

# Imaging the maelstrom about Z's center: Now we can do it

## Blinded by the light? Not Daniel Sinars

By Neal Singer

Peering into the center of Sandia's Z machine as it fires had been a feat unachievable for a decade.

"The energies in there are insane," says Sandia researcher Daniel Sinars (1673) of the maelstrom of X-rays released at Z's firing. Other than a nuclear bomb, Z is the most powerful generator of X-rays on the planet. Last year, its central mechanism, called a Z-pinch, fused isotopes of hydrogen to create nuclear fusion.

Now, by inserting a two-inch-long crystal that reflects only a single frequency, Dan's group has managed to visually filter out the bedlam of more than 99 percent of the energies generated by Z. Using the energy of a rela-

**"The energies in there are insane"**

tively weak laser beam passing through Z and reflecting off the crystal, the researchers have emerged with a series of pictures of the machine's key process — the dissolution of a wire cage (about the size of a spool of thread) into ionized gas particles.

By viewing the dissolution nanosecond by nanosecond, Z experimentalists will be able to understand more rapidly and accurately how changes to the wire array will affect the final outcome, in order to fine-tune Z's driving forces.

These alterations will achieve still more powerful outputs for weapons studies and, eventually, controlled nuclear fusion that could produce unlimited energy from seawater.

(The particles, contracted by a huge magnetic field, must be arranged to strike the central axis of the vanishing cage as simultaneously as possible to generate maximum X-rays; these already have been used to fuse pellets of deuterium.)

But how did Dan's team do it?

*(Continued on page 4)*

PROMETHEUS UNBOUND? — Daniel Sinars, in photo at left, demonstrates the setup he and his team created to peer into the center of Sandia's Z machine at the moment of firing. "Until our work, virtually every diagnostic on the Z facility simply measured the luminous self-emission from the z-pinch mass as it assembled on-axis and radiated," says Dan. "We have been able to observe plasma stages at any point in the process, not just the final stage when the plasma is radiating X-rays."

*(Photo by Randy Montoya)*



## Labs researchers share their work at annual biotech conference

By Chris Burroughs

From adapting a Sandia-developed decontamination foam for sterilization of cattle trucks to detecting early stages of gum disease with a hand-held chem lab on a chip, Labs scientists shared their research during the fourth annual Bio-Science and Technology Symposium (BS&T) Oct. 26-27 in Santa Fe.

Some 100 researchers from Sandia/New Mexico and Sandia/California attended the symposium filled with presentations on work they are doing in the area of bioscience and technology.

"I found this to be a very exciting day and half," said Julia Phillips, Director of Physical, Chemical, and Biomolecular Science Center 1100 and chair of the Sandia BS&T Council. "Sandia's biotech effort has grown considerably from the little nucleus it started with not too many years ago."

A revised symposium format let attendees hear from leaders of Strategic Management Units (SMUs) that have some biotech components associated with them and learn about their colleagues' work.

Julia said interest in biotech is growing at the Labs. In the FY05 Laboratory Directed Research and Development (LDRD) funding cycle, 60 proposals had biotech components. Of those, 25 were funded, representing about 10 percent of all the LDRD awards.

"The LDRDs span across all areas," she said. "As a result the [BS&T] council felt it was a good time to bring everyone together to get a sense of the breadth of what people are working on and the mission drivers for the work."

Anup Singh (8321) told about his efforts to develop a chem lab on a chip to use in detecting gum and heart disease. Chem lab on a chip, for-

*(Continued on page 4)*

# Sandia LabNews

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## Sandia to more closely follow DOE order requirements for security-concern incidents No more 'near miss' warnings, says Michael Schaller

By Chris Burroughs

Stricter adherence to DOE security mandates may result in more Sandians receiving infractions.

"In the past Sandia adopted a policy of issuing 'near misses' for violations considered minor in nature such as inadvertently bringing cell phones into the limited area," says Michael Schaller, team lead for Dept. 4215, which includes the Security Incident Management Program (SIMP). "Since a 'near miss' is not recognized by the DOE and does not meet the intent of DOE Order 471.4, we will no longer continue this practice."

The driver of the full compliance of Order 471.4 is that DOE is mandating its operations follow order requirements and directives in the contract.

DOE Order 471.4 lists reportable categories of incidents of security concern in an Impact Measurement Index (IMI) table. Incidents of security concern are categorized, using a graded approach, in accordance with their potential to cause serious damage or place safeguards and security interests and activities at risk.

Four categories of security incidents have been established based on the relative severity of the incident. Each of the four categories is identified by an impact measurement index (IMI) number, from most severe to least severe: IMI-1, IMI-2, IMI-3, and IMI-4.

The four categories are further subdivided into

*(Continued on page 5)*

63 Sandians advance to "Senior" and "Distinguished" rank in tech, admin jobs

6

Sandia organization chart updated to reflect management changes over past year

9



## What's what

After reading one of the recent long-lines-at-the-gates stories in the *Sandia Daily News*, Kelley Garcia (10861) observed:

"Maybe if more people rode the bus or carpoled, the wait would be smaller.

"Maybe we could install an HOV [high-occupancy vehicle] lane.

"Maybe commuters could park in an off-base parking lot then catch a bus to the gate.

"Maybe people could find a job somewhere else.

"Heck, working here is a whole lot better than standing in an unemployment line!

"Thanks! I feel much better now."

Kelley may be wasting her time working as an electrical systems engineer. Maybe she should take up motivational speaking.

\* \* \*

You won't see Iris Aboytes' picture in the Milestones section. Although she loves writing about Sandians in the *Lab News*, and despite her bubbly personality, she's pathologically shy, and near-maniac about her privacy. We contrived to take her to lunch on her birthday a couple of years ago and when she saw all of us and we all cheered, she nearly swooned.

So we're not going to publicly recognize her 20 years at Sandia. Who knows what she might do if we tried to do that.



\* \* \*

This is not a Santa Fe joke.

The Z wonks experimented with a new wrinkle recently. They added a crystal in the target area of the famed "arcs and sparks" machine and fired.

And, no. . . it didn't throw off a hologram of Shirley MacLaine. Find out what it did in Neal Singer's story on page 1.

\* \* \*

A recent report on the karaoke group's farewell performance at the Coronado Club brought word from pretty-dang-good baritone Andy Rogulich (12342) that the group is now meeting in the Mountain View Club's basement Ground Zero Lounge. If you don't sing, he says, there's a pool table, foosball table, well-stocked bar, food from the kitchen, and entertainment from those who do sing.

The group meets there every Thursday, 5:30-9:30 p.m.

\* \* \*

Well, the election's over and some of my candidates won, there's green chile in the freezer, firewood stacked in the woodpile, my boat's still afloat, and I reached that magic threshold of Social Security eligibility reasonably intact. Now, if only Dave Brubeck would get Kennedy Center Honors, I'd count it a dadgum good year.

— Howard Kercheval (844-7842, MS 0165, hckerch@sandia.gov)

## Manager Promotions

### New Mexico

**Mike Hessheimer** from PMTS to Manager, Systems and Structures Dept. 6864.



MIKE HESSHEIMER

Mike joined Sandia's International Nuclear Safety Department in 1993 after working in the nuclear power and defense industries as a structural engineer and private consultant. He managed the large-scale containment test programs for the US Nuclear Regulatory Commission and Japanese Nuclear Power Engineering Corporation and several other structural experimental programs. Mike received his MS in civil engineering from Michigan Technological University and is a registered professional engineer in several states.

\* \* \*

**Joel Lash** from PMTS, Solid Mechanics Engineering Dept. 9126, to Manager, Multiphase Transport Processes Dept. 9114.



JOEL LASH

Joel joined Sandia's Intense Energy Beam Research Department in May 1996 to develop and field advanced plasma diagnostics for the Ion Beam Fusion program in the Pulsed Power Sciences Center. Following this, he became part of the Radiographics Physics Department, where he

developed and fielded similar diagnostics supporting Sandia's development of high-intensity radiographic X-ray sources.

In 1998, Joel became part of the High Energy Density Physics program in the Pulsed Power Sciences Center, where he developed high-yield and ignition ICF target designs and capsules utilizing Z-pinch drivers. He joined the Engineering Sciences Center in 2000 and performed both component- and system-level computational analysis in support of the W76-1 LEP and a current neutron generator qualification.

Joel has a BS in mathematics from Indiana University, and an MS and PhD in nuclear science, both from the University of Michigan.

## Recent Patents

Douglas Drumheller (6211): Reducing Injection Loss in Drill Strings.

Eric Majzoub (8773): Direct Synthesis of Catalyzed Hydride Compounds.

Paul Galambos (1769), Murat Okandan (1749), Stephen Montague (5624), James Allen (1769), and Jerome Jakubczak II (1703): Surface-Micromachined Microfluidic Devices.

Eric Lindgren (6863) and James Phelan (4136): Method and Apparatus for Optimized Sampling of Volatilizable Target Substances.

Dwight Jennison (1114), Alexander Bogicevic, Jeffrey Kelber, and Scott Chambers: Method of Adhesion between an Oxide Layer and a Metal Layer.

Timothy Gardner (14154), Ronald Manginell (1764), Patrick Lewis (1764), Gregory Frye-Mason, and Chris Colburn: Microcombustor.



## Lab News's next two issues

Our Nov. 26 issue will be printed on schedule but because of the Thanksgiving holiday shutdown will likely not be distributed to Sandians until Monday morning, Nov. 29. External mailings to retirees and others should occur on schedule. Our last issue of the year will be the Dec. 10 issue.

—Editor

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# National laboratory women gather at LBL to explore employee pipeline issues

## 150 women from four labs meet in Laboratory Women's Forum

By Nancy Garcia

"Widening the winner's circle" is how Rep. Ellen Tauscher, D-Calif., described the way the US will retain dominance in the 21st century in her remarks at the third Laboratory Women's Forum, "Women of Influence at the National Laboratories."

Convened at Lawrence Berkeley National Laboratory (LBL) last month, the forum was attended by more than 150 participants from Sandia, Lawrence Livermore, Los Alamos, and Lawrence Berkeley national laboratories.

Richard Nolan, director of the Berkeley Site Office of DOE's Office of Science, echoed Tauscher's message.

Attracting and retaining talent, he said, is of critical importance to DOE and to the world because under-utilization of women seriously impinges on the security needs of the nation. "It's clear we need you," he said, "to lead us forward into the 21st century."

*"It's clear we need you to lead us forward into the 21st century."*

### Women in science/technology

Although women represent about half the workforce, they accounted for only 19 percent of the science and technology sector in 1991 and 26 percent in 2003, he said, although that sector was growing more quickly than the rest of the workforce.

Tauscher experienced changing opportunities when she was one of the first women to join the New York Stock exchange after graduating from college in 1974. "Globalism hit financial markets before any other business," she said. "They needed people and talent. This was the wave of the future."

Tauscher inspired the first forum by asking laboratory women in Livermore to contribute ideas to the Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development. Held in San Ramon in 2000, it resulted in policy recommendations regarding recruitment, recognition, workplace flexibility, and the image of women in technical fields. Two of the recommendations were forwarded to the National Academy of Sciences Commission on Women in Science and Engineering, said Jane Ann Lamph (8755), who recapped progress in remarks at the most recent forum.

### Policy, benefit proposals

Judy Moore (16000), co-chair for the Sandia Women's Action Network, added that Sandians followed up by proposing policy and benefit changes to make Sandia an employer of choice. Her co-chair Georgianne Smith (3000) attended with others in Albuquerque by videolink.

"We really have taken action and made a difference," said Deputy Director Pat Falcone (8110).

Los Alamos women, who learned about Sandia's ombuds program, established one there, said LANL Technical Staff Member Wendee Brunish. Although women make up 32 percent of the workforce, they account for 52 percent of the ombuds clientele, she noted.

Lawrence Livermore women focused on championing having more women in middle and upper management, which resulted in several upper-level recruitments, including Associate Director for Computation Dona Crawford, a former director from Sandia/California (she had been a panelist at the first forum and introduced Tauscher at this forum).

The host of the October forum, LBL's Chief Facilities Planner Laura Chen, said she was the sole participant from her facility at the second forum, held in 2002 in Albuquerque. The recently appointed LBL director, Steven Chu, kicked off the forum with remarks about how the laboratories



PERSPECTIVE — Mim John (8000), the fourth panelist from the left, speaks at the 2004 Laboratory Women's Forum in Berkeley in October.

## Sandia California News

can be made more hospitable. "Things are getting better," he concluded. "But things can be a lot better."

California Laboratory Vice President Mim John spoke about the impacts of national science and technology issues on the labs. "The world has changed," she said, with the threat of a massive nuclear attack diminishing but the acquisition of nuclear capabilities growing. She called for the labs to engage in the policy debate as well as technical solutions, saying, "The challenges are enormous. The nation expects us to be there when we're needed."

Karen Ramorino, deputy of the Administrative Services Department of LBL, spoke about workforce demographics. She said that among technical workers, the ranks of women who were unmarried, had nonworking spouses, or saw work-life balance as an obstacle were 34 percent, 10 percent, and 21 percent, respectively, while for men, the numbers were 17 percent, 38 percent and 2.8 percent. (The statistics are from a 2004 paper by Shirley Tilghman of Princeton University, "Ensuring the Future

*"There are millions of young girls out there," she said, "and our work is to build a ladder for them to places we couldn't go."*

Participation of Women in Science, Mathematics and Engineering," online at <http://books.nap.edu/books/030909173X/html/7.html>.)

Ramorino also said that men can be as effective as women as role models.

Also speaking from LBL was Deputy Director Pier Oddone, who described how successful women can also be role models for men. Instituting improvements over time, he said, is an effort that has to be carried out in parallel and on many fronts.

That was essentially Tauscher's call to action. "There are millions of young girls out there," she said, "and our work is to build a ladder for them to places we couldn't go. Unless we make this part of our own personal agenda, we cannot make sure this will be done. We will find the way, because we are meant to do it. It is for our legacy that they will work."

### Summer intern Bob Dorgan awarded first prize in student paper competition

FORMER SANDIA/CALIFORNIA summer intern Bob Dorgan was recently awarded first prize in the Student Paper Competition at the 2004 Society of Engineering Science Conference for his presentation titled, "A C1 Finite Element Multi-Field Solution of a Gradient Plasticity Model." For more information about Robert, his paper, and his research, access Sandia/California Recruiting & University Partnerships' Intern Island at [http://education.ca.sandia.gov/internisland/robert\\_dorgan/index.lhtml](http://education.ca.sandia.gov/internisland/robert_dorgan/index.lhtml)



BOB DORGAN

### Sympathy

To Jim Lauffer (8754) on the death of his father, Lester R. Lauffer, 76, Sept. 17, in Cleveland, Ohio. He is survived by his wife, Catherine, son Jim, daughter Susan Favorite, and grandchildren Michael and Jonathan Lauffer.

## Z machine

(Continued from page 1)

### Real 'crystal power'

Expanding on work by Sergei Pikuz and Tanya Shelkovenko of the Lebedev Institute in Moscow and Cornell mentor David Hammer, who each had worked on far smaller machines, Dan realized that while the Z machine released huge energies over tens of nanoseconds, it did so in a wide frequency band. He imagined shining X-rays generated by a relatively weak but single-frequency laser beam through the wire array as it crumbled. The image generated would be

*Almost all of Z's energies would be eliminated because they would not be reflected by the crystal — as eerie a phenomenon as vampire images absent in horror-movie mirrors — leaving the laser-generated image . . . unblotched.*

reflected by a crystal functioning in only that same frequency, spherically curved for better focus on a carefully placed external detector. Almost all of Z's energies would be eliminated because they would not be reflected by the crystal — as eerie a phenomenon as vampire images absent in horror-movie mirrors — leaving the laser-generated image — a picture resembling a dental X-ray — unblotched. The laser's energies — though only one-millionth as energetic as Z's



SHANE SPEAS, a member of the team headed by Dan Sinars, prepares the instrumentation that enables researchers to observe plasma stages throughout the firing stages of the Z machine. (Photo by Randy Montoya)

total output — would dominate in that one band, and from it, Dan's team would create images of the wire cage's dissolution.

"Until our work, virtually every diagnostic on the Z facility simply measured the luminous self-emission from the z-pinch mass as it assembled on-axis and radiated," says Dan. "We have been able to observe plasma stages at any point in the process, not just the final stage when the

plasma is radiating X-rays."

### A grain of sand in a sand pile

The images provide quantifiable information about where the plasma mass is located, whether instabilities exist at any moment, what the wavelength and amplitude of such instabilities are, and where these instabilities are spatially correlated over large distances.

Says Pulsed Power Sciences Center director Jeff Quintenz (1600), "That Dan can extract such detailed images from that maelstrom environment using such a small amount of energy is more than impressive. It's like being able to find a grain of sand in a sand pile, or a single voice in a crowded coliseum."

Says Cornell physics professor Hammer, Chair of the American Physical Society's Plasma Physics division, "Dan has extended backlighting work done elsewhere, but he has done so in the most extremely difficult environment. His implementation had to be novel to make it work. His work contributes major understanding of the critical dynamics of the Z-pinch."

### What the Sinars group saw

The images showed that wires in the high-energy machine do not uniformly disintegrate, as was once thought. Current passing through the wires at first heats and melts them as expected, but only a portion of the metal becomes plasma. Because plasma is so much more conductive than the heated liquid metal "cores," much of the electrical current is diverted from heating the wires and instead flows in the tenuous plasma surrounding the dense wire cores. The plasma — continually swept inward by the magnetic forces acting on the array — is replenished with material from the dense cores. The dense cores persist for relatively extended periods of time, eventually burn through, and only then are swept inward.

"The non-simultaneous arrival of the mass on the axis is believed to be the limiting factor on the peak radiation power achievable using wire-array z-pinches, so it is critical for us to understand exactly how the wire array mass assembles on the axis," says Dan. "This information is critical to improving our still-primitive understanding of why z-pinches work as well as they do."

The results — the first pictures achieved of a large pulsed-power facility's wire-cage dissolution — will be the subject of an invited talk by Dan at the upcoming American Physical Society's Division of Plasma Physics meeting in Savannah, Ga., Nov. 15-19.

Z produces one to two million joules of X-rays in 100 to 200 terawatt bursts. The crystals reflect at either 6.648 or 2.015 angstroms.

## Biotech

(Continued from page 1)

mally called  $\mu$ Chemlab™, is a Sandia initiative to build a hand-held "chemistry laboratory" the size of a palm-top computer. The adaptation of using it for medical purposes came about because of new funding from outside sources, Anup said.

A Sandia-developed decontamination foam used in the past to kill anthrax is now being studied as a way to disinfect farm equipment hauling cattle to ensure that meat supplies are safe, said Bruce Kelley (6245). This is just one of the many agriculture/bio activities in Division 6000 he talked about.

Some of the other topics and their presenters at the symposium were Single Molecule Approach to Biophysics, Khai Luong (8353); Protein Microarrays for Biowarfare Agent Detection, Amy Herr (8321); Biomedical Projects in 15200, Kelly Jorgensen (15233); Bio/Micro Fuel Cell Grand Challenge Project, Kent Schubert (1763); Bio Cognition Work in 15000, John Wagner (15241); Interaction of Proteins with Lipid Films, Mike Kent (1812); Biological Weapons Nonproliferation, Ren Salerno (6928); and Studies of Signaling/Domains in Model and Biological Membranes, Alan Burns (1116). A wide variety of other

### Bioscience at Sandia

In the late 1990s Sandia began to expand its work in biotechnology to enable the Labs to have an even greater impact on protecting national security by participating in efforts to counter bioterrorism and biowarfare. While Sandia had pursued some biotech research for more than 10 years, no concerted effort existed prior to this time to use this technology in a systematic way.

Laboratory management created a Biotech Science & Technology Council to lead Sandia's efforts in this area and formed several new departments to focus on biotech research efforts. Sandia researchers are participating in these research efforts, applying expertise, techniques, and equipment initially developed for physical, chemical, and material sciences bioscience problems ranging from studying protein interactions to improving microfluidic devices for detecting chemical and biological warfare agents.



JOHN WAGNER (15241) talks about Sandia's bio cognition work in Center 15000 during the fourth annual BioScience and Technology Symposium.

work was presented at a poster session.

Following the presentations, directors present talked about how successful the event was and what still needs to be done in the area of biotech.

"I reflect back eight or nine years ago when Mim [John, VP 8000] was trying to convince the SMUs that chem/bio was important," said Marion Scott, Director of Microsystems Science, Technology & Components Center 1700. "It was a difficult sell. Today it's not a difficult sell."

Director of the Center for Exploratory Systems and Development 8100 Rick Stulen noted that while the symposium was excellent, "we are still struggling to put together a coherent story around bio. We still have our work cut out for us. It requires everyone to pull together."

Julia said that the biotech work at Sandia was all about interfaces.

"It's interfacing science, technology, and engineering," she said. "Sandia is choosing the science problems we attack with national security in mind. We may see results of this work decades in the future."

The second interface she said is occurring between various Sandia organizations, while the third involves Sandia's partnering with outside organizations.

"We are giving more careful thought to our external partnerships. We are transitioning from being a contributing partner to leading more of these partnerships," she said.

The final interfaces she noted are between disciplines — bio, micro, nano — and between various funding agencies.

# Security

(Continued from page 1)

specific subcategories based on the security topical areas of physical security, protective forces, information security, personnel security, and nuclear material control and accountability. Violations of security policy identified within the IMI will — in most cases — result in the issuance of an infraction, Michael adds.

When an incident of security concern is reported, members of Dept. 4215 conduct inquiries. The inquiry official then has 24 hours to examine and document all pertinent facts and circumstances to determine whether the incident is reportable to DOE. During this 24-hour period, the suspected incident must be categorized by an IMI number. If it is determined that a reportable incident of security concern did not occur, then no further action is usually required.

However, management may still be required to submit corrective actions or a root cause analysis if the preliminary inquiry revealed process or procedural deficiencies within the organization. This analysis must determine which systems/functions performed correctly or failed to perform as designed and establish a basis for implementing corrective actions.

The inquiry process includes interviewing all people having an interest or knowledge of the incident, including staff members, managers, directors, and vice presidents, if necessary. Once the inquiry is completed, inquiry officials will forward reports to appropriate management for action and to the Office of Security. The manager is responsible for



HEED THE SIGNS — Infractions are infractions, and “near miss” warnings will no longer prevail in cases such as bringing personal cell phones into the tech areas. (Photo by Randy Montoya)

determining and documenting all corrective actions and appropriate discipline, if warranted.

“When an infraction is assessed, pertinent information is forwarded to the local DOE personnel security office for placement in the employee’s personnel security file,” Michael says. “For incidents involving minor, one-time-only infractions, no further action usually results. However, occurrences involving serious or multiple incidents over a short period of time may result in additional action as deemed appropriate by their management.”

Sandia has four Inquiry Officials — Vic Webb, Tony Teague, Steve Guerrero, and Dave Morrison — and one administration specialist, Belinda Alcantar (all 4215). Michael is the team lead.

The inquiry team is on call 24 hours a day. Each inquiry official is specially certified by DOE to conduct inquiries. To be certified to conduct inquiries officials must attend and pass multiple DOE-approved courses or have previous investigative experience. All inquiry officials must have extensive knowledge of appropriate laws, executive orders, departmental directives, and regulatory requirements, and they receive special appointment letters from DOE prior to performing official functions.

“It is also important to note that the vast majority of incidents at SNL are self-reported, indicating that a very high level of integrity and security awareness exists within our community,” Michael says. “It is my sincere hope that increased enforcement of DOE order requirements does not create undue apprehension or dis-

courage this continued practice.”

Although DOE order requirements regulate categorization and subsequent determination of infractions, a degree of discretionary judgment can, at times, be exercised by the inquiry official. For example, there might be multiple people working at a safe when an inventory incident occurs, and the inquiry process can’t definitively determine a responsible individual. In these circumstances an infraction may not be the appropriate course of action.

“In situations such as these, we will work directly with the responsible manager to determine a root cause, document appropriate corrective actions, and prevent further compromise or security violations from occurring,” Michael says.

## Examples of Impact Measurement Index

Here are examples of the various Impact Measurement Indexes as listed in DOE Order 471.4. Violations of these may result in security infractions.

### IMI-1 (the most severe)

- Confirmed or suspected loss, theft, or diversion of a nuclear device or component.
- Confirmed or suspected loss, theft, diversion, or unauthorized disclosure of weapon data.
- Confirmed or suspected loss, theft, diversion, unauthorized disclosure of Top Secret information, Special Access Program information, or Sensitive Compartmented Information, regardless of the medium, method, or action resulting in the incident.
- Instances of malicious code that allow unauthorized or undetected access to information systems containing classified information (Top Secret, Secret, Confidential, Special Access Program, or Sensitive Compartmented Information).

### IMI-2

- Suspected loss, theft, or diversion of any radioactive material not categorized as special nuclear materials or dangerous materials that could pose a health threat or endanger security.
- Confirmed or suspected intrusions, hacking, or break-ins into DOE computer systems containing secret or confidential classified information.
- Loss of classified information that must be reported to other government agencies or foreign organizations.
- Detection of activities involving individuals who have been confirmed as physically watching/casing/surveillance a site in an effort to gather information to aid in the conduct of a terrorist-type attack.

### IMI-3

- Bomb-related incidents at any DOE facility, including location of a suspected device.
- Confirmed or suspected unauthorized disclosure, loss, or potential loss of confidential matter by any medium, method, or action.
- Physical violence or threat of retaliation against facility security personnel.
- Intrusion attempts into information systems containing classified information.

### IMI-4

- Unauthorized cellular phones and personal digital assistants introduced into a limited area, protected area, or material access area, where there is no potential for compromise of classified or sensitive information.
- Loss of security badges in excess of five percent of total issued during one calendar year.
- Failure to establish procedures contributing to the misuse or misprocessing of or failure to maintain security badges and passes.
- Peaceful demonstrations or protests that do not threaten facility or site security interests or activities.

## Michael Schaller back to his roots

Michael Schaller, Team Lead for the new Dept. 4215, says conducting investigations (DOE uses the word *inquiries* because one is generally not dealing with criminal investigations) is his background.

He has 25 years of experience in law enforcement. He retired from the Albuquerque Police Department after 20 years where for 14 years he led homicide investigations and spent four years conducting internal investigations. After his retirement, he joined the DOE Central Training Academy for two years and then served as the deputy manager of Sandia’s Protective Force for 19 months.

## Look familiar? KAFB traffic delays persist



TRAFFIC DELAYS at the KAFB gates serving Sandia have become more protracted in recent weeks due to heightened security concerns, more rigorous screening by base and Labs security personnel, and some KAFB personnel shortages. This was the view approaching the Wyoming Gate one morning last week.

(Photo by Randy Montoya)

# 63 Sandians move into Distinguished, Senior ranks

## Divisions announce DMTS, DMLS, DTNG, DASA, Sr. Scientist/Engineer appointments

Sandia's special appointments — 63 individuals are so honored this year — represent employees from all areas of the Labs' operations: Senior Scientist/Engineers, Distinguished Members of Technical Staff, Distinguished Members of Laboratory Staff, Distinguished Technologists, and Distinguished Administrative Staff Associates.

According to Corporate Process requirement documents, "Placement in the Distinguished Level signifies a promotion to the highest level of the Technical Staff, Laboratory Staff, Technologist, or Administrative Staff Associate Ladder. This level is different from the other levels in that it is subject to a 10 percent population limitation to preserve the distinction of the level."

Traditionally, one of the Labs' key "total rewards" incentives has been the quality of the folks who work here. Being able to offer prospective employees the opportunity to work with the most highly regarded people in their fields is a powerful recruiting tool. The individuals pictured here represent the world-class quality of the Labs workforce at its best.

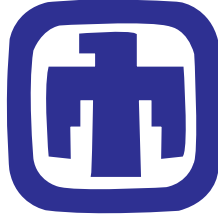
plaque and a nonbase salary award, in addition to this special mention in the *Lab News*.

The Distinguished and Senior levels are part and parcel of the Integrated Job Structure (IJS) goal of providing multiple career paths for employees. The IJS's dual-track structure — management and staff — makes it possible for employees to advance in salary, prestige, and recognition without following a management track.

As has been its tradition for many years, the *Lab News* presents photographs of Sandians who have received special appointments this year.

**Not pictured:**

*Leonard Connell (9745), DMTS; Fernando Dominguez (4213), DTNG; Tammy Henson (5712), DMTS; Thomas Grasser (9112), DTNG; William Hart (9215), DMTS; Patrick Knupp (9211), DMTS; Daniel Kral (5733), DMTS; Dillon McDaniel (1640), Sr. Sci/Eng; Helen Quintana (2122), DASA; Daniel Segalman (9124), DMTS; Joel Siemers (5620), DMTS; John Torczynski (9113), DMTS; Charlene Wiuff (12801), Sr. Sci/Eng; and Christopher Young (5533), DMTS.*



Employees selected for the new levels have been recognized with a special

	Nature of Work and Technical Expertise	Exercise Discretion/ Direction Received	Creativity	Responsibility for External Contacts	Sphere of Influence/Potential Impact on Organizations
<b>Distinguished Member of Technical Staff (DMTS)</b>	Utilizes advanced concepts spanning several specialized disciplines or comprehensive knowledge of one field. Conducts innovative engineering studies or scientific research. Advice is sought throughout the company; is recognized as an expert in professional field.	Work is conducted under consultative direction rather than by formal review.	Expected to develop new methods/ processes as a result of identifying new perspectives and approaches in solving complex problems.	Is the program, project, or subject Principal Investigator with the sponsor/customer? As appropriate, expected to serve on committees of technical societies.	Leads or changes a knowledge area through developing new concepts, redirecting an approach, or redefining customer requirements that impact organizational operations or directions.



**DMTS — Distinguished Member of Technical Staff**  
**DMLS — Distinguished Member of Laboratory Staff**  
**DASA — Distinguished Administrative Staff Associate**

**DTNG — Distinguished Technologist**  
**Sr. Sci/Eng — Senior Scientist/Engineer**



Photos by Bill Doty (N.M.) and Bud Pelletier (Calif.)



Theresa Apodaca (4225)  
DASA



Bill Arnold (6851)  
DMTS



Terrence Aselage (2525)  
DMTS



Bob Axline (5711)  
DMTS



Catherine Baca (10513)  
DASA



Adolfo Bachicha (10258)  
DMLS



Patricia Barthelmes (14412)  
DTNG



James Browning (14425)  
DMTS



Charles Brusseau (4148)  
DTNG



Phillip Bryson (8222)  
DMTS



Debra Buttry (4107)  
DMLS



Dolores Chavez (1000)  
DMLS



Ed Cole (1739)  
Sr. Sci/Eng



David Cox (5532)  
DMTS



Rodney Depoy (2956)  
DMTS



Beth Dick (10515)  
DMLS



Rusty Escapule (15425)  
DMTS

# 63 Sandians move into Distinguished, Senior ranks

*Divisions announce DMTS, DMLS, DTNG, DASA, Sr. Scientist/Engineer appointments*



Joanne Fredrich (6116)  
DMTS



Duane Garrison (10762)  
DMTS



Molly Glen (5991)  
DMLS



Fred Harper (4117)  
Sr. Sci/Eng



Roy Hertweck (10853)  
DMTS



Red Jones (15232)  
DMTS



Tim Knewitz (12127)  
DMLS



Chris Lanes (5721)  
DMTS



Lyle Linger (10505)  
DTNG



Michael Lopez (14422)  
DTNG



Carol Meincke (10853)  
DMTS



William Miller (5910)  
DMTS



Adele Montoya (4222)  
DMLS



Connie Myers (6326)  
DASA



Habib Najm (8351)  
DMTS



Jamy Peevy (4107)  
DASA



Gus Potter (6323)  
DMTS



**DMTS — Distinguished Member of Technical Staff**  
**DMLS — Distinguished Member of Laboratory Staff**  
**DASA — Distinguished Administrative Staff Associate**

**DTNG — Distinguished Technologist**  
**Sr. Sci/Eng — Senior Scientist/Engineer**



Sheila Pounds (1802)  
DASA



Dale Preece (15322)  
DMTS



Gary Randall (2613)  
DMTS



Sara Reid (3521)  
DASA



Kevin Rolfe (6323)  
DTNG



George Samara (1120)  
Sr. Sci/Eng



Richard Simmons (10864)  
DTNG



Arba Smith (14003)  
DASA



Ronald Thomas (14426)  
DTNG



Mark Tucker (6245)  
DMTS



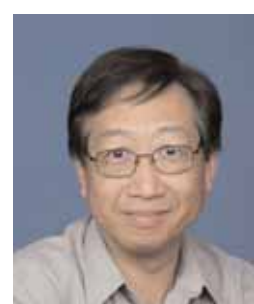
Dan Wahl (5937)  
DMTS



Brian White (2122)  
DMLS



Richard Wickstrom (5531)  
DMTS



Daniel Yee (8755)  
DTNG



Patty Zamora (12105)  
DASA

# Sandia's Mentor Protégé Program helps small businesses strengthen supplier capabilities

## Program begins recruiting new participants for fourth year

By Michael Padilla

Building on capabilities of small businesses to become better suppliers and create a positive economic impact in the region, Sandia's Mentor Protégé Program (MPP) is beginning its recruitment process for next year.

A series of presentations have been scheduled this month and next to highlight participants' technical capabilities, says Corina Gallegos (1302), program manager for Small Business Development.

"The presentations are a great way for participants to showcase their accomplishments," says Corina.

The presentations are intended for both internal Sandia line and procurement staff and to external companies and organizations, including various companies and industries that may have an interest in the services/technology being presented.

The presentations also help generate ideas for new companies and mentors, says Corina, adding

For information on the presentations or the program, contact the Mentor Protégé Program office at 284-9012 or visit [www.sandia.gov/busops/partnerships/sbp/MP/MPcontent](http://www.sandia.gov/busops/partnerships/sbp/MP/MPcontent).

## Employee death

Theresa Broyles of Explosive Technologies/Diagnostics Dept. 2554 died Oct. 28 after an illness. She was 47 years old.

Theresa was a technologist and had been with Sandia for five years.

She is survived by her husband, Robin Broyles; daughter, Leslie Broyles; and sons, Kenneth and Marshall Broyles

*"The highlight of the program was when we teamed with our protégé Reytek Corporation to win a contract to design and build a high-voltage measurement system for the Primary Standards Lab at Sandia."*

that companies and mentors are nominated then selected through a review process.

MPP, sponsored by Sandia's Office of Advocacy and Small Business Development in collaboration with Sandia Supplier Information and Relations, is designed to help small businesses in New Mexico, Arizona, Colorado, Utah, Texas, and Nevada.

## Boosts region's economy

It features a one-year program with a second-year option including 12 full months of assisted business development. Teams establish a minimum of two goals, meet once a month, submit development reports, and attend four events a year.

Mentors consist of Sandia employees, and large and small suppliers. Protégés are small businesses in the region with a practice or process needing improvement.

Corina says there are numerous benefits to all program participants. Protégés help strengthen business practices and create awareness within Sandia and the community. Mentors assist with locating and evaluating potential teaming partners and have the chance to directly impact the quality and development of suppliers and businesses.

Vic Chavez (1302), Office of Advocacy and Small Business Development Manager, says the

program boosts the region's economy and helps foster a positive working environment among small businesses.

Vic says the program has been recognized nationally and continues to grow. Within the last three years, the program has had 35 mentors and protégés, 11 alumni, 14 business service advisors.

"The program is the only one of its kind in the country," Vic says.

Bob Sachs from TEAM Specialty Products (TSP), a mentor in the program for two years, says as a Sandia "Strategic Partner," TSP finds it important to give something back to the partnership because this is the essence of a true partnership.

"The highlight of the program was when we teamed with our protégé Reytek Corporation to win a contract to design and build a high-voltage measurement system for the Primary Standards Lab at Sandia," says Sachs.

TMC Design Corporation went through the program as a protégé in the first year of the pilot program and also in the second year. This year TMC Design Corporation serves as an alumnus in the program. Mark Retter, manager (5702), was TMC's Mentor.

Leroy Gomez, president of TMC Design, says TMC attended training over a period of 12 months, which culminated in obtaining the New Mexico 9000 compliant certificate from the State of New Mexico for ISO 9001:2000 standard.

TMC Design Corporation increased its revenues from \$5 million to \$7.1 million and increased its employment base 20 percent during the three years of participating in the program.

## Open Enrollment notices will be sent out later this month

### Confirmations

Now that the Open Enrollment period has ended, the Benefits Department will mail Benefits Confirmation Statements to the home addresses of all employees and retirees. The statements will go out by the last week in November, regardless whether any elections or changes were made during Open Enrollment. Each employee statement will list the Sandian's coverage for medical and dental plans and Voluntary Group Accident plan as of Jan. 1, 2005, and any elections made under the Reimbursement Spending Accounts and Vacation Buy plan for the 2005 calendar year. Please review your Benefits Confirmation Statement immediately and notify the Benefits Customer Service Center at 845-2363 if your statement is incorrect.

### Paycheck Deductions

**Employees:** Your new premium share amounts for medical coverage will begin with your Jan. 13, 2005, paycheck.

Payroll deductions for those employees who enrolled in the Reimbursement Spending Accounts (RSA) and/or Vacation Buy Plan for 2005 will begin with the Jan. 13, 2005, paycheck.

If you are a new enrollee or have changed plan coverage under the Voluntary Group Accident Plan, your payroll deduction will begin with your Dec. 2, 2004, paycheck.

**Retirees:** If you are paying a premium share for medical coverage, your new premium amount, if applicable, will be deducted from your pension check beginning in January 2005.

**Appeals:** If you want to request an exception relating to the 2005 enrollment process, you must send a written appeal to the Open Enrollment Appeals Committee in the Benefits Department at MS 1022, or P.O. Box 5800, Albuquerque, NM 87185-1022. Appeals must be received no later than Dec. 10, 2004.

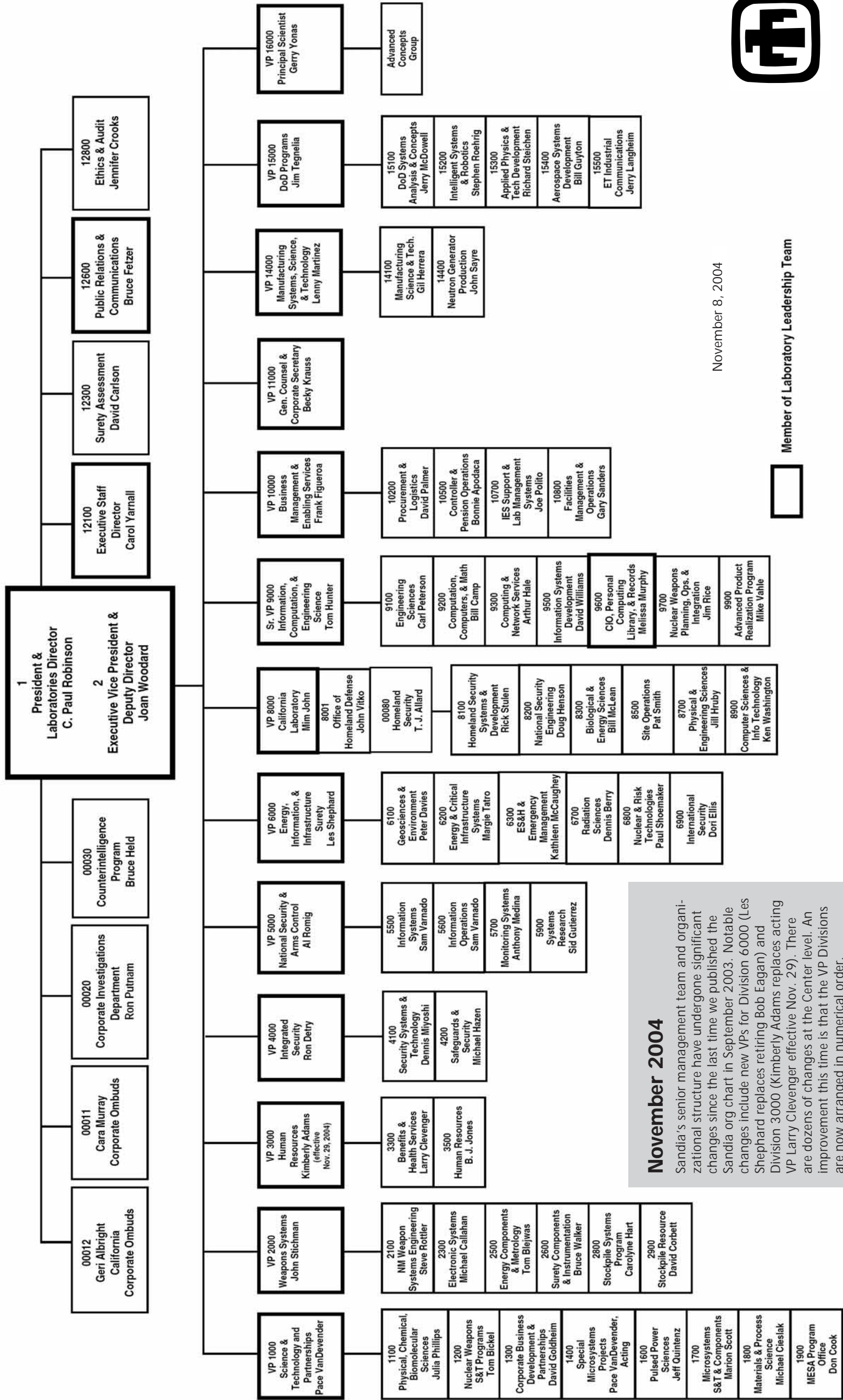
## Sandians support troops with 'Care Packages'



EVERY LITTLE BIT HELPS — Patricia Shorty (10263) checks out the contents of a care package collected as part of a grass-roots Sandia effort sponsored by SAFENet (Sandia Armed Forces Employees Networking Group) to donate those little essentials that can make life a bit more pleasant for America's soldiers on the front lines of the war on terrorism. The campaign to collect personal items for Sandians on active duty with the military has been extended through Nov. 12. Boxes with lists of items being collected (toiletries, razors, toothpaste and brush, etc.) are at various locations around the campus. SAFENet encourages everyone to give. The items collected will be shipped to the troops before the holidays. Questions to Jim Shorty (3521) at 844-3247 or [jcshorty@sandia.gov](mailto:jcshorty@sandia.gov). (Photo by Randy Montoya)



# Sandia National Laboratories



November 8, 2004

Member of Laboratory Leadership Team

## November 2004

Sandia's senior management team and organizational structure have undergone significant changes since the last time we published the Sandia org chart in September 2003. Notable changes include new VPs for Division 6000 (Les Shephard replaces retiring Bob Eagan) and Division 3000 (Kimberly Adams replaces acting VP Larry Clevenger effective Nov. 29). There are dozens of changes at the Center level. An improvement this time is that the VP Divisions are now arranged in numerical order.



## DOE awards Battelle Energy Alliance contract to run newly named Idaho National Laboratory

Secretary of Energy Spencer Abraham announced Tuesday (Nov. 9) that DOE has selected the Battelle Energy Alliance, LLC (BEA) to establish the Idaho National Laboratory (INL) as "the nation's premier laboratory for nuclear energy research, development, demonstration, and education within a decade."

The Idaho National Laboratory will combine the research and development components of the Idaho National Engineering and Environmental Laboratory and Argonne National Laboratory West.

The Idaho National Laboratory will begin operating under this new name and contract on Feb. 1, 2005.

The term of the contract is 10 years. BEA, owned by Battelle Memorial Institute, teamed

with several institutions, including Battelle Memorial Institute, BWXT Services Inc., Washington Group International, the Electric Power Research Institute and the Massachusetts Institute of Technology.

"We are very pleased. . .," Abraham said. "The Battelle team brings an outstanding reputation, an excellent plan and a superior management team that will make the INL a world-class multiprogram laboratory. This new laboratory was the missing element in our strategy to provide long-term energy security for the nation."

"We needed a laboratory that can work with the other labs in our complex, academia, and industry to advance nuclear power technology and create an entirely new type of nuclear energy plant for the longer term future."

## Feedback

### Labs approves Mozilla as a COE browser

**Q:** We need a new browser for lots of reasons:

1) Netscape is years out of date for the UNIX side.

2) IE 5.2 is out of date for Macs, and the CCHD

has stopped supporting it. (<http://www-irm.sandia.gov/org/div9000/cchd/alerts/browsercompatibility.htm>)

3) Pop-up blocking & tabbed browsing.

Someone submitted a Feedback in February 2003 complaining about the Netscape browser on the UNIX side. The decision was made that summer to standardize on Mozilla, and the announcement was made in September of last year. CSU Special Projects had already picked Mozilla for you, since in the spring of 2003 they released the Redhat 9 COE with Mozilla as the standard browser, and Netscape was nowhere to be seen. The only problem with this is that Mozilla is not "officially supported" yet, and the Timecard application likes to reassign the hours that you charge to your projects. How many years does it take to update the timecard application? Somebody's been dragging their feet.

The problem is not going to go away, it's just getting worse. Microsoft no longer supports IE for Mac users. Sandia still "officially" supports it, but just don't use it on parts of our internal network (See the web link above).

The previous Feedbacks on pop-up blocking are way off the mark. It works great in Mozilla and Firebird. We don't disable it, and it is configurable. I know several PC users at Sandia who have switched from IE just for these reasons. The tabbed browsing is also a great feature.

It's time to roll out the new Mozilla browser for the UNIX side, and you need to make a decision on a Mac browser ASAP. Otherwise your Mac users will pick several different browsers for you.

**A:** Because the Web plays such a critical role at Sandia and because so many groups are involved in a change to the browser environment (Web page developers, Web application developers, computer security, SWIFT, Tech Dev, CSUs, CCHD, and all end users) changes to the browser environment are done very infrequently in order to minimize the impact on everyone.

However, as you point out, the current situation demands a browser change. In order to ensure all affected parties have a voice in the decision process, the Technology Infusion process is used. The Technology Infusion Proposal (TIP) to recommend the COE browser for all supported operating systems at Sandia has just been completed. The topic was heavily debated by domain experts and interested parties, with a final decision coming out of the Operations Planning and Action Group (OPAG).

The OPAG decision is Mozilla will be the default COE browser for UNIX/Linux and Mac platforms. In addition, the OPAG approved deployment of an option whereby users can self select to download Mozilla onto their Windows machines, from an internal source, in the event of an emergency MS IE shutdown.

Implementation of the browser decision outlined above is currently underway. Until the browser migration is complete, CCHD will con-

tinue to support IE on the Mac as best they can, given that the vendor no longer supports IE on the Mac.

— Don Schroeder (9620)

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**Q:** When will the city widen Southern Blvd. east-bound from Eubank to Juan Tabo to two lanes all the way? With all the growth in this area, this should have been done long ago.

**A:** The City of Albuquerque has no immediate plans to widen Southern Blvd. between Juan Tabo and Eubank. Parts of Southern Blvd. are being improved in conjunction with adjacent development through an "exaction" process. An exaction process is where the city or other government agency may require a developer to improve roads and other infrastructure because of the development activities. The remainder will be constructed when there is sufficient funding and when several environmental issues have been resolved. You may find more information from the city by accessing the Traffic Safety Committee Home Page <http://www-irm.sandia.gov/facilities/esh/traffic.htm> and clicking on the "City of Alb. Traffic" link.

— Ed Williams (10864)

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**Q:** I have noticed items that would be valuable to me, thrown out in construction dumpsters around the tech area. These are the type of containers that are brought in to an area close to the construction site where drywall and other types of construction rubbish are placed. The items I have seen are old rotary telephones, small electronic items, like vintage 1970 motion sensors, and door hardware. Clearly, items that Sandia places no value on.

What is the policy of employees removing items that are in clear view, at the top of the dumpster and do not require digging in the dumpster? Also, would it be permissible to take the items home? If I was able to ask the construction worker for the items, before the rubbish was tossed in the dumpster, would I be allowed to take them home? After all, the items are going to the landfill and not to property reapplication.

**A:** I agree there are many interesting items placed in dumpsters during clean up and construction and it is tempting to take them home. Don't! All items in the dumpsters are government property and must be disposed of in specific ways. Removing items for personal use is considered theft of government property and is a violation of our ethics and principles. In addition, construction contractors are never authorized to dispose of material by giving it to private parties and are only rarely allowed to salvage some material on a contract specific basis.

Further policy information may be found in Corporate Process Requirement No: CPR 500.2.3 Property/Assets Management User's Manual ([http://www-irm.sandia.gov/manuals/property/prop\\_toc.html](http://www-irm.sandia.gov/manuals/property/prop_toc.html)) and in Corporate Process Requirement No: CPR300.4.3 Disciplinary Actions: ([http://www-irm.sandia.gov/HR/Policies/Lr/disciplinary\\_actions.htm](http://www-irm.sandia.gov/HR/Policies/Lr/disciplinary_actions.htm)).

— Ed Williams (10864)

## Mileposts

New Mexico photos by Michelle Fleming



Richard Rogers  
40 10503



Daniel Doughty  
25 2521



Al Romig  
25 5000

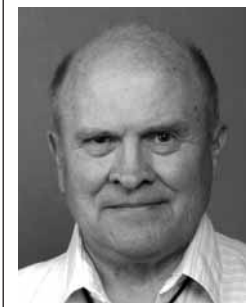


Gary Zender  
15 1822

## Recent Retirees



James Anastasio  
40 14402



Robert Fisher  
40 1800



Don Schueler  
40 10720



Del Klinetobe  
37 2993



Ray Berg  
32 2622



Willard Hareland  
20 2954



Charleene Lennox  
19 15232

# Sandians turn out in numbers for Make A Difference Day



DIGGING IN — Volunteers from Sandia, KAFB, and AFOTEC helped landscape the Habitat for Humanity Habitat Park in the La Vida neighborhood at 46th Street and Central SW in Albuquerque for Make a Difference Day. Sandia paid for the plants and trees. The volunteers were led by project manager Dale Leonard. Amy Faucett (1707) designed the park. (Photo by Bill Doty)



This monthly column highlights Sandia Lab News items from 50, 40, 30, 20, and 10 years ago, but each column does not necessarily include items from each decade.

**50 years ago . . .** Computers were already in use at Sandia. According to the Nov. 5, 1954, issue, a new “electronic genius,” the General Purpose Automatic Digital Computer, was being used exclusively for research by Sandia mathematicians, providing answers “via a special typewriter — somewhat like an old-time player piano.” And it didn’t care for human errors in programming or command. If such errors were introduced, the story said, “the magic brain sort of ‘flips its lid’ with a flash of lights and a rush of incoherent numbers onto the typewriter paper.”



MATHEMATICIAN Dale Young enters data into the General Purpose Automatic Digital Computer in 1954.

**40 years ago . . .** The Nov. 6, 1964, *Lab News* announced that the Defense Department’s Advanced Research Projects Agency had authorized Sandia to design, build, and test a prototype land-based Unmanned Seismological Observatory, further involving Sandia in remote detection, verification, and nonproliferation R&D activities. The new detection work followed outstanding success of the Vela Detection Satellite program, a joint Sandia/Los Alamos military program for detecting secret nuclear testing in space and the atmosphere. The same *Lab News* issue

noted that Sandia’s Tonopah Test Range (TTR) in Nevada had just completed five years of full-time operation. The 637-square-mile TTR was a busy place at the time, conducting a variety of aircraft drop tests, rocket firings, and other nuclear-weapon-related tests, and was exploring possible peaceful uses for nuclear devices in Project Plowshare.

**30 years ago . . .** A Nov. 1, 1974, special issue was published celebrating Sandia’s 25th anniversary. It included a replica of the letter from President Harry Truman to AT&T President Leroy Wilson asking AT&T to direct Sandia’s operations. The letter contains the now celebrated sentence, “In my opinion you have here an opportunity to render an exceptional service in the national interest.” All was not well, however, during the Labs’ 25th anniversary year. The next regular *Lab News* on Nov. 8 announced that a special early retirement incentive was being offered to selected staff employees because Sandia was facing “substantial reductions in funding for FY ’75.” Eligible employees could collect a special allowance of one year’s salary in addition to their regular pension by retiring during the following month.

**20 years ago . . .** A full page interview in the Nov. 9, 1984, issue with Gerry Yonas, then Strategic Defense Initiative Office (SDIO) Chief Scientist, emphasized the huge technical challenges and political considerations that the US was facing as it began serious efforts to develop a strategic missile defense system for detecting and destroying intercontinental ballistic missiles. Gerry had directed Sandia’s Pulsed Power Sciences program before taking the SDIO post. He returned to Sandia several years later and is

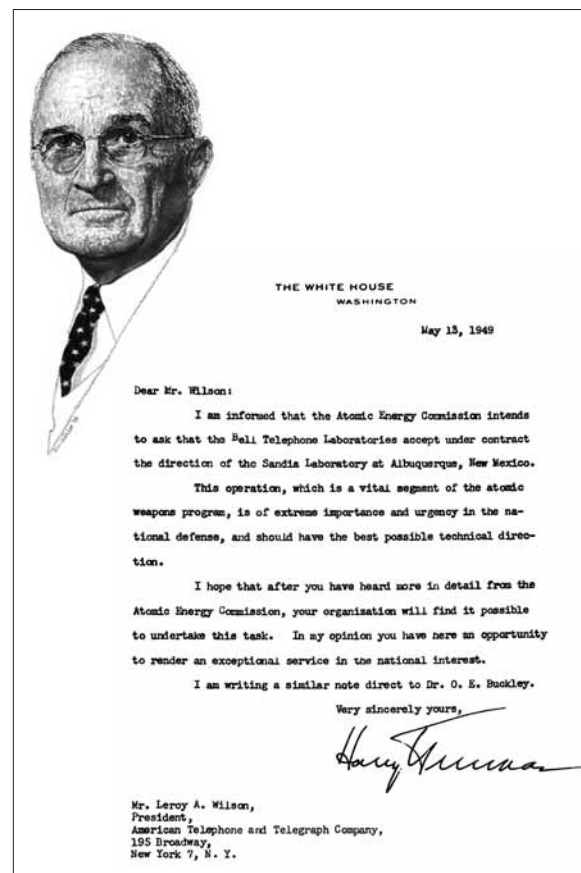


CHIEF SCIENTIST Gerry Yonas discusses his new post with the Strategic Defense Initiative Office in 1984.

now the Labs’ principal scientist and VP and leads the Advanced Concepts Group.

**10 years ago . . .** Sandia’s 10 user facilities that the Labs had opened for collaborative research with US industry and universities were featured in the Nov. 11, 1994, issue. The story noted that the Combustion Research Facility at Sandia/California was the Labs’ first user facility and that Sandia was quickly opening more. Today Sandia has nearly two dozen such facilities; see <http://www.sandia.gov/busops/partnerships/tech-access/facilities/index.html>.

— Larry Perrine



IN CELEBRATION — A Nov. 1, 1974, special issue of the *Lab News* celebrating Sandia’s 25th anniversary carried the famous Truman letter.