

# National Institute of Justice names Sandia a satellite facility

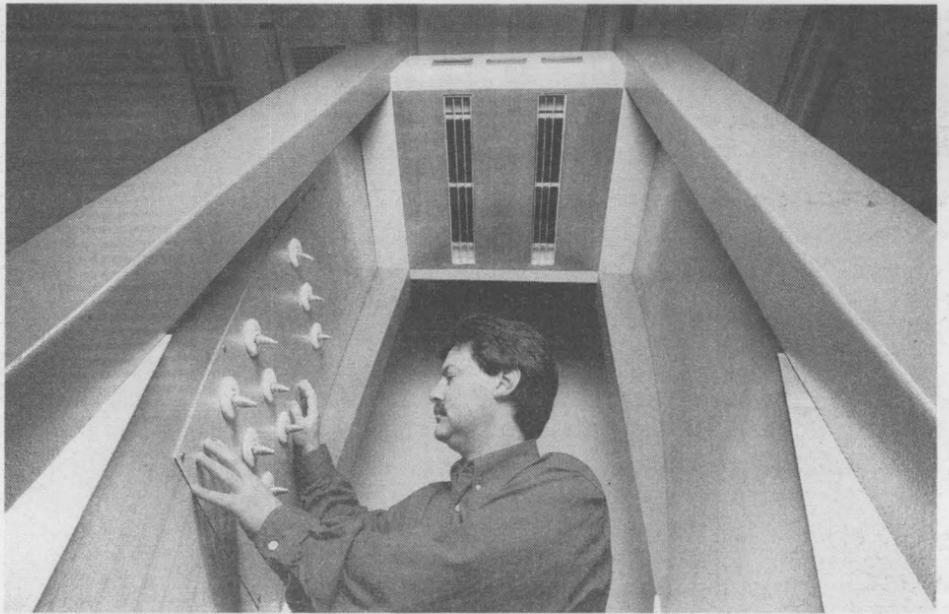
## Labs to appraise law enforcement technologies

The National Institute of Justice (NIJ) is announcing this week that it has named Sandia a satellite facility to support the Institute's multidisciplinary science and technology development program. NIJ is the research and development branch of the US Department of Justice for state and local law enforcement and corrections.

The official announcement was to be made Thursday afternoon by Rep. Steve Schiff (R-N.M.) and David Boyd, Director of NIJ's Office of Science and Technology, in a news conference at Sandia.

Demonstrations of a bomb-disabling device developed at Sandia and of a Sandia-developed walk-through explosives detection portal were planned. Both technologies represent the kinds of expertise Sandia will bring to its work as a NIJ Satellite Facility. Sandia President C. Paul Robinson and Executive VP John Crawford were expected to be on hand.

Sandia facilities and technical expertise will be focused on three areas for this new work: 1) testing and evaluating proposed and existing technology and equipment for state and local law enforcement and corrections; 2) researching and developing related activities to support law enforcement "special teams" such as SWAT and bomb squads; and 3) supporting NIJ's Rocky Mountain Regional Center in Denver in explosives  
(Continued on page 5)



**BETTER AIRPORT SECURITY** — Kevin Linker (5848) examines a Sandia walk-through portal that will be used in airports to detect minute traces of explosives on airline passengers. When an individual enters the portal, air is blown over his or her body and is drawn into a preconcentrator, which concentrates about 800 liters of air into a 2-liter sample. The sample is then analyzed in an ion mobility spectrometer that can identify small quantities of organic compounds like explosives. The preconcentrator technology can be adapted to support other detection needs such as chemical and biological agents, narcotics, and land mines. The work is funded by the Federal Aviation Administration and DOE's Office of Safeguards and Security.  
(Photo by Randy Montoya)

# Sandia Sandia National Laboratories LabNews

Vol. 49, No. 2

January 31, 1997

## Media seek scientific perspectives on TWA Flight 800 crash questions

By John German

Lab News Staff

Could a meteor down a jetliner? Did a gas bubble rise from the ocean floor, explode, and take down TWA Flight 800 last July?

As the six-month-old tragedy near Long Island, N.Y., remains unresolved, and as some of the most obvious explanations for the accident go unconfirmed, the local and national media have turned to Sandia scientists in recent weeks for their opinions about a pair of less-than-conventional theories about the crash.

Two weeks ago, *Albuquerque Tribune* science reporter Larry Spohn interviewed physicist and impact specialist Mark Boslough (9232) about the plausibility of a theory presented by TWA in response to lawsuits filed by the families of some of the 230 people killed in the accident: that a meteor collided with the 747 and caused the explosion. Legally, a meteor impact would constitute an "act of God" beyond TWA's control and might relieve the airline of liability.

Mark — whose explanations in recent months of seemingly incongruous meteor sightings over the western US (*Lab News*, Oct. 25, 1996) have earned him ink in newspapers across the country — told Spohn he doubts a meteor could have been responsible for the accident.

He said so many variables would have to be considered in such a computation — including the number of commercial flights per year, the area those planes cover at any given time, and the rarity of meteors surviving burn-up in the upper atmosphere — that the odds of a meteor hitting a jetliner would be something like one-in-a-billion. Other scientists, including meteorologist Douglas ReVelle of Los Alamos National Laboratory, are skeptical of the meteor theory as well.

Still, Mark acknowledged, the possibility of a meteor collision does exist; hundreds of witnesses reported seeing a streak or streaks of light near the plane just before the explosion.

Spohn's Jan. 16 article was syndicated by  
(Continued on page 4)

*Legally, a meteor impact would constitute an "act of God" beyond TWA's control and might relieve the airline of liability.*



**GOODBYE SANDIA** — After 21 years at the Labs, Elsie Yeppa (right) of Printing and Duplicating Dept. 12617 turned over her Sandia badge Jan. 23 to her friend and former co-worker, Debbie Leon of Personnel Security Dept. 7437. Elsie is one of 57 Voluntary Separation Incentive Program (VSIP) recipients to have left Sandia since Jan. 16. So far, the VSIP requests of more than 287 employees have been approved, and Sandia's Human Resources team still has applications to sort through. Sandia's goal is to eliminate all 448 impacted positions without layoffs; in all, 325 impacted and 217 nonimpacted employees submitted VSIP requests. Separation dates for departing VSIPers extend through April 17. Although Elsie said goodbye tearfully, she's looking forward to her retirement. She says her plans may include making pottery at her home in Jemez Pueblo. Karen Gillings of Staffing Dept. 3535 says HR will have a better idea about the need to begin Phase 3 of Sandia's Workforce Realignment Plan, the "60-day period for placement of surplus employees," in coming weeks. See the Feb. 14 *Lab News* for more information.  
(Photo by Randy Montoya)

United Way thanks Sandians for 13 years of generous giving 4

Labs gets three 1996 DOE Basic Energy Sciences awards 6

Collaborative work with US universities tops \$57 million 7

# This & That

Our feminine side - Pat Rosario (2600) says her center recently received a piece of junk mail hyping a frequent-traveler program, addressed to Ms. Sandia Laboratories, with the greeting "Dear Ms. Laboratories." And Phyllis Owens (3526) got mail addressed to her at Sandra Laks, with the greeting "Dear Phyllis and Sandra."

\* \* \*

What's on Sandians' minds? - As space permits, we publish Feedback questions and answers in the *Lab News*, but keep in mind that everyone with access to Sandia's Internal Web can see all current and archived Feedbacks at <http://www-irn.sandia.gov/corpdata/feedback/fbindex.html> or by going to the Communications page and clicking on Feedback. You'll find several interesting ones there now. Call Feedback coordinator Janet Carpenter (12640) at 844-7841 if you need more info about the program.

\* \* \*

Worth a special trip - Many Sandians don't go into Bldg. 802 often through the Bldg. 800 entry (I do, of course, since I often go to the executive offices to offer free advice and counsel), but it's now worth a special trip. An interesting, attractive photo exhibit has been in place in the hallway between the buildings for several months, showing Sandia's historical highlights and technical capabilities. The project was coordinated by Mike Lanigan (12680) and executed by Mike Clough and Alice Baltz (both 12615), supported by several other folks in Creative Arts Dept. 12615 with input from contributors throughout the Labs.

\* \* \*

Better bumper sticker - I mentioned in the last issue that this bumper sticker seems made for Albuquerque: "Forget World Peace. Visualize Using Your Turn Signal." Lorraine Solanos (10231) suggests a slight wording change. "Begin World Peace. Use Your Turn Signal." A modest beginning, perhaps, but it would certainly make me feel better.

\* \* \*

Overpriced in all sizes - While I'm talking about one pet peeve, I may as well mention another one: the major theatre chain that requires its concession-stand workers to ask this question after we order a soft drink: "Do you know you can get a medium [or large] for only a quarter more?" I really want to reply, "Of course I know it. That big sign behind you lists the prices, and I learned to read years before you were born!" But I realize the kids behind the counter are trying to make an honest buck and can probably get canned if they don't follow instructions, so I usually just say, "No thanks." If this outfit would stop this annoying practice, I might even stop sneaking my sack of microwave popcorn into the movies. Might.

- Larry Perrine (845-8511, MS 0129, [lgperri@sandia.gov](mailto:lgperri@sandia.gov))

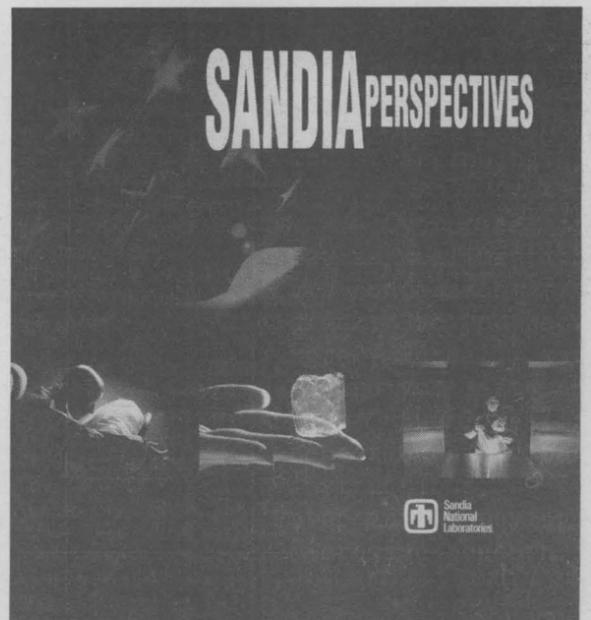
## Sandia Perspectives 1997 booklet presents up-to-date view of Labs

A new publication, *Sandia Perspectives 1997*, will be available soon, including on the Web. The glossy, 28-page, 10x11-inch booklet, illustrated with striking photographs of Sandia work, is intended to serve stakeholders and potential customers as an "annual report," outlining Sandia's mission, direction, and capabilities as a national security lab.

Intermingled throughout are "success stories" on projects such as Sandia's work with Goodyear and on the Precision Fabrics airbag. Also included in a built-in folder in the back are six fact sheets on robotics and intelligent machines, materials research and development, advanced manufacturing, scientific computing, user facilities, and doing business with Sandia.

Additional fact sheets will be added in the future. For more information call Sandy Smallwood (12680) at 844-4902. Look for the brochure on the Web about mid February at <http://www.sandia.gov/SandiaPerspectives>.

The booklet was produced by a team from Business Communications and Planning Dept. 12680, Creative Arts Dept. 12615, and Employee Communications and Media Relations Dept. 12640.



## You are invited to suggest topics for February employee dialogue sessions

Labs Director Paul Robinson invites Sandians to suggest topics they would like to hear discussed at the next employee dialogue sessions Feb. 24, 26, and 27.

Employees may submit suggested topics and questions via e-mail to Paul's assistant, Jane Elson, at [mjelson@sandia.gov](mailto:mjelson@sandia.gov), or to his secretary, Deanne Schwartz, at [dmschwa@sandia.gov](mailto:dmschwa@sandia.gov); suggested topics and questions can be sent via regular mail to either one at MS 0101 (anony-

mously if you prefer).

The main topics Paul will discuss will be announced in the next *Lab News*.

The dialogue schedule:

- Monday, Feb. 24, 3-4 p.m., BDM Bldg.
- Wednesday, Feb. 26, 8:30-9:30 and 10-11 a.m., Technology Transfer Center (Bldg. 825)
- Thursday, Feb. 27, 8:30-9:30 and 10-11 a.m., Bldg. 904 Auditorium at Sandia/California

## Feedback

**Q:** Since Sandia is saving money by putting a single copy of things like the Harvard Health Letter online, how about buying a few more subscriptions and putting them online too? I would like to see Harvard Women's Health Watch made available.

**A:** We have recently learned that the *Harvard Women's Health Watch* is now available for the purchase of an online license for Sandia's Web. We have requested pricing information from Harvard and then will evaluate whether the Benefits and Medical Services Center budget will allow us to acquire this publication.

- Larry Cievenger, M.D. (3300)

**Q:** When I use e-mail, I have the option of looking up mailing addresses in my own personal address directory. It would be nice if we had a similar feature on the Web for frequently contacted people.

**A:** The 3.0 version of the Netscape browser supports personal address books. The feature is found on the menu bar - Window/Address book. You will note that it looks and acts a lot like bookmarks.

- Paul Merillat (4800)

## Labs Accomplishments coming in Feb. 14 Lab News

It's that time of year again. If all goes as planned, the next issue of the *Lab News* (Feb. 14) will be our annual Labs Accomplishments issue. We are putting together a 12-page center section summarizing Sandia's top accomplishments in FY96. If you would like extra copies, please let us know as soon as possible.

## STATE OF THE SECTOR

LOCKHEED MARTIN 

Al Narath  
President  
Lockheed Martin  
Energy/Environment Sector

Wednesday, Feb. 5  
8:30-9:30 a.m.

Technology Transfer Center  
Bldg. 825  
Sandia National Labs, Albuquerque

Also teleconferenced live to  
Sandia/California  
CRF Auditorium, 7:30-8:30 a.m. PST

All Sandia employees are invited.

Come hear Sandia's former President discuss his new Sector responsibilities, recent Sector activities, and their impact on Sandia.  
Contact: Jerry Langheim, 843-4023

## Sandia LabNews

Sandia National Laboratories

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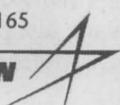
<http://www.sandia.gov>

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Livermore, California 94550-0969  
Tonopah, Nevada • Nevada Test Site • Amarillo, Texas

Sandia National Laboratories is a multiprogram laboratory operated by Sandia Corp., a wholly owned subsidiary of the Lockheed Martin Corp. and a prime contractor to the US Dept. of Energy.

Ken Frazier, Editor .....505/844-6210  
Barry Schrader, California site contact .....510/294-2447  
Lab News fax .....505/844-0645

Published Fortnightly on Fridays by  
Employee Communications Dept. 12640, MS 0165

LOCKHEED MARTIN 

# Co-op student completes a working prototype of airborne radiometer for climate models

**Engineering intern wraps up Sandia work on unique instrument**

By Nancy Garcia

California Reporter

Doug Parker is leaving his six-month cooperative work-study program at Sandia with the satisfaction of having completed a working prototype for an outside customer.

The prototype he was preparing to ship out as his assignment finished in December mounts onto the wing of an unmanned aerial vehicle to measure solar radiation. The customer, Scripps Institution of Oceanography, will use it to study global warming.

The instruments are expected to be deployed on a high-altitude unmanned aircraft, possibly next fall, Doug says.

The radiometer mount design was initially formulated by two other Sandians in his department — Hal Radloff and Rafael Davalos of Advanced Weapon Systems Engineering Dept. 2254. Their unique design allows the instruments to rotate without a motor, using aerodynamics.

A control surface provides lift to turn the four-foot boom, which houses two radiometers, one at each end. A brake fixes the position. An aerodynamic analysis by Walt Wolfe (9116) showed this design would function.

## One instrument set, two directions

With this design, one set of instruments takes measurements alternately in two directions, toward the sun and toward the ground. Using a single set of instruments permits accurate calculations of how much solar energy is radiated away from Earth by eliminating any calibration errors.

Jeff Spooner of Control Subsystems Dept. 2338 devised the control system. The control system, boom, and drive assembly were tested in autumn 1996 at Texas A&M University's wind tunnel. Although he was nerve-wracked at first, "the tunnel test was very cool," Doug says. "They worked pretty well." Carole Le Gall (2254) helped acquire data during the tests.

Doug is entering his senior year of mechanical engineering studies at Rensselaer Polytechnic Institute in Troy, N.Y. The Vermont native wasn't familiar with Sandia when he was invited to intern here. He ended up being exposed to a

broad range of activities, ranging from a week-long computer class in the design software Pro Engineer to a lot of hands-on fabrication. "I really enjoyed coming out here," Doug says about the hands-on experience. "It was nice to finish something and see it come together. I learned a ton this summer."

Alongside his department co-worker Dan Trujillo, Doug and members of Sandia's machine shop built the prototype, riveting joints and hammer-forming ribs with direction from Sandian Dave Neustel, a member of Dept. 2254 who learned to work with sheet metal in his previous job in Sandia's Sheet Metal Shop.

"We got to build our own design," says Rafael. "Everybody got to see a product from start to finish, from conceptual design through testing a prototype. You don't get to do that very often."

## Data for climate models

Keeping the year-long effort within the relatively small budget was challenging, Rafael says. Other challenges included designing for a relatively harsh environment. The high-altitude aircraft experiences temperatures as low as minus 65 degrees Fahrenheit, but the device actuators do not function below minus 40 F, so the team added postage-stamp-sized, low-watt heating pads beside the actuators. The radiometer is mounted on a four-foot-long boom so the instrument can "see" clear sky without obstruction from the aircraft. Also, the instrument package had to keep deflections due to aerodynamic loading below one-tenth of a degree, so it was designed as a stiff airfoil shape.

Now Scripps scientists plan to rely on the radiometers to obtain data for climate models. Shelly Pope, a Scripps atmospheric scientist and co-principal investigator with Francisco Valero, will use the device for experiments similar to those conducted by the Atmospheric Radiation Modeling-Unmanned Aerospace Vehicle Program that took place in fall 1996 at DOE's Cloud and Radiation Testbed site in Oklahoma. Pope participated in the most recent experiments there along with scientists from Sandia and other organizations.

Calculating the net flux of solar radiation from



GETTING READY — Doug Parker prepares the radiometer for a wind tunnel test. The instrument mounts onto the wing of an unmanned aerial vehicle to measure solar radiation from the ground and sun.

## Sandia California News

the ground and sun with a single rotating radiometer eliminates systematic error or bias inherent in a pair of fixed, calibrated instruments, she says. The calibration uncertainty may be only 1 percent, but eliminating the need to calibrate a fixed pair of upward- and downward-facing radiometers by using a single one to measure in both directions "takes a small but finite number (the 1 percent uncertainty) and brings it to zero," she says.

# Fusion research manager honored by DOE

**Ken Wilson is fifth Sandian to receive 'Distinguished Associate' award**

Ken Wilson, Manager of Surface Chemistry Dept. 8716, has received a Department of Energy Distinguished Associate award for his pioneering work in fusion research.

Ken has been studying the interaction of materials with magnetic fusion plasmas — hot, ionized gases — since arriving at Sandia in 1974 with a PhD in materials science from Cornell University. He currently manages the Magnetic Fusion Energy program at Sandia. He is also a US Home Team manager for the International Thermonuclear Experimental Reactor, a proposed next-generation fusion energy device.

"The award is really a recognition of Sandia's program in plasma-material interaction," Ken says. "Sandia has become world-recognized as a leader in this area of research."

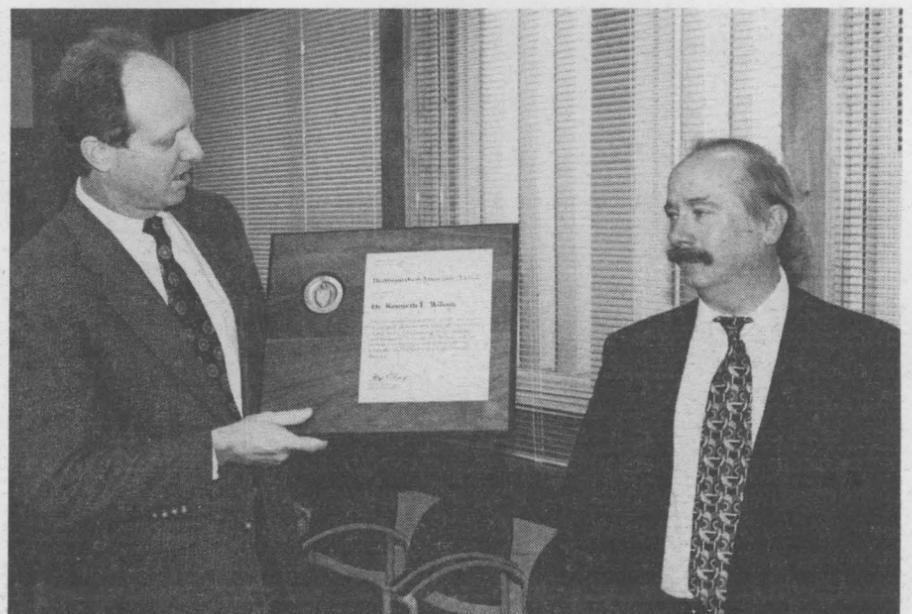
Sandia has developed materials that resist plasma degradation. They have been used in fusion energy devices around the world. Sandia has also developed improved ways to remove heat from reaction vessels in which hot plasmas are contained by magnetic fields. Magnetic fusion creates energy by fusing light nuclei into heavier atoms in a process similar to the reaction that powers the sun.

"In magnetic fusion," Ken says, "the plasma slowly leaks through the magnetic 'bottle' and reacts with the walls of the vessel. This affects the fusion reaction in the plasma and the lifetime of the walls of the vessel."

Approved and signed by Secretary of Energy Hazel O'Leary, the citation was presented by Anne Davies, Associate Director for Fusion Energy, at a Dec. 11 ceremony in Germantown, Md. It reads: "For your pioneering research on the interactions of energetic plasmas with materials, application of this research to magnetic fusion plasmas, and leadership in design and R&D for critical in-vessel components and systems for the International Thermonuclear Experimental Reactor."

The award is the highest non-monetary award for employees of DOE-owned, contractor-operated facilities. Ken is the fifth Sandian to receive a DOE Distinguished Associate award.

"I had my first assignment in the new field



HONORED — Mike Dyer, Director of Materials and Engineering Sciences Center 8700, left, reads the citation on the DOE Distinguished Associate Award issued to Ken Wilson, right.

of material-plasma interaction," Ken remarked at an award celebration in Livermore earlier this month, "and found a career passion in this new research area."

— Nancy Garcia

## Sandia employees recognized by United Way for 13 years of \$1-million-plus giving

United Way of Central New Mexico honored Sandia employees with a special recognition award at its annual Adobe Awards dinner Jan. 15 at the Hyatt Regency Hotel in Albuquerque. Sandia employees received the special recognition for having raised more than \$1 million a year for 13 consecutive years through the Employee Contribution Plan (ECP).

Executive Vice President John Crawford accepted the award on behalf of Sandia employees who raised \$1.5 million in pledges during the 1996



THANKS FOR THE GENEROSITY — Executive VP John Crawford accepts a crystal structure special award from Brea Boda, Chairwoman of the United Way of Central New Mexico Board of Directors, during the United Way's annual Adobe Awards dinner Jan. 15.

ECP campaign last October. Seventy-five percent of Sandia employees currently participate in ECP.

Sandia was recognized with three other awards at the dinner:

- Employee Campaign Award, awarded to the top three campaigns based on per capita giving (Sandians give an average of \$211 per person)
- Leadership Giving Award, for highest percentage increase in the number of leadership givers (\$500+) in a company
- Cincuenta y Más Corporate Adobe Award, for corporate gifts of \$50,000 to \$99,999 (Lockheed Martin Corporation donated \$60,000 on behalf of Sandia)

Former shuttle astronaut and current Sandia employee Sid Gutierrez (2527), with the help of a Roswell "visitor" (ECP program administrator Juanita Sanchez [12650] posing as an extraterrestrial alien), unfurled the banner announcing the final 1996 United Way of Central New Mexico total of \$7,660,000 in 1996 pledges. Sandia pledges made up 19 percent of that total.

"Raising a record \$7.66 million for the local community is a testament to the generosity of the tens of thousands of individuals and companies who gave to United Way in 1996," says 1996 United Way campaign chair Jim Tegnelia,

## A letter to all Sandians

Dear Sandians,

I'm writing you this special message to express how proud I am of your extraordinary generosity to the needy and underprivileged in our community through your contributions over the years to Sandia's Employee Contribution Plan.

United Way of Central New Mexico has recognized your efforts by presenting you with a special award at its Adobe Awards dinner on Jan. 15. The award is in recognition of Sandians contributing more than \$1 million a year for the past 13 years to United Way through ECP. In the recent campaign, you pledged \$1.5 million despite uncertain economic times and fewer employees.

I am pleased that you have chosen to make your contributions in a meaningful way, spending money and devoting effort where it is really needed — helping the less fortunate among us. A child's smile, not a marble statue, is your reward. We are glad to see that, year after year, that appears to be enough.

With warm regards,

C. Paul Robinson

President of Lockheed Martin Advanced Environmental Systems, Inc. and former Sandia Executive Vice President. "This outpouring of support will help provide local health and human service organizations with the funds to assist thousands of people living in central New Mexico."

— Janet Carpenter

## TWA Flight 800

(Continued from page 1)

Scripps Howard News Service and picked up by several newspapers across the country.

### Sandian poses earth venting theory

Another Sandia researcher, Dick Spalding (5909), has answered numerous media inquiries since Jan. 20 when a second *Tribune* article by Spohn, this one distributed by the Associated Press, reported on Dick's controversial hypothesis that an enormous plume of methane gas might have bubbled up from the ocean floor, mixed with oxygen at the surface, risen to 13,000 feet, and exploded near the plane. He says an electrical disturbance such as a lightning bolt, or the plane itself, might have ignited the gas.

Dick is among a handful of scientists around the world who believe the earth periodically vents such "gas burps," among them noted astrophysicist Thomas Gold and Czech astronomer Zdenek Ceplecha, a collaborator of Dick's. Gold's 1987 book, *Power from the Earth*, explores earth venting as one source of natural greenhouse-gas emissions. Skeptics of the theory, including most geologists, contend there isn't much evidence that such a phenomenon exists.

Dick, who tracks atmospheric disturbances in satellite data as part of Sandia's nuclear detonation monitoring program, says he's been studying possible earth gas eruption events for almost two years, including unexplained surface and atmospheric explosions in Newfoundland in 1978, Poland in 1993, Spain in 1994, and Honduras in November. He says he has identified a class of atmospheric events that often look like meteors from the ground but that are later proven not to be meteoric.

Prior to last July's accident, Dick had put together a modus operandi for such phenomena. "I thought from the first eyewitness accounts of the crash that this matched the MO for a gas eruption," he says.

He believes science's very nature requires scientists to at least consider the possibility that gas venting occurs and that it could have been responsible for the accident. The hundreds of eyewitness accounts of these events shouldn't be ignored, he adds.

He says earth venting also may explain the appearance of "pock marks" on the ocean floor,

from which he says gas bubbles may have emerged, as well as cold gas clouds known to rise through the atmosphere occasionally.

His theory has been submitted to the Federal Bureau of Investigation (FBI), the Federal Aviation Administration (FAA), TWA, and the Navy. As of *Lab News* press time Wednesday, Dick had been interviewed by CNN, the tabloid-style TV show EXTRA, and a local radio station.

Although Dick says he's convinced the gas bubble hypothesis explains the Flight 800 incident, he admits the best he can hope for is for other scientists "to at least consider the idea with open minds. I'm not afraid to talk about it."

"I feel a little like the Lone Ranger without a Tonto," he adds.

### Bangs and rumblings

That was until a third *Tribune* article appeared last Friday, Jan. 24, in which retired Sandian Jack Reed weighed in.

Reed, whose former job as a nuclear weapons effects researcher at the Nevada Test Site included studying the acoustical behavior of high-energy explosions, believes Dick's hypothesis may be the most conceivable explanation yet proposed.

Numerous eyewitnesses, most at least 10 miles away from the plane at the time of the accident, reported hearing atmospheric rumblings and a series of loud bangs during and seconds after the explosion. Some residents of Long Island reported that their windows rattled. Reed says these accounts of the magnitude and timing of the noises simply don't jibe with a bomb or fuel system explosion.

At that distance, he says, it would take the explosive equivalent of at least one ton of TNT, a 50-foot-diameter sphere of propane gas, or the explosives contained in a surface-to-air missile (SAM) to rattle windows on Long Island.

"That's just too much noise," he says. "It's not consistent with something you could pack in some baggage or in a phony cassette recorder." He says launching a SAM requires "a lot of big hardware" that likely wouldn't go unnoticed or unreported this long.

Moreover, it would take the shock wave from such an explosion about a minute to travel that distance, he says. Because some eyewitnesses say they heard loud bangs only a few seconds after they saw the fireball, Reed thinks individual pockets of methane could have been detonating

before the plane exploded.

"I don't endorse [Dick's] theory," he says. "But we have a lot of work to do before we can rule it out. I think it's the only idea so far that explains how that much explosive could have gotten up there."

Reed, who works as a full-time explosives consultant out of his office in Albuquerque, is providing part-time voluntary assistance to the FBI on the case. He hopes to re-interview many of the eyewitnesses, this time focusing on acoustical information.

Like many scientists, however, Mark Boslough isn't convinced that the evidence exists to support Earth eruptions, either as a geologic phenomenon or as a cause of the Flight 800 incident. Mark acknowledged in the *Tribune* that Dick is a "creative, inventive scientist who has very good ideas," but says he remains skeptical of Dick's hypothesis and Jack Reed's evidence.

He points out that eyewitness estimates of time intervals are notoriously poor. Witnesses he interviewed after the Oct. 3 meteor sightings over New Mexico, Texas, and later California had guesses for the duration of the events that varied by a factor of 10.

He also acknowledges that a variety of unlikely circumstances would need to come together for a combustible cloud of methane gas to rise 13,000 feet and ignite. "I wouldn't say that it's impossible," he told the *Lab News*. "But such a model would require exceptional evidence before I would believe it really took place."

"In scientific terms, I don't believe the case has been made for earth venting," he adds. "I don't think you can point to it yet as a plausible cause for the TWA accident."

Investigators still have not ruled out the three most obvious explanations for the crash: that a mechanical failure caused a fuel system explosion, that a bomb was planted onboard the plane, or that a surface-to-air missile struck the 747.

Mark says he believes the jet fuel that would have been aboard a 747 at the beginning of a transatlantic flight would contain more than enough energy to account for the magnitude of the explosion. The energy required to trigger the explosion may have been relatively small, he adds.

Divisions 9000 and 5000 are working with the FBI, FAA, and National Traffic Safety Board on proposals to provide Sandia technical assistance in the Flight 800 investigation.

## Sandia steam plant shows 'grace under pressure' during area cold spell

Sandia showed real grace under pressure during the recent, much-discussed cold snap in Albuquerque. In fact, the "under-pressure" occurred in local natural gas lines, where high demand in late December resulted in a pressure drop in the lines that almost left some gas customers out in the cold.

To resolve the pressure problem, the Public Service Company of New Mexico requested some of its biggest customers to help out. Specifically, PNM asked Sandia to switch over its boiler plant from natural gas to fuel oil to fire its steam plant boilers. Sandia obliged and pressure began to creep



STEAMED UP — A Sandia steam plant worker makes early morning rounds. At PNM's request, the plant recently switched some of its five boilers from natural gas to fuel oil to help restore pressure in city gas lines. (Photo by Randy Montoya)

back up, restoring full service to customers throughout the city.

Sandia's steam plant, one of the largest such facilities in the state, operates five boilers to keep the Labs' buildings heated during the winter. The plant, almost 50 years old, houses five dual-fired boilers, capable of burning either oil or gas. Three of the boilers are practically as old as the Labs; they date to 1949. Two larger boilers were installed in the late 1960s.

According to Steam Plant Dept. 7843-1 team supervisor Chris Chavez, the plant rarely has to use all, or even most, of its boilers to meet heating demands.

"Normally, we have a couple of boilers in standby," Chris says. "The only time we ever had five boilers going was in 1971, when the temperature dropped to 17 below zero [F]. Right now [in mid-January, with daytime temperatures in the 30s] we're burning one big boiler on oil and a boiler on gas."

While Sandia was able to act as a good corporate neighbor, helping PNM and gas customers throughout the city, the move to oil turns out to have made good economic sense, as well.

Chris notes that the steam plant is burning oil from Sandia's one-million-gallon storage site; the tank farm is based at Wyoming and Hardin.

"We bought most of that oil more than 10 years ago when it was a lot cheaper than it is now," Chris says.

The steam plant provides heat for all the buildings in Tech Area 1 and facilities as far south as Bldg. 897 and as far north as the Coronado Club. The plant also serves Kirtland Air Force Base east (essentially everything east of Pennsylvania) and much of the DOE complex. All told, Chris says, the facility provides steam for about four million square feet of office and work space.

While the steam plant will continue to burn gas under some circumstances, Chris says, it will definitely burn fuel oil when the temperature gets down below 15 degrees F.

## Nonviolence begins with families, says Martin Luther King Day speaker

Martin Luther King Jr.'s grand goals of a peaceful, just, and socially stable society were brought down to vivid particulars by District Court Judge Angela Jewell in a talk to Sandians at the celebration of the Rev. King's birthday Jan. 20 at the Technology Transfer Center.



Judge Jewell, of the Second Judicial District Court, Domestic Violence Division, apologized for speaking about a very particular issue, domestic violence. But she pointed out that nonviolence was the hallmark and the moral high ground of all of King's efforts to change society, and nonviolence must begin in the home.

She emphasized that violence is a "learned behavior" and that too many people are learning it from their own family members. She provided a vivid example: One day in her court, a man was before her on charges of battering his ex-wife; his son was also in the courtroom on charges of battering a girlfriend; and afterward out in the hallway, the man's grandkids were being restrained by court officials for fighting with his ex-wife's grandkids — three generations of learned domestic violence in the same courthouse.

The good side to violence's being a learned behavior is that peaceful and nonviolent behavior can also be taught and learned, Jewell said. The nonviolence that was the essence of Martin Luther King's actions serves us all well, she said, and it begins at home.

Sandia President and Laboratory Director Paul Robinson preceded Jewell and told Sandians he was proud of their extraordinary record of giving in this year's Employee Contribution Plan campaign (see article on page 4). He said he was honored to appear at a ceremony in memory of Martin Luther King and King's efforts on behalf of brotherhood, justice, and equality. Paul also thanked the Sandia Quality Leadership Council for attending. Redd Eakin of Community Relations Program 12650 gave examples of specific Sandians' generosity in helping others in the community (*Lab News*, Dec. 20). The speakers were preceded by a vocal solo by David Cain (2111).

The noontime event was hosted by Sandia's Black Leadership and Outreach Committee.

## Satellite facility

(Continued from page 1)

and drug detection.

The one-year, \$500,000 agreement with NIJ will complement Sandia's work for DOE in research and development of security technologies. Over the past 20 years, Sandia has developed state-of-the-art physical security technologies for DOE, the Department of Defense, and various other federal agencies. In particular, Sandia has been involved in research and development, design, and implementation of detection, entry control, delay, and response technologies.

Sandia also brings to the table its explosives detection and bomb disablement expertise. Engineers in Contraband Detection Technologies Dept. 5848 are developing a walk-through explosives detection portal for the Federal Aviation Administration. In addition, Engineering Projects & Explosives Applications Dept. 9333 has hosted two advanced training programs, Operation Albuquerque 1 and 2, for select bomb squad personnel from local, state, and federal law enforcement agencies. Some of NIJ's funding for the Satellite Facility will be used to cosponsor Operation Albuquerque 3, to be held later this year. The Albuquerque Police Department has cohosted the Operation Albuquerque events.

"This is great news, not only for Sandia, but also for law enforcement," said Schiff, a supporter of using technology to increase public safety. "The Labs will be better able to use its vast techni-

cal expertise to assist law enforcement around the country, and the National Institute of Justice will be better able to assist state and local law enforcement in its efforts to fight crime in our communities." Schiff is Chair of the House Science Committee's Subcommittee on Basic Research and a member of the House Judiciary Committee, Subcommittee on Crime.

### Explosives-detection technology

One of the first tasks Sandia will tackle is an analysis of currently available explosive-detection technology and equipment. This will be done in partnership with the Rocky Mountain Regional Center, located at Denver University.

Since 1992, Sandia has evaluated three major criminal justice technologies for NIJ — sticky foam, aqueous foam, and a user-authorized safe gun. Sandia currently has a visiting scientist — George Wagner of Department 5861 — at NIJ in Washington on a year-long assignment to provide technical assistance and project management support on law enforcement technology evaluation.

Dennis Miyoshi, Director of Security Systems and Technology Center 5800, says the concept of a Satellite Facility to test technology for the criminal justice community grew in part from the examination Sandia did in late 1995 of the Quadro Tracker, a hand-held device claimed by its manufacturers to be able to detect "atomic emissions" from narcotics, explosives, and even stray pets and lost golf balls. The device was supposed to function akin to a divining rod and was being sold to unsuspecting law enforcement

agencies and schools nationwide.

This activity led to NIJ's interest in having Sandia available for quick-response testing of new devices being marketed to its customer base.

### Quick response to diverse claims

"With so many devices on the market these days that claim such a wide variety of successes, the law enforcement community realized a need to be able to quickly and efficiently test these technologies," says Debra Spencer (5861), program manager for the facility. "We are able to offer our expertise to help them do just that."

Under the new agreement, NIJ will be able to contact Sandia about reviewing a particular technology or new product and, within a few days or weeks, that technology or product will have been tested and evaluated.

Dennis says being a Satellite Facility will help the Labs support the needs of NIJ. "We'll be more a part of their team now," he says. "We'll be able to develop a clearer understanding of their needs through this partnership."

"Our function will be to validate existing technologies or new concepts, at the request of NIJ, and provide assurance that a product will work. I see this as a perfect role for a national laboratory, acting on behalf of the government."

Although the Security Systems and Technology Center will coordinate the NIJ projects, Dennis predicts that much of the work will be done in other parts of the Labs. Examples of this work include chemical analysis, explosives technology, and tracking and tagging capabilities.

— Kathy Kuhlmann

# Labs' atomic-level research wins two, shares one 1996 DOE Basic Energy Sciences awards

By John German

Lab News Staff

Sandia's prize materials research program has once again baked blue-ribbon entries in DOE's annual Basic Energy Sciences awards competition, taking home honors in three of nine categories for 1996 and extending its winning streak in the competition to 14 years.

The awards are conferred annually by DOE's Office of Basic Energy Sciences/Division of Materials Science (BES/MS). Each year, one award is given to a BES/MS-funded research program or project at a DOE institution in each of nine categories. Winning programs receive a cash award in the form of capital equipment funding.

Traditionally, Sandia research has fared well in the friendly competition among DOE labs, says George Samara (1152), BES/MS program manager. "With only about five percent of the BES/MS budget," he says, "Sandia has won 31 out of 147 awards since the competition began in 1981 and 14 out of 45 awards in the last five years." Two years ago, Sandia won five awards — the most ever by a single laboratory.

"These awards continue Sandia's tradition of excellence in the BES Materials Science Program," he said in a congratulatory letter to the Sandia award winners. "It is especially satisfying to note that our awards were determined by the votes of our competitors, the other DOE labs."

## The frontiers of materials science

This year's awards are for development of the atom-tracking scanning tunneling microscopy technique, production of nanoclusters for coal liquefaction and waste cleanup, and pioneering new approaches for modeling polymer blends (shared with Oak Ridge National Laboratory and the University of Illinois). Awards and recipients follow.

• *Outstanding Scientific Accomplishment in Solid State Physics:* "Development of Atom-Tracking Scanning Tunneling Microscopy for Direct Measurements of Surface Dynamics," Brian Swartzentruber (1114) — For several years, scientists have been able to observe atoms at rest on a crystalline lattice. Now Brian Swartzentruber of Surface and Interface Science Dept. 1114 can watch an atom

*"Sandia has won 31 out of 147 awards since the competition began in 1981 and 14 out of 45 awards in the last five years."*



**ATOM TRACKER** — Brian Swartzentruber (1114) watches atoms move using the scanning tunneling microscope he modified to track individual atoms in rapid motion. (Photo by Mark Poulsen)

as it hops about its business by programming the needlelike sensor of a scanning tunneling microscope (STM) to ride the atom's high point. (*Lab News*, Sept. 29, 1995)

Brian's electronic technique uses lateral feedback from a surface's atomic topography to supplement the vertical feedback ordinarily provided by a scanning tunneling microscope. That information helps the perched sensor lock onto and track an individual atom as it jumps from surface location to location. Because the atom tracker continually monitors an atom's position instead of scanning an entire surface region, the new approach is more than a thousand times faster than traditional STM imaging.

The technique is helping scientists understand atoms' travels at different temperatures as well as their ultimate incorporation into surfaces, key to making smaller, faster electronic structures. It may also allow them to watch corrosion and crystal growth one atom at a time.

• *Significant Implications for Department of Energy Related Technologies in Materials Chemistry:* "Nanoclusters for Energy Applications," Jess Wilcoxon, Paula Newcomer, David Bliss (all 1152),

Anthony Martino (6211), and George Samara — Producing liquid fuels from coal and reducing pollutants into harmless chemical constituents, two high-priority DOE projects, have been hindered by lack of inexpensive, environmentally benign catalysts (chemicals that make reactions among other chemicals faster and more efficient). A new Sandia process, called inverse micellar synthesis (*Lab News*, Oct. 29, 1993), may allow such catalysts to be produced inexpensively and in large quantities from a relatively new family of materials called

nanoclusters, tiny chunks of matter that range in size from a few dozen to a few hundred atoms or molecules.

Nanoclusters make good catalysts because their atomic structures have lots of surface area for chemical reactions to occur, their imperfect surfaces provide an abundance of "nonclassical" bonding sites, and their chemical and physical properties can be tailored for a variety of applications by subtly altering the sizes and chemical constituencies of the atomic bundles.

Using its patented synthesis process by which the clusters are grown inside molecular cages suspended in oil, Sandia team members produced nanoclusters from a variety of common metal and semiconductor materials. By tuning the materials' sizes and atomic makeups, they were able to create photocatalytic nanoclusters that energize chemical reactions when subjected to sunlight, a breakthrough that may lead to enhanced detoxification of organic wastes using solar energy. They also created inexpensive, environment-friendly nanoclusters that significantly enhance the production of liquid hydrocarbons from coal powders.

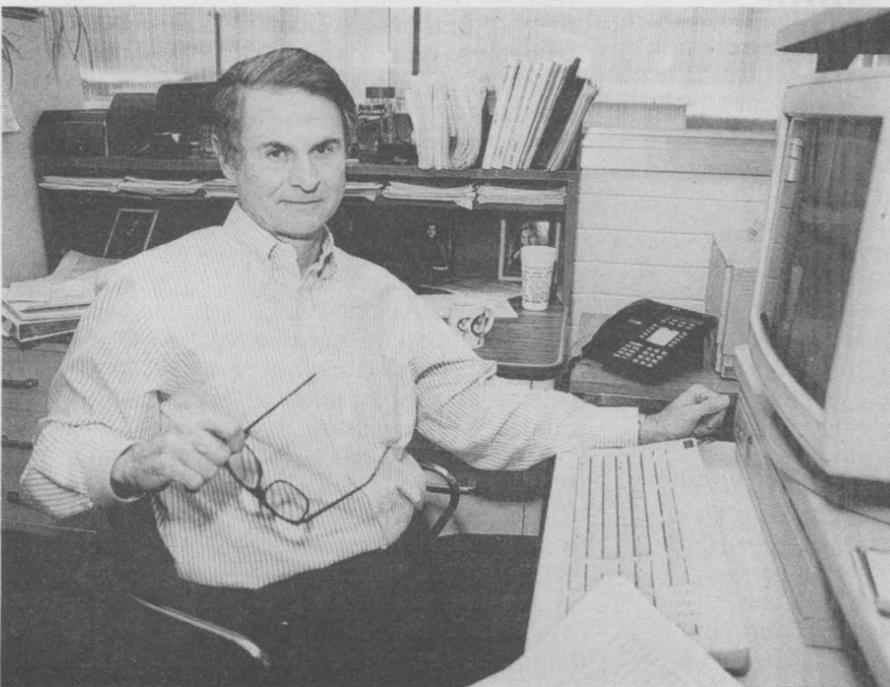
• *Outstanding Scientific Accomplishment in Materials Chemistry:* "Blends of Macromolecules with Nanophase Separation," John Curro (1870), Kenneth Schweizer (University of Illinois, former Sandian), and George Wignall, David Londono, Brian Annis, and Tony Habenschuss (all Oak Ridge National Laboratory) — Like oil and water, different types of polymers (as plastics are technically called) don't usually get along; when polymers are melted and mixed together, they tend to separate into two or more different parts, or phases. That's why recycled plastics are sorted before being melted down and cast into new products; a product made from a mixture of polymers typically has poor mechanical properties owing to weak adhesion between the parts that don't mix.

Polymers are made up of innumerable long-chain molecules each consisting of thousands of repeating units, something like strands of spaghetti in a bowl. The ability of these molecular strands to "pack," or fit together efficiently, in their molten state depends on their molecular shape, flexibility, degree of branching, and other architectural features. In the past, polymer chemists have sought to develop, largely on a trial-and-error basis, new alloys made from compatible polymers to obtain certain desirable physical properties not present in either pure component. Such alloys have been useful in making improved products such as rubber tires and telephone housings, as well as new materials for use in weapon components.

In 1992, Sandia and Oak Ridge set out to understand why some polymers mix well and why others don't using a combined theoretical/experimental approach. Employing X-ray and neutron scattering techniques, the Oak Ridge team characterized the structure, packing efficiency, thermodynamics, and phase behavior of different polymer alloys and melts. This information helped the Sandia team (John Curro and Kenneth Schweizer, now a professor of materials science at the University of Illinois) develop a theoretical approach to polymer compatibility, called the Polymer Reference Interaction Site Model (PRISM). A computer code based on the model is now being used to predict the compatibility of certain types of polymer blends before they are actually created in a laboratory. Sandia's theoretical model was the subject of a 1992 R&D 100 award and a cooperative research and development agreement with BIOSYM Technologies.

Other DOE-funded institutions winning 1996 BES awards include Oak Ridge (won two awards plus the one shared with Sandia), Ames Laboratory (one award), Idaho National Engineering Laboratory (one award), Lawrence Berkeley National Laboratory (one award), and the University of Illinois (one award plus the award shared with Sandia).

The Sandia winners were honored in a Dec. 12 ceremony.



**POLYMER MODELING** — John Curro (1870) was one member of a Sandia/Oak Ridge National Laboratory team that has developed an improved understanding of polymer compatibility using a combined theoretical/experimental approach.

# Sandia and the nation's universities: A coordinated partnership effort is launched

**Sandia finds it provides \$57 million a year in university support**

By Kathy Kuhlmann

Media and Employee Communications Dept. 12640

For the past year and a half, Mary Ann Zanner, Manager of University Collaborations Office 4526, has been seeking an answer. Analyzing, crunching, merging, and deciphering data accumulated from several sources gave her one: \$57 million. The question: How much financial support did Sandia provide to US universities in FY95?

"An accurate university investment amount had never before been calculated," says Mary Ann. "This research has historically been arranged at the line level with no central data-gathering point. I think we were all surprised — pleasantly — at what this represents." (FY95 data was the most current information available when this project began.)

The timing for bringing together all this information couldn't be better, says Mary Ann. "University collaborations have been raised to a strategic level this year in the new strategic plan. The corporate goal calls for integrated research, recruiting, and outreach with universities."

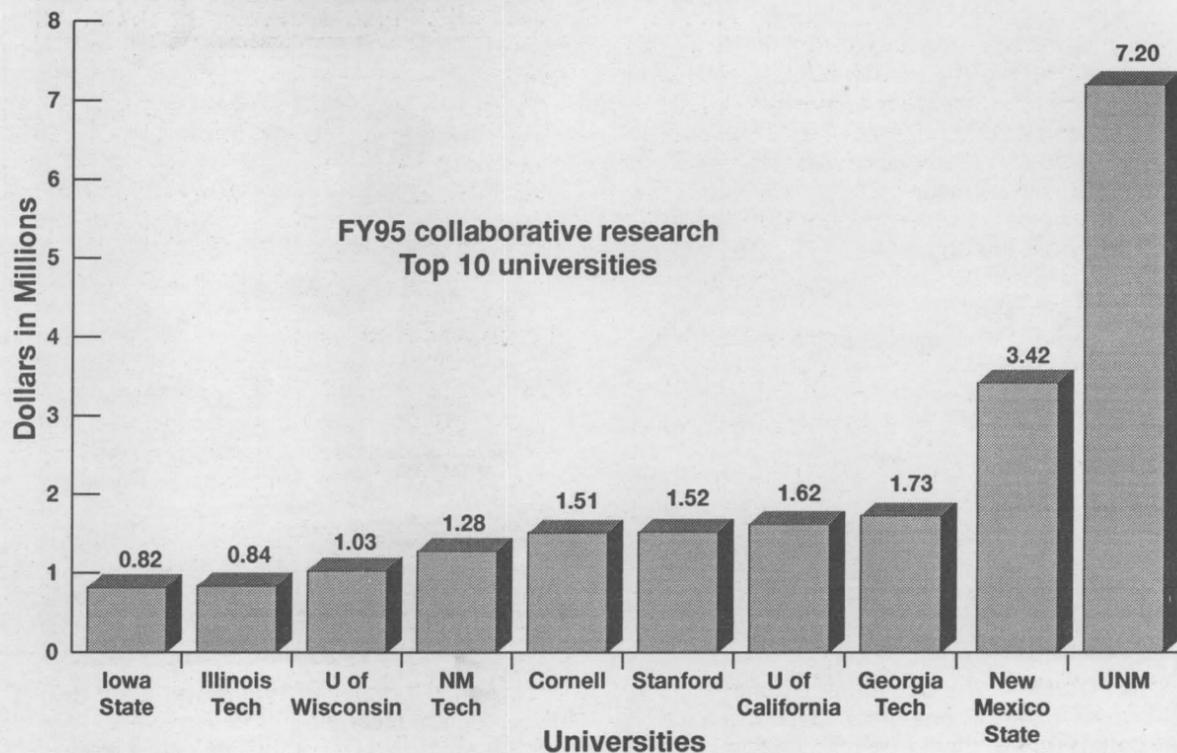
The University Collaborations Office was created to strategically align research opportunities within Sandia with work at universities. Bert Westwood, retired Sandia VP of Research, was the initial champion of this project; VP of Laboratory Development Dan Hartley (4000) has now taken the baton.

"Our goal," says Dan, "is to maximize the work we currently have with universities and capitalize on future partnerships. We're realizing that we can't go it alone any longer. We need to reach out and obtain basic science through collaborating with these sources of expertise."

"We have identified four areas of university interactions — minority programs, research, regional universities, and recruiting," he adds. "The function of the University Collaborations Office is to integrate and coordinate all these facets. Teaming with these various departments will be a major factor for success. For example, Sandia now has researchers and recruiters going to the same universities. Why not tap the researcher to help Sandia with recruiting during campus visits?"

Another key component of the university partnership initiative is the Campus Executive Program, Dan says. "We're in the process of developing the program now, but it basically calls for

*"We're realizing that we can't go it alone any longer. We need to reach out and obtain basic science through collaborating with these sources of expertise."*



pairing each Sandia VP with specific universities to serve as high-level points of contact with those schools. These VPs will visit the universities — there are about 16 of them currently — a couple of times a year and will be kept up-to-date about our interactions with the schools by the University Collaborations Office. The idea behind campus executives is to improve relationships, seek greater opportunities for strategic partnering, and develop constituencies with these key universities."

To improve the way business with universities is done at Sandia, Mary Ann's office will serve as a resource for data regarding university interactions and will aid in the coordination and facilitation of these interactions. "One goal is to better leverage money across the Labs for work at the same universities," explains Mary Ann. "A long-term goal is to strategically align emerging research niches at universities with Sandia's research interests and bring lesser-known schools to a higher level through collaborations with Sandia and use of our facilities."

The \$57 million from FY95 includes research and nonresearch contracts with universities, minority education outreach activities, on-site student programs, postdocs and faculty, and user facility-related support. Twenty-five percent of the funding is from DOE Defense Programs budgets.

According to Mary Ann, the figure that really got folks to sit up and take notice was the \$34 million Sandia spent that year on university research alone.

## 523 projects at 105 universities

Sandia has long relied on obtaining both leading-edge and basic science from universities through collaborative research contracts. FY95

data show that the majority of this work (\$15.5 million) was in the area of engineering sciences, which includes geosciences and solar research in addition to simulations, modeling, and fluid dynamics. The other top collaborations were in engineered materials and processes, computer and information sciences, and microelectronics and photonics.

During FY95, Sandia researchers

collaborated with 105 universities on 523 different projects. Not surprisingly, New Mexico and California universities topped the list of these projects. The top five universities were the University of New Mexico, New Mexico State, Georgia Tech, University of California, and Stanford. Laboratory Directed Research & Development (LDRD) research contracts amounted to \$2.5 million for 84 collaborations with 30 universities. The total amount invested in work with New Mexico universities was almost \$12 million; California universities received \$3.2 million.

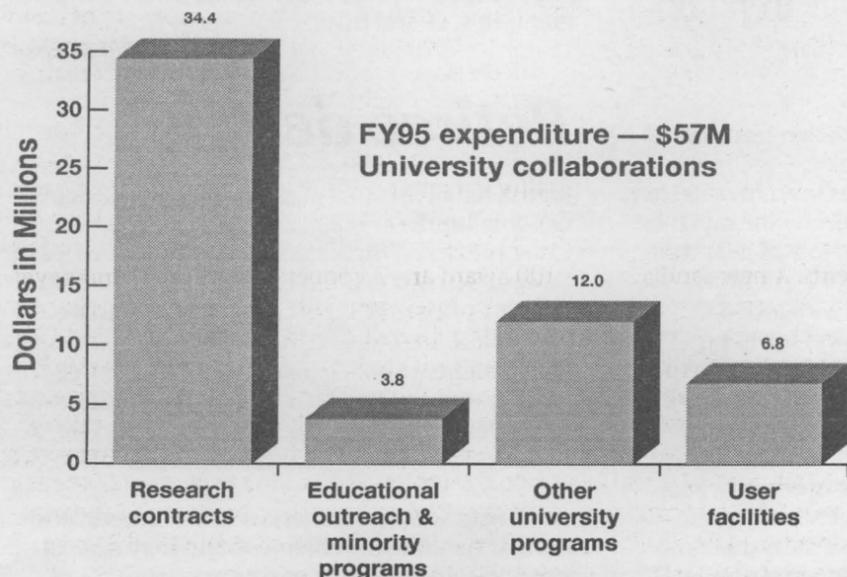
Mary Ann says that one of the first questions asked after all this information was compiled was, "Are the contracts we have with these universities taking advantage of the research strengths of the schools?" According to Mary Ann, "National survey data indicate that we are working with the top schools in the country in their areas of expertise. Our tradition of doing 'bottoms-up' business with universities has shown us that Sandia directors and those on the line apparently know just where those niches of expertise are and are going after them. The work we're doing with universities also complements the Labs' research foundations."

Mary Ann reviewed (manually) university contracts, procurement and financial databases, user facility records, and LDRD expenditures from FY95 to arrive at the numbers. With support from Chuck Meyers (4523) and the LDRD office, a four-dimensional database with online input from procurement and finance is scheduled to be up and running early in the year to simplify reference and tracking. Mary Ann credits Dick Baird (10204) with helping make this database a reality. Julie McBride (10230) also worked with Mary Ann to condense myriad individual research contracts into single umbrella contracts with universities, which decreased processing time and costs.

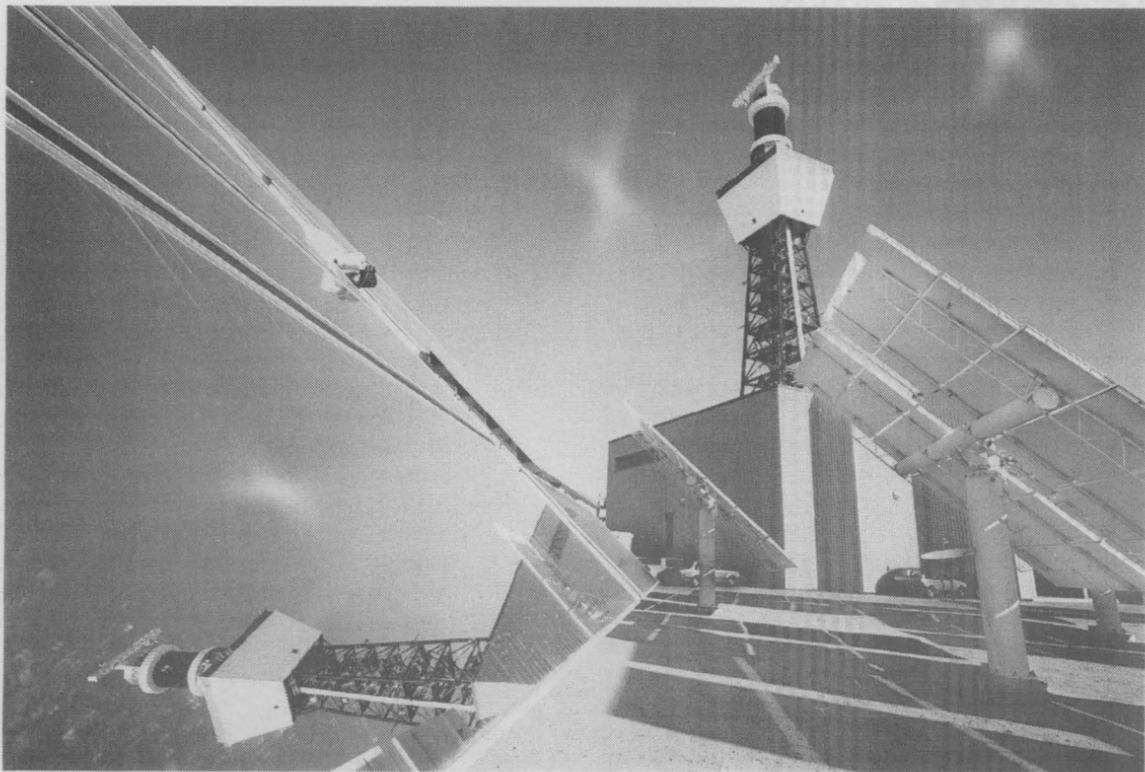
## Sandia leads the weapons labs

Although FY96 data are still being evaluated, it looks like university research expenditures will be more than \$35 million for that year, compared to \$34 million for FY95. Sandia leads the three national weapons laboratories in university expenditures.

Vic Reis, DOE Assistant Secretary for Defense Programs, has introduced a DP university initiative within DOE. The goals include increasing the involvement of academia in carrying out DOE's national security mission and striving to make DP laboratories more attractive as collaborators and more available to universities. Sandia is actively involved in plans for a DP laboratory-university workshop to be held sometime in FY97 to firmly establish this DOE initiative.



## Popular Science cites Sandia's solar work



**SUN POWER** — The December issue of *Popular Science* recognized the Solar Two power plant near Barstow, Calif., as one of its "Best of What's New" environmental technologies. Solar Two's 1,926 heliostats (one of them here reflecting an image of the plant's power tower) focus sunlight onto a receiver near the top of the tower. The receiver is filled with a molten salt mixture that collects and stores enough thermal energy to drive a steam turbine that produces electricity sufficient to power 10,000 homes (*Lab News*, June 21, 1996). The project is sponsored by a consortium of 10 organizations led by Southern California Edison Company in partnership with DOE. Sandia engineers played a key role in developing the Solar Two technology. Sandia led the technical advisory committee that oversaw all technical aspects of the project; transferred Sandia-developed molten-salt technology to the project; and supported the design, construction, and startup of the plant. (Photo by Randy Montoya)

## Feedback

**Q:** I recently received a traffic violation for parking south of the Technology Transfer Center (Bldg. 825). At that time, I noticed that approximately only half of the cars parked in this location were ticketed. Is it standard practice to ticket only some of the cars that are in violation? Because my department resides offsite, the parking area south of the TTC has been used while attending meetings at the TTC. Would it be possible to designate some parking spaces for offsite residents or to redesignate the TTC parking lot to accommodate employees attending meetings at the TTC?

**A:** Thanks for your recent inquiry regarding the issuance of parking tickets. Vehicles that are in violation of parking regulations are not randomly selected for ticketing. When we perform a parking lot patrol, we try to ensure that we ticket all vehicles that are not properly parked. In your situation there may have been several reasons why you and not the other vehicles in the same area received a ticket. It may have been due to the length of time you were parked or it might have been that you had a Sandia decal and the other vehicles did not. If you have a Sandia decal, you are not considered a visitor even though you might reside offsite. Regarding your question about whether or not some of the slots in the TTC parking area could be redesignated for offsite residents, I will pass this feedback response to the center representative on the Traffic Safety Committee for discussion. There may be a way to regulate this type of parking with a special pass for use by our offsite employees. Again, thanks for your inquiry. This type of communication allows us to review our operation and help maintain an excellent level of customer service.

— Frank Gallegos (7400)

## Student intern says Sandia experience 'invaluable' in preparing her for real-world engineering design

### Meeko Oishi and engineering design team colleagues win trip to Bangkok

A Sandia summer student intern and her engineering design team at Princeton University have won an expense-paid trip to Bangkok — and the student credits much of her effectiveness as a team member to skills she learned at Sandia.



MEEKO OISHI

Oishi, is a Senior Member of the Technical Staff in Advanced Systems Development Dept. 2161.

In an e-mail note to Arthurine, Meeko says she and her Princeton classmates were asked to develop a hairdryer model as an engineering class project. (The engineering professor is a consultant for Manica, Inc., an East Asian hairdryer manufacturer.) The classes involved were organized into seven teams of four or five students each.

Meeko says the teams' charge was to design a new hairdryer — one that would be both quieter and more powerful than units currently on the market.

"One of my main tasks," Meeko says, "was to build a model of the hairdryer on Pro/Engineering [an engineering CAD program for UNIX workstations]. My group used the Pro/E files to manufacture a working prototype."

Meeko says the CEO of Manica, one of his chief engineers, and the CEO of a California firm served as judges; after reviewing the submissions, they selected her team's design as the winning entry.

"We had a design that was radically different from everyone else's in the class; the main difference was that our hairdryer had two fans, not just

one like all the rest on the market today. Manica seems to like it."

Meeko's father, Kaz, amplifies the description offered by Meeko. His daughter's team's design, he says, incorporated not just two fans, but aerodynamically designed counter-rotating fans, conceptually similar to designs used in jet aircraft to minimize noise and increase efficiency.

Manica was impressed enough with the winning design to offer the entire team (four students, a teaching assistant, and the professor) a 10-day trip to Thailand, where the company maintains manufacturing facilities. Meeko says she is excited about her upcoming trip. "I haven't been out of the country, except once when I was three, to Juarez."

Meeko says her internship at Sandia has played an instrumental role in her success at Princeton — she's a near-4.0 student this semester — and contributed significantly to her engineering design team's success in the hairdryer competition.

"My experience at Sandia has been invaluable in helping with this [design] project," she says. "I already knew Pro/E and could do lots of neat stuff with it, while everyone else had to learn from scratch. Also, just being familiar with a UNIX workstation was a major asset; I was really surprised that most of my classmates didn't have the first idea of where to start [in using a UNIX box]."

Meeko says she even had an advantage in knowing how to present her work to the judges. "I knew what to do as far as making overheads, etc., for our presentation to the CEOs," she says.

"This whole project really made me realize how much I'd learned while working for you [Arthurine]."

*"This whole project really made me realize how much I'd learned while working for you."*

Arthurine, for her part, says Meeko is "a great person" who as an intern has "always delivered everything we've asked for and more."

Arthurine gives Meeko especially high marks for her contributions to Sandia's www-proxy server.

"During her first summer with us," Arthurine says, "she worked on the www-proxy server that is instrumental in all of Sandia's business now. We wouldn't be where we are now [with the server], I think, if she hadn't started this project and made so much progress during the three months she was here."

Meeko, an Albuquerque Academy graduate and National Merit finalist in high school, may intern at Sandia for one more summer — she has applied for another internship at the Labs, and Arthurine says she is looking forward to mentoring Meeko again.

In addition to her engineering studies, Meeko was a certified ski instructor and is a member of Princeton's nationally ranked women's ski club team. An accomplished pianist, she is the recipient of a Bennett Pastor Keyboard Award. She programs in C++ and html.

— Bill Murphy

## Retiree deaths

Juan Abeita (65)	.....0324.....	Sept. 2
Gordon Smith (87)	.....7611.....	Nov. 10
Craig Hudson (78)	.....1150.....	Dec. 2
Edward Bernard (81)	.....3430.....	Dec. 5
Robert Culley (86)	.....7511.....	Dec. 11
Lester Sandlin (65)	.....2664.....	Dec. 12
Juan Sanchez (84)	.....4614.....	Dec. 18
Earl Craven (88)	.....4543.....	Dec. 21
Adelia Littleton (81)	.....0132.....	Dec. 26
Norman Renaud (77)	.....8213.....	Dec. 30

Organization numbers indicate retirees' positions at the time of retirement and may not correspond to present-day organizations.

# Chart your course with Sandia's CTD fleet

## An armada of education and training services

By Janet Carpenter

Lab News Staff

Training and education opportunities are spread all over Sandia's "sea" of organizations and departments. Although they are in separate organizations, they've now joined forces to form a fleet of education and training courses needed by employees and departments in Sandia's dynamic environment.

"We started this project in October 1995," says Charline Seyfer, Manager of Programs Operations Office Dept. 3525. "There are teams all over the Labs — weapons, leadership development, financial, Web training, procurement, etc. — and we wanted to partner with them early on and help them with their training products."

When employees need training, they often don't know who provides it or where to obtain specialized training. The goal of the project was to make it easier for employees to locate the many

courses available at Sandia and to pull together the various organizations offering training.

### Something in common

Corporate Training and Development departments provide a common look and feel for courses sponsored by Sandia. They help organizations focus performance improvement efforts, plan and develop courses, administer degree-related programs, and set up registration procedures.

Most courses at Sandia, including financial, procurement, technical, science, engineering, professional communications, interpersonal skills, information systems, leadership, management, project management, Web technologies, information systems, quality, etc., use the Corporate Training and Development registration process.

A one-stop Web page with links to various organizations offering training will soon be available. A new registration system, TEDS (Training Education and Development System), has been developed, with most registration going through the Corporate Training and Development registrar.

Corporate Training and Development includes Technical and Compliance Training Dept. 3524, managed by Belinda Holley; Programs Operations Office 3525 and Business and

Leadership Development Dept. 3526, both managed by Charline Seyfer; and Diversity and Development Dept. 8526, managed by Carol Crown. These departments are the foundation of this "virtual training company."

### Defining corporate training

"Corporate Training and Development is responsible for the broader aspects of education and training at Sandia," says Charline. "We have partnerships with other organizations that provide the subject-matter experts. We capitalize on the strengths of both the individual organizations and CTD to provide training and subject expertise to the line organizations."

Centers 10400 and 10500 provide the team members for the Sandia Business School's Financial Branch. "There are organizational boundaries," says SBS project leader Carol Christensen. "We are connected to Corporate Training and Development by a common process but we are a separate project."

Sandia's Training Services page on the Internal Web offers training information about a full complement of training services and products, along with the course index, CTD registration form, and "What's New" in corporate training.

## New ES&H courses add fun, humor to training

If you have bemoaned sitting in an auditorium with scores of other employees for three hours to receive credit for the annually administered, all-employee, corporate-required ES&H courses, you might be interested in a new, shorter way to take this required training: Web, video, and voicemail training modules are now incorporating fun and humor into the mandatory material.

"In the past, it has been administratively easier for an organization to gather all its employees in an auditorium at the same time for all mandatory courses than to figure out who individually needs what and when," says Elsa Glassman (3524), Integrated All-Employee ES&H training project leader. "However, this delivery system was ineffective, time-consuming, and costly."

### Easy access to critical ES&H information

To address this problem, a team consisting of an instructional designer/project leader from Corporate Training and Development, a subject-matter expert from each major topic, and representatives from those who deliver and manage the training came together in July 1995 to integrate all-employee ES&H training at Sandia. Team goals were to significantly reduce ES&H training delivery time and cost, to increase its efficiency and effectiveness, and to provide more convenient access to the most critical ES&H information all employees must have.

The project included course development, video production, Web, voicemail, and new-hire training teams. Information from five required courses — "ES&H Rights," "Fire Extinguisher Awareness," "General Employee Radiological Training," "Lockout/Tagout Awareness," and "General Employee Emergency Response Awareness Training" ("Emergency Preparedness General Awareness Training" in California) — were combined into one course called "Environment Safety and Health Awareness Training" (ESH100). Mandatory ES&H training is now available multiple ways — on Sandia's Web, on video accompanied by a student guide for new hires, and testout opportunities on the Web or through voicemail.

### Cows in sunglasses

Perhaps, in some distant future, our descendants will work on a space station. For now, however, we can get a taste of science fiction adventure (strange as it is) while reading and answering questions about Environment, Safety, and Health (ES&H) on Sandia's Web.

On the Web, you can choose between two forms of the course material, "StarTech" or "Just

the Facts."

"StarTech" features science fiction and humor. It's an adventure story starring you as a captain in the StarTech Federation. You are assigned to address ES&H concerns aboard the Sandia Space Lab. The cast of characters include Ambassador Robinson, mad scientist Dr. Arrogonzo and his chief assistant Wretchley (dissolved into a blue puddle by Dr. Arrogonzo), Ensign Checkmate, Clickons (cows in sunglasses), Lt. Techmate, and site fire marshal Blob Dillon.

"Just the Facts" is straightforward material presented on a yellow notebook paper background.

Both versions contain multiple-choice questions. You receive immediate feedback about whether you answered questions correctly or incorrectly. To receive course credit, you need to answer every question. Both versions cover the same material and take approximately 30 minutes to complete.

"More than 1,000 students have taken the course online," says Rich Graham (9781), Web team project leader. "People have found it convenient, easy, and quick."

If you feel you know the material, "Testout: The Challenge!" asks 20 questions and requires that you answer 80 percent of them correctly and complete the testout in one sitting lasting

approximately 15 minutes. This option is also available through Sandia voicemail at 844-3724 (844-ESAH).

ESH100 training is available both on the Internal and External networks. The IRN address is <http://www-irn.sandia.gov/cgi-bin/esh.cgi>. The EON address is <http://www.sandia.gov/cgi-bin/esh.cgi>.

ESH100 primary project team members included Elsa Glassman (3524), David Abrahams (8804), Allison Davis (4541), Peter Feng (7933), David Furgal (7526), Nathan Golden (7001), Jodi McAllaster (3524), Elizabeth Scott-Patterson (5001), Barry Schwartz (7500), Brian Thomson (7514), William Vonderheide (7523), and Paul Yourick (7524). Support team members included Judy Davenport (2411), Bob Fisher (1800), Richard Graham (9781), Judy Hubbard (12614), Carla Lamb (7846), James Lloyd (12614), Al Lujan (12614), Bill Norton (5807), Sharon Ortiz (3535), Anh Nguyen (3525), Kelly Peters (7511), Patty Padilla (3524), Laura Ring (12323), Don Robbins (9782), Mark Semonick (7524), Dan Sessions (4817), Gary Shepherd (4911), Kim Sheppard (8814), David Sparks (12614), Betty Straba (4911), Alvina Tenorio (3525), Elaine Valdez (4911), Dirk Vanwestrienen (4911), and Jeff White (4817).

— Janet Carpenter

## Take Note

KNME-TV, Channel 5, will celebrate Black History Month with the following special programming in February: "An Evening with Lena Horne," Feb. 1, 7 p.m.; "Great Performances: Robert Altman's Jazz '34," Feb. 1, 8 p.m.; "Shattering the Silences," a look at the success and distress of seven minority scholars in the humanities and social sciences at universities across the US, Feb. 4, 8 p.m.; "Reality of a Dreamer, River North Dance Company," documentary featuring Chicago's jazz dance troupe, Feb. 5, 8:30 p.m.; "Great Performances: The Story of Gospel Music," Feb. 8, 7 p.m.; "Rainbow Recognition: In the Life Celebrates Cultural Diversity," Feb. 8; 9:30 p.m.; "Gandy Dancers," musical traditions and verbal recollections of eight retired railroad track laborers whose occupational folk music was once heard along the railroad tracks that crisscross the South, Feb. 18, 9:30 p.m.; "W.E.B. Du Bois: A Biography in Four Voices," four contemporary scholars present the life of the great scholar and political activist, Feb. 22, 7 p.m.; "Black America: Facing the Millennium," three prominent analysts critique the state of Black America on the eve

of the 21st century, Feb. 25, 9 p.m.; and "Colores: Blackdom," local KNME production of the virtually untold story of Black pioneers Frank and Ella Boyer's dream to create a "colony" for Black people in the prairie of southeastern New Mexico, Feb. 26, 8 p.m. (repeated March 1, 6:30 p.m.).

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Retiring and not seen in *Lab News* pictures: Sandra Hudson (5907), 29 years; Elisa Monnet (7618), 20 years; Frank Raymond (9331), 30 years; Gladys Rowe (5951), 30 years; Grace Sheldon (7000), 17 years; Keith Treece (1277), 45 years; Irene Valdez (10224), 20 years; and Bernie Vallejos (2101), 35 years.

## Congratulations

To Pam and Brad (14302) Elkin, a daughter, Abigail Rochelle, Dec. 6.

To Cindy (12670) and Louis (9364) Restrepo, a daughter, Rebecca Emily, Jan. 12.

# Mileposts

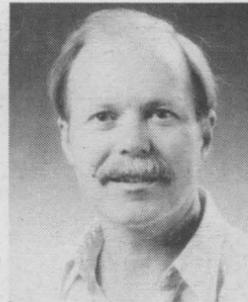
## January 1997



Stan Roeske  
35 9352



Channy Wong  
15 9114



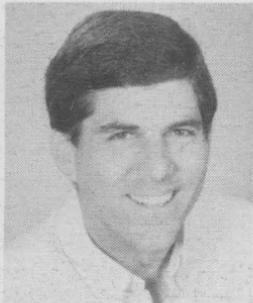
Steven Wright  
20 9363



Bernice Mills  
20 8713



Pro Padilla  
30 7600



Ken Black  
15 8417



David Like  
15 2663



Edward Scussel  
25 5722



Greg Evans  
15 8345



Ralph Goekler  
25 5703



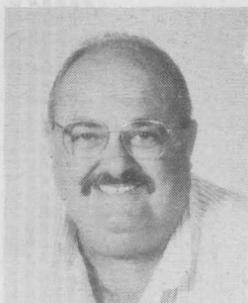
Lalit Chhabildas  
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Gerald Knorovsky  
20 1833



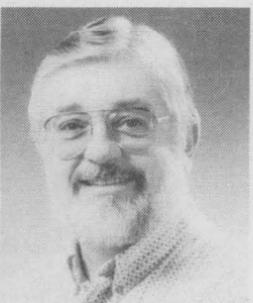
Carole Price  
15 8815



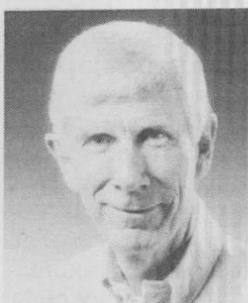
Dan Moniz  
20 8240



Paul Gallegos  
30 15102



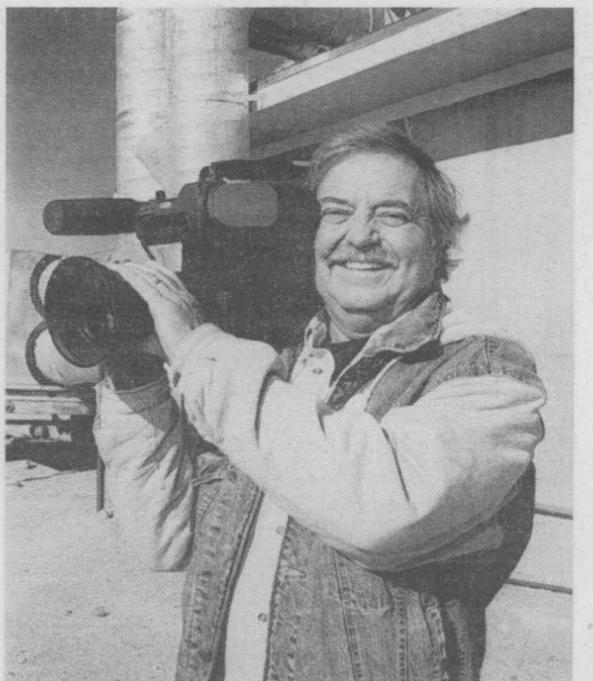
Ray MacAllister  
15 14713



James Henderson  
20 12335



Richard Granfield  
20 6512



George Skinner  
35 12610

## Sandia Web Watch: Facilities open to private sector listed on External Web



Private US companies, universities, and other labs that may be interested in working at Sandia on joint R&D projects of mutual interest can find out what facilities are open to them, what equipment is available, and who to contact for more information by checking Sandia's External Web site.

Interested researchers and groups can access Sandia's "User Facilities" Web page directly at [http://giss.tt.sandia.gov/Facilities/facilities\\_list.htm](http://giss.tt.sandia.gov/Facilities/facilities_list.htm) or by going first to Sandia's External Web home page at <http://sandia.gov>, clicking on the Research & Technology icon, and then clicking on the User Facilities link near the bottom of the page.

Many of Sandia's unique research facilities have been opened for use by the Labs' industrial and academic partners in recent years. The User Facility designation helps streamline the partnering process. Once a statement of work has been

negotiated by the partner and Sandia facility owner, a final agreement is typically in place within a few weeks.

The User Facilities page shows 25 separate facilities, some at Sandia/New Mexico and some at Sandia/California. Facility descriptions provide details on areas for potential partnerships. A small sampling includes the Combustion Research Facility, Electronics Quality/Reliability Center, Explosive Components Facility, Manufacturing Technologies Center, National Solar Thermal Test Facility, and the Primary Standards Laboratory.

Anyone needing general information about Sandia's User Facilities can contact Gary Jones (4232) by e-mail ([gjjones@sandia.gov](mailto:gjjones@sandia.gov)) or by phone at 505-843-4206.

("Sandia Web Watch" is a *Lab News* series featuring news and developments about Sandia's Web sites.)  
— Larry Perrine

## Around the corporation **LOCKHEED MARTIN**

### M4 gets new president; restructuring options studied

Retired Navy admiral Millard Firebaugh, who joined M4 Environmental six months ago as technical director, has been named president of the limited partnership formed in 1994 by Lockheed Martin and Molten Metal Technology to use extraction technologies developed by Molten Metal for recycling hazardous and radioactive wastes. Officials at both parent companies said the leadership change is part of a plan to restructure the organization by April 1 to reduce redundancies and increase operational efficiencies. Jerry Langheim, vice president of communications for Lockheed Martin's Energy & Environment Sector, said the key concern is redundancies but that "all options are open for review."

## Feedback

**Q:** I have noticed that many of the new badges we got last summer seem to be fading and crazing badly, some to the point where they are barely recognizable. Was it a bad batch of film? Are any steps going to be taken to remedy this?

**A:** Thank you for your concern regarding the DOE standard badge fading and crazing problems. The technology Sandia uses to produce the standard badge is new and, as with most technologies, there are a few "bugs" to resolve. The process by which color, image, and lettering are printed is a direct print-to-plastic method using heat-activated dye sublimation. Although the printing is embedded in the plastic, the surface of the badge is open to contact and with day-to-day use can be damaged. After beginning our 1996 badge reissue last March, it was noticed that the badges were more susceptible to scratching and fading than we wanted. Daily wear would eventually cause the top surface to fade and distort the image. The automated badge readers were primarily responsible for the scratching. Working with the supplier, we corrected the problem by obtaining a higher grade color ribbon. The new ribbon produces a tougher badge that is more wear-resistant and decreases fading and crazing to an acceptable level. Badges issued using the new process are holding images a great deal better. In addition, the new process has proven more resistant to the scratching problems. We encourage anyone with a distorted badge to visit the Badge Office and have their badge replaced using the improved process.

— Frank Gallegos (7400)

# Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads

## MISCELLANEOUS

OVAL OAK TABLE, w/2 leaves, 3 chairs, \$100 for all OBO. Blackburn, 821-8931.

MICROSOFT WORD 6.0, Powerpoint 4.0, Excel 5.0, \$100 ea.; prior versions for less. Everts, 822-1767.

SLANT 6 ENGINE, \$100; 904 transmission, need to sell, \$100; Chrysler SB headers, \$25. Bordlemy, 883-4926.

COMPUTER MONITOR, SVGA, 14-in., 1024 x 768 resolution, Packard Bell, like new, \$175 OBO. Hulett, 255-8961.

KITCHEN CABINETS, w/cast-iron sink & counter tops, all very good condition, free, you haul. Lindsey, 858-0683.

ELECTRIC STOVE, retro-style, reliable performer, '50s-era Electrohost, free to good home. Parrott, 255-3614.

SHARP COLOR TV, 19-in., \$50; Art-Stan Berning abstract, framed, valued at \$900, asking \$500; framed Van Gogh poster (nice), \$25. Cassidy, 836-8661.

TV, 60-in. RCA ProScan, excellent condition & many features, \$2,400. Rivera, 831-2909.

DRUMS, 5-piece Premier, like new, all hardware, plus Zildjian ride cymbal, \$1,200. Kottenstette, 822-5036.

TWO TWIN-BED FRAMES, \$15 ea.; matching Club chairs, green, \$75 ea. Traeger, 294-2564.

RANCH MINK, knee-length coat, size 16/18, \$250. Robbins, 823-2492.

UPRIGHT FREEZER, Montgomery Ward, 15 cu. ft., \$75. Osburn, 298-0354.

THREE CABINETS/WALL UNITS, 7-ft., black lacquer, lighted, glass doors, paid \$1,200+, asking \$125 ea. OBO. Hammond, 892-2193.

FURNITURE: queen-size futon couch/bed, children's bedroom set (white), brown recliner, antique chairs; all great condition. Spring, 281-5688.

RANGE, 36-in., outside-vented range hood, w/2-spd. fan & light, harvest gold, excellent condition. Barts, 293-5347 or 298-4741.

REFRIGERATOR, Whirlpool, 19 cu. ft., white, top freezer, good condition, \$110. Stoever, 296-3717.

HARD DISKS, (2) IDE 1.2GB drives, 3.5"x1", WD Caviar & Conner, \$100 ea. Ennis, 836-0504.

TIRE CHAINS, 1 pair easy-on/off, fits most car tires, sizes P205/60R-13 thru P195/50R-15, never used, \$35. Foutz, 281-6442.

HOME EXERCISE MACHINE, includes stair stepper, bench press, leg extensions, excellent condition, \$250. Davis, 828-1931.

BLACK FOLDING CHAIRS; set of 4; ironing board, w/cover; free-standing brass towel rack. Kesti, 821-9208.

MICROWAVE OVEN, Sharp Carousel, w/interactive cooking system, 1 yr. old, \$75. Potts, 292-5697.

LEATHER MOTORCYCLE JACKET, size 40 medium, black, padded, road racing-style, excellent condition, \$125. Dobbs, 899-1665.

SNOW BLOWER, 8-hp, electric start, rubber tracks, Sears' biggest & best, like new. Doyle, 299-9455.

FOUR WHEELS, 15x8, "American Racing," 5-star polished wheels, w/60 series tires, \$450; code alarm system, w/automatic lock, \$75. Aguilar, 238-0567.

TREADMILL, Sears Lifestyler 10.0, 0-8-mph, 16x55 belt, 1.5-hp, 2-1/2 yrs. old, electric incline, 6-mode indicators, pulse monitor, \$220. Hall, 299-0009.

CORNER ENTERTAINMENT CENTER, w/doors, walnut finish, will accommodate large TV & VCR plus tapes, \$115. Schkade, 292-5126.

MOVING SALE: Feb. 1, dining room table & chairs, photo/art equipment, exercise bike, much more. Neal, 299-4956.

PINBALL BY WILLIAMS, "Fire Power," works great, has all accessories, recreation room must, \$525. Dybwad, 296-9047.

FLIP CELLULAR PHONE, Motorola, 2 extended-life batteries, belt case, charger, used 1 month, \$250. Barlow, 1-505-820-6845.

EPSON LASER PRINTER, w/new toner, \$275; 14-in. non-interlaced color monitor, \$150; home weight-lifting equipment, kid's skiing equipment. Gonzales, 299-3491.

SOFA, 82-in., off-white, made by Henredon, excellent condition, \$375. Radigan, 821-0723.

FRENCH PROVINCIAL COUCH & CHAIR, beige satin upholstery, excellent condition, \$250 for both. Baca, 866-1178, leave message.

YAMAHA KEYBOARD, Portatone PS-6100, 4 tracks of recording tape interface, MIDI, autochords, rhythm, 61 keys, all voices, owner's guide, \$325. Lenz, 884-4835.

SOFA, Pennsylvania House, 1 yr. old, 76-in. long, cream/claret/pale green plaid, \$800 OBO. Harris, 299-4559.

FIFTH WHEEL TRAILER HITCH, (Reese) for pick-up bed, 14,000-lb. capacity, 1 yr. old, \$375 OBO. Padilla, 294-3127.

STEPPER EXERCISER, w/timer-pacer, \$55; keyboard, Gateway 124+ key, \$15; MS PS2 mouse, \$16. Molecke, 296-5850.

RCA XL100 COLOR TV, 20-in., w/remote, like new, will include oak TV/VCR stand, sold new \$270, asking \$125. Bear, 881-7128.

FUTON, twin-size frame, w/Southwestern cover, becomes chair or bed, excellent condition, \$100. Brock, 296-7307.

CHAIN SAW, Stihl Farm Boss, \$325; gumball machine, \$495; 5 Chev. 15-in. Monte Carlo rims, \$150. Shock, 877-3728.

YARD SALE, for Shandiin CDC, Feb. 8, 7 a.m. - 2 p.m., 3600 Stardust Rd. NE, toys, home items & much more. Boissiere, 884-4328.

MATTRESS, for full-size bed, \$25. Marrs, 281-9889.

TELESCOPE, Celestron 4.5-in. Newtonian, 250x, equatorial mount, several lenses & filters, hardwood tripod, over \$900 invested, asking \$600 OBO. Robbins, 292-7355.

ROTTWEILER PUPPIES, 1 female & 1 male, 8 wks. old, had first shots, dewormed, dewclawed, mahogany color, American Kennel Club, \$250/ea. Giersch, 890-1163.

OFF-ROAD VEHICLE LIGHTS, 2 ea., PIAA 6-in. diameter, w/covers; 2 ea. PIAA 3x5" w/covers, wiring harness, \$50 for both OBO. Phelan, 869-6094.

TWO GOODYEAR EAGLE GA TIRES, P205-70/R15, used, good tread, \$50 for both. Sjaardema, 299-8042.

MODEM, USRobotics Sporster 28.8, fax modem with V.34/V.32 bis, essentially new, \$75. Kepler, 296-0402, leave message.

NORDICTRACK ski machine, \$90 OBO. Schriener, 866-1612.

PRECIOUS MOMENTS COLLECTION, some retired, some members only, some special events, \$35-\$100. Wenzelburger, 256-9370, after 4 p.m.

DARK GOLDEN RETRIEVER PUPPIES, lovable & adorable, registered, w/shots, 7 wks., males & females, \$325 ea. Archuletta, 292-3590.

NEW BRIEFCASE, w/shoulder strap, \$15; stationary bike, heavy-duty, \$40; Pyrex silverplate coffee server, \$25. Estil, 883-1531.

TIRE & RIM, 750-16, 8-lug, Ford, good tread, excellent spare, \$49. Marron, 345-4006.

BRONZE TABLEWARE, from Thailand, service for 8, \$75; Panasonic printer, KXP1595, \$40; smoker, Brinkman, \$20. Fensteamacher, 298-9050.

KENMORE DRYER, electric, almond color, \$125; 5 removable aluminum window awnings, various sizes, \$50 ea. Newman, 266-6928.

ZOOM COMSTAR VOICE FAX, 14.4 int. PC modem microphone & speaker, in box, all manuals, \$60. Ginn, 761-0101.

COMPUTER CABINET, Sauder model 467, PC cart, \$50. Booker, 299-3554.

**DEADLINE: Friday noon before week of publication unless changed by holiday. MAIL to Dept. 12640, MS 0165, FAX to 844-0645, or bring to Bldg. 811 lobby. You may also send ads by e-mail to Nancy Campanozzi (nr campa@sandia.gov). Questions? Call Nancy at 844-7522. Because of space constraints, ads will be printed on a first-come basis.**

### Ad Rules

1. Limit 18 words, including last name and home phone (We will edit longer ads).
2. Include organization and full name with the ad submission.
3. No phone-ins.
4. Use 8 1/2" by 11-inch paper.
5. Type or print ad; use accepted abbreviations.
6. One ad per issue.
7. We will not run the same ad more than twice.
8. No "for rent" ads except for employees on temporary assignment.
9. No commercial ads.
10. For active and retired Sandians and DOE employees.
11. Housing listed for sale is available without regard to race, creed, color, or national origin.
12. "Work Wanted" ads limited to student-aged children of employees.

30-GALLON AQUARIUM, w/oak base cabinet, \$100. Paustian, 255-5127.

WHEELCHAIR, Everest-Jennings travel, like new condition, \$365 OBO. Hole, 255-1444.

EXERCISE EQUIPMENT: Wilson ProStaff 745 aerobic stepper; Vita-master 325P treadmill, excellent condition; \$100 ea. Branstetter, 292-5978.

## TRANSPORTATION

'87 DODGE DAKOTA, 4WD, V6, 5-spd., original owner, well maintained, 98K miles, \$4,800. Pryor, 294-6980.

'87 MERCURY GRAND MARQUIS, V8, all power options, average miles, very clean, \$3,000 OBO. Eytcheson, 238-1866.

'95 HONDA MAGNA, like new, 8K miles, lots of extras, \$6,300; '70 Chevelle Malibu, \$1,000. Sanchez, 831-3418.

'94 FORD EXPLORER, 4x4, 4-dr., 5-spd., 80K miles, very clean & well maintained. Castillo, 864-1962.

'93 INFINITI G20, metallic cream, 5-spd., alarm, PW, PD, 33K miles, 100K miles warranty, \$12,500. Bianchi, 856-2003.

'74 CHRYSLER NEW YORKER, 50K original miles, a classic, excellent shape, 440 V8, AM/FM 8-track, \$2,500. Ahrens, 294-8986.

'95 FORD BRONCO, 4x4, loaded, AT, power everything, 34K miles, excellent condition, \$21,000. Matz, 332-3359.

'85 HONDA PRELUDE, 5-spd., 1.8L engine, sunroof, new tires, 112K miles, excellent interior, original owner. Archibeque, 899-9180.

'90 FORD TAURUS LX S/W, 61K miles, 3rd seat, loaded, digital dash, JBL stereo, good condition, \$6,450. Turner, 292-6819.

'89 NISSAN 240SX, digital heads up display, power sunroof, PW, PL, low miles. Bonahoom, 296-4450.

'93 VOLVO 940 SW, AT, AC, all power, leather, sunroof, 46K miles, second owner, excellent, \$17,850. Clevenger, 888-0209.

'95 NISSAN MAXIMA GLE, loaded, CD, leather, sunroof, V6, security system, excellent condition, low mileage, best offer. Kinchen, 352-9745.

'89 AUDI 100, loaded, PS, AM/FM cassette, new tires, very good condition, maintenance records, \$6,250. Harrison, 897-0658.

'89 JAGUAR XJ6 VANDAN PLAS, sandstone, 59K miles, garage-kept. Tapia, 269-8300, leave message.

'84 TOYOTA TERCEL, 3-dr., AT, AC, stereo, transmission needs work, (still runs), \$750 OBO. Bronkema, 291-1323.

'85 BUICK PARK AVENUE, very good condition, recently certified for '97 emissions testing, 101K miles, \$2,700. Elder, 275-2943.

'79 FORD F350, supercab, 87K original miles, good condition, \$5,000. Stewart, 281-7906.

'87 MAZDA B2000, new tires, camper shell, AC, tint, sliding glass window, very well maintained, \$3,500. Garcia, 343-8207.

'88 ACURA LEGEND L, 2-dr., ivory, 86K miles, \$9,200. Koehler, 323-1453.

'96 NEON HIGHLINE, 4-dr., 5-spd., AC, 31K highway miles, w/warranty, original owner, excellent condition, \$8,700. Vaughn, 867-4625.

'85 JEEP CHEROKEE PIONEER, 4x4, 4-dr., 4-cyl., 5-spd., very clean, \$3,750. Carnicco, 281-3421.

'76 CORVETTE 350, 4-spd., nice, must sell, \$7,000 OBO. Killian, 271-1664, after 5 p.m.

'88 MUSTANG, 5.0L V8, convertible, 5-spd., power everything, alarm, cruise, sheepskin seats, AM/FM cassette, 63K miles, excellent condition. Kercheval, 864-6549.

'89 VOLVO 240, AC, AT, PB, PS, PW, CD player, new tires, brakes & battery, well maintained, \$6,900. Leslie, 867-8603.

'93 TOYOTA DX, X-cab, red, AT, AC, AM/FM, bedliner, anti-theft, low mileage, excellent condition, must sell, \$10,000 firm. Sanchez, 873-2058.

'86 HONDA CRX51, sunroof; '74 Mercedes 450SL, both tops. French, 856-6126.

'82 TOYOTA, 4x4, w/350 Chev. engine, AT, 15-in. lift, 44-in swampers, over \$17,000 invested, \$6,495. Mulville, 968-3472.

'89 CHEV. CONVERSION VAN, loaded, 3/4-ton, runs great, only 70K miles, \$7,000 OBO. Chavez, 865-6293, ask for Mike.

'88 HONDA ACCORD LX, 4-dr., 5-spd., tints, AC, PW, PS, cruise, 121K miles, silver, good condition, \$4,200. Biffle, 293-0330.

'90 NISSAN PICKUP TRUCK, parting out. Chavez, 861-0712, ask for Kevin.

'89 SUZUKI SIDEKICK, 4x4, 5-spd., AC, AM/FM cassette, removable hard top, good condition, 1 owner. Hayward, 292-2980.

'92 NISSAN PATHFINDER XE, 4x4, 5-spd., AC, luggage rack, tow bar, 57K miles, excellent condition, \$14,500. Carroll, 292-5436.

'93 CHEV. LUMINA APV, 3.8L V6, power pkg., F/R AC, cruise, 7-passenger, 58K miles, excellent condition, \$10,000. Salazar, 275-9991.

'95 FORD XLT SUPERCAB, 3/4-ton pickup, PowerStroke, loaded, \$23,000. Haley, 281-2898 or 767-2448.

'87 FORD BRONCO II, 4x4, 88K miles, new tires, very good condition, runs great, \$5,000. Perrine, 293-1429.

'72 CHEV. BLAZER, 4x4, 350 V8, AT, PS, PB, hard/soft top, Alpine stereo, 4-1/2-in. lift, \$4,800. Mulligan, 237-8005.

'95 SUBARU LEGACY L WAGON, AWD, ABS, power everything, AT, CD, very clean, service records, 34K miles, \$18,500 OBO. Edwards, 897-6535.

## RECREATIONAL

SKIS, BOOTS, POLES: Elan skis & poles, 175 cm, good condition, \$100 OBO; boots, woman's size 6, \$50 OBO. Conaway, 296-6210.

DIAMONDBACK, AXIS (top-of-the-line new), Deore XT, future shock fork, GripShift, VelociRaptors, \$600. Mills, 294-5219.

DOUBLE-SHARE TIMESHARE, "red week," Pagosa Springs, Colo., accommodates 8, deeded property, must sell, best reasonable offer. Cocain, 281-2282.

MOUNTAIN BIKE, Nishiki, Bravo, brand new, 18-spd., size 18-in., \$99. Koch, 856-1362.

CROSS-COUNTRY SKIS, w/3-pin bindings, 205mm waxable, \$5; 210mm waxable, \$20; 210mm waxless, \$20. Koenig, 294-2264.

LAKE POWELL HOUSEBOAT OWNER-SHIP SHARE, luxury, 65' x 16', week of June 22 + spring/fall, \$12,000. Davis, 828-0298.

'91 SEARAY BOAT 180, w/trailer, open bow, 150-hp, OB Mercury, w/skiing equipment, like new, \$10,000 OBO. Sjulian, 293-8555.

SLIDE-IN CAMPER FOR F250/F350 pickup, AC, fully self-contained, stove, refrigerator, queen bed, awning. Simmons, 298-5248.

## REAL ESTATE

3-BDR. MOBILE HOME, '88, 2 baths, 16 x 80, parked Tierra West mobile home community, \$3,500. Cox, 831-8703, after 5 p.m. or 842-9079 (day).

FARM, 60 acres, concrete irrigation ditches, Ft. Sumner, N.M. Jennings, 281-4507.

FIVE ACRES OF LAND, Belen, \$21,500 cash. Harrison, 897-3541.

3-BDR. HOME, immaculate, all brick on large beautifully landscaped cul-de-sac lot in NE, 2,150 sq. ft., \$165,000. Moreno, 271-2696.

3-BDR. HOME, 2,392 sq. ft., brick construction, formal & informal living areas, hardwood floors, sunroom, \$174,900. Bennett, 889-0929.

3-BDR. HOME, 2 baths, River's Edge III, easy access to I-25, great schools, quiet location, 3 yrs. old, \$119,000. Mason, 867-8603.

4-BDR. SHERLOCK HOLMES HOME, Spires, 275-3655 or <http://www.nmia.com/~svspire/>

## WANTED

HOUSEMATE, nonsmoker, female preferred, \$275/month + portion of utilities. Piatt, 293-1204.

HOUSEMATE, nonsmoker, female, nice area near Winrock, \$360/month, includes utilities, one medium dog ok. Allen, 256-0680.

HOUSEMATE, M/F, to share nice 3-bdr./2-bath home, near KAFB/SNL, \$295/month + utilities. Rose, 293-2442, leave message.

SANGO DISHES, White Christmas pattern, set, place-settings, or pieces. Boozer, 293-1348.

HOUSEMATE, nonsmoker, male preferred, nice residential area, mountain views, \$350/month + utilities, separate private apartment. Smith, 298-7365 or 292-1976.

ONE SET OF BUNK BEDS, good condition & reasonably priced. Washburn, 294-5921.

ROOMMATE, M/F, nonsmoker, \$300 + share utilities, Edgewood home w/female owner & 2 cats. Williams, 286-8263.

TO CONTACT A SLFCU member using an IBM Aptiva PC to access CU@home. Hanson, 299-6421 or rhanson@swcp.com

STEP LADDER, aluminum, 6-ft. Moss, 298-2643.

WOMAN'S BICYCLE, old-style, good condition. Martin, 323-2182.

SHOTGUN, Remington model 1100, 16-gauge. Svensson, 898-3078.

DOUBLE JOGGING STROLLER. Schrader, 298-4154.

## LOST & FOUND

LOST: Silver heishi earrings. Barnes, 296-0462 or 844-5070.

LOST: Keys, several keys on 2 rings, gold cross on key ring, during snow storm. Chavez, 844-2693.



## Sandia News Briefs

### Sandia to host virtual reality conference in Albuquerque

IEEE's Virtual Reality Annual International Symposium (VRAIS '97) will be held in Albuquerque March 1-5 at the Hyatt Regency Hotel downtown. VRAIS is the premier venue for presentation of research and development in virtual reality (VR) and related areas. The symposium includes two days of tutorials and three days of technical presentations. A concurrent exhibition showcases the latest in commercial VR products. Sharon Stansfield of Analysis Dept. III 5913 is the conference chair for VRAIS '97. The venue will include research demonstrations highlighting local VR efforts, including several Sandia projects. Anyone interested in obtaining more information may contact Sharon at 844-1396 (sastans@sandia.gov). The advance program and registration forms are also available at the conference Web site: <http://www.eece.unm.edu/eece/conf/vrais>.

### Video Services brings home three new awards

Sandia's Video Services Dept. 12614 won three awards in the 1996 Communicator Awards Competition. The Communicator Awards is a national awards organization that recognizes outstanding work in the communications field. The 1996 video competition featured more than 2,700 entries from 43 states. The Award of Excellence is presented to entrants whose abilities to communicate elevate them above the best in their field. "Energy and Environment (E&E) Sector: Quality of Life" won the Crystal Award of Excellence in the category "Corporate Image." The video was produced for Jerry Langheim, VP of Communications for Lockheed Martin's Albuquerque-based E&E Sector. The Award of Distinction is given for projects that exceed industry standards in conveying an organization's message. The "1996 United Way" video won the Award of Distinction in the category "Fund Raiser." It was produced for Don Carson, Director of Public Relations and Communications Center 12600, and was used for the 1996 Albuquerque United Way Campaign. An Honorable Mention was awarded to "Autumn 1996" in the "Editing" category. Produced for Executive VP John Crawford, the video was shown as people entered the auditorium prior to the employee dialogue session John hosted in November.

Send potential Sandia News Briefs to Lab News, Dept. 12640, MS 0165, fax 844-0645.

## Benefits notice: This mistake could be costly

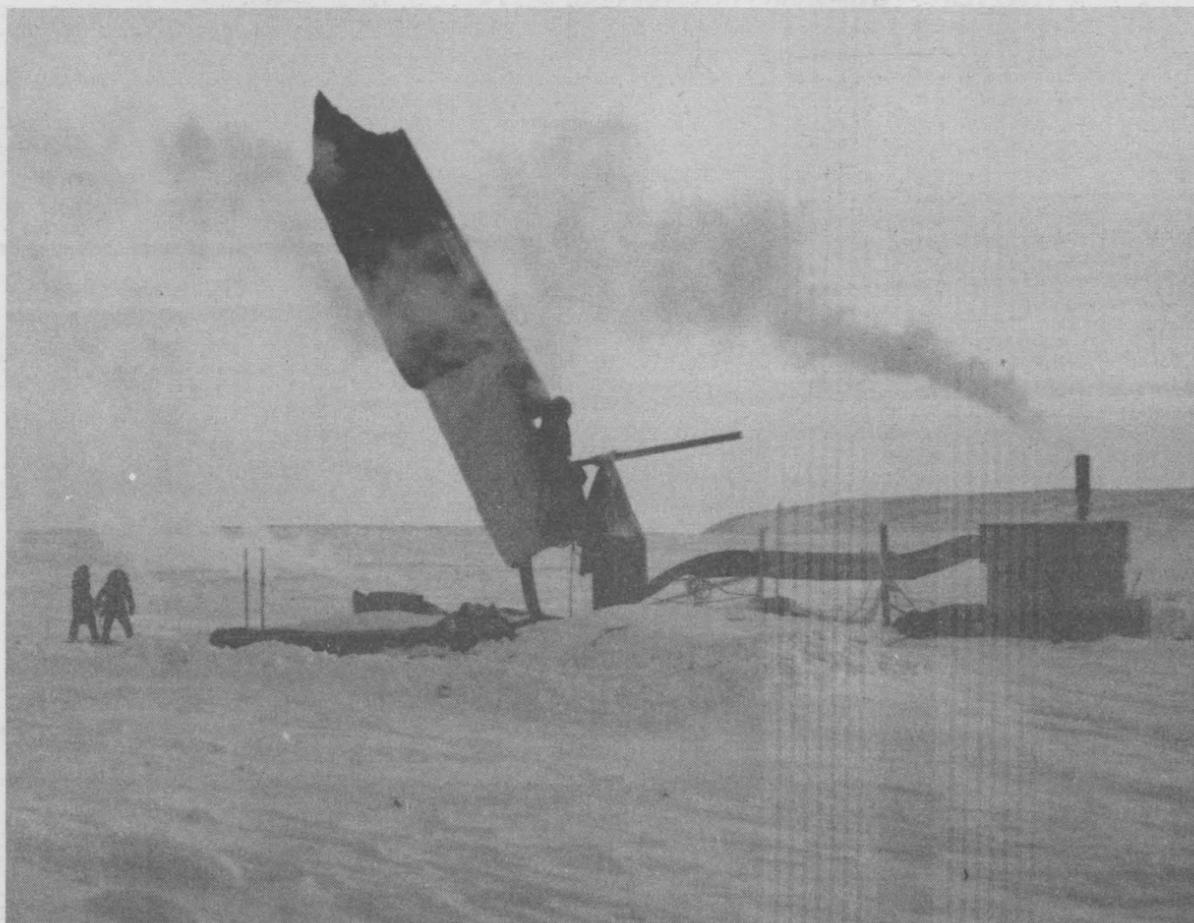
Another urgent reminder from Benefits Dept. 3343: If you have a new dependent (i.e., newborn, adopted child, spouse) and wish to enroll her or him in any of Sandia's health care plans, you must contact the Benefits Department within 31 days of a "qualified change in family status" (i.e., birth, adoption, marriage).

In a new requirement that went into effect



Jan. 1, if the 31-day window is missed, the dependent cannot be enrolled until the next Open Enrollment period with coverage effective the following calendar year. That could mean an entire year without any medical coverage! No exceptions can be made.

For more detailed information, please call the Benefits Department at 845-BENE.



OPERATION TORDO participants, including about a dozen Sandians, weren't expecting balmy weather in Canada's Northwest Territories 285 miles north of the Arctic Circle, but they weren't altogether prepared for the brutal storm that hit the test station on New Year's Eve 1974 and brought minus 30-degree temperatures and 40-knot winds. This Corporate History Project photo donated by Tordo participant Rick Orzel (6641) shows one of two Canadian Black Brant rockets used in the test on its launcher, covered by a specially made canvas sleeve and heated by an adjacent heater (right) to keep the rocket and payload warm for the launch. Tordo was a pair of rocket-borne barium plasma injection experiments to investigate a region of the magnetosphere known as the polar cusp. Although the test was a joint project among a variety of labs, universities, and governments, Sandia designed the experimental payloads and was responsible for the launches. The rockets lifted off successfully on Jan. 6 and 11, 1975. Robert Seamans, then administrator of the Energy Research and Development Administration, DOE's predecessor agency, sent a letter to then-Sandia President Morgan Sparks calling the Sandia rocket crew's accomplishments "nothing short of spectacular." (Photo courtesy of Myra O'Canna, 15102)

## Coronado Club

Jan. 30 — Thursday bingo night. Card sales and buffet start at 5 p.m., early birds' bingo at 6:45 p.m.

Feb. 2 — Sunday brunch buffet, 10 a.m.-1 p.m. \$7.95 all-you-can-eat buffet. Kids 3-12, \$1, under 3 free. Music by Bob Weiler, 1-4 p.m.

Feb. 6, 13, 20, 27 — Thursday bingo night. Card sales and buffet start at 5 p.m., early birds' bingo at 6:45 p.m.

Feb. 7 — "Western Night" dinner/dance. \$7.95 all-you-can-eat buffet; steak or shrimp, \$8.95, 6-9 p.m. Music by Isleta Poorboys, 7-11 p.m.

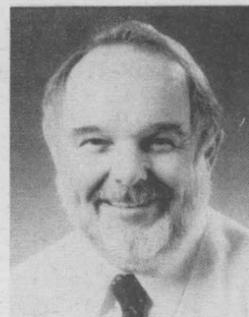
Feb. 14 — Valentine's Day dinner/dance. \$7.95 all-you-can-eat buffet; steak or shrimp, \$8.95, 6-9 p.m. Music by the Starlighter Boys, 7-11 p.m.

Feb. 16 — Sunday brunch buffet, 10 a.m.-1 p.m. \$7.95 all-you-can-eat buffet. Kids 3-12, \$1, under 3 free. Music by Swingshift, 1-4 p.m.

Feb. 21 — "Western Night" dinner/dance. \$7.95 all-you-can-eat buffet; steak or shrimp, \$8.95, 6-9 p.m. Music by Bobby Buttram, 7-11 p.m.

All Month — Pool open daily. Call or visit the C-Club for hours.

## Recent Retirees



Dave McVey 38  
1890



Don Tipton 36  
2166

## Fun & Games

**Bowling** — Congratulations to 1995/1996 SANDOE Bowling Association Bowlers-of-the-Year: Scratch — Dora Gunckel (6400), 586 scratch and 691 handicap; and Pat Sanchez (13913), 678 scratch and 735 handicap; Handicap — Rena Yellowrobe (6423), 539 scratch and 626 handicap; and Barry Hansen (6219), 591 scratch and 603 handicap. Only 1995/1996 season Bowlers-of-the-Month winners were eligible to bowl in the Bowler-of-the-Year tournament held at Holiday Bowl on Dec. 8.

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**More Bowling** — SANDOE Bowling Association Bowlers-of-the-Month for November include: Scratch — Sharon Voccio (5908), 592 scratch, 688 handicap; and Len Hansen (1152), 691 scratch, 706 handicap; Handicap — Helen "Charlie" Husa, 546 scratch, 657 handicap; and Jerry Long (ret.), 634 scratch, 706 handicap.

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**Ice hockey** — The 30-30 Ice Hockey Association is looking for new players for the spring season. The league plays Sunday mornings at the Outpost Ice Arena. For more information, contact John Cilke (6543) at 291-8732 or Dave Cady at 856-6121.

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**Boating** — The US Coast Guard Auxiliary is again offering "Boating Skills and Seamanship" and "Sailing and Seamanship." Classes will be held at the Armed Forces Reserve Center (400 Wyoming NE) on Tuesday evenings at 7 p.m. beginning Feb. 18, with both classes lasting approximately 13 weeks. Course charge is \$15 for each text and workbook; however, texts may be shared. These courses will introduce students to boat handling, trailering, navigation rules, seamanship, safety, and legal requirements. To register, call 823-1527 or 298-0116.