

# Sandia researchers develop integrated energy-water model for planning/management purposes

**First program that addresses fundamental resources together; uses sophisticated computer modeling**

By Chris Burroughs

Water and energy are inextricably linked. It takes large volumes of water to produce energy and significant amounts of low-cost energy to treat and distribute water.

But the planning and management of these fundamental resources have historically been done in isolation.

A Sandia research team is attempting to remedy the situation by developing interactive computer modeling tools that integrate the two for planning and management purposes.

“Our model will allow energy and water producers, resource managers, regulators, and decision makers to look at the different tradeoffs of water use and energy production caused by uncertainties in population, energy demand, climate, and the economy,” says Vince Tidwell (6313), principle investigator.

Specifically, the model will help answer questions dealing with possible energy and water shortfall scenarios for particular regions; tradeoffs between alternate energy futures to meet projected shortfalls; tradeoffs between alternate water allocation schemes; economic and environmental consequences of these alternative futures; and potential consequences of alternative energy, environmental, and/or water policies.

The research is in its second year of three-year funding through Sandia’s internal Laboratory Directed Research and Development (LDRD) program.

The idea for the modeling program grew out of the Energy-Water Roadmap Development exercise conducted by Sandia and several other entities that addressed major

*“Users will be able to run hundreds of scenarios and see the effects in graphs and tables of their water and energy choices a year from now or decades away.”*

— Sandia researcher Vince Tidwell



POWER PLANTS around the globe, like this modern coal-fired plant on the island of Mindanao in the Philippines, use billions of gallons of fresh water every day in the process of meeting a growing demand for electricity. (Photo courtesy of STEAG)

(Continued on page 5)

## Latest policy changes are music to some Sandians’ ears

**Personal radios, CD players OK to use, even in limited areas**

By Julie Hall

The status of personally owned radios and CD players on Sandia premises — a source of confusion for some Sandians and managers over the past year or so — has been resolved with publication of a revised policy governing proper use of information technology resources.

The most recent policy revision, published in December, contains a section specifically addressing “music devices” and recognizing that music in the workplace

As always, using or possessing illegally copied files on Sandia-owned equipment is a violation of Sandia policy. Nor can Sandia resources be used to download or store music files, irrespective of whether the files are acquired through legal channels.

Related story: ‘Digital natives’ find it tough to adapt to life without cell phones, MP3 players. See story on page 4.

can improve worker concentration and performance by masking noise distractions. The policy states that personally owned radios and CD players are allowed in limited and property protection areas — except where special prohibitions exist — provided the devices do not have capabilities for recording, storage, or networking. That means that MP3 players are still verboten.

Another policy change eliminates the need to submit a form that allows visitors to bring their computing equipment and media into property protection areas and other less restrictive areas, such as the Combustion

(Continued on page 4)

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## NISAC steps to plate during deadly California wildfires



NISAC PERSONNEL, including Vanessa Vargas (6321, above), worked 24/7 in the National Infrastructure Simulation and Analysis Center to provide real-time data analysis during the California wildfires last fall. Story on page 5.

(Photo by Randy Montoya)



### Secretary to nine Labs presidents passes away

Rosalie Crawford, secretary to the first nine presidents of Sandia Corp. and a role model to two generations of Sandia women over a 38-year career, has died at age 84. Story on page 2.



### ES&H audit to begin

This month, DOE’s Office of Health, Safety, and Security Office of Independent Oversight, HS-64, comes to Sandia (Jan. 28-Feb. 8) to conduct a Labs-wide inspection of line implementation of ES&H programs. Story on page 3.



### Unbreakable?

Astonishingly, Nora Armijo has not missed a day of work due to illness in 34 years. Perhaps the rigors of a childhood without lots of luxuries toughened her up, or perhaps she is just unbreakable. Story on page 8.

# That's that

What's in a name? If you read this space last time, you may remember that I was tussling with what to call this biweekly assortment of (a)wry observations and random musings on, well, everything. I'd about settled on going with "That's That" when a couple of emails made me stop and reconsider. Clare Stanopiewicz (1055) writes, "After reading your thoughts on renaming the column, a name came to mind. It might be that I hear it often at home (due to having a teenager in the house), but you could call it 'Whatever...'" And Ken Smith (5346) says: "This & That [an old name for this column] is my favorite part of the *Lab News*. If I were writing it I would call it 'Thunder Chicken Scratching' but since I don't write it I won't call it that." I won't either, Ken. To which I'll only add: "Whatever . . ." And that's that.

\* \* \*

How about some word play? A couple of issues back, we had a story about Sandia's Sunshine to Petrol project – that's the effort by Rich Diver and others to use solar energy to extract CO<sub>2</sub> from the air and convert it into the raw material for fuel. Anyhow, one of the countless media sources that picked up the story is an online publication called bit-tech.net. Their headline read "Boffins ready air-to-fuel converter."

Hmmm. That caught my eye. I've been working with words for decades – I use 'em every day – and I'd never come across the word "boffins." At the end of the story, there's a section where readers can post comments. The very first one chided the writer for the headline, saying, "Boffins? Are you trying to be *The Register* or *The Inquirer* or something?" To which the writer replies: "No, but I am from the UK. According to my copy of the *Cambridge Advanced Learner's Dictionary*: 'Boffin, noun, mainly UK informal: A scientist who is considered to know a lot about science and not to be interested in other things.' I'd say that Mr. Diver fits that description pretty well, no?"

Well, no. I think if the bit-tech.com writer spent much time at Sandia, he'd be blown away by the diverse interests that Sandia scientists and engineers pursue away from their jobs. But let's not be mean here: I suspect he meant the term in a flattering, even awestruck, way.

And here's a strange (as storied radio announcer Paul Harvey might say): The very day I came across the word "boffin" for the first time, I was reading a book by a British mystery writer by the name of Dick Francis. I'd barely picked up the book for my evening read when, there, on page 299, the protagonist talks about the "boffins" who developed the prosthetic hand he uses. Obviously, just a coincidence. But still . . .

\* \* \*

No one can tell me Sandians aren't a can-do bunch. The Labs' personal electronics policy forbids bringing iPods and other recording-capable MP3 and other devices into the tech areas. But that policy doesn't stop Sandians from having their music their way. Case in point: The other morning I walked in behind a guy carrying a guitar case through Gate 3. Presumably, there was a guitar in the case, and that's cool. Just so long as it wasn't electric.

See you next time.

– Bill Murphy (845-0845, MS 0165, wtmurph@sandia.gov)

## Rosalie Crawford, secretary to Sandia's first nine presidents, dies at age 84

By Iris Aboytes

Rosalie Crawford, secretary to Sandia's first nine presidents, died recently at age 84. Rosalie retired from Sandia in 1986 after 38 years.

"If you were a secretary at Sandia while Rosalie was here, she was your role model," says Becky Hunter (1055). "She had this infectious smile and an abundance of energy that assured you she loved her job."

Rosalie came to Sandia in 1948 when Sandia was still a branch of the Los Alamos Scientific Laboratory. She likened the environment to almost a family feeling. She said you knew everybody, and everybody knew you. At that time, Sandia was a relatively small place with only about 900 employees.



ROSALIE CRAWFORD with Sandia Labs president Siegmund "Monk" Schwartz in 1960.

"I was a messenger when I first met Rosalie," says retired secretarial coordinator Carol Kaemper. "She was always so kind and made me feel so good. I hoped that if I ever became a secretary, I would be just like her."

Rosalie would say she did not know why she was selected to be the president's secretary. Maybe it was because she was one of the few secretaries on roll with a college degree. One day about 10 months after she started working she was notified she would be working for George Landry. Landry came to Sandia from Western Electric when the Bell System took over management of Sandia Laboratory. Landry was the first president.

She compared working for each Sandia president as starting a new job. Each president wanted things done just a little differently, so it was a new beginning each time around. "Things were never dull," she said.

One of her favorite stories during all those years was when Dixie Lee Ray, then chairman of the Atomic Energy Commission, arrived for a visit with President John Hornbeck. Ray's entourage included her two dogs. The dogs accompanied her to an early morning briefing in his office. "They were introduced to me, like people, and then proceeded to share a chair at the conference table while the briefing was presented," she said. "The dogs were made special badges to wear inside the tech area."

When Rosalie retired she was asked if she could go back, would she do it all over again. "I don't think I'd change much of anything. I've given it my best shot. I've never forgotten advice I received from my dad a long time ago. He used to tell us kids, 'When you're working for someone, give them their money's worth.' I've always tried to come to work early, stay as late as needed, and do whatever the job required. That's sort of the philosophy I've lived by."

"She was always so cheerful and was always the same," says Meg Luther (12123). "She was a very special lady."

With a twinkle in her eye, Rosalie joked about setting a record that nobody would ever match — 38 years without a promotion. She started at the top!

Rosalie's retirement years brought golf, travel, and lunch with many friends. Her involvement with her church was paramount. "Rosalie was a beautiful person both inside and out," says her lifelong friend and colleague Sandia retiree Jo Sena. "We will all miss her."

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## Recent Patents

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

Anthony McDaniel (8367) and Bob Bastasz (8758): Carbon Monoxide Sensor and Method of Use Thereof (Patent No. 7,264,778)

Anup Singh (8321) and Tim Shepodd (8778): Dialysis on Microchips Using Thin Porous Polymer Membranes (Patent No. 7,264,723)

Mark Tucker (6327): Decontamination Formulations for Disinfection and Sterilization (Patent No. 7,271,137)  
James Krumhansl and Patrick Brady (both 6316), David Teter (243), and Paul McConnell (6764): Cask Weeping Mitigation (Patent No. 7,271,310)

Mark Tucker (6327): Granulated Decontamination Formulations (Patent No. 7,276,468)  
Francis Bouchier, Lester Arakaki, and Eric Varley (all 6418): Preconcentrator Heat Controller (Patent No. 7,282,676)

Mark Tucker (6327): Decontamination Formulation with Sorbent Additive (Patent No. 7,282,470)

Kamlesh Patel (8324): Electrokinetic Pump (Patent No. 7,297,246)

Kevin Linker, Frank Bouchier, Lisa Theisen, and Lester Arakaki (all 6418): Analyte Separation Utilizing Temperature Programmed Desorption of a Preconcentrator Mesh (Patent No. 7,299,711)

Eric Coker (1815): Method for Encapsulating Nanoparticles in a Zeolite Matrix (Patent No. 7,306,824)

### Sandia Corp.'s first nine presidents

<b>George Landry</b> Oct. 1949 – Feb. 1952	<b>Donald Quarles</b> March 1952 – Aug. 1953
<b>James McRae</b> Sept. 1953 – Sept. 1958	<b>Julius Molnar</b> Oct. 1958 – Aug. 1960
<b>Siegmund "Monk" Schwartz</b> Sept. 1960 – Oct. 1966	<b>John Hornbeck</b> Nov. 1966 – Sept. 1972
<b>Morgan Sparks</b> Oct. 1972 – July 1981	<b>George Dacey</b> Aug. 1981 – Jan. 1986
<b>Irwin Welber</b> Feb. 1986 – March 1989	

# New year brings more support for local education

By Patti Koning

Earlier this month, Sandia/California, through the Livermore Valley Education Foundation (LVEF), gave a \$5,000 donation to the Tri-Valley Educational Collaborative as part of Lockheed Martin's Gifts and Grants Program. Known as TEC, the organization is stewarded by the Tri-Valley Regional Occupational Program and focuses on career technical education.

The donation was not for any specific TEC program, but rather in support of general operations. This is a distinction that is important, says Jim Simmons (8528), community relations and outreach lead for the California site.

"We want to support the general operations of TEC and allow the organization to grow and continue to reach more people," he says.

TEC is part of a growing nationwide trend of allies, advocates, and associates who come together over a common interest, bringing with them unusually diverse backgrounds as well as current vocations. Leaders and members of TEC represent many facets of the local community, including schools, colleges, local



TEC PEOPLE — Members of the Tri-Valley Educational Collaborative (TEC) brainstorm ideas to further opportunities in career technical education. Through the Lockheed Martin Gifts and Grants Program, Sandia recently gave TEC a \$5,000 grant to fund operations. (Photo by Patti Koning)

employers, trade unions, and local governments. LVEF is an important member of TEC.

The cochairs of TEC are Laurel Jones, vice president of academic services for Las Positas College, and Diane Centoni, superintendent of the Tri-Valley Regional Occupational Program.

"Las Positas College is proud of the collaboration that exists between our college and our feeder districts, as well as our relationship with the Regional Occupational Program. This collaboration provides another opportunity for students to make the transition from high school to college to career," says Jones.

TEC also represents a wide geographic region, with members from Livermore, Dublin, Pleasanton, and Sunol. TEC programs have an impact throughout the Bay Area.

This donation is another example of how Sandia supports the local education community. Sandians in California have long been partnered with LVEF to promote support for quality programs in the local schools.

These have ranged from the facilitation of major grants to purchase a mobile planetarium and classroom audio/video carts, to providing stipends for helpers in the Laboratory's signature school program, Family Science Night. The most recent effort of note was the establishment of a fund

to provide for an annual teacher of the year award program.

With this recent donation to TEC, Jim offered a challenge to LVEF to build its capacity. "While LVEF's leadership is volunteer-based, they are very strong, capable people and we have seen their dedication. We believed they could attract and capture other, additional funding, and support important unmet needs, like operations support for the TEC group, if we helped them build their own capacity," he explains.

Last year, LVEF received its first-ever capacity-

## Sandia California News

building, no-strings-attached grant, and it came from Sandia. And Sandia is helping to underwrite the support for TEC. Other grant money is now coming into LVEF as a result of its heightened visibility and the increased awareness of its role and ability to serve as a funder and steward.

This new grant type engenders a "trifecta" of wins, Jim says, even before whatever goodwill that may accrue to Sandia. LVEF, he says, is better positioned to be of service to the educational community, TEC's extraordinary efforts can continue to achieve success for an ever-growing educational field of interest, and the students served by these programs will have more opportunities for training and good careers.

"This is Sandia National Laboratories/California at work in the community we love and count on," says Jim.

# HS-64 inspection offers opportunity to shine

By Bob Brandhuber

*Note: Bob Brandhuber, senior manager in ES&H Management, Assurance, & Training Dept. 4110, has been overseeing Sandia's preparations for the all-important HS-64 inspection of the Labs ES&H programs. With the inspection due to begin later this month, Bob offers a few reminders of things Sandians can do to help ensure a successful outcome.*

When polled about what motivates workers, a majority of employees across the country say they just want to go to work, make a contribution toward the success of their company, and go home safely. In this way, we at Sandia are much like our counterparts. We, too, want to go to work, do our part for national security, and go home safely at the end of the day.

This month, as DOE's Office of Health, Safety, and Security Office of Independent Oversight, HS-64, comes to Sandia (Jan. 28-Feb. 8) to conduct a Labs-wide inspection of line implementation of ES&H programs, Sandia's workers will have the opportunity to make the greatest contribution to overall performance during the inspection.

Day-to-day operations will be closely scrutinized during the audit and several principal areas of interest

have been specifically identified for inspection. They include: Essential Systems Functionality for Nuclear and Selected Non-nuclear Activities and Facilities; Feedback and Continuous Improvement; Work Planning and Control; Occupational Injury and Illness Investigations and Reporting; Hazardous Waste Management; Chemical Management; and Specific Administrative Controls. Additionally, HS-64 inspectors have identified a number of facilities they intend to visit as they concentrate on these principal areas:

- Microsystems and Engineering Sciences Application (MESA)
- Neutron Generator Facility (NGF)
- Explosive Components Facility (ECF) and supporting operations in Bldgs. 702 and 857B
- Manufacturing & Science Technology Centers
- Hazardous Waste Management Facility (HWMF)
- Radioactive/Mixed Waste Management Facility (RMWWMF)
- Facilities Management and Operations Center (focusing on MESA, NGF, ECF, HWMF, and RMWWMF)
- Annular Core Research Reactor (ACRR)
- Gamma Irradiation Facility (GIF)

How can each of us help ensure success? As in most things in life, a good first impression counts: Make sure

your area's housekeeping is in order. Next, focus on the work performed and the hazards associated with that work; know the particulars of who authorizes work and the procedures and processes that control it. Know the proper personal protective equipment (PPE) and why it's the right choice. All these guidelines and more can be found on the HS-64 Inspection website (<http://gpweb.sandia.gov/HS64/>), which has a plethora of resources and tools to help workers get familiar with what to expect, including an "auditquette" presentation full of tips on inspection interaction.

The bottom line: Welcome the inspection as an opportunity to demonstrate you and your organization's competency and commitment to safe performance and mission success.

## Sandia 2008 Bioscience and Technology Forum set for Feb. 6-7

Sixteen Sandia researchers will speak at the 2008 Bioscience and Technology Forum Feb. 6-7 in Bldg. 858/L2000. The event is sponsored by Biological and Energy Sciences Center 8300.

The last biotech symposium sponsored by Sandia was held in October 2004.

Anthony Martino, cochair of the symposium and manager of Biomolecular Analysis Dept. 8332, says the forum is designed to bring people together to learn about Sandia's technical contributions in the biosciences. Also chairing the event is Steve Casalnuovo, manager of Biosensors and Nanomaterials Dept. 1714.

"We hope the interaction will promote new ideas for external proposals and the upcoming LDRD [Laboratory Directed Research and Development] season," Anthony says.

During the one-and-a-half day symposium, speakers will cover topics in the following areas: biological interfaces, nonproliferation and systems analysis, water and energy, and biodefense.

A poster session open to all participants will follow the first day's presentations. The forum will include working lunches and a dinner.

For more information, contact Anthony at 505-844-0652 or [martino@sandia.gov](mailto:martino@sandia.gov) or Steve at 505-844-6097 or [sacasal@sandia.gov](mailto:sacasal@sandia.gov).

When DOE's Office of Health, Safety, and Security Office of Independent Oversight visits Sandia this month for a major inspection of the Labs' ES&H implementation, auditors will focus on day-to-day operations Labs-wide. Inspectors will also be focusing on a number of principal areas of interest, including Sandia's Gamma Irradiation Facility (pictured at right).

(Photo by Randy Montoya)



# Feeling disconnected? Some Sandia 'digital natives' prone to personal electronics separation anxiety

By Julie Hall

Does leaving your cell phone or MP3 player in your car before passing through the gates to the limited area evoke vague feelings of anxiety and disconnectedness? If you're a "digital native" — someone who grew up with digital technology — it just might.

Digital natives were born after 1980 and have spent their formative years with computers, the Internet, cell phones, and more recently, MP3 players and PDAs. When they come to work at Sandia, they learn to leave their personal electronics devices at home or in the car, sometimes triggering a mild case of digital withdrawal. While dependence on technology is not solely the realm of the young, those whose electronic devices are close to being an extension of themselves seem to be particularly affected.

## Life unplugged takes getting used to

"I feel lost without a cell phone," says Marcus Chang (5527). "You feel connected to the world with a cell phone. Growing up you kind of get used to having one all the time."

For a year or so after getting his bachelor's in computer science and first coming to Sandia in 2002, Marcus says he felt "disconnected" because he worked in the limited area and had to leave his cell phone in his car. But "you get used to it," he says. While he has an MP3 player, leaving that behind wasn't as difficult, although he'd use it at work if he could.

One young employee who has since left Sandia says that being without his camera phone is "not a problem" but says his friends who work elsewhere say they "can't imagine not being able to have those things."

"Life goes on without a cell phone. There's an adjustment period but you can get a pager," he says, adding that the installation of cell phone lockers at the gates was a "good move."

He and some of his colleagues discovered they had the same "security nightmare." Similar to the typical college dream of having a paper due the next day that you forgot about, "we have nightmares that we're at work and we have our cell phones," he says. "I think a lot of Sandians share that mindset."

For Ben Farkas (2125), music is the bigger issue. Not being able to bring his iPod or his cell phone into

the limited area is "pretty inconvenient," he says. He listens to music all day while he works so he likes to have a variety of music on hand. While he brings in CDs as allowed by Sandia policy, he says it's not practical to bring in 60 gigabytes' worth of CDs, which is what some iPods hold.

"It's very difficult figuring out how to have music in the [tech] area," Ben says. He says he has some questions and ideas for solutions to the problem that he'd like to discuss with someone.

As with many of his friends, Ben says his PDA phone is his only phone; he doesn't have a land line at home. He often goes to his car during lunch to check his messages. He's often away from his office phone for periods of time and says he worries about being unreachable in the event of an emergency.

"I'm accustomed to being unreachable during the day, but I don't necessarily like it. It's still a minor concern," he says.

While he says he understands the need for security, he's still sometimes frustrated by Sandia's policies. "The policies change so often that no one knows what the current policy is so they do what they think is right," he says. In his view, it wouldn't be difficult for an adversary working at Sandia to obtain sensitive data if he or she wanted to, regardless of the policies.

## Digital natives in the workplace

Ben would also like to see Sandia be a little more flexible with its policy on incidental personal use of IT resources. While he understands the reason for limiting personal use, he thinks people generally "know where the line is." When you spend 10 hours a day at work it shouldn't matter that you take a break every so often to check personal email or book a flight, he says.

"I could see this being a potential deterrent to a prospective employee," Ben says.

Studies show an increasing blurring of the lines between work life and personal life. Digital natives in particular often have different ideas about how work should be done than employees of earlier generations (aka "digital immigrants"—those who've adapted to use technology but were not born into it). Periods of work are typically interspersed with looking up something (nonwork-related) online and maybe texting a friend. Work isn't necessarily com-

pleted during traditional business hours; it may be done in the evenings or wee hours of the morning. To them, listening to Internet radio or an MP3 player while being online in front of two computer monitors with an instant messaging window open is not "using technology" — it's life. In fact, some deem the term "work/life balance" outdated, favoring "work-life integration" as more representative of how work occurs today.

Potential future employees — those currently in college — typically are accustomed to communicating in online communities like MySpace, Facebook, and Second Life and using sites like YouTube, Flickr, and Wikipedia for sharing videos, photos, and information.

Companies everywhere are trying to figure out what these changing behavioral patterns and trends mean for the workplace.

## Technology, policies continue to evolve

Sandia's policy governing use of IT resources was recently revised to attempt to address the use of new technologies, says Mike Gomez (9601), who wrote the revisions (see "Policy changes are music to some Sandians' ears," p. 1). In addition, Mike recently formed the Electronic Devices Working Group. The group, comprising representatives from Safeguards and Security, Cyber Security, and the corporate policy office, plans to investigate, explore, and resolve issues regarding the use of electronic devices at Sandia, whether or not they are owned by Sandia.

While Sandians have had instant messaging capability for several years, Windows Messenger and Sametime instant messaging have been replaced by Microsoft Office Communicator, which is considered to be more secure, according to Kevin Hall (9537). While Communicator has videoconferencing and PC-to-PC calling capabilities, those features are not allowed at Sandia because of security and privacy concerns.

Marcus says that he and virtually everyone in his department uses Sandia's instant messaging application. Rather than walking down the hall to ask a colleague a question, he says it's a good way to quickly get an answer to a simple question.

"I think it's really one step in the right direction," he says.

## Electronics

(Continued from page 1)

Research Facility at Sandia/California or the Center for Integrated Nanotechnologies at Sandia/New Mexico. As user facilities, both are frequented by a large number of visitors from industry and universities.

While personally owned removable electronic media, such as CDs, thumb or USB drives, and memory cards, are generally prohibited on Sandia premises, personally owned music CDs — including those you have burned yourself — are a permitted exception, provided the files are legally acquired and do not contain video or other formats, according to the policy.

As always, using or possessing illegally copied files on Sandia-owned equipment is a violation of Sandia policy. Nor can Sandia resources be used to download or store music files, irrespective of whether the files are acquired through legal channels.

A review of the existing policy began in 2006 to address some areas of confusion and to bring the policy in line with current technology. A substantial revision of the policy was published in June, and additional changes were published in mid-December.

"Technology is evolving at a constantly accelerating pace, producing an increasing number of electronic devices with multiple capabilities," says Mike Gomez (9601), who wrote the policy revisions. "It's become a constant challenge trying to balance their capabilities against Sandia's requirements and environments."

Other significant changes, clarifications, or additions to the policy include:

- Accessing Internet (streaming) radio is still not allowed via any Sandia network. (This prohibition is due to the capacity of Sandia's networks.)
- Computer media such as CDs, memory cards, and thumb/pen/USB drives may only be brought onto Sandia-controlled premises if the following conditions are met:

*"Technology is evolving at a constantly accelerating pace, producing an increasing number of electronic devices with multiple capabilities. It's become a constant challenge trying to balance their capabilities against Sandia's requirements and environments."*

— Mike Gomez (9601)

- They are obtained through approved procurement channels and are identified as government-owned property.

- They are used to perform business-related work.  
- Sandia computers used to access the media have the latest updates to check for viruses and Trojan horses.

- Sandia visitors are now allowed to bring in USB drives and other media using a completed form SA-2712-CVC.

- All sensitive and "personally identifiable information" (PII) on portable/mobile devices must be protected with encryption. Social Security numbers, date and place of birth when associated with an individual, and many other types of information when connected with an individual are considered to be PII.

- Personal digital assistant (PDAs) used for an individual's job must be purchased from Sandia's list of recommended systems and registered in the Network Information Systems (NWIS).

To view CPR 400.2.10 - Using Information Technology Resources, including a quick reference table showing prohibited/controlled electronic devices for Sandia's different types of areas, see: [www-irn.sandia.gov/policy/infrastructure/cpr400210\\_10.htm](http://www-irn.sandia.gov/policy/infrastructure/cpr400210_10.htm).



UNDER SANDIA'S new personal electronics policy, privately owned radios and CD players are allowed in limited and property protection areas — except where special prohibitions exist — provided the devices do not have capabilities for recording, storage, or networking. (Photo by Randy Montoya)

# NISAC assists in California wildfires

*Sandia/Los Alamos group activated during massive 2007 wildfires in California*

By Stephanie Holinka

While emergency response groups from all over the country converged to fight the recent wildfires in California, a small group of people at Sandia and Los Alamos were placed on 24/7 operational status, supplying critical information to help decision makers and planners who had to anticipate cleanup and rebuilding activities in the wake of the fires' devastating effects.

The National Infrastructure Simulation and Analysis Center's (NISAC's) core partners are Sandia and Los Alamos national laboratories. Working under the Department of Homeland Security's Office of Infrastructure Protection (DHS OIP), NISAC uses the labs' expertise in modeling and simulating complex systems to examine both natural events and disruptions to manmade infrastructure in light of national security issues. Their work allows decision makers to have more robust information before they make critical infrastructure decisions during natural disasters or after a terrorist event.

When events like hurricanes threaten — and sometimes long before — the NISAC team mobilizes to provide planners with projected impacts and consequences; in the case of hurricanes, reports indicating potential vulnerabilities are provided days to hours ahead of landfall. Those areas can be supplied with more emergency resources.

During the wildfires, NISAC's analysts were pulling together disparate data on everything from ecology and infrastructure surety to potential impacts on housing prices. Their analysis showed how localized interruptions could affect larger regional and national economies and infrastructure systems.

As an increasingly interconnected society, the US relies heavily on its infrastructure systems running smoothly. When an area is disrupted, the consequences to the nation can be surprising and unexpected. Understanding the synergies and interactions among complex systems like public health, ecology, and the economy requires the synthesis and integration of huge sets of data, and often those data sets come from groups that are not accustomed to sharing information.

During an emergency event like the wildfires or a terrorist threat, and sometimes before an anticipated event such as a hurricane, NISAC feeds information to DHS about projected impacts. Catastrophic events have consequences for the economy and for national security that may not be immediately apparent or recognizable.

First responders know the situation on the ground, but they often do not know how



WILDFIRES RAGE in Southern California from Santa Barbara to the Mexican border. This image was taken Oct. 22 using the MERIS (medium-resolution imaging spectrometer) instrument aboard the European Space Agency's Envisat satellite while working in full-resolution mode to provide a spatial resolution of 300 meters. (Photo courtesy European Space Agency)

local impacts affect the larger infrastructure, and how these impacts cascade, affecting the nation's economy. Those impacts are not the primary concern of first responders who must deal with more immediate needs like saving lives and protecting property.

NISAC employs experts from a variety of disciplines including systems analysis, computer science, economics, biology, chemistry, the physical sciences, and engineering to examine scenarios of disruption from a vari-

ety of viewpoints. The NISAC Fast Analysis and Simulation Team (FAST, led by Nancy Brodsky at Sandia under Theresa Brown, the Sandia NISAC lead) mobilizes people with the requisite expertise; 20-25 Sandians from the Systems Engineering and Analysis business area (6320) and numerous LANL NISAC personnel worked on the wildfire analyses. Each expert contributes his or her analysis to a report provided to those who may respond to such events in the future and to those who must clean up in the aftermath.

During Hurricane Katrina, for example, the NISAC analysis showed that some manufacturers of critical raw materials for the medical supply industry were prevented from distributing their raw materials by blocked transportation routes. If they had been disrupted for too long, shortages of the raw materials could have impacted the availability and safety of medical services nationwide.

During Katrina, NISAC examined issues such as where significant electricity outages might occur and for how long, and where storm surge and power outages could disrupt telecommunications, energy production, or other infrastructure.

In his visit during the NISAC building's dedication last year, DHS Secretary Michael Chertoff praised the creation of NISAC, stating that "people who have to make decisions need accessible and reliable information." He praised the "willingness of the Labs to adapt to 21st century challenges and step forward" to address the types of problems that may someday face the nation.



MEMBERS OF THE NISAC TEAM examine data generated during the 2007 California wildfires. (Photo by Randy Montoya)

## Energy/water

(Continued from page 1)

energy- and water-related issues facing the country. The roadmap, which is under review by DOE, shows that energy and water utilities usually don't work together to resolve joint issues. Lack of coordination could lead to inefficiencies, conflict, and unnecessary stress on natural resources and the environment.

### 140 billion gallons of water per day

Vince says that currently, electrical power generation requires about 140 billion gallons of water per day, accounting for more than 40 percent of all freshwater withdrawals in the nation. That means thermoelectric generation withdrawals alone are almost equal to those for irrigated agriculture. However unlike agriculture, only a small fraction of the water withdrawn for power production is actually consumed (3.3 billion gallons per day). Nevertheless, withdrawals taken from waterways and aquifers can lead to overdraft conditions while return flows represent a source of thermal pollution.

With power demands in the US expected to increase 30 percent by 2025, Vince questions where the water is going to come from to accommodate new power gener-

ation. Related to this is the fact that much of the growth in the US is occurring in the Southwest, a region that already has limited water.

### Comparing hundreds of scenarios

Sandia's computer modeling initiative — drawn on the Labs' expertise in energy, water, and optimization — might provide some answers to these types of complex issues.

In developing the water-energy model, Vince says, the researchers face three problems — the coupling of complex systems, integration of processes over disparate time and length scales, and the analysis and optimization of these models.

Concurrent with the energy-water modeling, the research team will put together an optimization toolbox that will assist in data analysis. Specifically, optimization will be used to help in the siting of power plants, balancing the energy portfolio (e.g., fossil, nuclear, renewables) to keep pace with growing power demands, and decisions concerning when to build the next power plant. Such decisions might consider cost, availability of water, availability of fuels, access to transmission lines, and greenhouse gas emissions.

"Users will be able to run hundreds of scenarios and see the effects in graphs and tables of their water and energy choices a year from now or decades away," Vince says.

The model, which will run on a standard PC, uses readily available software and provides rapid feedback.

Len Malczynski (6313), who is doing energy modeling, says the team is now compiling data to go into the program. The model will allow users to tailor their investigations to meet specific needs. For example, they can get results on energy and water scenarios at the national, state, or local levels and will be able to look at specific watersheds. This would be particularly helpful in determining water-energy trends in states like New Mexico where most of the power is generated at in-state plants but used by people from out of state.

### Enough data to tell a story

"Energy data is provided by DOE, and water information is coming from different agencies," says Peter Kobos (6312), who is also doing energy modeling. "The challenge will be to have enough data to tell a story. We think we do. If not, we'll identify gaps and address them as the project progresses."

When the project is completed, the researchers expect the model will be available to water and energy utilities, regulators, and decision makers.

Team members: Vince Tidwell, Len Malczynski, Sean McKenna, Suzanne Pierce, and Geoff Klise (all 6313), Michael Baca (6332), Stephen Conrad and Thomas Corbett (both 6322), Bill Hart (1412), and Peter Kobos (6312).

# Mileposts

New Mexico photos by Michelle Fleming  
California photos by Randy Wong

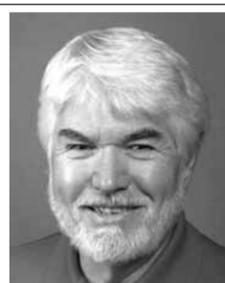


David Dell  
30 5624



Ronald Coleman  
25 1521

# Recent Retirees



Gary Jones  
37 2953



Bill Oberkamp  
28 1544



Jeffery Miller  
25 10248



Daniel Pettiford  
25 2712



Rush Robinett  
20 6330



Emily Soares  
20 8947



Linda Cusimano  
17 4532



Jack Stayton  
15 12334



Linda Daniels  
14 2027

## NNSA announces public hearing schedule for proposed complex transformation measures

NNSA has announced a public hearing schedule to solicit citizen comment on the Complex Transformation Supplemental Programmatic Environmental Impact Statement (SPEIS). That statement, approved by NNSA administrator Tom D'Agostino last December and filed with the EPA on Jan. 4, analyzes the potential environmental impacts of reasonable alternatives to continue transformation of the nuclear weapons complex.

D'Agostino laid out many of the proposed transformation measures in a December 17 media event. The transformation of the weapons complex, D'Agostino said at the time, aims to make it more responsive, efficient, and secure to meet national security requirements.

The current complex consists of sites located in seven states (California, Missouri, Nevada, New Mexico, South Carolina, Tennessee, and Texas). The SPEIS evaluates alternatives that would restructure special nuclear materials manufacturing and research and development facilities; consolidate special nuclear materials throughout the complex; consolidate, relocate, or eliminate duplicative facilities and programs and improve operating efficiencies; and identify one or more sites for conducting NNSA flight test operations.

NNSA will hold public hearings to receive comments on the SPEIS at the times and locations listed below. This document and related information are available at [www.ComplexTransformationSPEIS.com](http://www.ComplexTransformationSPEIS.com).

### Draft Complex Transformation Supplemental Programmatic Environmental Impact Statement Public Hearings schedule

- North Augusta, S.C., North Augusta Community Center, 495 Brookside Ave., Thursday, Feb. 21, 11 a.m.-3 p.m. and 6-10 p.m.
- Oak Ridge, Tenn., New Hope Center, 602 Scarboro Rd (corner of New Hope and Scarboro roads), Tuesday, Feb. 26, 11 a.m.-3 p.m. and 6 p.m.-10 p.m.
- Amarillo, Texas, Amarillo Globe-News Center, Education Room, 401 S. Buchanan, Thursday, Feb. 28, 11 a.m.-3 p.m. and 6-10 p.m.
- Tonopah, Nev., Tonopah Convention Center, 301 Brougner Ave., Tuesday, March 4, 6 p.m.-10 p.m.
- Las Vegas, Nev., Atomic Testing Museum, 755 E. Flamingo Rd, March 6, 11 a.m.-3 p.m. and 6-10 p.m.
- Socorro, N.M., Macey Center (at New Mexico Tech), 801 Leroy Place, Monday, March 10, 6-10 p.m.
- Albuquerque, N.M., Albuquerque Convention Center, 401 2nd Street NW, Tuesday, March 11, 11 a.m.-3 p.m. and 6-10 p.m.
- Los Alamos, N.M., Hilltop House, 400 Trinity Dr. at Central, Wednesday, March 12, 6-10 p.m.
- Los Alamos, N.M., Hilltop House, 400 Trinity Dr. at Central, Thursday, March 13, 11 a.m.-3 p.m.)
- Santa Fe, N.M., Genoveva Chavez Community Center, 3221 Rodeo Rd., Thursday, March 13, 6-10 p.m.
- Tracy, Calif., Holiday Inn Express, 3751 N. Tracy Blvd., Tuesday, March 18, 6-10 p.m.
- Livermore, Calif., Robert Livermore Community Center, 4444 East Ave., Wednesday, March 19, 11 a.m.-3 p.m. and 6-10 p.m.
- Washington, D.C., Forrestal Building, 1000 Independence Ave., SW, Tuesday, March 25, 11 a.m.-3 p.m.

## Miss New Mexico Jenny Marlowe

### Former Sandia intern represents state at 2008 Miss America competition

By Darrick Hurst

While a passing knowledge of Miss New Mexico Jenny Marlowe will surely afford you an awareness of her looks, it may not reveal the deeper aspects of who she is — a musician, performer, and woman with a profound sense of faith — who can now add “contender for Miss America” to her growing list of accomplishments.

“This was only my third time ever entering a pageant,” Marlowe says, describing how she became Miss New Mexico. “It was something I started doing as a freshman in college because I was looking for ways to pay for my education.”

Marlowe, who interned with Treasury and Travel Services (10507), placed in the top five finalists at her first pageant and third in a pageant the following year, before taking a year to study in Europe. When she returned home, she had no intention of entering a pageant again.

“I got a call from a friend who was working with organizing the pageant, out of the blue, telling me they needed participants,” she says. “I wasn’t even supposed to compete, and next thing I know, I’m hearing my name being read as this year’s [2007] winner.”

### Present shaped by the past

The journey that brought Marlowe to the life-changing event on a stage in Alamogordo, N.M., in June 2007 was affected by another life-altering moment years earlier, says Marlowe.

“When I was 14, I was sexually assaulted by two seniors at my high school,” says Marlowe. “I was duct-taped, and held on a table by two older classmates — people I thought I knew in a place that I had grown to trust as a safe place — a classroom.”

“I didn’t know where to go for help. For years I didn’t talk about what happened; I didn’t want to go to counseling for fear that it was somehow my fault or they would think I was lying. I let this event haunt me every day until I finally confided in someone about what happened.”

“Only through putting my faith in God did I find the strength to rise above that event,” she says. “Having experienced something that affected me so deeply has driven me to be an agent of change in a world that doesn’t want to deal with difficult issues.”

“If I’d heard open dialogue on the topic from an advocate like Miss America about overcoming an assault, I probably would have had the courage to



JENNY MARLOWE

Jenny Marlowe will appear in the upcoming “Miss America Pageant” telecast on Saturday, Jan. 26, on TLC.

do something about my anguish,” Marlowe says.

While many people look at the Miss America competition as a glorified beauty procession, says Marlowe, it’s about much more than just appearance, and she’s eager to discredit the stereotypes of statuesque women who square off against each other armed with only their looks.

“Yes, we’re evaluated on our ability to carry ourselves with grace, but this is about women who are using their platform to promote their voices in culture, politics, and the community and are focused on personal, professional, and social development,” she says.

“If I become Miss America, my hope is to end the silence about sexual assault and help youth learn to be powerful against this intimidating offense,” she says. “It’s a topic that just gets skimmed over because it’s not pleasant, but that’s all the more reason to educate our society.”

### Musical inspiration

When she’s not fulfilling her duties as Miss New Mexico, Marlowe immerses herself in music, a passion that has manifested itself as the “Jenny Marlowe Band” in which she plays piano and sings.

“My piano is my therapy,” Marlowe says. “I’m first and foremost a singer and songwriter. My music is drawn from my faith and belief in God. God put these dreams in my heart and if I’m not true to those, I’m not true to myself, or God.”

Marlowe says her love for music was directly inspired from an introduction to musical theater when she was in middle school.

“The Young Americans came to my school, and I got to see these kids ranging from 16 years-old to 24 years-old teaching this very interactive art and doing what they love.”

### Looking to the future

While Miss New Mexico is her identity today, Marlowe looks to a future beyond pageants and tiaras.

“I’ve worked hard for everything I’ve accomplished with my life,” she says. “Faith drives me when life is difficult. I’ve had to pray and be honest with myself more than ever since becoming Miss New Mexico because the things we want aren’t always the things we need or are supposed to have.”

“Someday, I want to sing on Broadway. I dream about having my own Grammy or a Tony, living somewhere doing what I love to do and being happy. I realize that everything I have in life is a gift.”

Ultimately, Marlowe says her credo is simple and straightforward.

“If you’re not having fun, don’t do it,” she says. “Don’t waste a day of your life doing something you don’t enjoy and find meaning in.”

# Is it her immune system or her unwillingness to miss out that have kept Nora Armijo healthy for 34 years?

By Iris Aboytes

Nora Armijo (10222) has been at Sandia 27 years and has not taken a sick day. Before Sandia she worked for the US Forest Service seven years and was not sick there either. She says she actually got the flu during the long Thanksgiving weekend one year, but was well by Monday.

Nora says she has a strong immune system. Maybe it was the walking in the snow to and from school, she says, or maybe it was her unwillingness to miss out on happenings at work.

Nora's fondest childhood memories are about growing up in Mountainair. Her family did not have any electricity or running water. Kerosene lamps provided light at night; the wood stove provided heat.

"Wonderful meals were prepared on that wonderful wood stove," says Nora. "We chopped lots of wood." Washing clothes involved heating water in a *cajete*, a big round tin tub. They would warm the water and spin the clothes with a large oar.

## There was no glamour

"I had my own little iron that we would warm on top of the stove so that I could iron clothes. There was no glamour — an outhouse could be cold in the winters. I still don't know why we had a two-holer.

"My mother, Jesucita, was a waitress and worked three part-time jobs to make ends meet," says Nora. "My father, Jacobo, was retired from the railroad. Summers my family of two brothers and two sisters and my parents would get on the train (since my father had retired from there, we were able to travel free) and go pick fruit in California."

When Nora was older, her family moved to Albuquerque's South Valley. She had a 40-minute walk to and from elementary school. She rode the school bus once she got to mid-school.

"Winters were hard," she says. "At that time girls

*Washing clothes involved heating water in a cajete, a big round tin tub. They would warm the water and spin the clothes with a large oar.*



A PICTURE OF HEALTH — Nora Armijo (above) hasn't taken a sick day in 34 years of work. (Photo by Randy Montoya)

were not allowed to wear pants so I wore long socks. In later years I met a girl who had worn her pajamas folded under her dress when she walked to school. I wish I would have thought of that."

Nora's family did not have a car until Nora bought one when she was 21. That did not stop her. She still rode the Albuquerque city bus or walked. She was very keen on bus schedules, especially on weekends when she would ride the one bus to go to the movies in downtown Albuquerque.

## Always reading a textbook

Nora dropped out of high school in her senior year. She got married and had a child. Her marriage ended

after three years. A five-year period followed where she worked for several companies, earned her GED, and went to T-VI, now Central New Mexico Community College (CNM), at night. It was because of her little girl that she tried so hard, she says. Riding the bus to work, she was always reading a textbook.

She remarried and went to work for the Forest Service. Her husband, Ray, a mailman, was very supportive and encouraged her love of learning and self-development. Their neighbor worked at Sandia and told her how Sandia had a program to help their employees get a better education. So to Sandia she came.

## Saving Sandia 2,592 hours

Six months after she became a secretary, she was taking evening classes. Her husband would tend to their daughters Cathy and Cindy. Nora became an example for the younger crowd because when she took her daughters to soccer games, catechism, guitar lessons, and band practice she always had her books. Nora went on to earn bachelor's and master's degrees in computer resource management and a master's in supply chain management.

"I've been blessed in that I have loved my jobs," says Nora. "My husband, managers, and mentors have evoked excitement and passion that have drawn me to work every day. From a business perspective Sandia's employees do not accumulate sick leave. But if they did, using one day a month, I would have saved them approximately 2,592 hours, which translates to 2,592 hours of productivity. I think I have contributed to Sandia's mission success."

So you decide how Nora got her strong immune system. Was it the big pot of beans that her mother cooked to eat all week? (She does not eat beans now.) Was it walking in the snow, not wearing a jacket? (She lost four jackets after her husband insisted she wear a jacket out in the cold.) Or is she just an anomaly?

"I guess the reason I come to work every day is that I want to be all that I can be," says Nora. "I am still working on it. I don't want to miss out on anything."

*"I guess the reason I come to work every day is that I want to be all that I can be."*

# Yonas co-leads UNM course in new discipline of neurosystems engineering

Sandia VP and Principal Scientist Gerry Yonas will co-teach a 15-week course in the new discipline of neurosystems engineering (NE) at the University of New Mexico on Wednesdays from 5-7 p.m., beginning Jan. 23.

Neuroscience? Gerry?

"I'm not the world's greatest expert in anything," says Gerry. "But I like to believe I just might be the world's greatest expert in learning new things."

"What I'm teaching is not neuroscience but systems engineering combined with neuroscience to solve real-world problems. Most people currently believe there's not yet a role there for neuroscience."

The course will bring in experts, including several Sandians, "on various aspects of NE so we can all learn and invent this new field together."

"So I would describe my job as co-learner rather than co-teacher, he says."

Gerry has a varied background. It includes studying undergrad quantum mechanics with Hans Bethe at Cornell, doing basic fluid mechanics research at the Jet Propulsion Laboratory, initiating Sandia's pulsed power fusion program, and playing a key role in President Reagan's Star Wars program.

Still later, he led work on Sandia's Z machine during the period of its astonishing rise in output in the mid-1990s, when researchers switched from lithium ion to huge electrical current implosion of targets.

Gerry went on to lead Sandia's Advanced Concepts Group, which envisioned future threats to the US and their possible solutions. Among these threats was the



GERRY YONAS

advancing ages of the population of industrialized countries. The ACG advocated technology-based means to maintain the health and utilize expertise of so-called "geezer" through advanced sensors, communications, and computing. Another issue was dealing with the water resource problem (global drying) using controlled-environment agriculture. Gerry advocated creating a binational lab with Mexico to build a middle class along the border, and comprehensive intelligence from hostile territories through widespread distribution of cheap sensors in a program Gerry dubbed RSTAKA (Reconnaissance Surveillance Target Acquisition Kill and Assessment).

Also considered were possibilities in aiding or adorning the brains of intelligence analysts, decision makers, and soldiers through better understanding of brain function, which led Gerry into neuroscience.

Now a quarter of his time is given to support the Albuquerque-based Mind Research Network (MRN), which is beginning to do research with Sandia. Gerry believes Sandia can provide the computational power, systems expertise, and modeling to make a contribution to this field in cooperation with the MRN, although he admits that "this venture is as challenging as anything yet attempted at Sandia." He adds, "It makes fusion look easy."

The UNM course will be co-taught by Rex Jung, UNM professor of neurology and psychology, who is also a member of the MRN.

The course, offered by the Electrical and Computer Engineering Department (ECE 595-ST), is a graduate-level course also open to nondegree students with approval of the instructors.

In addition to assisting with the Sandia leadership team efforts, Gerry also serves on several national security technical advisory groups.

— Neal Singer

# Tech Symposium: John Stichman addresses engineering ethics

Join Executive VP and Deputy Labs Director John Stichman for a discussion of the



importance of making ethical decisions in the practice of engineering at the 2008 Technology Symposium season's premiere presentation, Monday, Jan. 21, noon-1:15 p.m. at the Steve Schiff Auditorium. As creative professionals, engineers have a special obligation to society that takes the form of an individual ethical imperative. John will show examples of engineering mishaps to illustrate a few key lessons. John's talk is called "An Ethical Imperative Drawn from Engineering Mishaps." The presentation will be video streamed to Sandia/California.

