

# Innovative range imager sees how targets measure up

For smart weapons and civilian uses too

By Ken Frazier

Lab News Managing Editor

A video camera provides an image of a scene but no accurate range information. A radar provides range information but typically



**GHOSTLY IMAGE** — Range image from Sandia scannerless range imager shows "intruder" and cart and provides accurate range to everything in the field of view. In this gray-scale image, the nearer the object, the darker it is. The "intruder" is actually project leader John Sackos of Dept. 9127. Perimeter surveillance is one of many applications being explored for the system.

no image.

Laser detection and ranging (laser radar, or LADAR) combines the two to provide both image and range.

Until now, however, most laser radars have had to laboriously scan the scene pixel by pixel (a pixel is the smallest part of an electronically coded picture image), using mechanical moving mirrors or solid state cells or relying on some form of natural scanning from the motion of the platform carrying the device. These requirements impose severe penalties on speed, size, reliability, and data processing.

Sandia engineers have now developed a prototype, packaged, field-ready scanner-

less range imager system that requires no mechanical or electronic scanning, overcoming that deficiency. It is compact, relatively inexpensive, has a high data rate and high pixel density, is completely computer controlled, and can operate anywhere in the electromagnetic spectrum between ultraviolet and infrared.

It can resolve differences in range very accurately, which means it can readily determine and display the size, shape, and contours of objects.

The system has undergone a series of field tests this year, culminating with a joint test in June with the USAF Wright Laboratories at Eglin Air Force Base, Fla.

## Soon ready for exodus from Labs

"We now truly have a packaged, field-ready, engineered system," says project leader John Sackos (Electronic Fuzing & Sensors Dept. 9127). "It is compact and low cost, requiring only about \$15,000 in hardware. Tech Transfer is responding to inquiries about it, and it looks as though it will soon be ready for exodus from the Labs toward commercialization." (John Walter, Manager of Manufacturing Partnership Office 4212, and Glenn Baird, a contractor in Industrial Partnership Development Dept. 4211,

(Continued on page 4)

## Entrepreneurial leave policy allows Sandians to try launching their own businesses

By Howard Kercheval

Lab News Staff

Within the next few weeks, Tim Estes of Electronic Processing Dept. 2411 will hang his smock on a peg in his lab, turn in his badge and keys, and walk out the door at Sandia, the first to leave under terms of a new policy that could ease his return if he should decide to come back within a couple of years.

Tim and former AT&T Bell Labs researcher Ron Rhodes have teamed up to form a company called Conductor Analysis Technologies, Inc. (CAT), which will provide printed wiring quality control and related services to the electronics industry.

Tim's departure will not be the first by a Sandian with the entrepreneurial urge, but he will be the first to take advantage of the new Technology Transfer Leave of Absence Policy now being finalized. It will allow Sandians to take leave of up to two years to try their wings in their own businesses.

"It's a great safety net," says Tim. "If I fail — and a lot of small businesses do fail — I could come back to Sandia, retain my benefits, and bridge my time in service. It's a great program and I think it'll encourage a lot of people to go out on a limb and try something."

### Policy being finalized

Leland Traylor (4221) is program manager of the New Ventures Initiative (NVI) Program that will provide support for Sandians like Tim who decide to take entrepreneurial leave. He says the policy is being finalized, and Tim's leave arrangement is being negotiated.

"NVI, which is part of Technology Transfer & Commercialization Center 4200, is charged with identifying business opportunities and technologies that can be transferred to private businesses," says Leland. "NVI will work closely with Technology Ventures Corporation

(Continued on page 4)

# Sandia LabNews

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**GUEST GOVERNOR** — A year ago Andy Quintana was an administrator in Safeguards and Security Center 7400. Today he walks a fine line between economic development and conservation of tribal land. Quintana, seen here on the Cochiti Lake dam, is on temporary leave of absence from Sandia to head the government of Cochiti Pueblo. See story on page 5. (Photo by Randy Montoya)



- ▶ 6 Sandians support United Way agencies through Day of Caring, ECP dollars
- 8 Three Labs employees win national Hispanic Engineer awards



# This & That

Pictures from the past - Several Sandians learned last month they won photography awards in an AT&T industrial photo competition they entered when they were managed by the communications giant (keep "communications" in mind for a moment). Randy Montoya (12630), Russell Smith and Jim Bechdel (both 13419), and Oscar Goodwin (recently retired) were delighted to learn that they had won the awards - back in the 1989 competition.

\* \* \*

Cash for colleges - I mentioned a couple of months ago some ways in which our management contractor Martin Marietta supports education. Two Sandians pointed out that I didn't mention the company's matching gift program for colleges and universities.

Carlos Griego, Manager of Pension, Life Insurance & Employee Services Administration Dept. 3544, who manages this program at the Labs, says Sandians are taking advantage of it. These figures are getting a bit stale - current as of May 31 - but at that time Sandians had given \$132,720 to colleges and universities that was matched dollar-for-dollar by Martin Marietta. This includes 750 total gifts to 270 different schools. As you might guess, the University of New Mexico and New Mexico State University had received the most gifts from Sandians, but a surprise third is that distinguished institution of higher learning in the "Land of Awe" - Kansas State University (guess who's a grad).

Keep in mind that Martin Marietta will match employees' individual gifts to eligible schools of up to \$10,000! To request a brochure and application, call Sandia Line on 845-6789, press 9 for quick dial, press 1270#, and follow the recorded instructions.

\* \* \*

Must we say it? - One of our many thrilling duties here in the Employee Communications Department is proofreading the job listings that are published in the *Weekly Bulletin*. (And you thought we were one-dimensional!) If there is one thing we get tired of reading, it's that "excellent oral, written, and interpersonal communication skills" are required for a job. That statement or a close variation appears in about 90 percent of the professional-level job ads, often along with a statement that the employee selected must work well in a team environment. Just once, we'd love to see something like this:

"Communication skills are irrelevant in this job. Your manager will do all of your communicating for you so you don't alienate anyone or embarrass yourself. Also, this group practices rugged individualism and will not tolerate teamwork."

\* \* \*

They're back! - I'm almost ready to give up on this, but not quite. Those ultra-ugly "screaming yellow" butt cans have reappeared in front of Building 800, our front door to the world. These cans come complete with instructions for using and emptying them painted in big black letters on the cans. Two observations: (1) Isn't any butt can that has to have bold instructions written on it too complicated a butt can? (2) I'd prefer that Sandia look like the proud R&D lab that it is instead of the back side of a 1950s-era meat-packing plant. If you feel the same way, you may want to call someone whose opinion counts (obviously, that's not me).

- Larry Perrine

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**MARTIN MARIETTA**

## Weapon training center dedicated Sept. 12 in memory of Richard Brodie

The Weapon Training Center in Bldg. 892, where the late Richard (Dick) Brodie taught hundreds of Sandians and others the essentials of nuclear weapon history and safety, was dedicated to his memory Sept. 12 in a ceremony on the mall east of the building.

Defense Programs VP Roger Hagengruber (5000) presided over the dedication, which included Dick's wife Genelia, son John, and daughter Valerie. Sandia President Al Narath, Operations Center Director Carol Yarnall (5500), and Ken Kvam of Weapon Training and Evaluation Dept. 5513 also participated in the dedication ceremony.

Dick was born and educated in Texas; served in the Air Force as a fighter pilot, retiring with the rank of colonel; and had worked in weapon surety at Sandia since joining the Labs in 1976. He died in March at age 58.

He received many honors during his Sandia career, including the prestigious DOE Distinguished Associate Award in 1993. He was honored by the Labs in 1992 for teaching more than 1,000 Sandians in his "Survey of Weapons Development and Technology" course.

## Martin Marietta stock available for savings plans; no effect yet from proposed merger

Sandians now have the option of investing in Martin Marietta Corporation (MMC) common stock through both the Sandia Savings and Income Plan and the Sandia Savings and Security Plan.

David Medina of Pension Fund/Benefit Program Management Dept. 3542 says an amendment to the Savings Plan Summary Plan Description dated June 1, 1993, should have been received by all Sandians. He says the amendment regarding the MMC Common Stock Fund should be read before investments in the fund are made.

### No current effect from merger

David says the MMC Common Stock Fund remains an option, despite the recent announcement by Lockheed and Martin Marietta that they plan to merge into a new corporation called Lockheed Martin.

"Until final regulatory approval of this merger is given," he says, "Sandians will continue to have the savings plans option of buying Martin Marietta common stock. Assuming the merger is approved, we will assess the issue of making the stock of the new corporation a savings plans option."

The new fund option became available through Fidelity Investments' Voice Response System Aug. 26. Transactions also may be conducted through a Fidelity representative on Sandia's dedicated line, 1-800-240-4015.

Meanwhile, Fidelity's Voice Message System was to be fully operational for the new MMC Common Stock Fund (reference number 9198) by Sept. 9.

Questions about the MMC fund should be directed to the same number, or to David on 844-0997.

## Martin Marietta and Molten Metal Technology form limited partnership

Martin Marietta and Molten Metal Technology have formed a jointly owned limited partnership called M4 Environmental to provide Molten Metal's proprietary recycling process to DOE and DoD.

M4 Environmental has exclusive license to deliver Molten Metal's Catalytic Extraction Processing (CEP) technology for DOE and DoD environmental remediation projects. The two principal companies have a combined annual budget for waste management and cleanup programs of about \$10 billion.

CEP converts waste to useful products by reducing the target material to its component elements in a molten metal bath, then recovering the elements as raw materials. No air, ground, or water pollution is generated, and radioactive constituents are isolated in a much-reduced volume.

## ★ Congratulations

To Elaine and Charles (5111) Lloyd, a son, Christian Alan, Aug. 12.

To Donna (5104) and Craig Pettit, a son, Matthew Craig, Aug. 13.

To Sylvia and Jeff (1311) Tsao, a son, Eugene Jeffrey, Aug. 17.

To Kris and Michael (6422) Allen, a daughter, Shannon Casey, Aug. 20.

To Sandy and Gary (1332) Tipton, a son, Benjamin Thurston, Aug. 30.



# Combustion puzzle: How to reduce boiler deposits from biomass burning?

**Researchers tackling obstacle to biomass power conversion**

By Pat Radin

Summer Science Writer

Researchers at Sandia/California's Combustion Research Facility are doing some sleuthing on behalf of the environment, in collaboration with engineers as far away as Denmark.

The mystery: Why does a glassy, gray deposit stick to the insides of boilers when straw is being burned? And how can its properties be anticipated?

The reward: More efficient and reliable conversion of biomass energy to electricity.

"This is an urgent problem," says Larry Baxter (8361), noting that power generation from biomass represents a major industry in California and around the world, with particular application to countries with developing economies. For example, rice is a major California agricultural product, and the straw that is left after harvesting the grain has potential fuel value in power production.

Equally significant, the alternative to burning the straw in a boiler is burning it in the field, which is a major source of air pollution in those regions of California's central valley that produce rice. The more controlled combustion of straw in a boiler with pollution-abatement technologies decreases the pollution by large margins.

## Rice straw a particular culprit

But rice straw is 20 percent ash, and ash is mostly silica (70 percent) and potassium (20 percent), typical ingredients in glass. As a result, burning rice straw may lead to the formation of glassy deposits that adhere relentlessly to the insides of boilers.

"When we burn a material such as rice straw, we may generate this type of deposit," Larry says, holding out a piece of shiny gray material taken from his laboratory combustor. It remains stuck to a piece of the combustor liner, which had to be replaced because it was so thickly coated with deposits.

Commercial-scale tests of straw burning that Larry recently participated in led to similar results, even when the straw is blended in

## **Sandia** California News

minor quantities with more forgiving biomass fuels. Biomass-burning boilers had been designed with the best available techniques, just like any new combustion technology, but Larry says the empirically derived indices of ash behavior typically used by boiler designers "just weren't able to predict straw behavior over the long or short term." He says the experience was especially frustrating to boiler designers and operators because the same design techniques have been used extensively with modest success for coal-fired plants.

Straw, however, is just one example of the biomass waste that could potentially be burned, if deposit and corrosion problems could be solved. "There's a wide variety of fuels that would make good sources of power if we were able to accurately anticipate their deposit properties as a function of operating conditions and boiler design," Larry says.

In a collaborative project to improve boiler efficiency, Larry is working with Bryan Jenkins, a University of California at Davis professor of biological and agricultural engineering; Tom

Miles and Tom Miles Jr., consulting design engineers from Portland, Ore.; Larry Oden of the US Bureau of Mines; and others. The project is cosponsored by 10 industrial participants and the National Renewable Energy Laboratory as part of DOE's Biomass Power Program.

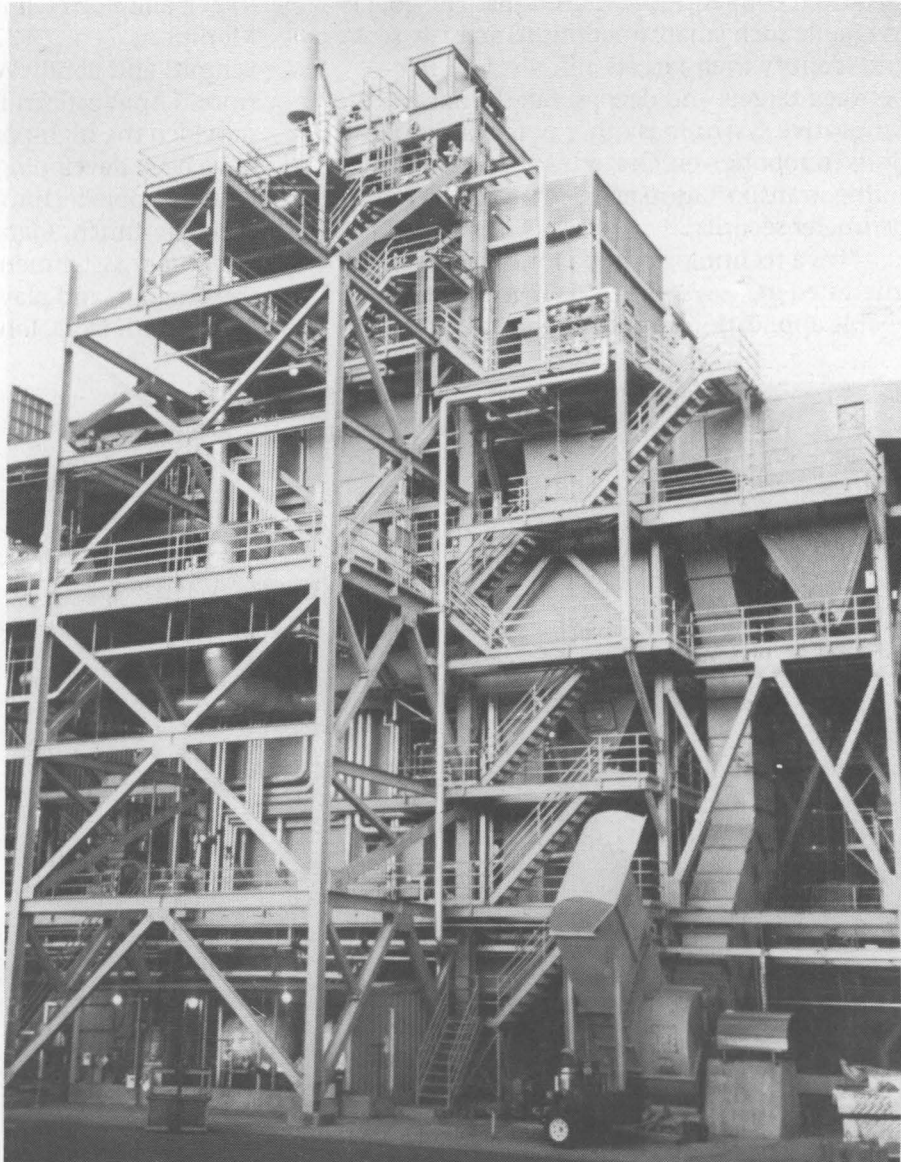
"Biomass combustion in California provides about a gigawatt of power — 2 percent of the overall power supply in the state," Larry says. There is also time pressure because California state government subsidy programs dating from the 1980s, which provide generous returns on power produced from renewable energy sources, are expiring. Only very efficient and reliable plants will survive over the long term.

The Sandia-based team is using a combination of laboratory tests in Sandia's Multifuel Combustor Laboratory (MFC) and field tests in commercial systems. The researchers looked at a number of different boiler designs including stoker-fired moving grates, bubbling fluid beds, circulating fluid beds, auger-fired moving grates, and cigar burners, and fuels ranging from woods and straws to nutshells, fruit pits, and non-recyclable paper. Two of the 10 field tests were conducted at biomass plants in Denmark.

Phase one of the project, which ended recently, centered on definitively identifying the mechanisms of ash deposit formation at both laboratory and commercial scale — that combination of operating conditions, boiler design, and fuel properties that determines the properties of the deposits. Sandia's MFC, where materials can be burned under many different conditions with detailed measurements of the results, was headquarters for the laboratory experiments involved in the project.

The second phase, now in the planning stage, will also include a California state agency as a cosponsor. It seeks to provide quantitative computer models to predict ash deposit formation in boilers and to study corrosion issues. The project funding also targets other potential fuels for use in biomass boilers. For example, nonrecyclable paper, the largest fraction of landfill volume, is one of the best fuels tested in the first phase of the program.

One goal of phase two is to gather the technical data (Sandia's role) to present to regulatory bodies that determine what materials can be burned in biomass power plants. If nonrecyclables can be designated as an allowable bio-



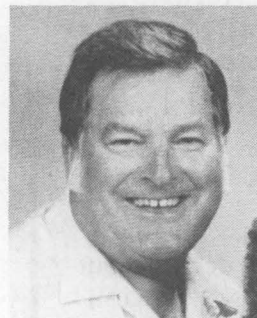
FIELD TESTS ON COMMERCIAL BOILER — This eight-story-high Thermal Electron circulating fluid bed biomass boiler, located at Woodland, Calif., is one of those Sandia is studying in field tests.

mass fuel, large fractions (perhaps as much as 40 percent) of landfill material can be diverted out of the waste stream, the paper can be put to beneficial use as a fuel, and municipalities may be able to get recycle credits for the material. Everyone wins. The key is to provide data of sufficient quality that the regulatory agencies are comfortable in their decisions.

According to the University of California's Bryan Jenkins, there's no simple way to eliminate the deposits caused by burning many biomass fuels such as rice straw, although "leaching out some of the fouling elements, or boiler redesign, would alleviate some of the problem."

On a final note, Larry says, "This is a project that really shows how Sandia adds value to critical areas of the economy and the environment, with particular relevance to California in this case. It's a fun project to be part of."

## Employee death



LESTER DEIMLER

Lester Deimler of Preventative Maintenance Team 8613-2 died on June 10. He was 63 years old.

Les was a laboratory maintenance specialist and had worked at Sandia since 1980.

He is survived by his wife, five sons, and three daughters.



## Range imager

(Continued from page 1)

are the contacts.)

The system is part of a joint DoD-DOE Munitions Technology Program for smart advanced conventional munitions. The goal is to enable such smart weapons to actively seek and identify their targets and discriminate between targets and decoys. But, John says, the innovative system has other potential applications in robotic vehicles, advanced manufacturing, transportation accident avoidance, and perimeter security.

"It's a technology that a lot of people are interested in," says John. "As it goes out, it will enable applications not before possible."



GETTING THE RANGE — John Sackos (left) adjusts lens on Sandia's scannerless range imager while Bart Bradley operates computer terminal. The system's light-emitting-diode array transmitter is at lower right. On the wall behind them is a range image of a missile-support vehicle. (Photo by Mark Poulsen)

The device is based on a range imaging laser radar concept invented at Sandia by Marion Scott, now Manager of Advanced Geophysical Technology Dept. 6114, and granted US Patent 4,935,616 to him on behalf of DOE in June 1990. (See "How the Sandia range imager works" on next page.)

John, Bart Bradley, Maritza Lecavalier (all 9127), and Bob Nellums (Smart Structures and Munitions Dept. 9122), working with Randy Schmitt and Randy Williams (both Optoelectronics Applications Dept. 2235), who have provided the high-powered laser transmitter, have been developing the concept into a demonstrable technology since then. John says Mark Grohman, Manager of 9127 (now on temporary assignment in Washington), started the program and played a key role in program liaison with DoD. John Anthes (5932), Phil

Garcia (5931), and former Sandians Ike Evans and Joe Pierce also contributed.

"A year and a half ago, it was a big, bulky, proof-of-concept project," says John. "Today it is significantly different."

### Steady stare

Laser radar systems can be either scanning or "staring" and either pulsed or continuous wave (CW), says John. Sandia's is a staring (total field of view), continuous wave system. As far as he knows, it's the only one in that category. "Our concept is different," he says. "It's innovative."

## Active optical sensors for future weapons

Modern weapons are now required to engage and defeat a growing array of increasingly capable and ever more illusive targets, says John Sackos (9127). How well they do depends on their targeting sensors and the algorithms that interpret the data.

Future weapon systems will need to make real-time target, guidance, and fuze decisions. This kind of quick, critical, automated decision-making requires sophisticated sensors and signal processing.

Under some operational conditions, active optical sensors are seen to have many advantages over radio-frequency, millimeter-wave, passive-infrared, and passive-optical sensors. Because of the shorter wavelengths, sensors that operate at optical frequencies inherently have high resolution and so are particularly well suited for high-fidelity, image-quality data collection. In addition, active optical range-imaging sensors may be more resistant to countermeasures than other types of sensors.

The range associated with each pixel is measured essentially simultaneously across the whole scene.

The next goal of the program is to develop the system and its associated signal-processing capability further so that it can be integrated into advanced optical sensor technologies in DoD smart weapons. (See "Active optical sensors for future weapons.") The goal is to improve target detection and identification, delivery system guidance and control, and weapon fuzing.

John and his colleagues believe that its use  
(Continued on next page)

## Leave policy

(Continued from page 1)

[TVC] to provide access to financing and business development support for Sandia spin-off companies."

TVC was created and initially funded by Martin Marietta soon after Martin Marietta won the DOE contract to manage and operate Sandia last year.

During his four years plus at Sandia, Tim has designed and built equipment that makes precise resistance measurements of conductors to determine various attributes: height, width, uniformity, etc.

The equipment was developed in connection with a cooperative research and development agreement with the National Center for Manufacturing Sciences (NCMS) that was intended to improve the capabilities of printed wiring board manufacturing, says Tim.

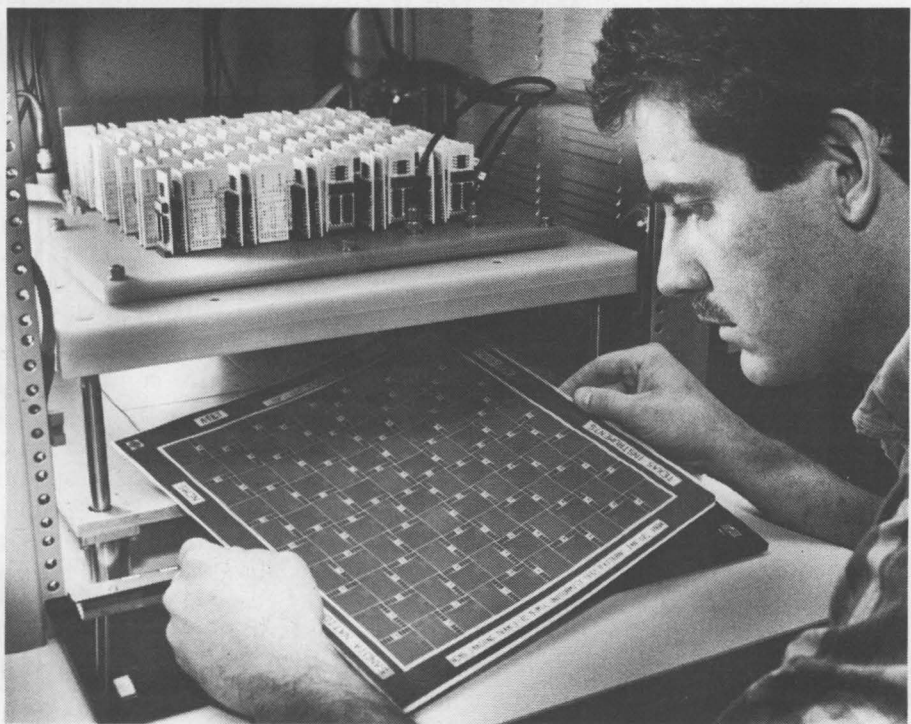
Funds from DOE Defense Programs (DP) have supported Sandia's enabling technology, and the equipment and future enhancements

will benefit both Sandia's DP mission and commercial applications. NCMS has provided long-term support and an appreciation for market interest in the technology, and will be Tim's first customer.

He says he has always dreamed of going into business for himself, following in his father's footsteps. "He was successful in some and not successful in others, but had a lot of fun," says Tim. "I've always thought that was what I wanted to do, but not until about a year ago did it really start to look like maybe something would evolve at Sandia to make it happen."

If he and Rhodes are on target with their estimates, they should have "a pretty good feel for what's going to happen," he says. "Long-term, our prediction is of a \$5 million company [in revenue] in five years."

And if the company succeeds, he says



PATTERN TEMPLATES like the one Tim Estes is examining are part of the equipment he designed as a Sandian that will form the core of a business he and a partner will run while he is on entrepreneurial leave from Sandia.

(Photo by Randy Montoya)

### The number to call is . . .

Leland Traylor (4221) says anyone interested in learning more details about the entrepreneurial leave policy can call him on 271-7811 or Barbara Jordan (4221) on 271-7836.

Sandia will have been responsible for that.

"Our company is going to provide US electronics manufacturers the technology to improve their processes, their products, and their profitability," Tim adds. "That's a role that I think Sandia ought to be involved in, and this is our way of doing that."



# Development, dollars, and stray dogs: It's all in a day's work for pueblo governor

*Sandian serves as Cochiti Pueblo's top administrator*

By John German

Lab News Staff

Residents of Cochiti Pueblo prefer an empty sky, empty except for the tall clouds that roll over the Jemez Mountains on summer afternoons to cool the dry landscape.

During the past few months, however, two low-flying stunt planes from Santa Fe have swooped down over the Pueblo to practice aerobatics, raining a discordant drone on the quiet, rural lives of the people below.

It's Monday morning in the Cochiti Pueblo Governor's Office. Don Suina, Cochiti's head conservation officer, gives his weekly briefing to Gov. Andy Quintana and Lt. Gov. José Herrera, the Pueblo's top two administrators. The governor asks Suina to make another call to the Federal Aviation Administration as a reminder that, as a sovereign nation within the US government, the Pueblo maintains control of its airspace.

"We have a lot of problems with trespass," explains Quintana.

## Couldn't say no

A year ago, Gov. Quintana was known by fellow Sandians simply as "Andy," an administrator in Safeguards and Security Center 7400 helping establish a new computerized escort service center for Sandia. He had been at Sandia 16 years, he says.

Then one day the Cochiti elders called. In a selection process that's not talked about publicly, the traditional tribal leaders decided that Quintana, a native of Cochiti, would serve as Pueblo head of state for one year — Jan. 1 through Dec. 31, 1994.

He couldn't say



ANDY QUINTANA

'no' to the appointment, literally. "I've never seen anyone refuse," says Herrera, a former Pueblo conservation officer who was appointed Lieutenant Governor by much the same process.

So Andy took a one-year leave of absence from Sandia, emptied his desk, and headed home to the 90-square-mile reservation north of Albuquerque.

As head of a relatively small tribal government, Quintana deals not only with the day-to-day affairs of Pueblo life but also the bigger issues of crime, education, sovereignty, environmental conservation, and economic development.

Today for instance, his schedule includes attending a lunch meeting with Albuquerque Mayor Martin Chavez regarding Albuquerque's water shortage and sending a memo asking a Pueblo woman to get rid of two stray dogs on her property.

One of the more crucial aspects of the governor's job, says Quintana, is maintaining relationships with federal, state, and local government agencies, such as the Bureau of Indian Affairs, the Public Health Service, and DOE.

Also among his priorities is supporting the long-term economic development of the Pueblo. A popular golf course, several housing



NATION WITHIN A NATION — Cochiti Pueblo Gov. Andy Quintana (right) and Lt. Gov. José Herrera discuss trespassing on tribal land. Although the Pueblo welcomes most of its one million visitors each year, a few unwelcome visitors dump trash, cut fences, and otherwise harm Pueblo property.

developments, an outlet mall, marina, and fish hatchery bring in profits. Support from the federal government, such as a recent \$5.6 million grant from Housing and Urban Development, provides jobs and helps pay for construction projects.

## Dollars and expertise

The governor's office also makes sure Pueblo residents get an education. "We try to help tribal members help themselves," he says.

One program takes Pueblo youths on experiential field trips, either to local ruins where they learn the ways of their ancestors, or to fun places where they learn etiquette and self discipline, lessons that help them feel more comfortable if they go away to college, says Quintana. Other youth programs provide career counseling, counseling for troubled teens, and ecological science training.

In addition, dealing with many of the unique problems of today, such as monitoring air and water contamination on Pueblo land, requires specialized training. An environmental program sponsored by the governor's office is making sure Pueblo residents are trained to review the deluge of technical documents that come out of nearby Los Alamos National Laboratory regarding environmental contamination and reclamation projects.

"We need expertise to do that," he says.

Quintana says as governor, he's learned a lot about leadership and managerial and human relations skills. He's looking forward to his return to Sandia on Jan. 3, 1995.

"It was a great honor to be chosen to serve my people," he says. "When we're young, they encourage us to get an education so we can do that."

*"It was a great honor to be chosen to serve my people. When we're young, they encourage us to get an education so we can do that."*

(Continued from preceding page)

in such weapons would eliminate problematic scanning subsystems in present munitions and improve their performance while reducing system size and cost.

Several challenges have to be overcome, John says, but Sandia is coordinating its work with appropriate technology managers within the Army, Navy, and Air Force to ensure that it meets their needs and has actively sought DoD involvement in establishing the program goals.

## How the Sandia range imager works

The Sandia scannerless range imager system uses either a high-power laser diode or an array of light emitting diodes (LEDs) to completely illuminate a target scene. (This LED capacity for short-range applications is why it's not exclusively a "laser" radar.)

Conventional optics confine the target beam and image the target onto the receiver. This integrating detector array can have hundreds of elements in each dimension. They convert each photon of light to an electrical signal.

The range to a target is determined by measuring the phase shift of the reflected light from the target relative to the amplitude-modulated carrier phase of the transmitted light.

To make this measurement, the gain of an image intensifier within the receiver is

modulated at the same frequency as the transmitter, so the amount of light reaching the sensor (a charge-coupled device) is a function of the range-dependent phase difference. A second image is then taken without receiver or transmitter modulation and is used to eliminate non-range-carrying intensity information. A digital signal processor is used to operate on these two frames to extract range.

The range associated with each pixel is essentially measured simultaneously across the whole scene.

The range information can be color coded (or gray-shade coded) when displaying the image on a computer screen. With gray scale, for instance, objects closer to the imager are darker, those farther away lighter.





**PLAYING IN THE MUD** — It wasn't hard to convince these Navajo Elementary School students to jump in the mud at Cornstalk Institute. Nei-Nei Freeman (1513) and David Harding (6642) helped kids mix adobe for a banco (bench) being built nearby. Cornstalk Institute offers an outdoor classroom where Albuquerque Public School teachers and students can learn about using the outdoors to apply classroom knowledge.

### Showing they care on Day of Caring

A hundred enthusiastic Sandia volunteers were part of the 1,000 volunteers from Central New Mexico who spent a day making adobe, painting buildings, doing yard work, helping in classrooms, helping people with disabilities, delivering meals, and performing other community service activities on the third annual United Way of Central New Mexico Day of Caring Sept. 1. The volunteers helped at nonprofit agencies in Bernalillo, Sandoval, Torrance, and Valencia counties. Day of Caring kicks off the 1994 United Way fund-raising campaign. Sandia's Employee Contribution Plan campaign to raise money for United Way begins Oct. 10. (See story on next page.)

Agencies asking for volunteers included West Side YMCA/Mary Ann Binford School, where volunteers read to children in classrooms and assisted in the lunchroom. "We were so impressed with Sandia volun-

*(Continued on next page)*



**INFECTIOUS ENTHUSIASM** came easy and often when Sandia volunteers helped at a Special Olympics gathering in Los Altos Park. Isidoro Molina (1231) ran along with young Dominique as they headed for base during a kickball game.



**DRYING IN THE SUN** — Megan Mahoney (daughter of Rod, Dept. 1127), a Washington Middle School student, and Sandia volunteer Jeanne Evans (12911) spread apple pieces to dry in the sun at Cornstalk Institute. Washington Middle School sixth grade students and teachers spent the day at Cornstalk to learn how to set up an outdoor classroom at their school.

*Photographs by Mark Poulsen*



**PAINTING HIMSELF OUT OF A CORNER**, Sandia volunteer Pat Long (7614) shared his painting skills at the Alta Mira Specialized Family Services Respite Home. Alta Mira provides specialized services for people with disabilities and their families.



**FAMILY ACT** — Sara Carson, daughter of Susan Carson (6626), joined the Sandia volunteers at the Special Olympics day of games at Los Altos Park. She and this Special Olympian enjoyed a round of one-on-one basket shooting.



# Here's how your ECP donations help people

Sandia's 1994 Employee Contribution Plan (ECP) campaign to raise money for United Way and other health and human services agencies is scheduled for the week of Oct. 10-14 in Albuquerque.

Following is information provided by United Way of Central New Mexico about how some of our donations are used to meet our community's needs.

**Counseling and parenting:** Last year \$508,213 of donations funded services that help families stay together and learn better parenting skills. Between 1989 and 1991 there

were 4,362 births to teenage mothers in New Mexico. In Albuquerque alone, some agencies have waiting lists as long as three months for counseling services. United Way funds five agencies that address parenting

issues and counseling for families and individuals. Parentcraft, a branch of Family and Children Services, offered 154 workshops and served nearly 3,000 adults and children. Albuquerque Family and Child Guidance Center provided 9,000 hours of comprehensive mental health care to 799 families.

**Family violence and abuse:** Last year \$260,584 of donations funded services that help individuals and families in crisis. Recent statistics show that the New Mexico State Department of Human Services receives an average of 500 referrals per month in the areas of child neglect (60 percent), physical abuse (35 percent), and sexual abuse (5 percent). Reported cases of domestic violence have increased in Albuquerque in recent years. United Way funds four agencies that provide support to victims of domestic violence and services for neglected and abused children. All Faiths Receiving Home, for example, helps children in crisis and provides parenting education for abusive families. All Faiths helped 366 children. The Women's Community Association provided 12,332 days of care, including shelter, food, and clothing to vic-

tims of domestic violence.

**Gangs and youth-at-risk:** Last year \$502,562 of donations funded services that help youth at risk and youth involved in gang-related activities. There are more than 120 gangs in the Central New Mexico area with approximately 7,000 youth actively involved in gang-related behavior. New Mexico ranks as the sixth worst state in the country in the rate of teens who annually die a violent death — 94 teens per 100,000. United Way funds nine agencies that address gang and youth-related issues. The New Mexico Council on Crime and Delinquency took the lead in changing the New Mexico Children's Code. A judge now has more alternatives when sentencing a teenager involved in violent gang activity. Hogares, Inc. provided counseling and residential treatment services to 384 troubled adolescents and their families. The Gang Prevention and Intervention Project was formed by United Way of Central New Mexico in response to growing gang-related activity in the community. It promotes awareness, educates the general public about gang-related activities, and promotes harmony in the community through special projects.

**The elderly:** Last year \$255,452 of donations funded services that help the elderly stay out of nursing homes and other institutions. More than 15,000 elderly persons with self-care disabilities have been identified in the Central New Mexico area. A substantial number of these people have disabilities that — if the people are to remain in a community setting — require intensive services, such as senior day care. In the Central New Mexico region there are an estimated 5,000 people 65 years of age and over with permanent disabilities that limit their ability to take care of themselves. To remain functionally independent in their homes, these people require some level of light housekeeping and personal care. United Way funds five agencies that address various areas of need for the senior population in Central New Mexico. Share Your Care Adult Day Care Center provided services to 122 disabled adults and frail elderly, 44 of whom have Alzheimer's disease. Cornucopia Adult Day Care provided 25

people with services that kept them from having to be placed in nursing homes or other institutions.

**Child care:** Last year \$394,450 of donations funded child care services that help low-income working parents. The 1990 Census indicates that there are approximately 25,000 families in the Albuquerque area with children under 6 years old in which all parents in the household are in the labor force. It is estimated that 22.5 percent of these families have incomes below 50 percent of the median. For them, commercial licensed child care services generally are unaffordable. The United Way funds six agencies that provide child care services to low-income families. Christina Kent Day Nursery provided 2,400 hours of day care, education, and nutrition to children from low-income, single-parent families. Cariño, a child care information and referral service provided by the YWCA of Albuquerque, helped 4,742 parents find their children safe, quality child care.

**Health:** Last year \$414,281 of donations funded health education and social development programs. One out of four Hispanics in New Mexico over 45 years old has diabetes. And one-third of all American Indians in New Mexico over 35 years old are afflicted with the disease. Complications include blindness, amputations, stroke, and heart disease. AIDS ranks as the seventh leading cause of death among 25- to 44-year-olds in Bernalillo County. United Way funds five agencies that provide health and health education services to the community. The American Diabetes Association participated in more than a dozen health fairs and provided a high-risk analysis test to 45,000 households. The American Red Cross promotes health education and assists emergency and disaster victims. More than 1,700 people were reached through 51 AIDS awareness presentations.

**Persons with disabilities:** Last year \$737,760 of donations funded services that help persons with disabilities and their families deal with the challenges of daily life. The birth of a developmentally delayed or disabled child can be devastating to parents. Resources are limited for families to deal with such a challenge. In New Mexico approximately 15,000 children and adults have some form of a developmental disability. The state estimates that there are an additional 10,000 children at risk of acquiring one. United Way funds 11 agencies that help people with disabilities and their families deal with daily life. The Rehabilitation Center (RCI) has a child development program for children with disabilities. RCI helped 141 such children. Alta Mira Specialized Family Services provides services to the entire family of a person with a disability. More than 120 families were helped by Alta Mira.

## Day of Caring

(Continued from preceding page)

teers," says Pat Woodard, Principal of Mary Ann Binford School. "I can't tell you what a great group they are."

At the Cornstalk Institute, volunteers helped students from Navajo Elementary School and Washington Middle School plant and prune trees, make adobes, build compost, and work the garden. Volunteers worked on an art project with teens and adults with disabilities at the Very Special Arts Enabled Arts Center. Volunteers played games with Special Olympians at Los Altos Park. Other Labs employees helped paint Alta Mira Family Support Center's respite home and, through the Office of Senior Affairs, were assigned in teams to do yard work at homes of frail, indigent, homebound elderly residents throughout the city.

Redd Torres Eakin (12640), coordinator of Sandia's Volunteers in Action Program, coordinated Sandia's participation. "I think the Sandia volunteer turnout demonstrates Sandia's corporate ethic of enhancing the community in which we live and work," says Redd.

—Janet Carpenter



MANAGEMENT PARTICIPATION — Lynn Jones, VP of Laboratories Services Div. 7000, joined volunteers at La Mesa Community Day Care. Lynn played with the preschool children and read stories to them. La Mesa Community Day Care and Pre-School cares for children from low-income families in the southeast Albuquerque La Mesa neighborhood.

## Retiree deaths

George Hildebrandt (71) ...5120 .....	July 3
Frankie Potts (62) .....2742 .....	July 7
Margaret Bernhard (80).....5621 .....	July 7
Dollie Harris (79).....3141 .....	July 15
Joseph Seiler (75).....2234 .....	July 20
Vern Sawyer (93).....4517 .....	July 21
Tony Manuel Lopez (61)...3154 .....	July 21
Lawrence Gallo (58) .....5248 .....	Aug. 5
Jessie Hodges (74).....4131 .....	Aug. 10
Joseph Gregory (76) .....7213 .....	Aug. 20
Joy Cannedy (89) .....4131 .....	Aug. 21
Dorothy Belmore (83) .....3411 .....	Aug. 27
Roy Schultz (76) .....3417 .....	Aug. 30



# Three Sandians win *Hispanic Engineer* national awards

**Winners to be honored at national conference in Houston**

Three Sandians are among 18 engineers and scientists from laboratories, universities, and businesses across the country selected from nearly 250 nominees to receive 1994 Hispanic Engineer National Achievement Awards.

Nestor Ortiz, Director of Nuclear Energy Technology Center 6400, won the Professional Achievement Award; José

Rodriguez of Silicon Technologies Dept. 1325 won the Outstanding Technical Achievement Award; and Tamara Ulibarri of Organic Materials Synthesis/Degradation Dept. 1811 won the Most Promising Scientist Award.

*"Their selection underscores the value of diversity in our workplaces."*

Awards will be given in nine categories, some of which include multiple winners. Nestor and Tamara are the sole winners in their categories and José is one of three in his group, two named for contributions to industry and one for contributions to academia; his award is for contributions to industry.

They will be presented their awards at the sixth Hispanic Engineer National Achievement Awards Conference (HENAAC) in Houston Oct. 15. The conference and awards are sponsored by the magazine *Hispanic Engineer*.

## A source of pride, says AI

"The fact that three of the 18 people to be honored by *Hispanic Engineer* are from our lab is something in which all Sandians should take pride," says Labs President Al Narath. "Their selection underscores the value of diversity in our workplaces."

Energy & Environment VP Dan Hartley (6000) writes in his nomination of Nestor that he manages programs to resolve important technical issues in nuclear engineering, and that his and his staff's work is being applied by government, industry, and academia nationally and internationally.

"He is very proactive in helping minority universities to develop excellent academic and research infrastructures in science and engineering," Dan writes. "He plays an important role in developing Sandia's diversity program and in hiring, mentoring, and promoting career development of minorities and females."

"Achieving success in complex missions requires people with the right education, working as a team under the right environment," says Nestor. "Martin Marietta and Sandia are fostering an environment where diverse cultures — including Hispanics — have the opportunity of working together to contribute to the national security of this country.

"I accept the opportunity and challenge to serve as a role model for Hispanics in the science and technology area," he adds, "so they will experience the honor and joy I feel in receiving a national award as a Hispanic engineer."

## Work won R&D 100 Award

José, whose work in developing hydrogen sensor technology won a 1993 R&D 100 Award recognizing it as one of the nation's 100 most significant new technologies, was nominated by his department manager, Paul McWhorter (1325).

Paul says José's determination and hard work lifted him from a disadvantaged childhood in Juarez, Mexico, and carried him through the University of Texas at El Paso and Stanford University to a staff position at Sandia in 1978.

"I cannot think of a better example of an individual overcoming disadvantage," Paul writes in his nomination. "José will fulfill the obligation of 'role model' with integrity, character, and distinction, and will serve as an inspiration to those struggling with adversity."

José says he is deeply honored to have been selected from a group of so well qualified and deserving nominees.



HISPANIC ENGINEER National Achievement Award winners, left to right, Tamara Ulibarri (1811), José Rodriguez (1325), and Nestor Ortiz (6400) share the pleasure of being selected from nearly 250 peers nationwide for their scientific and engineering accomplishments. They will be honored Oct. 15 at the Hispanic Engineer National Achievement Awards Conference in Houston.

## Award winners to be recognized next week

Before going to Houston to receive their awards in October, Sandia's three honorees will be acknowledged before their fellow employees during a Wednesday, Sept. 21, ceremony at the Technology Transfer Center (Bldg. 825). The ceremony is part of the Labs' Hispanic Heritage Month activities.

Nestor Ortiz (6400), José Rodriguez (1325), and Tamara Ulibarri (1811) will be recognized during the 10-11 a.m. ceremony, which will be keynoted by Linda Garcia Cubero, Manager, Group Development, Mergers and Acquisition, Information Group, Martin Marietta Corp.

"I am proud and honored to receive such an award from HENAAC," he says. "But it is not just for me; it also honors those who influenced me in my youth, and my co-workers, without whose help and support I might not have reached this point in my career. And I am very proud to be considered a role model for young people."

Tamara, who has been at Sandia less than four years, was nominated by her department manager, Roger Clough (1811).

He describes her University of California, Irvine, graduate work in the use of rare earth metals for catalyzing organic chemical compounds as "cutting-edge research."

During her time at Sandia so far, he writes, she has pioneered development of a polymer-ceramic composite material, "work that could only have been done by an unusual person having exceptionally broad interdisciplinary capabilities in both of these areas."

Tamara says she was surprised and delighted to be among those selected by HENAAC. "Receiving the award is a great honor," she says, "and I will try to live up to the spirit of the award in the future."

## Sandia Day Employee Car Show



An employee car show will be held on Sandia Day, Oct. 22, 9 a.m.-2 p.m., in the parking lot west of the Technology Transfer Center (Bldg. 825). All Sandia employee vehicles, including customs, restored vehicles, trucks, race cars, and motorcycles will be accepted. There will be no judging, but each entrant will receive a memento acknowledging participation. Questions should be addressed to Reggie Tibbetts (7813) or Matt Torres (7435) on 844-5244. To enter, return the entry form below to Reggie at MS 0934. Registration deadline is Oct. 17.

To: Reggie Tibbetts, MS 0934

### Sandia Day Car Show Entry Form

Name: \_\_\_\_\_

Org.: \_\_\_\_\_ Mail Stop: \_\_\_\_\_ Phone: \_\_\_\_\_

Vehicle make and model: \_\_\_\_\_ Year: \_\_\_\_\_



# Upcoming phone changes include seven-digit dialing

## Sandia 'telephone company' makes new features available

By Janet Carpenter

Lab News Staff

Now that Sandia has its own "telephone company," several changes will take effect Oct. 1 that will change the way you use your Sandia telephones.

"Many new capabilities are available with our telephone system," says Steve Ross, emergency preparedness project leader in Emergency Management Dept. 7311. "The 5ESS switch makes it all possible."

This switch supports phone service for Sandia, DOE, and DOE contractors located on Kirtland AFB. To continue supporting this customer base, it will soon be necessary to add additional phone numbers to the telephone switch. To prepare for the addition of these new numbers and to enable the addition of new telephone features to the switch, effective Oct. 1, you must use the full seven-digit phone numbers to call on-base numbers. As an example, today you can dial 5-7900 to call the Sandia Voicemail system. After Oct. 1, you will need to dial 845-7900.

"The telephone system is helping integrate Sandia's New Mexico and California sites more closely," says John Eldridge, Networking and Communications Customer Interface Dept. 13917. "We will use seven digits to dial between California and New Mexico, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory. We're also trying to add DOE Headquarters to the seven-digit plan."

The telephone changes also affect feature codes used for calling FTS, dialing off base, forwarding phones, placing conference calls, etc. For example, instead of dialing 9 to get an outside line, dial 7. For FTS calling, dial 7 instead of 8. ISDN phone codes will include

dialing \*19 to select a number to use for forwarding all calls (instead of \*9) and \*13 to use for forwarding calls after the third ring (instead of \*7), etc.

A revised *Sandia Directory* including the changes discussed here is scheduled to be issued to all employees Oct. 1.

### Use 911 for emergencies

As of Oct. 1, call 911 (844-0911 on cellular phones) to summon response to all Sandia emergencies (e.g., fire, bomb threats, medical). Updated Sandia Quick Reference cards with information about who to call in emergency and nonemergency situations will be distributed.

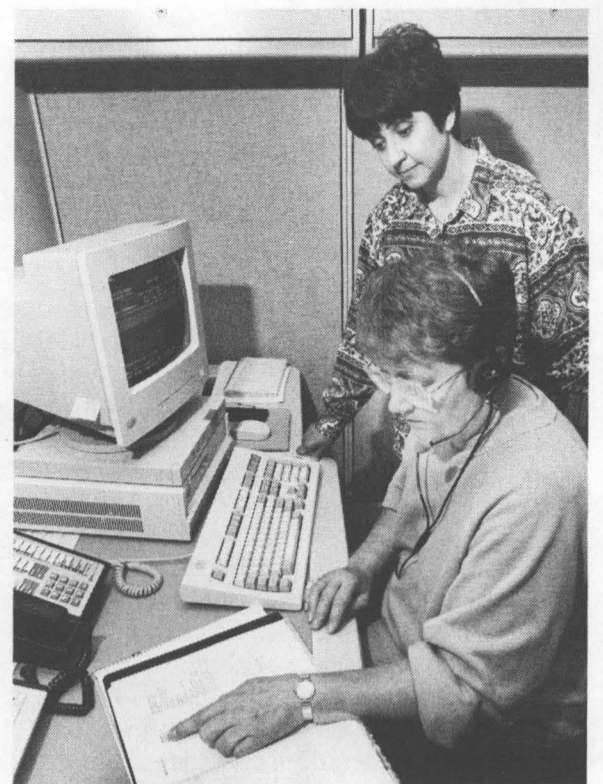
If you encounter a situation that doesn't appear to be an emergency, but which could affect your health, safety, environment, or security, call 844-6515, the nonemergency number listed on your Quick Reference card. Fender benders, minor spills, sprained ankles, etc., are examples of non-urgent situations.

If you're not sure if your situation is an emergency, you should never hesitate to call 911.

New telephone stickers that have the phone numbers on them will be available by Sept. 30. "General Employee Emergency Response Awareness Training" has been updated to include the changes. This course is part of required annual ES&H training.

Sandia Security's Headquarters Communication Center will continue to be the primary responder to all 911 calls; the Sandia Medical Department, Incident Commanders, South Security Force, and the KAFB Fire Department will listen to the calls for response instructions.

Steve Ross says that Phase I of the 911 plan will affect just Sandia/New Mexico for now and



FINDING EMPLOYEE phone numbers and locations has been easier since the Sandia locator service, here represented by Maryalvin Gonzales (standing) and Alma Jean Sage (contractors in Dept. 13914), moved a year ago from Human Resources Center 3500 to Customer Support: LAN, WAN, Phone, and Video Dept. 13914. The organization change allowed the service to be computerized; in the past, locators flipped through printed lists to find employee locations and extensions. Telephone service at Sandia has been changing steadily since the installation of the 5ESS switch last year.

that Phase II, integrating all KAFB facilities, could be completed within the next 24 months. Completion depends on DOE and DoD approval for a common dispatch center.

## Feedback

### Employment discrimination policy

**Q:** I noticed in the Labs' updated Equal Employment Opportunity and Affirmative Action Policy Statements that Sandia has included the term "sexual orientation" among the list of items on the basis of which individuals cannot be discriminated against in employment matters. The policy also includes the words "all applicable equal employment laws and regulations regarding:" prior to the list. Why has Sandia included "sexual orientation" in the list? What specific "laws and regulations" exist that required Sandia to include it?

In my opinion, Sandia has entered uncharted territory by including "sexual orientation" in these policy statements and could be found liable for damages if claims of discrimination are made on this basis.

First, sexual orientation is a behavior and not a fundamental physical attribute, as are most of the other items in the list. (Religion, Vietnam veteran status, and marital status are clearly experiential and do not represent an issue in the minds of most people.) Further, the urgency of the other items in the list, particularly traditionally disadvantaged minorities, is compromised by the inclusion of a behavior which has been shown to be voluntary and reversible or changeable based on the will of an individual.

Second, because it is a behavior, there is not now, nor will there ever be, a conclusive test to prove the sexual orientation of an individual. While all of the other items in the list can be definitively verified (either through physical examina-

tion, testing, or review of information), an individual's sexual orientation must simply be accepted as claimed, despite whether the claim is true or false. This lack of an independent means to verify an individual's sexual orientation creates the potential for fraudulent claims of discrimination against Sandia or any of its employees.

While I know of no one at Sandia who is an acknowledged homosexual, I strongly believe and practice the Sandia corporate values of integrity, quality, leadership, teamwork, and — especially — respect for the individual. I sincerely appreciate your consideration and response to my questions and concerns.

**A:** In response to the first question, effective Jan. 1, 1993, California passed AB 1206. The passage of this regulation effectively prohibits employment discrimination on the basis of perceived or actual sexual orientation. (Sexual orientation refers to either heterosexual or homosexual orientation. It differs from the term "sexual preference," which denotes a choice in sexual activity.) The effect of this regulation is the same as other equal employment opportunity laws, regulations, and guidelines that make all terms and conditions of employment accessible to all applicants and employees regardless of race, color, national origin, religion, sex, age, disability, veteran status, and sexual orientation.

In response to the second question, Sandia included "sexual orientation" in its policy because it is Sandia's policy that all sites be governed by similar policy. Though New Mexi-

co did not (by a narrow margin) pass a regulation prohibiting employment discrimination on the basis of sexual orientation, the California legislature did pass the regulation. Thus, in accordance with our practice, California legislation is applied Sandia-wide, regardless of site.

The legislation does not provide for affirmative action employment programs based on perceived or actual sexual orientation. This means that numerical affirmative action goals are not required. However, it does mean that Sandia must ensure equal opportunity for all applicants and employees in all terms and conditions of employment.

Charlie Emery (3000)

## Fun & Games

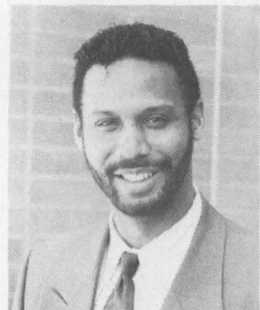
**Skiing** — Although temperatures are still reaching the 80s, Coronado Ski Club board members have spent the summer planning trips, give-aways, and other activities for winter fans. To participate in next season's ski club activities, you must be a member of the Coronado Club. If you are interested in joining the ski club, you are invited to attend the first general meeting of the 1994-95 year on Tuesday, Sept. 20, at the Coronado Club. A social period begins at 4:30 p.m., and the general meeting begins at 6. Trips are being planned to Utah, central Colorado, Taos, and other popular ski areas. A ski physical preparedness class is also being planned. For information, contact Margaret Emrick on 260-6567.



## Anthony Thornton named Diversity Director

ANTHONY THORNTON has been named Director of Diversity Leadership and Education Outreach Center 3600.

Center 3600 is responsible for affirmative action, equal opportunity, special interest outreach committees, K-12 program, post-secondary programs, community outreach for school tours, and speakers bureau.



ANTHONY THORNTON

He has been Post-Secondary Program Manager in Education Outreach Dept. 3020 since August 1993. He worked on an inter-related set of projects supporting scientific and technical education for post-secondary students and faculty, and designed projects to improve scientific and technical literacy at universities and community colleges.

His career since joining Sandia in 1979 has been in applied research in computational fluid dynamics (grid generation, grid adaptation, gridless numerical methods) and convective heat transfer and fluid flow analysis with an emphasis in computer modeling and simulation.

He came to Sandia after receiving a BS in aerospace engineering from the University of Colorado. He first joined Sandia's Heat Transfer and Fluid Mechanics Department, where he investigated magma energy extraction by studying convective heat transfer processes in

porous media for the in-situ heat transfer experiment.

From August 1979 to August 1980, Anthony participated in Sandia's One-Year-On-Campus program, attending Stanford University to earn a master's degree in engineering. He was with the Aerothermodynamics Department from September 1980 to August 1984 and determined aerodynamic heating effects on reentry vehicles and other bodies in hypersonic flight. He left Sandia in September 1984 and worked to obtain a PhD in aeronautics and astronautics at Purdue University through Sandia's Doctoral Studies Program.

Anthony was with the Thermophysics Department from December 1988 to January 1991, and was project leader of a process management team to develop a rapid response computational fluid dynamics capability. While there, Anthony received a Sandia Award for Excellence for leading a process management team in developing a three-dimensional simulation capability.

From February to July 1993 he worked for the Parachute Technology and Unsteady Aerodynamics Department. He was the original principal investigator on a successful Labs-Directed Research and Development proposal to develop a novel gridless technique for fluid-structural dynamic coupling on flexible membranes.

He is a member of the National Technical Association, the American Institute of Aeronautics and Astronautics, Sigma Gamma Tau (aeronautical engineering honorary society), and Tau Beta Pi (engineering honorary society).

### this month in the past...



**40 years ago...**The latest semi-annual report of the Atomic Energy Commission (AEC) was summarized in the *Lab News*, which reported a "concerted development effort on thermonuclear weapons." The report said the R&D program was highlighted by tests at the Pacific Proving Ground which were known as "Operation Castle." The story concluded, "For security reasons, Sandia's contributions to the weapons program are not mentioned, except to refer to the renewal of the contract under which Sandia Corporation operates the laboratory for the AEC."

**35 years ago...**Famous rocket scientist Werner von Braun, then director of the Army Ballistic Agency's Development Operations Division, commended Sandia's support in the Army's Deacon-Arrow Meteorological Rocket Program. The Army used Sandia-developed "chaff" rockets to measure upper atmosphere winds. Radar was used to track chaff (lightweight aluminum strips) that was ejected from the rockets at desired heights. As of summer 1959, more than 65 of the rockets had been launched at Sandia's Tonopah (Nevada) Test Range in support of the Deacon-Arrow Program. Sandia originally developed the rockets for use in the Pacific "Hardtack" series of nuclear tests.

**30 years ago...**Nuking their butts — A 1964 *Lab News* story reported that the Atomic Energy Commission had awarded \$20,000 to a Kentucky firm to study the possible effect of ionizing radiation on tobacco. The firm, Spindletop Research Center of Lexington, planned to irradiate cigarettes with massive doses of highly penetrating gamma radiation from a cobalt-60 source to see if the radiation could alter the "nature of certain undesirable products in cigarettes." The irradiated butts were to be "smoked" by an automatic smoking machine and the smoke compared with that from unirradiated cigarettes.

**Breakthrough for women** — It was announced that Sandia's traditionally all-male Technical Development Program class would be a little different in the fall. "Pert" Gail Barton, as the *Lab News* described her, was scheduled to join 44 men who worked part time at Sandia and attended technical university classes part time.

## Fun & Games

**Summer softball** — The 1994 Sandia Laboratories Softball Association (SLSA) summer softball season final standings and tournament results are shown below. SLSA board members thank all who participated and supported the league.

**A League:** Tied for first place, Naturals and Reckless Abandon; third place, Slowballers; fourth place, Metallurgy Clergy; fifth place, Berserkers; tied for sixth place, Air Guard A and Bob's Buff; and eighth place, The Others.

**A Tournament:** First place, Naturals; second place, Reckless Abandon; third place, Slowballers; fourth place, Air Guard A; tied for fifth place, Metallurgy Clergy and Berserkers; and tied for seventh place, Bob's Buff and The Others.

**B League:** First place, Bombers; second place, TTC; third place, Bullheads; fourth place, Desperados; fifth place, CCU; sixth place, Desert Rats; tied for seventh place, Tumbleweeds and NC&C; ninth place, Lazars; and tenth place, Generics.

**B Tournament:** First place, TTC; second place, Tumbleweeds; third place, Desperados; fourth place, Bombers; tied for fifth place, Lazars and Desert Rats; seventh place, Bullheads; and a three-way tie for eighth place, NC&C, CCU, and Generics.

**C League:** First place, Deadwoods; second place, Sandbaggers; third place, Hitters & Fitters; fourth place, Air Guard C; fifth place, Finite Elephants; sixth place, When Pigs Fly; and a three-way tie for seventh, Stray Bears, GunRunners, and Silver Slammers.

**C Tournament:** First place, Hitters & Fitters; second place, Air Guard C; third place, Finite Elephants; fourth place, Sandbaggers; tied for fifth place, Stray Bears and Deadwoods; seventh place, GunRunners; and tied for eighth place, When Pigs Fly and Silver Slammers.

**W League:** First place, Right Stuff; second place, Anita's Team; third place, Great Expecta-

tions; and fourth place, Tech Rex.

**W Tournament:** First place, Right Stuff; second place, Anita's Team; and third place, Tech Rex.

**Coed League:** First place, Just for Fun; second place, Melt Defects; third place, Blowfish; fourth place, L.H. Beagles; fifth place, Gram Inc.; and sixth place, Killer Bees.

**Coed Tournament:** First place, Just for Fun; second place, Blowfish; third place, Melt Defects; fourth place, Killer Bees; fifth place, Gram Inc.; and sixth place, L.H. Beagles.

## Favorite Old Photo



**WHAT'S FOR DINNER?** — My father took this photo of his father in the 1930s. I had always thought that the chicken in the photo was a family pet. Only recently did I discover that the chicken was simply Sunday lunch. — Darryl Drayer (7906)

## Sympathy

To Edward Cole, Jr. (2275) on the death of his father in Raleigh, N.C., Aug. 10.

To Pandora Apodaca (12336) on the death of her father, Wilfred Gumbs, Jr., in Brooklyn, N.Y., Aug. 25.

To Harry Hjalmarson (1322) on the death of his mother, Katrin Hjalmarson, in Grand Forks, N.D., Aug. 29.

To Hugh Church (6612) on the death of his sister-in-law, Carolyn Church (wife of retiree Allen Church), in Albuquerque, Sept. 2.



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

## MISCELLANEOUS

BICYCLE CABLE LOCKS, Nashbar, steel lock body, 5-pin brass tumbler, vinyl-covered 7/16" x 6' cable, w/bracket, never used, \$11 or 2/\$20. Schkade, 292-5126.

FOOTBALL PLAYER COLLECTIBLES, hundreds of newspaper cutouts from '25 to '32, under plastic, in book, make offer. Locher, 256-3406.

PA SYSTEM, Klipsch, JBL, Tascam, Crown, Hafler, Yamaha, Shure, AKG, Mogami, Switchcraft, clean, \$15,000 invested, sell for \$7,500 (complete system only). Rathbun, 888-3344.

POCKET-SIZE DIGITAL DIARY, Casio SF-4300, 32KB memory, retail \$69.99, sell for \$45. Webb, 828-2271.

ROSENTHAL CHINA, Japanese blossom pattern, complete set for 12 w/serving pieces, classic modern, w/platinum trim. Wagner, 823-9323.

CONTEMPORARY DINING TABLE, w/six chairs, solid mahogany, seats 6-14, like new, \$550 OBO. Benham, 856-2739.

OLYMPUS CAMERA, ISE, one year old, excellent condition, \$400. O'Keefe, 899-7669.

BUNDY CLARINET AND FLUTE, will trade, both for camcorder. Aragon, 888-3473.

FRIGIDAIRE WASHER and White-West-inghouse electric dryer, white finish, \$200 for pair. Burstein, 275-3370.

GARAGE SALE, annual, multifamily, quality women's clothing, household items, 1308 Ridgcrest Dr. SE, Saturday, Sept. 17, 9 a.m. Cook, 266-6088.

SOFA SLEEPER, queen-sized, blue pattern, \$150; white kitchen table, 2 chairs, \$40; end table, \$20; stereo case, \$10. Alam, 281-7760.

WOMAN'S DIAMOND RING, 14K white gold, center stone 1.06 ct., 4 side stones, each 0.11 ct., best offer. Besse, 294-6711.

NINTENDO VIDEO GAME, w/9 games and carrying case, excellent condition, \$75. Anderson, 897-2772.

SAMTRON B/W MONITOR, Toshiba wide-carriage dot-matrix printer, IBM keyboard, MS-DOS 5.0, Lotus 123, 2.3 DOS, 386Max, grammar checker. Turpin, 281-5933.

STEREO AMPLIFIER, ADCOM GFA-555, Series 1b, 200-watt, \$525; ADCOM GFA-555 series 1a, \$450; Yamaha M-45, 125-watt stereo amplifier, \$100. Norton, 299-3763.

UPPER BODY EXERCISE STEPPER, Image 833, combines stepping action w/upper body handle bars, \$200; 110-lb. barbell set, \$20. Shane, 294-4920.

TABBY CAT, large, orange, neutered, talkative, 4, needs inside/safe-outside, one-pet home, no young children, craves affection. Whitehill, 298-2011.

WATERBED, super-single w/bookcase, headboard, linens, \$125; upright piano, circa early 1900s, needs tuning, \$300. Braaten, 293-0709.

BABY/TODDLER ITEMS, crib, mattress, changing table, car seat, highchair, walker, toys, more. Lott, 856-5956.

COMPUTER, 386DX20, 4MB RAM, 40MB HD, 5-1/4" & 3-1/2" disks, super VGA monitor, 24-pin printer, rarely used, original owner, \$1,200. Baca, 271-2962.

SHOPSMITH, Mark V, dust collector, jointer, workbench, accessory shelf, casters, disc sander, accessories, hardly used, \$2,035. Granstaff, 856-7589.

WASHER AND DRYER, Kenmore, \$250; twin-size bed with built-in drawers, \$200; two twin-size mattresses, \$75 ea. Kramer, 281-8516.

LIONEL TRAINS; baseball, basketball, non-sports cards; futon beds. Truitt, 294-5349.

PIANO, Yamaha U2, full upright, ebony, white leather bench, one owner, well maintained, \$3,600. Shepherd, 296-1238.

TV, SONY 19", w/remotes, \$175; Shure VCR, w/remotes, \$75; wall unit, \$50, will sell all for \$275. Schultz, 275-9349.

TANDUM AXEL TRAILER, 16-ft., 5-ft. sides, good rubber, electric brakes, \$1,000. Gallegos, 293-8885.

HEADBOARD, king, walnut. Baca, 265-2881.

DRAGON MASK, \$100; shotgun, old 12-gauge pump, \$500; stamp collection, \$1,200; two weight-lifting leather belts, \$40. Eikelberg, 296-0899.

OBOE, Linton, excellent, student, recent professional servicing and appraisal, \$625; two fender-mount detachable mirrors for towing, \$10. Richardson, 296-8787.

NORDICTRACK ACHIEVER, brand new, w/all accessories, \$575. Stotts, 271-1339.

BABY STROLLER, Graco, \$20; infant carrier, \$5. Nelson, 828-2755.

BEDROOM SET, 5-piece, walnut, excellent condition, \$400; bronze, aluminum 6-ft. sliding glass door, \$50; four 165R13 tires, \$10 ea. Patrick, 265-4569.

SPARE TIRE AND WHEEL, temporary, Goodyear T115/70D14 tire on black steel wheel, 5-hole, 4" spacing, never used, \$25. Molecke, 296-5850.

ARTIST'S DELIGHT, drawing table, lamp, straightedge, K&E pens, electric eraser, ultrasource cleaner, \$200 OBO. Lambert, 293-8825.

GOLFERS, set of 4 woods, Haig Ultra, right-handed driver plus 3, 4 & 5, steel shaft, need grips, \$50. Norwood, 292-0072.

TV/VCR CART, wood, 28-1/4" w x 15-1/2" d x 19-1/2" h, \$25; typewriter, Olympia, w/case, \$30; picture, wood frame, 52" w x 27" h, \$10. Campbell, 268-4925.

ESPRESSO COFFEEMAKER, Signor, like new, \$50; Little Ben coffee grinder, \$15. Liguori, 256-3613.

GOLF CLUBS, Wilson staff, fair condition, 2-PW, w/bag, \$75. Holmes, 897-0916.

COMPUTER, VAXstation 2000, 1024x864, 19", 4-plane color, 6MB, 159MB HD; VMS software, documentation, 32-bit hardware, FPU, \$995. Key, 856-1588.

WINTER FUN, join Coronado Ski Club, great trips, discounts, general fun, sign-up meeting at Coronado Club on Sept. 20, 4:30 p.m. Emrick, 298-1083.

DOORS, drawers, and shelves from kitchen cabinets; dishwasher, free. Harstad, 298-6551.

TRUNDLE BED, teak, w/custom mattresses, teak twin headboard/bookcase, 4-drawer dresser; Lil Tykes giraffe; child's rocker; all excellent condition. Cashwell, 856-1968.

AIRCO CUTTING TORCH BODY, unused, model 9515, \$150 OBO; unused AIRCO style 144 cutting tips, \$10 ea. Zirzow, 281-9896.

ESTATE SALE, chainsaw, \$75; carousel horse, \$1,600; kerosene heater, \$60; sailboat, \$650; electric lawnmower, \$75. Lorenz, 281-9321.

486DLC, 40mhz., 8MB RAM, 256K cache, 212MB hard drive, math co-processor, super VGA monitor & card, mini, tower, fax-modem card, \$1,200. Malone, 821-9051.

IBM-XT TURBO, w/color monitor, 5-1/4" & 3-1/2" floppies, Epson LX-800 printer, joystick, software, games, & documentation, \$400. Chavez, 275-0490 after 6 p.m.

DINING ROOM TABLE, pecan, oval, w/leaf, 4 chairs, matching china hutch, \$300 for set. Crine, 292-5321.

SKI RACKS, 6-pr. locking Barreccrafter, luggage-rack mount, \$70; 2 pr. rain-gutter mount, \$15; both good condition. Clark, 281-1243.

GOLF CLUBS, Ping Zing, Black Dot, 1 thru SW, \$635, Taylor made woods, 1, 3, 5, \$125; all excellent condition. Feng, 275-6639.

AIR HOCKEY, Brunswick professional floor model, 3'2" x 6'2", like new, w/instructions, 65% off, \$250 OBO. Dybwad, 296-9047.

TWO MOTORCYCLE HELMETS, Bell Super Magnum, silver, size 7-1/8, \$40; HJC FG 9, white, full-face, medium size, \$50; visors included. Larsen, 292-7301.

SEGA GAME GEAR, w/four games, AC adapter, car adapter, in case, \$150 (\$250 value). Cook, 292-0196.

**Deadline: Friday noon before week of publication unless changed by holiday. Mail to Dept. 12660, MS 0413, or fax to 844-0645.**

### Ad Rules

- Limit 20 words, including last name and home phone (the *Lab News* will edit longer ads).
- Include organization and full name with each ad submission.
- Submit each ad in writing. No phone-ins.
- Use 8 1/2" by 11-inch paper.
- Use separate sheet for each ad category.
- Type or print ads legibly; use only accepted abbreviations.
- One ad per category per issue.
- No more than two insertions of same "for sale" or "wanted" item.
- No "for rent" ads except for employees on temporary assignment.
- No commercial ads.
- For active and retired Sandians and DOE employees.
- Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.
- "Work wanted" ads limited to student-aged children of employees.

VGA COLOR MONITOR, w/box and books, must sell, \$100 OBO. Wood, 823-1965.

TWO COUCHES, 4 chairs, double bed, mulching mower, glasstop table w/4 chairs, stereo, microwave, more. Buchanan, 299-7487.

FORMAL DINING TABLE, w/4 chairs, \$600; child's oak bedroom furniture, \$550; Amana refrigerator, \$700; Whirlpool washer, \$300; console TV, \$100. Salazar, 281-0560.

FOOD DEHYDRATOR, 9-tray electric, \$70; 7-in. grinder/sander, 10 amps, \$50; electric hand planer, \$25; electric heater, \$20. Abbott, 298-2039.

BAND SPEAKERS, two Kasino, 5' x 1' x 1', mixer, microphones, all \$150; electronic cash register, old programmable, \$75. Blackledge, 294-6030.

DINING ROOM TABLE and six chairs, very nice, \$375. Barton, 268-7349.

BABY ITEMS, crib, innerspring mattress, \$60; Fisher-Price port-a-crib, \$45; swing, \$15; walker, \$10; double stroller, \$15. Koepp, 294-7136.

REAR WINDOW for full-size Ford pickup. Hesch, 298-4902.

COLLECTIBLE GLASS CLOWN FIGURINES, complete series of 13, \$100 for set; port-a-crib, \$30. Parson, 291-8394.

WATERBED, queen-size, heater, liner, bookshelf headboard, padded side rails, fairly new, regular mattress, good condition, \$100 OBO. Brock, 296-7307.

LA-Z-BOY ROCKER/RECLINER, brown tweed, \$100; swivel rocker, beige fabric, \$100; hide-a-bed sofa & loveseat, neutral tones, \$400 OBO. Spears, 266-9782.

BABY FURNITURE, Simmons, solid maple set, includes crib, coil mattress, 6-drawer dresser, & changing table, excellent condition, \$600. Ross, 299-3023.

BABY ITEMS, 2 captain's chair car seats; backpack, 2 strollers, all \$30 ea.; GE refrigerator, 19.1 cu. ft., side-by-side, almond, \$125. Rechard, 292-1754.

GARAGE SALE, multi-family, Saturday, Sept. 17, 9 a.m., Horton Lane NW. Levin, 897-7145.

ANTIQUe CRIB, w/mattress, \$50; antique printers trays, \$20-\$35; Nettlecreek comforter, queen-size, \$15. Peterson, 256-7514.

### TRANSPORTATION

'85 TOYOTA SUPRA, gray, AT, sunroof, good condition. Creel, 839-7335.

'80 TOYOTA 4x4 TRUCK, new motor, 6K miles, new tires, stereo included, excellent condition, \$4,500. Chavez, 293-2853 after 5 p.m.

'83 MERCURY MARQUIS, one owner, 93K miles, excellent condition, PW, PL, power seats, \$2,800. Schamann, 298-5192 after 5 p.m.

'85 FORD TEMPO, 4-dr., original owner, white, 85K miles, very clean, McBride, 821-6839.

'91 CHEV. CAPRICE, 58K miles, rear defrost & side windows, 4-dr. sedan, maple, \$8,000. Torres, 869-3159.

'72 DODGE CHARGER, excellent condition, many new items including paint, roof, carpet, carb., ignition, exhaust, \$3,600 OBO. Baney, 294-8970.

'76 CADILLAC ST. MORITZ, 75K miles, PW, PL, great car, \$5,000. Simon, 299-8468 evenings.

'91 JEEP CHEROKEE LAREDO, 4-dr., 4x4, AT, AC, PW, PL, keyless entry, excellent condition, 66K miles, book \$14,000. Kauchich, 275-1034.

'86 PONTIAC GRAND AM, 2-dr., new clutch, heat/air, interior in great condition, \$3,300 OBO. Archibeque, 877-8818.

'87 NISSAN MAXIMA, V-6, 5-spd., PW, alarm, Alpine stereo, new custom paint, ground effects, 50's series tires, 140K miles, \$6,000 OBO. Maokhampiou, 296-5095.

'92 TOYOTA CELICA GT, convertible, like new, 18K miles, 5-spd., AC, dust cover, \$18,000 OBO. McConnell, 271-2011.

'75 F250 SUPERCAB PICKUP, 360 engine, new tires, shell, bedliner, dependable, runs great, \$2,495. Gallegos, 293-8885.

ADULT TRI-WHEELER, 3-spd., Schwinn, coaster brake, like new, \$125. Baca, 265-2881.

'92 TOYOTA CELICA GTS, AM/FM cassette, 5-spd., PW, PD, cruise, AC, sunroof, anti-theft device, 14K miles, excellent condition, \$16,500. Nelson, 828-2755.

'84 SUBARU GL, 4x4 SW, rebuilt engine, FM cassette, AC, 170K miles, \$2,500. Hund, 281-5297 after work.

'92 FORD BRONCO XLT, 4x4, 24K miles, AT w/OD, PS, PB, PW, PL, excellent condition, many extras, \$20,325. Pritchard, 299-3543.

'88 PLYMOUTH VOYAGER LE, minivan, 89K miles, blue, PS, V-6, excellent condition, \$6,990. Liguori, 256-3613.

'89 DODGE VAN, B250, 360, V-8, AC, PS, PDL, tilt, PB, TLR tow package, 63K miles, \$10,000. Nelson, 265-2248.

'87 PONTIAC GRAND SAFARI, station wagon, 9-passenger, 108K miles, PS, PB, AC, AM/FM, new brakes, tires, shocks, \$4,500 OBO. Smetzer, 883-3109.

FISHING BOAT, 16-ft., Glaspar, trailer, outboard/trolling motor, good condition. Hertel, 345-1088.

'94 FORD TEMPO GL, 2-dr., AT, turquoise, AC, cassette, PL, theft deterrent, 2,500 miles, immaculate, below NADA. Henderson, 299-6083.

'77 JEEP CHEROKEE CHIEF, V-8, AT, runs great, \$2,900. McNamer, 861-0122.

'89 FORD PROBE GL, AC, PS, AM/FM cassette, 5-spd., silver, 74K miles, \$4,800; '81 Honda CB-650, 17K miles, \$1,000. Jones, 275-6791.

'56 BEL-AIR, 2-dr. hardtop, 265 ci., automatic Powerglide, red/white, beautiful, restored original, no rust, \$14,000 OBO. Banks, 836-1524.

'91 MAZDA NAVAJO, power everything, AC, OTF4WD, immaculate condition, FM cassette, sunroof, tilt, tint, must see. Stuppy, 898-4720 or 266-1994.

MAN'S BIKE, Schwinn Varsity, \$25. Rechard, 292-1754.

GIRL'S BICYCLE, Schwinn 5-spd. Truitt, 294-5349.

### REAL ESTATE

EDGEWOOD, 26 acres, fronts Highway 66 southside, all utilities, terms, Box 1731, Sun City, AZ 85372. Lewing, 602-584-2291.

TAHOE TIMESHARES (2), south shore, 5-star resorts, base of Heavenly Ski Resort, exchange for worldwide resorts, suites w/hot tubs, free shuttle. Ingwerson, (510) 455-5024.

4-BDR. HOUSE, Four Hills, 3,050 sq. ft., big/private yard, wood floors, lots of storage, in-law quarters, brick, warranty, \$230,000. Tebo, 296-4964.

3-BDR. CUSTOM HOME, Sandia Park, 1-3/4 baths, 2-car garage, 2+ acres, long porch w/mt. view, 1,665 sq. ft., steel roof, \$140,000. Salazar, 281-0560.

4-BDR. HOME, Glenwood Hills, 3,300 sq. ft., tri-level, views, landscaped, storage, home/office potential. Dunn, 296-4904, Mon-Thurs. evenings.

TOWNHOUSE, near Ladera Golf Course, two master bedrooms, 2-3/4 baths, approx. 1,400 sq. ft., beautiful condition, lots of upgrades, \$98,000. Owens, 836-7802.

4-BDR. HOME, upper Placitas, 2-1/2 acres, upper deck, borders wilderness, seclusion, view, horses, SLFCU mortgage, additional land available, \$195,000. Vigil, 242-2969.

3-BDR. HOME, freshly renovated inside/out, large kitchen, pitched roof, big yard, mountain view, near Tramway & I-40, \$82,900. Smith, 296-1908.

4-BDR. HOME, custom Mossman, 2,250 sq. ft., Bear Canyon, 2 baths, large patio and den, separate kitchen, finished insulated garage, \$184,500. Chen, 821-5541.

### WANTED

SINGER, for non-professional, just-for-fun rock band. Douglas, 281-9843.

CYLINDER for '75 Yamaha MX250, will consider entire engine or motorcycle for right price. Hesch, 298-4902.

WICKER CHAIR, loveseat, rocker; gas fireplace insert; wood staircase. Rockwell, 884-4206.

OBOE, resin or wood. Lipinski, 299-1140.

SMALL RV REFRIGERATOR, microwave. Shepherd, 296-1238.

WESTERN SADDLE & STOCK TRAILER, light weight, to borrow for Special Olympics, until Sept. 26. McClure, 898-5551.

AIR COMPRESSOR, w/20 gallon tank, 3-hp. or larger preferred. Zirzow, 281-9896.

TRAILER, enclosed, U-Haul or Wells Cargo type, to rent or maybe buy. Wemple, 298-2048.

CHEAP PISTOL, also cheap guitar, electric or acoustical. Roeschke, 266-8988.

ARTIST, for "Cherished Creations" craft show, preview Thanksgiving, 6 p.m.-9 p.m., Wyoming Mall, Friday, Nov. 25 through Sunday, Nov. 27. Self, 296-4137.

BASEBALL MITTS, adult size; deep bookcase; World-Book case; children's mountain bike for 10-yr.-old. Barnette, 292-5186.

### WORK WANTED

STUDENT SEEKS houses to clean, references available upon request, reasonable rates, ask for Andrea. Kaufmann, 292-9249.

BABYSITTING JOBS for mature, reliable adult student, most evenings. Schweda, 296-6029.

KIDS TO BABYSIT, very mature 13-yr.-old honor student, available evenings/weekends, responsible, loves kids. Barham, 293-2412.

### LOST & FOUND

CASIO WATCH, blue and white, found in road by Gate 10, taken to Lost & Found Dept. Pacheco, 844-9272.

GOLD AND DIAMOND BRACELET, lost between east waterfront parking lot and Gate 6 on Tuesday, Sept. 6, reward offered. Bullington, 844-6880.



## Sandia News Briefs

### Sandia's Electronics Quality/Reliability Center gets Intel award

Intel Corporation presented a plaque to Sandia in recognition of the significant productivity improvement Intel has realized as a result of cooperative research and development (CRADA) work with Sandia's Electronics Quality/Reliability Center (EQRC). EQRC is a team effort of Electronic Components Center 2200, Microelectronics and Photonics Core Competency Center 1300, and Technology Transfer and Commercialization Center 4200. Intel presented the award "in recognition of the outstanding contribution Sandia has made to the semiconductor industry through the development of the charge-induced voltage alteration [CIVA] technique to identify circuit opens." CIVA is one of a suite of unique reliability and failure analysis techniques Sandia has invented. This technique can find defects in integrated circuits in minutes that could take more than a week to locate with other techniques. Ed Cole was the technical leader in developing CIVA, and Chris Henderson is the project leader of the failure analysis CRADA with Intel. Both are members of Failure Analysis Dept. 2275.

### DOE Review of Programs for Women coming to Sandia Oct. 10-13

"Weaving Diversity into the Fabric of Quality" is the theme of this year's DOE annual Review of Laboratory Programs for Women. Sandia and Los Alamos National Laboratory are co-hosting the event at Sandia/New Mexico Oct. 10-13. Speakers include Martha Krebs, DOE Assistant Secretary; Sheila Tobias, author of *Overcoming Math Anxiety*; and Lynn Bertuglia, an authority on the "glass ceiling." Joan Woodard, Director of Environmental Programs Center 6600, is the primary contact for Sandia. She says, "These annual reviews have the mission of identifying opportunities to remove barriers and assist all women in achieving their full professional development; developing aggressive outreach programs that improve women's access to careers in science, engineering, and mathematics; and communicating them to DOE and the national labs' senior managers." Although the meetings are limited to designated delegates and are not open to walk-in attendance, there are opportunities for Sandians to help support the event. Interested persons should contact Joan on 845-9917.

### New Carlsbad Operations Center dedicated Sept. 13

Sandia's new 7,500-sq-ft Carlsbad (N.M.) Operations Center, staffed by 26 Sandians and 20 contractors, was dedicated Tuesday, Sept. 13. The center's staff works closely with DOE and Westinghouse Waste Isolation Division workers on the Waste Isolation Pilot Plant (WIPP) near Carlsbad. DOE hopes to bury transuranic waste from nuclear weapons production in the 2,000-ft-deep WIPP. Sandia also recently completed transferring its support of DOE's National Transuranic Waste Program from Albuquerque to Carlsbad. Center Director Paul Brewer (6700) says the Sandia office is also heavily involved in community educational outreach and economic development programs. "We hope we've made a real difference in the community, and this new building is just a symbol of our commitment," he says.

Send potential Sandia News Briefs to Lab News, Dept. 12660, MS 0413, fax 844-0645.

## Sandia in the News

This is a periodic column listing a selection of recent print and broadcast news reports about Sandia. It is provided by Media Relations Dept. 12630 to give Sandians a sense of what is being said about Labs work in national and international media.

The *Toronto Star*, in a story about an international convention of 4,000 statisticians and mathematicians, quotes Ron Iman (6613), the organization's current president, on the "competitive necessity in life" for statistics.

Sandia's historical development of safe and secure nuclear material transportation systems, work the Labs is doing with members of the former Soviet Union, and Dave Nokes (5091) were featured in a major *San Francisco Chronicle* piece about increasing concerns over Russian nuclear security.

Associated Press filed a national story about ongoing development at Sandia of a portable device that could help identify drunken drivers. The wire service also sent a photo out nationwide that was taken during the Sandia/Albuquerque Police Department's first-of-a-kind bomb squad training program.

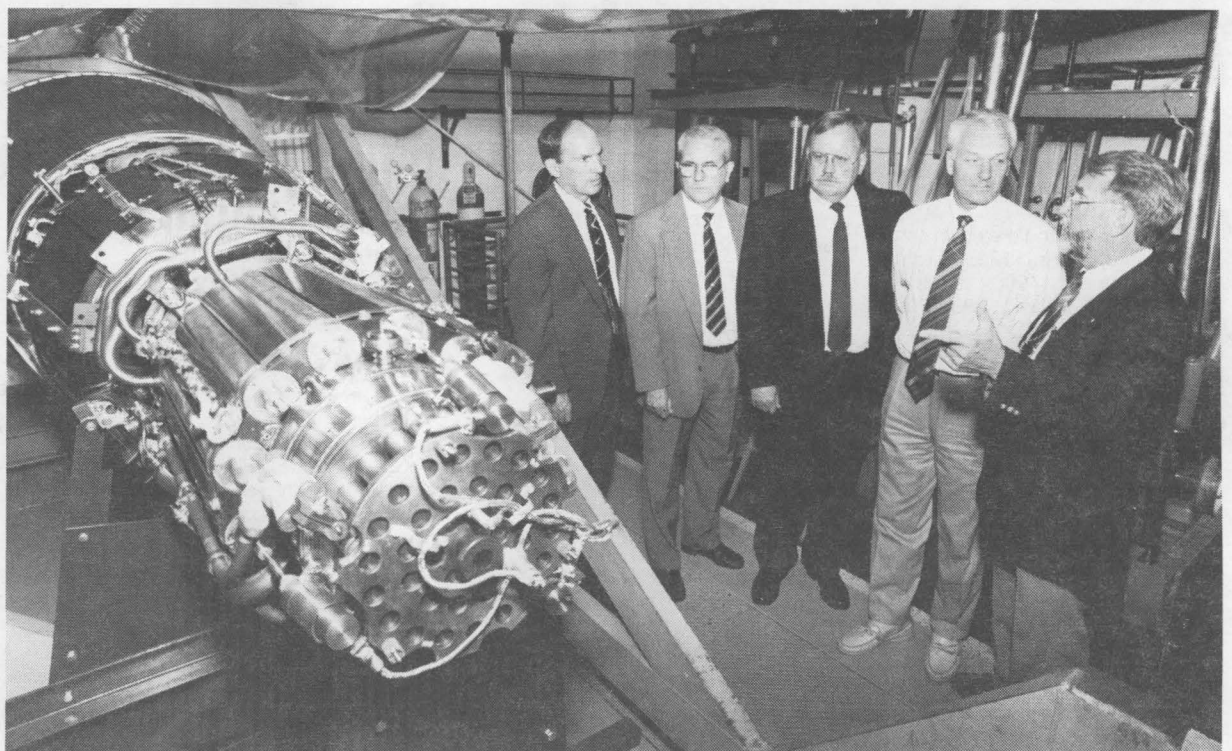
*Virtual Reality World* and *R&D Magazine* talked about Sandia's virtual reality research in recent lengthy articles. *R&D* ran a color photo of Creve Maples (1415) at his video display of "fused data." There also was mention of significant contributions to the technology by Craig Peterson (contractor) and Arlan Andrews (2902).

The *Energy Daily* ran a lengthy page-one piece on how Sandia "is reengineering its applied energy program." It quotes Dan Arvizu (6200) to the effect that "our vision is to become the lead laboratory in renewable energy manufacturing processes."

A CNN "Science and Technology Week"

program included a several-minute report on Sandia's RETRVIR, a robotic system developed for cleaning up hazardous waste.

Kent McIntire (7401) was interviewed about security force physical fitness requirements and policies for a five-minute live segment on the all-news station in Phoenix, KFYL.



TRULY AT TOPAZ — Vice Admiral Richard Truly (second from left) gets a briefing on the Topaz space nuclear reactor from Sandia's Topaz International Program Manager Frank Thomé (6403, far right) as part of a Sandia visit last month. Truly is director of the Georgia Tech Research Institute. He was Administrator of the National Aeronautics and Space Administration from 1989-1992 and before that was a Space Shuttle astronaut, first flying into space in 1981 and in 1983 commanding the first night launch and landing mission. With Truly is Sam Blankenship (center), senior research scientist for the Georgia Tech Research Institute; Sandia VP for Energy and Environment Dan Hartley (far left), host for the visit; and Russian Topaz researcher Valerie Sinkevich (second from right). Truly and Blankenship also received briefings and tours on Sandia's programs in energy and environment, advanced manufacturing, satellites, and microelectronics.

## Coronado Club

Sept. 16 (tonight)— Dieciseis de Septiembre Fiesta. All-you-can-eat Mexican buffet, 6-9 p.m., \$7.95. Together Band, 7-11 p.m., Ballet en Fuego, 8-8:30 p.m.

Sept. 18 — Sunday brunch buffet, 10 a.m.-2 p.m. Adult members, \$6.95, nonmember guests, \$7.95, child 4-12 \$1, 3 and under free. Tea dance, 1-4 p.m., music by Bob Weiler and Los Gatos.

Sept. 22, 29, Oct. 6 — Bingo nights. Card sales and buffet, 5:30 p.m., early birds' bingo, 6:45 p.m.

Sept. 30 — Friday night dinner-dance, 7-11 p.m. T-bone steak, \$11.95, grilled halibut, \$10.95, all-you-can-eat buffet (baked ham, baron of beef, roast turkey breast, poached fish, chef's surprise), \$6.95. Music by Westwind.

## Welcome

Albuquerque — Karen Archibeque, Angela Cabanillas, John Hatley (all 13211), Debbie Luna (13415), Katherine Nienow, Kevin Roberts (both 7713), Darline Romero, Catherine Sleeter, Christine Squire, Sue Williams (all 12111), John Campisi (7713), William Knauf (5008)

Other New Mexico — Priscilla Blea, Alice Glover (both 12111), Michael Pacheco (5831), Catherine Stropki (10230)

Arizona — Paul Carter (1561)

Idaho — Ricardo Sarfaty (6742)

Louisiana — John Dickey (12700)

Pennsylvania — Susan Altman (6312)

Texas — Emily Glass (9225), Sid Gutierrez (9911)

## Retirement Open House

Sandia is holding an open house in honor of retiree Calvin Rogers (9432) in the Area 1 Cafeteria (Bldg. 861) on Tuesday, Sept. 27, 2-4 p.m. Refreshments will be served. Friends and acquaintances are invited.