David is looking forward to an upcoming 50-mile bike ride with friends.