



FAST AND LOW OVER CACTUS FLATS — A B1 less than 300 feet "off the deck" prepares to drop a laydown weapon near a target during a 1994 low-altitude drop test at Tonopah Test Range (TTR). Declining nuclear weapons budgets and reduced testing needs have caused Sandia to adopt a campaign mode at TTR in recent years, but the range has enjoyed periods of feast as well as famine since its establishment in 1957. In the mid-1960s, the range crew conducted 1,100 tests during a 12-month period, according to a new book about the range by former Sandia historian Leland Johnson, now on sale at the National Atomic Museum Store. The 100-page book, titled "Tonopah Test

Range: Outpost of Sandia National Laboratories," includes information, anecdotes, and historical photographs covering the range's 40-year history, beginning with the shifting of Labs' testing work from the Salton Sea test range in California in the mid-1950s to TTR in Nevada (originally known as "Cactus Flats"); to the first rocket tests and high-altitude aircraft tests; to TTR's weapons testing contributions during the Vietnam and Persian Gulf wars; to the range's present-day status as an as-needed test range. "The range has considerable potential for future development as a historic site," the book concludes. (Photo by Mark Poulsen)

Sandia Sandia National Laboratories

LabNews

Vol. 48, No. 17 August 16, 1996

PACER — analyzing argon provides easy info on aging weapons

New method uses inert gas to monitor O-ring reliability

By Philip Higgs

Lab News Intern

Each time the crew of a US Trident II submarine runs practice preparations for a launch of the sub's stock weapons — a cache of W76 warheads on D5 Trident II missiles — a number of the weapons are really put through the paces. Weapons are placed in launch tubes and the tubes are pressurized for launch; before the dry run is complete, the tubes are depressurized and the weapons removed.

This kind of pressure can get to a missile. The rubber-compound O-rings that encircle the casing and seal off the weapon's interior expand and contract slightly according to pressure and temperature, which can encourage leaks and shorten the O-rings' life spans.

Monitoring seal degradation and an O-ring's ability to keep a weapon's inside clean and free of dangerous elements are therefore important aspects of weapons surveillance.

Until last fall, however, the common method of testing for leaks and degradation of the W76's reentry body O-rings was slow and not quite accurate. In November 1995, the sur-

veillance team that administers the test switched over to a new method developed by Ken Gillen of Materials Aging and Reliability — Bulk Properties Dept. 1811 with joint support from the surveillance groups and the Enhanced Surveillance Program. The new method is quicker, it's more accurate, it provides more information than the old way, and the concept behind it is so simple that any high school chemistry student could understand it.

Leaks and degradation

When the missile casing of a nuclear weapon is assembled, the sections aren't just welded together; engineers and technicians need to be able to get back inside the weapon for evaluations and adjustments. Instead, a weapon's sections are sealed with "environmental O-rings," so named because they protect a weapon's internal components from the surrounding environment.

Elsewhere in the weapon's case are a number of connectors, valves, and actuators that are also sealed with O-rings, which can also degrade. Left unprotected, the components fall prey to

(Continued on page 4)

VP Dan Hartley addresses House subcommittee

There is no need for an all-embracing government policy requiring repayment of taxpayer investment in successfully commercialized cost-shared technologies, Sandia VP for Laboratory Development Div. 4000 Dan Hartley told a congressional subcommittee in recent testimony.

Dan, addressing the House Science Committee's subcommittee on energy and environment, said that based on his long experience with cost-shared programs, he is concerned that a blanket repayment policy "will be perceived by industry as a major disincentive for partnering. Remember we still have a mission to accomplish — we want to do it effectively in a constrained budget; this requires partnering for leverage, and partnering requires incentives."

However, Dan said, it may be appropriate for DOE to require case-by-case consideration of a repayment requirement for those arrangements where DOE is not providing cost-shared technology development, as in demonstration projects where the government's money is more like risk reduction investment directly to industry.

'Two undeniable realities'

In introducing the hearing — "Funding Department of Energy R&D in a Constrained Budget Environment" — subcommittee chairman Dana Rohrabacher (R-Calif.) said, "We are faced with two undeniable realities. One is a shrinking federal budget and the other is a desire by many members of Congress and the national laboratories to continue these [research] partnership programs."

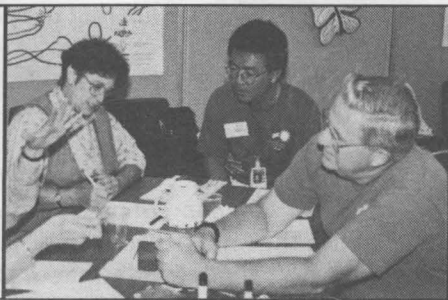
"The question is: are there innovative financing solutions that would benefit both the taxpayer/investor and the government/industry partnerships? Shouldn't the taxpayers get their money back from a successful, profit-making venture?"

DOE currently engages in numerous financing arrangements for technology partnerships. They include cost-sharing, repayment, and royalty and licensing agreements. However, Rohrabacher said, "the agreements

(Continued on page 5)

HR team turns employee survey data into meaningful change 2

At Sandia, teachers develop new ways of making science relevant 3



This & That

The cardiac special - When eating out with some of my so-called friends, I often suffer verbal abuse over my love of chicken-fried steak. (I say a real man needs a good shot of grease occasionally!) But a Sandian recently told me about a dish that even few Okies would eat, at least in public: *chicken-fried bacon*. This Sandian saw country singer/picker Grandpa Jones talking about it on TV, but he said a cholesterol problem now prevents him from enjoying this home-cooked "delicacy" as often as he used to. Something tells me chicken-fried bacon won't show up as a Salud "wellness dish" at the company cafeteria.

* * *

Old writer has new job? - Marti Butler (5799) sent me some yellowed instructions that came to her with some update pages years ago when she was a secretary. Marti says she saved the instructions because everyone in her office back then got such a chuckle out of them. I think they're worth repeating: "The enclosed pages 1 through 108 are a continuation of the revision of Section III. These pages replace pages 1 through 44 and other scattered pages in the 'old' issue. Where applicable, follow the procedures outlined in the 'new' pages, referring to the 'old' pages only when the 'new' pages do not cover the subject. Do not destroy the 'old' pages because parts are still being revised."

The person who wrote that may be working in industry now. I strongly suspect he or she wrote the installation instructions for the ceiling fan I put up at home recently.

* * *

Got a personal mission? - Some motivational speakers just motivate me to nod off during their presentations, but I heard one say recently that every employee needs a personal mission statement to help you define what you're really trying to accomplish at work. At first, that sounded a little hokey to me, but then I decided to give it a shot. It took some thought, but I wrote a personal mission statement that I'm rather proud of, using fewer than 75 words. I don't care to share it with anyone - after all, it's called "personal" - but after writing one, I'll bet many of you would find this exercise worthwhile. It only took me about an hour. Instead of watching Detective Sipowitz harangue a confession out of one more murderer or scummy drug dealer next week, consider spending an hour at this.

* * *

Say cheese, Rodney! - For some reason, my colleague Rod Geer (12640 manager) didn't seem to fully appreciate this when I pointed it out to him and several others in our center. My e-mail spell checker doesn't recognize "Rodney," which we sometimes call him, but it suggests this alternate: rodent.

- Larry Perrine (845-8511, MS 0129, lgperri@sandia.gov)

Straight talk to our readers

The *Lab News* staff takes great pride in providing Sandia employees and retirees timely and accurate news and information. We plan to continue doing so, but we need to tell you about some changes in the works.

Employee Communications and Media Relations Dept. 12640 publishes the *Lab News*, the *Weekly Bulletin*, and the *Heads Up!* and *Sandia Daily News* electronic newsletters.

A tighter budget for next fiscal year will force us to try some new approaches and we want you to know what is coming:

- The *Lab News* will switch to a less expensive paper. It will be thinner, lighter, and less white than the high-quality (and expensive) paper we have used for decades. But it will save a considerable amount of money.

- The *Weekly Bulletin* will cease printing paper copies, a major expense. For the past year, the contents of this bulletin have been on Sandia's Internal Web. Once the paper version is suspended at the beginning of FY97, you will need to access its information through the Internal Web, something that many Sandians have been doing regularly now for some months. (Special arrangements will be made for people who don't have Web access.)

- The daily *Heads Up!* and *Sandia Daily News* electronic newsletters (one for external news, one for internal, and both on the Internal Web) will soon be combined into one.

To make the most efficient use of space in the *Lab News*, there will be two further changes:

- We will slightly decrease the size of the type. That will allow us to publish more information in the given space.

- We sometimes may need to limit the length of our stories.

Despite these changes, we do promise to continue to provide a high-quality, vital, straightforward package of news, information, and features about Sandia and its people.

- Rod Geer, 12640 Manager

HR team develops four corporate goals from Sandians' Perspective data

Members of Sandia's Strategic Human Resources Planning (SHRP) team want Sandians' Perspective survey respondents to know they've been heard, and that the Labs' executive management is working hard to forge their opinions into a better workplace, says SHRP team co-chair Nina Chapman (3000).

Following the survey administered early this year, International Survey Research (ISR) Corp. compiled and tabulated employee opinion data for the center, division, and corporate levels and delivered its corporate-level analysis to the Sandia Quality Leadership Council (SQLC) in early May. The data were presented

to Sandia employees in mid-May (*Lab News*, May 24, 1996).

By that time the SHRP team, a group of director-level division representatives responsible for making sure the survey data get transformed into meaningful change, had already begun digesting the corporate data and developing a strategy for correcting problems identified by the more than 5,400 respondents. Team members analyzed the data, conducted follow-up interviews with employees, and identified Labs-wide trends and issues that seem to crop up survey after survey.

Separate teams at the division and center levels were formed to look at organization-specific data and develop action plans as well.

Goals and tactical approaches

Nina says the SHRP team has distilled the data into the following four corporate goals, presented as recommendations to SQLC July 15, which the VPs have agreed to implement in their respective divisions.

- Ensure that all Sandians know the annual goals for Sandia and their organizations and know how their daily work contributes to these goals. To achieve this, executive management will communicate clear and concise annual goals for the Labs and ensure that the goals are aligned with Sandia's strategic objectives, that they are energizing, that they have clear metrics, and that they are specific enough so that every individual's relationship to the goals can be defined. Every manager at every level will develop a clear statement of organizational goals and establish the links between these goals and each employee's annual performance plan.

- Increase the level of trust and credibility that upper management has with Sandians. SHRP's recommended tactical approaches include improving management's consensus practices (how consensus is reached, how it is internalized among participants, and how it is communicated), ensuring that management communication is consistent at every level, piloting and assessing decisions before implementing them Labs-wide, and holding managers accountable for their decisions.

- Improve people management skills at Sandia by requiring people management training for managers and staff members who are interested in management, incorporating people management skills into managers' Performance Management Plans and the criteria used for promotion, and developing dual-track career ladders.

- Enhance Sandians' pride in the Labs' decision-making follow-up and accountability processes for decisions made at all levels by helping employees see how decisions relate to their jobs, by enhancing managers' abilities to reach and support decisions, and by developing managers' people management skills.

Nina says the VPs have been asked to incorporate these goals into their division-specific action plans. Each division implementation team will develop strategies and metrics and will present their action plans to SHRP Aug. 28. SHRP will conduct reviews and report each division's progress to SQLC semiannually.

Watch for continuing coverage of Sandians' Perspective results in future issues of the *Lab News*.

Sandia LabNews

Sandia National Laboratories

An Equal Opportunity Employer

Albuquerque, New Mexico 87185-0165
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, Editor505/844-6210
Barry Schrader, California site contact510/294-2447
Lab News fax505/844-0645

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

LOCKHEED MARTIN

Teachers experience science education in action

Sandia researchers help make science relevant in summer institutes

By Nancy Garcia

California Reporter

Educators are turning tables on their traditional roles by becoming science students as part of science education workshops at Sandia/California this summer.

Alameda Unified School District Superintendent Dennis Chaconas joined 24 elemen-



LASER program administrator Judie Hurtz tries to drop a penny into a bottle during one of the teacher institute physics activities.

tary teachers from his district to investigate simple physics principles through hands-on activities in a Sandia/California program called LASER (Leadership Academy for Science Education Reform).

After measuring the distance that cubes of either aluminum or Styrofoam were catapulted across a carpet (to investigate the nature of mass), Chaconas declared that he had more questions than answers.

That signified that real learning was taking place, one of the organizers assured him. Teachers trained in LASER say they have abandoned spoon-feeding their students the "right" answers through lectures and textbooks. Instead, they are teaching a process of inquiry in their science lessons. The training also involves three lead teachers hired as facilitators and the support of six principals at the Alameda elementary schools.

LASER is designed to amplify its effect by creating teacher-leaders who will not only offer high-quality instruction in their own classrooms, but will also be prepared to teach other teachers throughout their schools through mentoring, collaborative teaching, and school development days.

Employee death



LAVONNE HILL

LaVonne Hill of Procurement Dept. 8534 died July 26 from cancer. She was 61.

LaVonne had worked at Sandia 24 years as a buyer.

She is survived by a daughter, Debbie Galloway, and two sons, Jack and Rod, plus three grandchildren.

Chaconas participated in part of this summer's three-week-long institute and also provides support by supplying substitute teachers at his district's six elementary schools during several teacher training days.

The three-year LASER institute includes five Saturday sessions and additional teacher development days during each school year. This long-term, year-round approach is intended to create long-lasting change in science education that will provide students a base of science literacy that stays with them throughout their lives, said LASER project manager Vera Revelli, an engineer with Structural and Thermomechanical Modeling Dept. 8742. Judie Hurtz (8818) is the LASER program administrator. Twenty-eight other Sandians have also assisted the program, which began last summer.

The program is conducted by Science and Technology Outreach Dept. 8818 with the California Science Implementation Network (a National Science Foundation-funded program for elementary school reform in California) and the Lawrence Hall of Science, a national leader in science education.

The \$1 million program is jointly funded by the NSF and DOE as part of the National Teacher Enhancement Project (NTEP).

Sam Bowen, NTEP's principal investigator, visited LASER and said he was "extremely impressed." He felt LASER stood out among eight other NTEP programs at DOE facilities as a national model for effective professional development in science instruction.

The Alameda school district was selected for LASER because of its emphasis on improving science education. Chaconas said the hands-on activities "are encouraging kids to be engaged and not hate science." He sees the role of the institute as a way to improve science education without the impetus of a crisis, such as the USSR's success with Sputnik, which fueled US science education in an earlier era.

Middle and high school teachers also participate in hands-on science activities during the summer at Sandia. A workshop entitled SUPER! (Science Understanding Promotes Environmental Responsibility) provides hands-on experience with Sandia research in environment and dismantlement of nuclear weapons, as well as lesson kits to bring back to the classroom. SUPER! is in its



VOCATIONAL VACATION — Elementary school teachers discuss how to present their observations of magnetism to the larger LASER group assembled at Sandia for the summer training.

Sandia California News

fourth year.

Thirty teachers from Northern California spent three weeks enhancing their science instruction through SUPER! this summer, including teams of teachers from Pleasanton and Dublin. The teachers will share their newfound knowledge with other teachers when they return to school. They will also stay in touch with each other and Sandia scientists during the year.

The workshop included laboratory experiments and an open-ended town meeting, during which participants discussed a proposal to dispose of contaminated waste near their community.

"Kids love the material," said teacher Cole Hudson. "I think they're really going to be excited about it."

Teacher Pamela Blinn said she liked putting herself in the shoes of a beginner again. "If I can learn it, they can learn it," she remarked about how her students will respond to the content. She said the issue-oriented approach provided "the basic understanding all of us can have and all of us can use."



MASS MATTERS — Alameda Unified School District Superintendent Dennis Chaconas, center, catapults cubes across the carpet as part of a basic physics lesson at Sandia.

Analyzing argon

(Continued from page 1)

the outside air, and oxygen and water vapor can oxidize and corrode the weapon's interior.

Placement of the O-rings, which are usually made of butyl, EPDM, or fluorosilicone compounds, is a careful business. Any little slip-up, even a tiny bit of caulk or a hair caught between the O-ring and the weapon's metal groove, could go unnoticed and leave room for leaks. A bad seal out in the field leads to a compromised weapon, which can lead to expensive repair or even failure.

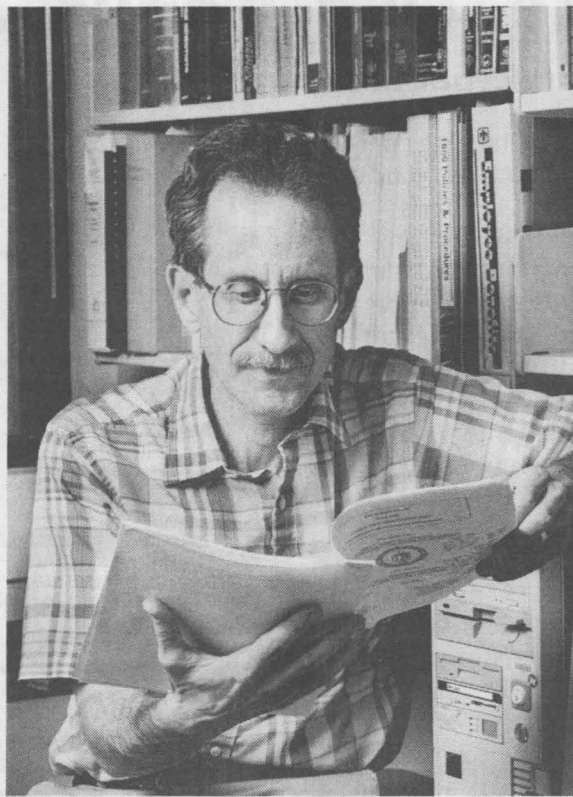
The initial manufacture of these weapons was accompanied by tests that sought to ensure, among other things, good seals. A good initial seal, however, doesn't always mean a good seal permanently. Transporting a weapon from manufacturing plant to inspection to the field, as well as putting weapons through practice runs, can jostle a seal or reseal it incorrectly. O-rings deteriorate with age, which also leads to leaks.

Unworldly conditions

Any weapon in the field is going to go through sometimes rapid temperature swings, rough handling, and bumpy transport rides. One of the standard surveillance tests performed on a range of nuclear weapons at the Pantex plant near Amarillo, Texas, is a helium leak-rate test (see "Leak-rate test is problematic" below). This leak-rate test, however, is a one-time evaluation. The surveillance tests at Pantex can't replicate the field conditions experienced by each individual weapon being tested, they can only measure the leakage of that weapon at that time in those laboratory conditions. "You can have leaks throughout the entire life of the weapon, but they're doing the test at the very end, and a test at the end doesn't tell you very much," says Ken.

But gas samples taken from weapons prior to the leak-rate test provide a different clue. If, in the months or years before a weapon is tested, foreign elements had entered its internal (initially nitrogen) environment, they would have gone to work immediately on the weapon, interacting and reacting with components and casing, and escaped later detection. "Oxygen oxidizes and water corrodes and then they aren't around to measure anymore," says Ken. "A low dew point and zero oxygen in the sample don't necessarily mean that there hasn't been a lot of water and oxygen coming in over a period of time."

There is, however, another player. "I was



KEN GILLEN (1811), here investigating data for an upcoming conference, has devised a new method for monitoring nuclear weapon seal integrity.

looking at the gas sample data, and I kept wondering why every sample had argon in it," Ken says. "I thought it was maybe a mistake, but then I remembered from high school chemistry that argon is the third most important constituent of air." Of the earth's atmospheric gases, argon represents a little less than 1 percent, the most prevalent gas after nitrogen and oxygen. Just as oxygen and water vapor permeate through the rubber O-rings and leak into the weapon around the seals, so does argon gas. Argon is inert — any that leaks in won't react with the weapon's interior components — and so will remain inside in its natural form.

Argon samples are free

"Anytime there's a leak over the entire history of the weapon, argon will enter," says Ken, "so I can take the amount of argon and back-calculate the amount of water and oxygen that were leaking in parallel with argon." An individual sample taken anytime over the weapon's lifetime can provide an average leakage rate. A trend towards increasing average argon leak rates is a definite indicator of O-ring aging.

"While the helium leak-rate test is problematic, only yields momentary results, and is expensive, this [argon-measuring] method represents a very simple way of calculating something we've never before been able to calcu-

single test. "A helium leak-rate test takes at least a day, including transport plus the actual testing," says Bob Balthaser of Stockpile Surveillance Dept. 12363. "It's a long process for every weapon."

Leaks are not the only way the helium can escape, however. O-rings are naturally permeable, so gases will escape no matter how tight the seal. This permeability creates another problem: How can analysts discern between helium that escapes from between bad seals and that which escapes naturally?

"The leak-rate test measures a physical property, permeation, that is always occurring, plus the leakage from a bad or aged seal," says Ken Gillen. "That makes the reading inaccurate."

late," says Ken. He and his colleagues have christened the method PACER, for Probing Argon Concentration to Evaluate Reliability.

Of course, the best news is that gas samples necessary for the PACER method are free. "They've been taking gas analysis samples for 30 years; all the data are in the database," Ken says. Analyses of each weapon system — to determine material constants and necessary parameters — can yield a prediction for argon percentages over time, and certain percentages of argon correspond to certain percentages of water vapor and oxygen. A slightly increasing concentration means gases are simply permeating into the weapon, but significant increases, either sudden or gradual, signify aging seals. Confirming continued O-ring reliability becomes a simple task of rate-watching. If the argon percentage is too high in the gas sample, a helium leak-rate test is then performed to locate the problem.

"With PACER, you get new information on aging, in addition to better information, and they're reducing the number of needed tests," says Ken.

"We started using the argon method exclusively beginning with the current surveillance test cycle for the W76," says George Easley of Stockpile Evaluation Dept. 12363. "Without the helium leak-rate test, movement of the weapon from test site to test site is cut back, and we save at least a day per weapon in operation times." PACER is currently being used with two weapon systems, the W76 warhead and the land-based Peacekeeper-mounted W87 warhead, and is being evaluated for use on several other systems including the W88 and W78 warheads.

Retiree deaths

Raymond Shephard (78) ...8413	.....May 28
Anthony Garcia (58) .....13915	.....May 30
George Power (89) .....9133	.....May 30
Richard Marquez (76) .....1473	.....June 1
Faye Swinford (89) .....3256	.....June 2
T. J. Jorgensen (78) .....3721	.....June 3
Loren Watkins (73) .....2534	.....June 4
Roberta Chinn (54) .....4813	.....June 5
Lloyd Myers (74) .....8412	.....June 7
Thaddeus Stetz (78) .....7126	.....June 7
Grant Johnson (80) .....3742	.....June 9
Willard McCormick (83) ...2522	.....June 12
George Matvichuk (78) .....1912	.....June 27
Laddie Sladek (80) .....4622	.....June 30
Kenneth Bixler (65) .....5122	.....July 4
James McFadden (78) .....9312	.....July 10
Wilbur Henry (85) .....7432	.....July 11
Lourine Milesosky (77) ...9000	.....July 17
John Cunningham (74) ....2553	.....July 28
Robert Dill (85) .....7150	.....July 29
Reynaldo Gonzales (73) ....3618	.....July 29
Herman Chaves (85) .....4514	.....July 29

Sympathy

To Patricia (7613) and Jim (3524) Shorty on the death of her father and his father-in-law, John O'Rourke, in Clermont, Fla., July 19.

To Ed Vernon (9365) on the death of his brother-in-law, Royce Burge, in Winston-Salem, N.C., July 20.

To Frank Sieradzki (1231) on the death of his brother in Pennsylvania, July 27.

To Janet (5848) and Brandon (5415) Ahrens on the death of her father and his father-in-law, Eldon Steele, in Silver City, N.M., July 29.

To JoAnn Herrera (4412) on the death of her father, Louis Herrera, in Albuquerque, Aug. 2.

To Debbie Sanchez (10204) on the death of her brother-in-law, Nick Norgar, in Los Alamos, Aug. 6.

Leak-rate test is problematic

In an ongoing surveillance program, each year a small number of each weapon design, such as the submarine-launched W76, is selected and sent to the Pantex plant near Amarillo, Texas, for a round of tests. Before a weapon is opened, a dew-point measurement and gas sample are taken from the internal environment, which in many weapon systems is initially filled with dry nitrogen gas. A helium leak-rate test, during which the entire weapon is back-filled with helium and a helium sensor checks for leaks, is then performed.

There are a number of problems, however, with this process. Each weapon must be placed individually into an enormous vacuum chamber, filled with helium, and all air pumped out of the chamber to perform a

Mayor thanks city businesses for youth employment opportunities

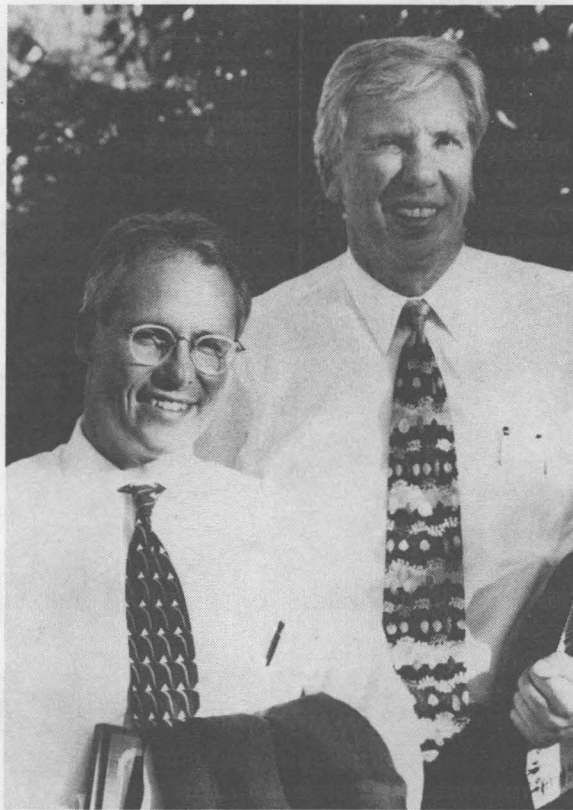
Albuquerque Mayor Martin Chavez thanked Sandia and hundreds of other local businesses that hire Albuquerque-area youths at a ceremony Aug. 6 at the Albuquerque Museum's sculpture garden.

During the event, sponsored by Lockheed Martin and Sandia, Chavez singled out the Labs as an area business that upholds the ideals of the mayor's Summer Youth JOBS Initiative, created in March to compensate for funding cuts in a federal jobs assistance program that has subsidized employment for city youths since 1983. Sandia this year employed nearly 700 graduate, undergraduate, and high school students. (See "Student employees wrap up summer's work at Sandia" at right.)

"The mayor was delighted that Sandia had so many summer jobs for Albuquerque students," says Mike DeWitte of Community Involvement and Issues Management Dept. 12650. "I know Sandia's leadership is impressed and grateful that the mayor's office took the initiative in getting Albuquerque employers to pick up the slack when federal job assistance was cut."

Labs President C. Paul Robinson attended the event and accepted a "thank-you" plaque presented by Sandia summer student Tenille Otero (12650) of the University of New Mexico on behalf of all Sandia summer hires. Renee Scott (14307), a recent Eldorado High School graduate on her way to Xavier University, presented a testimonial about her summer employment at Sandia.

In addition to the Summer Youth JOBS Initiative, the City of Albuquerque sponsors



ALBUQUERQUE MAYOR Martin Chavez (left) and Sandia President C. Paul Robinson pose for a photograph following a ceremony honoring city businesses that employ students.

the Job Mentor Program and the Summer Youth Employment and Training Program. Sandia's Student Internship Program and the New Mexico Department of Labor's Dial-a-Teen program complement the city programs, says Mike.

Student employees wrap up summer's work at Sandia

Close to 200 graduate, undergraduate, and high school students employed by Sandia presented the fruits of their summer's labor during an all-day symposium Aug. 9 at Albuquerque's Marriott Hotel.

The symposium included technical paper presentations and poster sessions by Sandia summer hires, many of whom conducted laboratory or field research during their time at Sandia. Paper topics included advanced manufacturing, distance learning, legislation and policy management, environmental management and remediation, and robotics and intelligent systems.

A career fair allowed the students to meet and show their work to recruiters from various companies, universities, and federal labs. An evening banquet with keynote speaker Cheryl Shavers, general manager of Intel's Advanced Technology Operation and recent inductee into the Women in Technology International Hall of Fame, rounded out the day's events.

Anthony Thornton, director of Diversity Leadership and Education Outreach Center 3600, called the Labs' Student Internship Program an "investment in the future of the Labs and the country." He says Sandia summer hires represent "outstanding students" majoring in computer science, math, engineering, various technology fields, and business — with an average GPA of 3.4.

VP Dan Hartley

(Continued from page 1)

seem to vary widely from program to program and from lab to lab. Is it now time to ensure the taxpayer the same payback the average private investor is entitled to?"

In his testimony, Dan noted that while existing methods of recouping some portion of the federal investment in government/industry R&D partnerships are useful, it is important to recognize that the macroeconomic benefit of federal investment in cooperative R&D with industry constitutes a much more substantial return to the government and taxpayer than can be achieved through licensing and recoupment provisions.

"It would be counterproductive," Dan said, "to institute an across-the-board repayment policy that might discourage companies and consortia from seeking arrangements with government-owned laboratories for joint development of new technologies and markets."

Historically, Dan said, most cost-shared R&D arrangements have not required that industry repay the federal government for its investment; it is understood that in these projects an important public purpose is served by the work. In addition, Dan added, the government frequently derives substantial benefits from its industry partners in terms of access to critical technologies and competencies for government missions.

Dan cited technologies and processes developed through Sandia's partnerships with SEMATECH, Intel, Goodyear, and others to demonstrate the macroeconomic and national security benefits the US has realized via public/private-sector R&D collaborations. Dan said he recently talked to Nissim Calderon, VP of Research at Goodyear, who characterized this

benefit by saying, "Goodyear had a task to do that required A+B, Sandia has a task that requires A+C, so we did A together, and saved each of us half the cost." Dan pointed out that in addition, the Goodyear "B" was something Sandia didn't even know about but is now using in the neutron generator design effort.

Dan said he considers licensing opportunities to represent the government's most viable direct means of repayment for successfully commercialized cost-shared projects.

Royalty income from licensing has potential for providing a reasonable return on federally owned technologies that have commercial uses, Dan said. However, he added, "it would be a mistake to overstate that potential."

In FY95, DOE intellectual property generated about \$4 million in royalties from all the national laboratories, he noted. While it is fair to expect that amount to increase by ten times over the next few years, and it is perhaps conceivable that revenues could increase by 100 times looking out many years, "that is probably the horizon of reasonable expectations with regard to royalty revenues," he said.

Dan walked subcommittee members through a hypothetical exercise illustrating the macroeconomic impact of government/industry R&D partnerships: "Let's assume that \$40 million is a reasonable target for aggregate licensing income from the DOE national laboratories by [the year] 2000. This amount is trivial with respect to the operating budgets of DOE's laboratories. However, when you consider that it represents a royalty of about five percent of commercial sales by licensees, it begins to take on significance. The \$800 million of commercial sales results in profits and income for real people — entrepreneurs, workers, investors. Some of that income is paid in taxes. Some is spent on consumables. Much of

it is reinvested, creating new industrial capacity, jobs, and income for others. The multiplier effect of this phenomenon is well known as a powerful stimulus of economic activity.

"But is the federal investment that produces those economic benefits reasonable or excessive? Keep in mind that the federal investment in the national laboratories is an established fact. If the laboratories did no licensing at all, they would still have to develop technologies for federal missions — most of the investment would still have to be made. Consequently, it is the marginal investment, not the full-cost investment, that we should consider for this analysis. To answer this question, I would like to cite a real example. . . ."

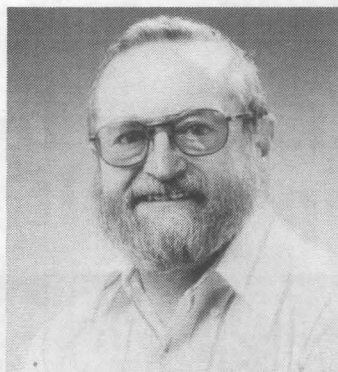
"Over a 20-year period, Sandia developed a world-class program to apply very hard surface coatings to parts for nuclear weapons. The technology can also produce coatings for superior commercial products. A small company in Wisconsin, Fisher-Barton, recognized the potential of this process in several new commercial applications and approached Sandia for help. Briefly, an analysis of this technology transfer interaction by the University of New Mexico showed that the macroeconomic benefit was close to \$25 million. DOE's marginal cost for the assistance was just \$57,000. The benefit-to-cost ratio was about 300 to one in this case."

Dan said he believes lawmakers' most important consideration is to fashion incentives that will increase the ultimate macroeconomic benefit of the federal investment in cost-shared R&D with industry.

"Whatever new requirements are proposed," Dan said, "should be carefully considered for their potential impact on the incentives for commercial development of new technologies, new markets, and the global competitiveness of US industry."

Mileposts

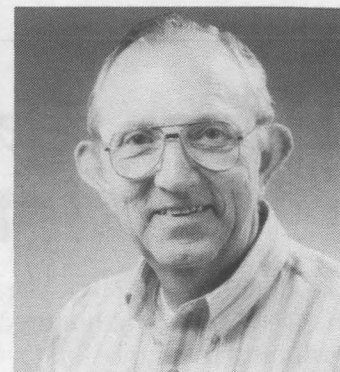
August 1996



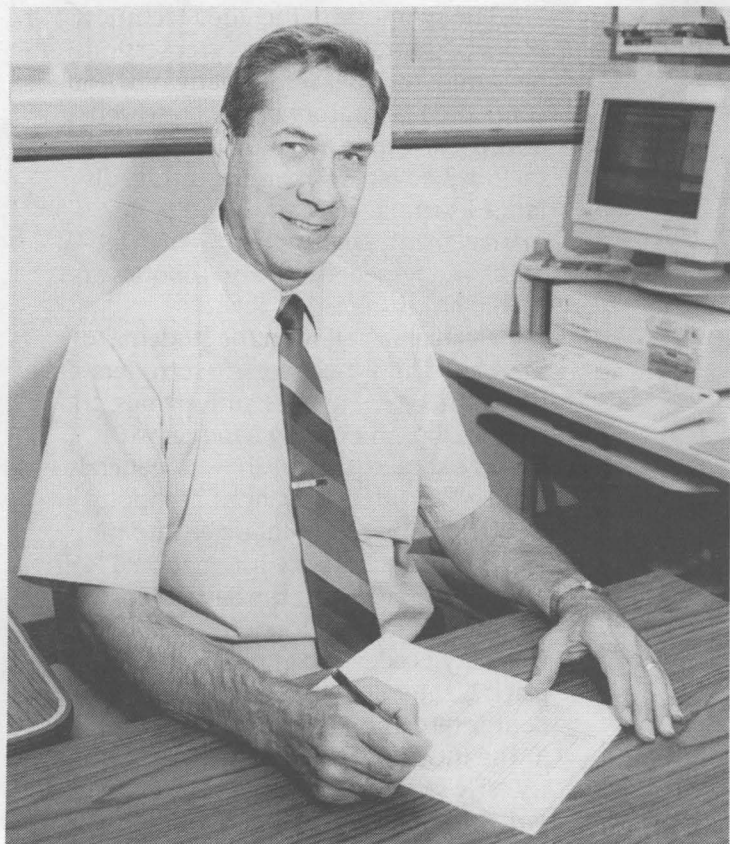
Warren Windle 35
1235



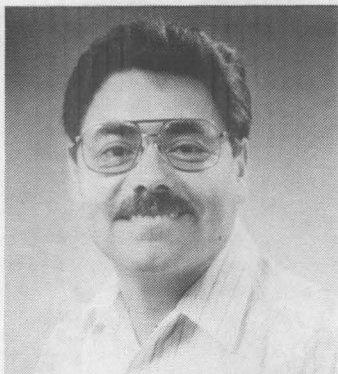
Lucille Forster 15
3050



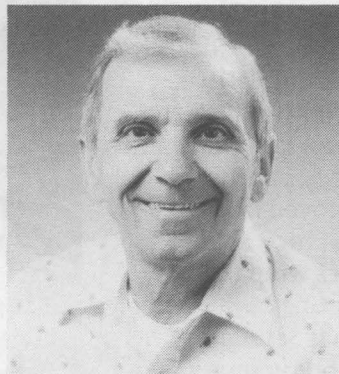
Larry McConahy 30
9414



Sam Jeffers 40
5334



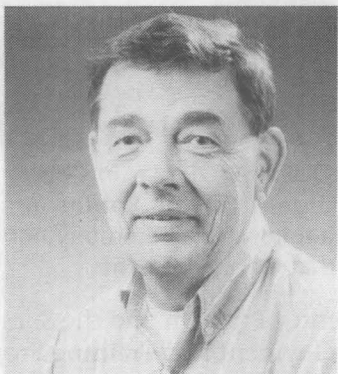
Mel Gonzales 20
1412



Bob Balthaser 35
12363



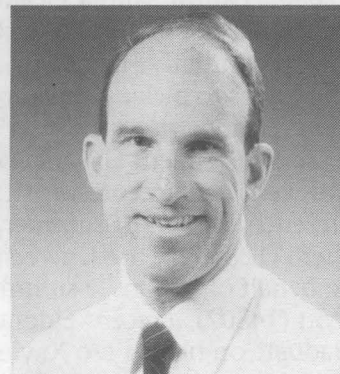
Mary Alice Padilla 15
7904



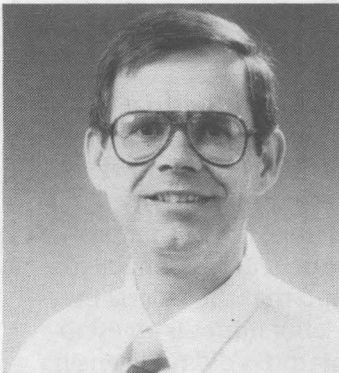
Bob Frazer 35
9416



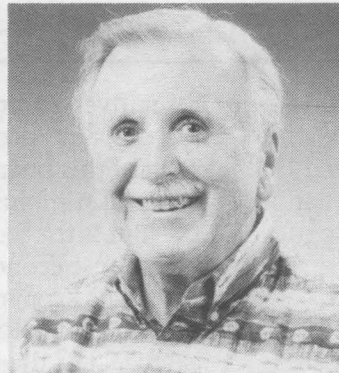
Karen Higgins 15
7001



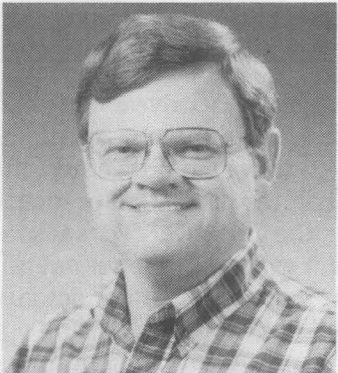
Paul Mix 25
9542



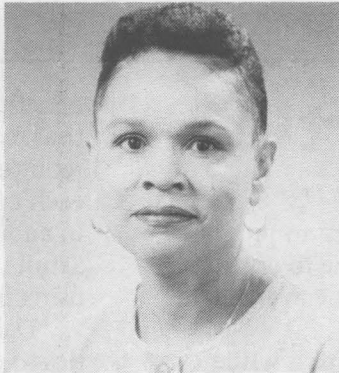
Ronald Hartwig 20
2105



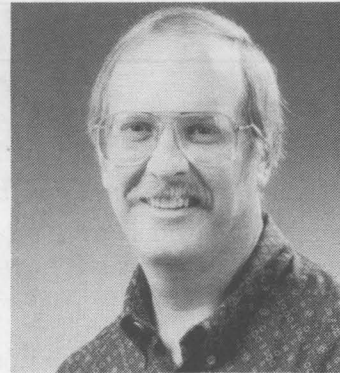
Ed Kociscin 35
9784



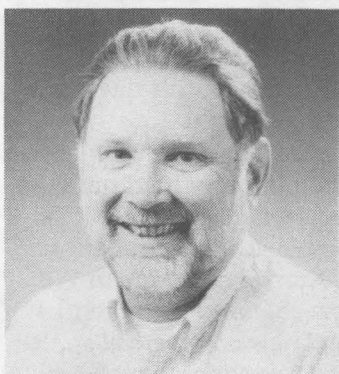
Billy Richard 20
9409



Pandora Apodaca 15
7801



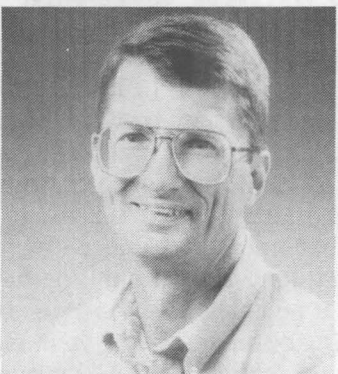
David Carlson 20
12333



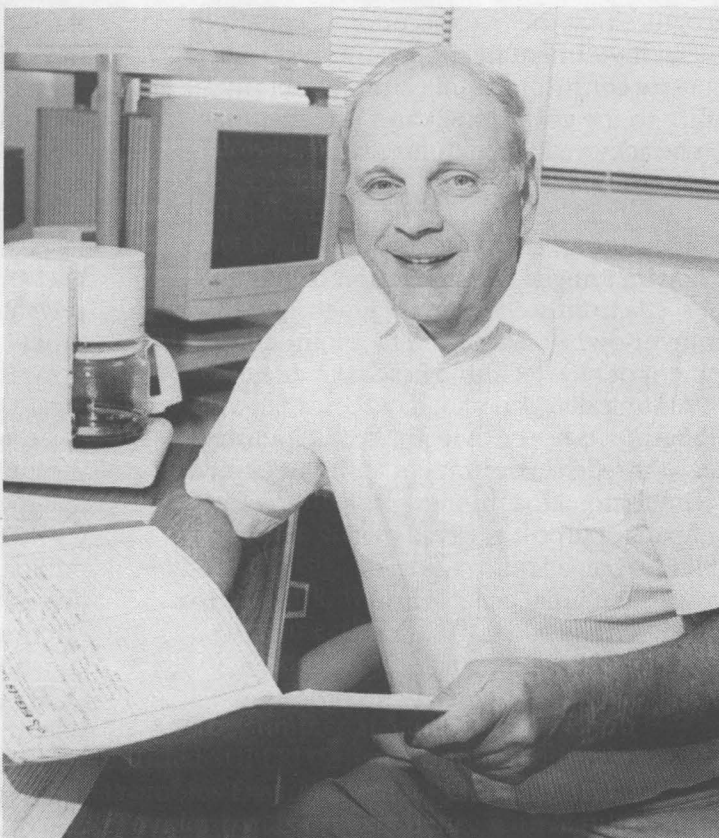
Robert Hughes 30
1315



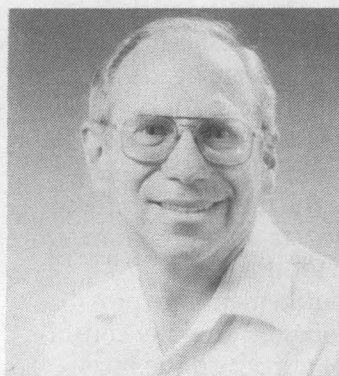
Suzie Simpson 20
10210



Jeffrey Keck 20
1561



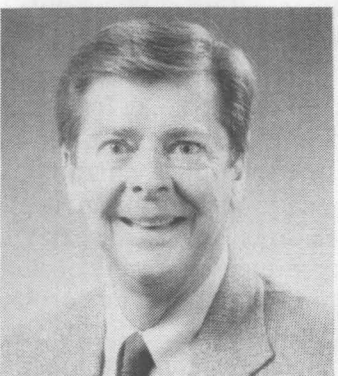
Ronald Soutar 35
1565



Larry Tolendino 20
4616



Carmela Gallegos 15
7447



Hugh Scott 20
5914

Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads

MISCELLANEOUS

REDWOOD PATIO FURNITURE SET, w/cushions, 2 chairs, 2 rockers, 1 lounge, 4 tables, \$250 OBO. Schuster, 293-4792.

MAC IISI, 5/80, 13-in. color monitor, StyleWriter II, Word 6, Aldus SuperPaint, more, \$900 OBO. Baldo-Pulaski, 345-0432.

BED, twin-size, frame, mattress, box spring, \$40. Chavez, 293-4268.

KIRBY VACUUM CLEANER, accessories & carpet shampooer, excellent condition, local manufacturer maintenance available, \$75. Kinkel, 899-2770.

GERMAN SHEPHERD DOGS/MIXES, home wanted, 2, gentle, friendly; spayed female, 5 yrs.; male, 8 yrs. Martinez, 298-7382.

SUPER NINTENDO, w/9 games, excellent condition, \$199; Sony AM/FM dual-cassette/CD player, excellent condition, \$99. Anderson, 897-2772.

QUEEN-SIZE COMFORTERS, down & holofil, make offer; large desk, w/typing extension, \$89. Swahlan, 292-3598.

FREE KITTEN, 6-wks. old, male, gray & white, box trained, has 1st shot, very playful. Givens, 833-0991.

KITTENS, 3 male, 2 female, free to a good home. Barnhart, 293-8859.

HEELER DOG, blue & red, 1-yr. male, attractive markings, farm raised, loves kids, great dog, \$60. Conner, 281-9370.

BANJO, excellent condition, compensated bridge, Keith tuners, beautiful inlay patterns, case, strap, 1 owner, \$1,050. Sturgeon, 281-9035.

SESAME STREET PLAYHOUSE, good condition, \$60; Fisher-Price car seat, seats up to 40 lbs., \$25; booster seat, \$15. Rosales, 837-1644.

BABY STUFF: carseat, \$20; travel stroller, \$10; high chair, \$10; voice-activated crib rocker, \$20; swing, \$15. Miller, 281-9470.

S&W .44-MAGNUM REVOLVER, model 29, 8-in. bbl., like new, boxed, \$395 firm. Marlman, 883-8660.

GOLF CLUBS, junior set, 1, 3 woods, 3, 5, 7, 9 irons, putter, bag, like new, \$100. Macha, 856-7427.

THULE RACK (bike & ski), \$200; Magnavox AM/FM/SW digital compact radio, \$50; voice organizer, appts., memos stored/recalled w/voice, \$150. Zarrella, 831-1981.

GOLDEN RETRIEVER PUPPIES, AKC-registered, w/pedigrees, 6 wks. old on 8/20/96, dew claws removed, \$300. Klamerus, 294-3398.

GARAGE SALE, several families, great stuff, August 16-18, 7 a.m.-4 p.m., 2333 Hoffman NE. Beeler, 822-9463.

FREE RED ROCK, approx. 6 tons, 6-in. to 15-in. red sandstone, you haul. LeGalley, 822-0676.

UPRIGHT FREEZER, Sears, 15-cu. ft., \$160; oak coffee table, 30 x 50 x 16H, \$70; recliner, \$90 OBO. Lewin, 898-2303.

BARBECUE GRILL, propane, large round cooking area, \$40 OBO. Schafer, 296-0017.

NORDICTRAK PRO, excellent condition, approx. 2 yrs. old, hardly used, includes computer, \$400. Lee, 299-2349.

486DX66 IBM-compatible, 8MB RAM, 1 gig SCSI HD, SVGA monitor, \$600 OBO. Burstein, 899-8971, after 6 p.m.

SPA, excellent condition, blue marble, redwood, insulated cover, 1 lounge, 4 seats, ozonator, 220 wiring, \$1,900. Hall, 298-6856.

TVs & CLOSED-CAPTION DECODER: 19-in. color Toshiba, \$75; 13-in. color Sharp, \$50; Telecaption 4000, w/remote, \$50. Baty, 857-0697.

MICROWAVE CART, w/drawer & cabinet, like new, make offer. Elliott, 792-1002.

WATERBED, queen-size, semi-waveless mattress, good condition, \$35; 20 marble tiles, 12" x 12", free. Creel, 839-7335.

486/33MHz MOTHERBOARD, 8MB RAM + IDE controller & VGA video cards, \$145. Harper, 892-1928, leave message for Jason.

UPRIGHT FREEZER, Whirlpool, 16 cu. ft., \$100; day-bed comforter, shams, skirt, 2 pair curtains, \$25. Martin, 323-2182.

STATIONARY BIKE, Tunturi brand, \$95; combo crib & toddler bed, w/shelves, white, \$240; all excellent condition. Umstead, 298-7091.

386SX2, 40MB HD, 30MHz, 4MB RAM, Windows 3.0, LotusWorks, w/monitor, \$250; crib; porta-crib; charcoal BBQ grill; drop-in range. Gonzales, 823-9511.

BEDLINER, for '91-'95 Toyota short-bed truck, \$75; 13-in. color TV, manual tuner, \$25. Wilson, 821-7953.

SECTIONAL SOFA, 2-piece, w/queen sleeper, excellent condition, versatile neutral tones, \$500. Tomasi, 797-2661.

STOVE, Hotpoint, w/burners & built-in grill, griddle, \$200. Hurst, 896-4218.

DINING TABLE, 59-in. extended, \$50; 3 living room chairs, \$25 ea. Watson, 298-2374.

FREE PRINTERS, scanner, condition unknown; 2 Epson Spectrum LX-80 (parallel); vest PCSCAN 200 (SCSI); you pick up. Schkade, 292-5126.

SLIDE TRAYS, Kodak Carousel Transvue, for 80 slides; Ektagraphic Universal slide tray, for 80 slides. Wagner, 823-9323.

REAR-WINDOW SHADE, louvered, for '92 Camaro, free hood bra w/this purchase, \$75. Smiel, 865-9081.

EXERCYCLES: \$10, \$15, \$20; portable typewriters: Royal, \$20; electric Smith-Corona, \$25; 18-set motivational tapes, \$50 OBO. Jesse, 296-1709.

USED BOY'S CLOTHING & SHOES, sizes 8-16, sale on Aug. 18-19. Kellogg, 299-3737, by appointment only.

SOFA, off-white, great condition, \$125; coffee table, \$50; 4-piece bedroom set, make offer. Carroll, 298-2827.

NORDICTRAK PRO, like new, solid oak, cost \$600, asking \$375 OBO. Cooper, 888-0967.

ROTTWEILER PUPS, 8 wks., 2 males, 4 females, \$250 ea. Baldonado, 864-8069.

OLD CHINA CABINET, curved front glass, 56"H x 34"W, \$325; desk chair, wood, tilt & swivel, \$60. Coalson, 298-0061.

STUDENT TROMBONE, King, \$200; student clarinet, \$150; Sears sewing machine, Kenmore, w/cabinet, \$85. Aragon, 888-3473.

SEARS TREADMILL, \$400; Tunturi stairstepper, \$100 OBO; Richard Simmons fitness program w/videos & power cord, \$35. Sierra, 344-6804.

TABLE TENNIS TABLE, fold-up, w/wheels, w/o net, \$70. Caffey, 296-1942.

GARAGE SALE, furniture, yard tools, Aug. 16-17, 4201 Indian Springs NE, north of Montgomery, between Louisiana/San Pedro, follow signs. Purcell, 883-2785.

MOVING SALE: waterbed, California king, \$125; fish tanks, 30- & 95-gal., complete w/setup, stand, \$200; exercise bike, \$30. Fernandez, 877-1565.

FAX MACHINE, Sharp 50, thermal paper, switch also available. Riley, 869-2119.

TREADMILL, w/cassette & computer display, \$60 OBO; large oak living room chair, w/cushion, like new, \$75 OBO. Avila, 275-9572.

GUN CABINET, 2-in. thick wood, 6-ft. tall, glass doors, lower cabinet, holds up to 8 rifles. Chadwick, 298-1372.

PARTS CAR, '79 Honda Accord, 4-dr., good parts left, towable, \$100. Zirzow, 281-9896.

CRIB & MATTRESS, like new, excellent condition, \$75. Martin, 268-5892.

POOL TABLE, traditional 4 x 8, dark wood, w/leather pockets, 2-piece slate, same as new, must see. Crosby, 294-1717.

SMALL UTILITY TRAILER, 3' x 4' x 5', enclosed, excellent condition, \$140. Schmidt, 275-7254.

DOUBLE-PANE GLASS, tempered, laminated, sealed, 15 pcs. 38" x 44", 3 pcs. 22" x 69", for sunroom/greenhouse. Ricco, 828-1997.

WASHING MACHINE, older Maytag model, good working condition, \$75. Celina, 294-0396.

ROUND OAK TABLE, 48-in., w/leaf & 4 chairs, \$250 OBO. Wolf, 281-0287.

NORDICTRAK SEQUOIA, beautiful redwood machine, great condition, \$350. Waggoner, 293-4755.

GERMAN SHEPHERD PUPS, 4 male, 1 female, 8-wks. old, had all shots, \$250 ea. Camillo, 896-6650.

OAK & GLASS COFFEE & END TABLES, \$125; Sears sewing machine, w/cabinet, good condition, \$50. Norwood, 266-2717.

'84 FORD ESCORT, for parts, \$500 OBO. Coleman, 299-8321.

DORM/OFFICE REFRIGERATOR, \$85; Mountain bike, 1-year old, \$100; Sega Game Gear, three games, \$125. Tafoya, 247-2733.

GARAGE SALE, Aug. 17, 8 a.m.-noon, 7625 San Benito NW, near Unser/Ouray, clothing, household items, children's books & toys. Gear, 839-4255.

DELL DIMENSION 466V/XPS COMPUTER, 16MB RAM, 450MB HD, 15-in. monitor, 2X CD, 1.44MB floppy, sound/video cards & speakers, \$800. Lange, 856-1952.

DEADLINE: Friday noon before week of publication unless changed by holiday. MAIL to Dept. 12622, MS 0165, FAX to 844-0645, or bring to Bldg. 811 lobby. You may also send ads by e-mail to Nancy Campanozzi (nrcampa@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.

PAIR OF BURIAL LOTS, Sandia Memorial Gardens, make offer. Burke, 719-275-6362, call collect.

PRINTER, reliable, Epson FX-286, parallel input, draft or NLQ printing, money-back guarantee, \$95; cable, \$10. Leslie, 266-1797.

TRANSPORTATION

'94 LEXUS ES300, emerald green, loaded, 43K miles, \$22,600. Mackey, 897-7206.

'71 MACH 1 MUSTANG, AT, AC, PS, PB, AM/FM cassette, red/black, partial restoration, \$5,000. Tyhurst, 281-1417.

'91 FORD EXPLORER EDDIE BAUER, good condition, 4WD, PS, AC, 5-sp., AM/FM cassette, 126K miles, \$9,000. Lee, 296-6051.

'93 TOYOTA 4RUNNER SRS, V6, 5-sp., PS, PW, PL, CD/AM-FM cassette, 8-spkr, cruise, security, 46K miles, below NADA, \$20,800. Delker, 291-8440.

'87 PLYMOUTH VOYAGER LE, 2.6L, 4-cyl., excellent condition, well maintained, 136,700 miles, \$2,950. Gibson, 281-8752.

'94 CHEV. SILVERADO Z71, 4x4, short wide, PS, PB, AC, cruise, AM/FM cassette, CD changer w/remote, 42K miles, \$17,000 OBO. Ortiz, 831-5657.

'92 FORD EXPLORER XLT, 4WD, PW, PL, cruise, luggage rack, excellent condition, 68K miles, \$14,500. Lange, 299-4613, ask for Patti.

'91 TOYOTA COROLLA DX, 4-dr., excellent condition, repair records available, 98K miles, perfect college car, \$6,500. Cox, 298-5800.

'91 MITSUBISHI ECLIPSE, 1 owner, 16-valve, 5-sp., PW, PL, cruise, sunroof, leather seats, \$7,900 OBO. Cano, 833-0057, ask for Susan.

'89 MAZDA MPV VAN, 1 owner, excellent condition, AM/FM cassette, AC, AT, PW, \$8,900 OBO. Vieth, 892-1806.

'88 HONDA CIVIC, 4-dr., 5-sp., AC, tint, rear-window defogger, mint condition; step-van ice cream truck. Garcia, 343-8207.

'94 JEEP GRAND CHEROKEE LAREDO, 4WD, 6-cyl., AT, AC, PW, cruise, excellent condition, \$19,700 OBO. Wilde, 296-4072, leave message.

'93 MITSUBISHI MIRAGE, blue, 2-dr., 5-sp., excellent on gas, dependable, must sell, \$6,350 OBO. Archibeque, 877-8818.

'84 CADILLAC ELDORADO, 4.1L, fuel-injected, 155K miles, runs well, \$2,200 OBO. Bauer, 296-0799, ask for Scott.

'92 MITSUBISHI MIRAGE, 4-dr., 54K miles, 27- to 37-mpg, AT, AC, AM/FM cassette, \$6,200 OBO. Zafery, 294-6768 or 329-0076 (pager).

'87 AEROSTAR XLT VAN, power everything, maximum extras, quad buckets, good/excellent condition, book \$4,500, asking \$4,100. Strascina, 294-0305.

'72 MG MIDGET, \$3,000. Beck, 281-1792.

'85 CHEV. CAMARO, V6, AT, PS, PB, low mileage, great condition, 1 owner, \$3,200. Chiarella, 293-1562.

'83 CHEV. SILVERADO LB, new 350, AT, PB, PS, AC, bedliner, new tires, good body, runs well, \$3,995. Barthelmes, 286-1491.

'88 MAZDA 323 HATCHBACK, blue, 4-sp., 4-cyl., AM/FM cassette w/qualifier, 72K miles, new brakes, \$2,900 OBO. Williams, 299-3108.

'92 LEXUS ES-300, plum, leather, moonroof, 6 CD, AM/FM cassette, power everything, 68K miles, \$21,000 OBO. McKeever, 299-4050.

'90 CHEV. S10 TRUCK, good condition, white, \$3,500 OBO. Schiess, 883-7107, call after 5 p.m.

'80 HONDA ACCORD HATCHBACK LX, cream puff, 22-mpg, 79K miles, AC, AM/FM tape, great inter-city transportation, 1 owner. Home, 292-2471.

'88 NISSAN MAXIMA SE, excellent condition, leather interior, power everything, styled wheels, sunroof, must see, \$4,500. See, 856-9422.

'84 TOYOTA COROLLA, AT, AC, AM/FM, \$750 OBO. Marquez, 352-9029.

'86 CHEV. ASTROVAN CL, 5-sp., 120K miles, recent clutch, brakes, more, 1 owner, carefully maintained, \$3,500. Crew, 821-0956.

'91 FORD EXPLORER XLT, 4-dr., 2WD, 5-sp., runs/looks great, \$10,500; '90 Ranger XLT, ext. cab, 4WD, \$8,000. Hilborn, 220-2400.

'75 DUCATI 860GT, 14K orig. miles, excellent original condition, extras, \$3,000 OBO. Salmen, 881-8612.

RECREATIONAL

'74 TRISONIC BOAT, tri-hull, 165-hp, Mercurier I/O, open bow; new axles, tires, upholstery & covers. Farmer, 857-0503.

'86 POP-UP PICKUP CAMPER, Jayco, 8-ft., refrigerator, heater, electric pump, 3-burner stove, stereo, \$2,600. Blankenship, 281-2257.

'88 BOAT W/TANDEM TRAILER, 19-ft. Seaswirl, V-8, 50L engine, like new, \$7,800 OBO. Hoak, 286-2086.

SEAWORTHY INFLATABLE BOAT, w/motor, originally \$1,800, carry in trunk of car, \$400. Robbins, 823-2492.

'89 BAYLINER BOAT, 19 ft., 125-hp, \$6,000 OBO. Locklin, 296-4517.

TIMESHARE, Fairfield Ocean Ridge, Edisto Island, SC, 55 miles from Charleston, SC, Aug. 8-15, 2 bdr., sleeps 6, furnished, golf on-site, 7 nites, \$450. Stang, 256-7793.

'95 TRAVEL TRAILER, Jayco Designer, 31-ft., loaded, AC, micro, awning, stereo & more, used once, must sell, job change. Thompson, 823-4567.

'91 HONDA NIGHTHAWK 750, 5,400 low miles, excellent condition, Tracy windshield, backrest, saddlebags, \$3,000 OBO. Griego, 873-9750.

'78 VW BUS/CAMPER, carpet, closet, bed added, invested \$3,000, asking \$2,000 OBO. Shin, 899-2291.

TIMESHARE, Lake Tahoe, first-class accommodations, for six, Sept. 14-21. Killian, 271-1664, after 5 p.m.

LAKE POWELL, Sept. 14-22, 65-ft. houseboat + breath-taking scenery, 2 places available, \$400 OBO for both spots. Kober, 881-3323.

'84 POP-UP PICKUP CAMPER, Hallmark, 9-ft., jacks, refrigerator, 3-burner stove, w/oven, electric water pump, heater, port-a-potti, must sell, \$2,200. Martin, 296-8154.

'94 BAJA BLAST, 14-ft. mini-jet, 90-hp Mercurier, '94 Dorsey trailer, \$6,990 OBO. Sandoval, 866-6991.

OUTBOARD, 5-hp, British Seagull, long shaft, no reverse gear, unique, dependable auxiliary power for sailboats to 22-ft., \$250. Ludwick, 296-6447.

CANOE, Old Town Discovery, 160K w/paddles, oars, oarlocks & custom remote anchor system, excellent condition, 1-yr. old, \$600. Barlow, 505-820-6845.

SAILBOAT, Sunfish "Mesa," 13-1/2-ft., w/trailer, sailbag, manual, 2 life-jackets, \$995. Benson, 296-4282.

'73 YAMAHA MOTORCYCLE RD-350, fair condition, 25K miles, \$200. Edgewood, Jones, 281-1186.

MOUNTAIN BIKE, Raleigh MT300, 18-in., aluminum, Future Shock air/oil, upgrades, 1 year old, \$455 OBO. Van Den Avyle, 898-6474.

'91 AIREX LIMITED XL290 MOTORHOME, sofa, dinette, queen island bed, Ford 460 EFI, 4-sp., AT, 17000GVW, 1 owner, 28K miles. Beasley, 298-3398.

MOUNTAIN BIKE, Bridgestone MB-0, w/Suntour XC PRO components, Marzocchi X-400 shock, Mavic hubs & wheels, \$475 OBO. Martinez, 821-7467.

NORDICTRAK ROADRUNNER 4-WHEEL, 9-gear aerobic outdoors recumbent bike, practical/fun exercise alternative, new condition, test drive, \$500. Harper, 822-0388.

REAL ESTATE

4-BDR.HOME, 1,860 sq. ft., 2 baths, 3721 Chelwood NE, great schools/park, \$135,000. Hoier, 275-1938.

LAND, 40 acres, pinon, ponderosa, 7,100-ft. altitude, near national forest, secluded, private, 10 miles NW Mountainair, \$2,500/acre, owner/agent. Conklin, 874-2280 or 298-8217.

3-BDR. DW MOBILE HOME, minutes to KAFB, 2 baths, large kitchen, fireplace, skylight, DR, 1,352 sq. ft., \$30,000. Harris, 298-4756.

3-BDR. HOME, views, new carpet, Spain/Tramway, \$53,000 down, 6% interest, \$1,800/per month, only \$353,000, cash offers considered. Gallegos, 294-0233.

VACATION/RETIREMENT HOME, Sunrise Beach, TX, 50 miles NW of Austin, \$64,900. Stuart, 265-7315.

3-BDR. HOME, NE Heights, 1,320 sq. ft., San Mateo/Candelaria, 1 bath, nice quiet area, great shape, \$91,500. Garcia, 883-4218.

4-BDR. HOME, 2-1/2 baths, 2,740 sq. ft. plus 3,000 sq. ft. redwood decks/patios, magnificent views, Jacuzzi, alarm system, extras, \$250,000. Rea, 296-4620.

3-BDR. MOSSMAN, updated kitchen & baths, carpeted hardwood floors, 1,885 sq. ft., 2-car garage, quiet, mature area, \$142,500. Nickerson, 888-4159.

WANTED

HELP transporting kids to school from our NE Heights home to UNM area, Monday, Tuesday, & Friday, 7:30-9 a.m. Hopkins, 821-3641.

HOME GYM, circuit training w/weights, 27-in. TV, good condition. Vigil, 880-0026.

CONCERT-MATE, sold-out KISS reunion concert, Phoenix, Wed., Aug. 21, have tickets, car, need someone to go, help drive. Cancilla, 298-8741.

HOUSEMATE, Lomas & Tramway area (4-1/2 miles to work), share 2,000 sq. ft. house w/ 2 others, quiet neighborhood, \$325/month + 1/3 utilities. Cordova, 292-4477.

HOUSESITTING, or apartment rental, from 9/1/96 to 5/31/97, Arizona professor on sabbatical at Sandia, e-mail raghavan@cit.arizona.edu. Guilinger, 845-9043.

COPY OF BOOK, *Sandia National Labs - The Postwar Decade*. James, 298-0709.

USED GO CART, with or without engine. Murphy, 294-1778, ask for Jim.

NT GREEK I COURSE TEXTBOOK: *Early Manuscripts & Modern Translations of the New Testament*, P. W. Comfort. Baker, 888-4220.

MATURE FEMALE HOUSEMATE to pay only \$100/month in exchange for occasional assistance to independent woman. Hudson, 294-3029.

486 IBM-COMPATIBLE DESKTOP, prefer internal modem 14.4 or 28.8, 33-66 MHz, minimum of 8MB RAM. Hands, 262-9685.

HAIR DRYER, large, black or brown, need not work; grass catcher for 18-in.-wide push mower. Underhill, 294-5774.

HOUSEMATE, nonsmoker, rural Albuquerque, \$300/month plus 1/2 utilities. Jordan, 873-9040.

HOUSEMATE, 3 bdr./2 baths, new townhouse, w/double garage, \$325/mo. + utilities, quick I-40 access. Sanchez, 296-9095.

LOST & FOUND

FOUND: Set of keys on Sandia Federal Credit Union key chain, 7/23/96, Research Park parking lot. Hamrah, 271-7916, ask for Jennifer to claim.

Copayment no longer required for primary Medicare participants

As of Aug. 1, 1996, a \$10 copayment is no longer required for services received through a Primary Care Physician (PCP) or any referred specialist accepting Medicare assignments. The same applies to a hospital copay if you are referred by your PCP. If you would like to receive a grid to help determine which physicians accept Medicare assignments, please call Prudential Member Services toll-free at 1-800-845-6986.

Prudential will notify network providers; however, you may want to save this notice to take to your next appointment.

Payment is still required if you obtain care in the Organized or Traditional options. Copayments for prescriptions also are still required.

This change was made because administrative costs to refund copayments to individuals who had met their Medicare deductibles exceeded the cost of not collecting the copayments.

Coronado Club

Aug. 16 — Patio BBQ buffet. A la carte buffet 5-8 p.m. Pool open til 9 p.m. Music and dancing on the patio 7-11 p.m. Music by Midnight Magic.

Aug. 18 — Sunday brunch buffet, 10 a.m.-2 p.m. \$6.95 all-you-can-eat buffet. Kids 3-12, \$1, under 3 free. Music by Bob Weiler, 1-4 p.m.

Aug. 22, 29 — Thursday bingo night. Card sales and buffet start at 5 p.m., early birds' bingo at 6:45 p.m.

Aug. 30 — Big Band dinner/dance. A la carte buffet 5-8 p.m. Pool open til 9 p.m. Music and dancing on the patio. Music by Westside Sound, 7-11 p.m.

Student employee Cindy de la Fé to sing anthem at NFL game

Cindy de la Fé, a student employee in Manufacturing Systems Dept. 9672, is sched-

uled to sing the national anthem prior to the Miami Dolphins vs. Minnesota Vikings pre-season game at Joe Robbie Stadium in Miami Monday evening, Aug. 19.

A Miami native with Cuban parents, Cindy says she's always wanted to do

the honors at a Dolphins game. While on vacation in Miami a few weeks ago, she sent the Dolphins organization a cover letter and demo tape. A few days later the team's marketing manager called her. Cindy's star has been rising in the Albuquerque area for several years. She's performed at the New Mexico State Fair Rodeo, at University of New Mexico Lobo basketball games, at the women's Western Athletic Conference basketball tournament, and at other local events. She's also cutting an album with a local producer. She describes her usual musical style as contemporary Christian with a Latin pop rhythm.

(Photo courtesy of Santa Fe Center Studios)



CINDY DE LA FE

Sandia News Briefs

Division 15000 program aims to reduce SLPs by 50 percent

Sandia Executive VP John Crawford has approved a new policy business model that will enable Division 15000 to meet its commitment to reduce the number of Sandia Laboratories Policies (SLPs) by 50 percent by April 1997. The new model supports five high-level Corporate Policy Statements compared to the current 127 SLPs. Each policy area will be headed by a VP Policy Sponsor with specific roles, responsibilities, and accountabilities. Two prototype areas (Human Resources and Production) have been selected to prove the concept and will run through December 1996. A Corporate Policy Reengineering Survey has been developed and made available on the Internal Web. Data gathered from survey respondents will be used in planning and implementing an effective and efficient policy delivery process. The survey can be reached via the "Corporate Policy Dept. 15105" home page under a "Corporate Policy Reengineering Survey" button. The focus is on suggestions for better access and delivery of policy/procedure-type information to end-users. For those who do not have Web access, call Sandia Line at 845-6789, press 9 to access Quick Dial, and enter code 1140 to have a hard copy forwarded via fax.

Lockheed Martin wins contract extension at ORNL; shares contract at Hanford

DOE has announced a two-year extension of Lockheed Martin Energy Research Corporation's contract to operate Oak Ridge National Laboratory. DOE effectively separated the K-25 Site and Y-12 Plant contract into environmental management and defense programs, respectively. Energy Systems also received a two-year extension for Y-12; the K-25 contract will be competed, with requests for proposals initiated in February 1997. Competitions for the ORNL and Y-12 contracts will be scheduled to be complete by the end of the extension period, according to Secretary of Energy Hazel O'Leary. ORNL's current contract runs until March 31, 1998. DOE officials praised Lockheed Martin's operation of the Oak Ridge facilities and its response to DOE's contract reforms. DOE also announced that a Fluor Daniel-Lockheed Martin-led consortium has been awarded the contract to manage cleanup at the department's Hanford site. The six-company consortium will take over management of the site on Oct. 1. The contract is valued at approximately \$5 billion over five years. The Hanford contract emphasizes pay for performance: the consortium will earn fees only when project goals are accomplished safely and on schedule.

Roger Zimmerman named president of state engineering group

Roger Zimmerman of Special Projects Dept. 2413 has been elected President of the New Mexico Society of Professional Engineers. Roger, who has been with Sandia since 1980, is a native New Mexican from the Gallup area. He attended New Mexico Military Institute and earned his B.S., M.S., and Ph.D. from the University of Colorado. Prior to joining Sandia, Roger spent 15 years as professor of civil engineering at New Mexico State University and as senior dean of the university's Physical Science Laboratory. He was recently appointed the National Society of Professional Engineers' representative to the Accreditation Board for Engineering and Technical Engineering-Engineering Accreditation Commission.

Dennis Mangan earns INMM's Meritorious Service Award

Dennis Mangan, Manager of Nuclear Materials Management Systems Dept. 5314, has received the Institute of Nuclear Materials Management's Meritorious Service Award. The award citation reads: "In recognition of his sustained and exemplary service to the Institute of Nuclear Materials Management in the capacity of Chairman and member of several standing and ad hoc committees, Vice Chairman and Chairman of the Institute, and his professional contributions to both domestic and international safeguards and security." The award, the highest the Institute bestows, was presented during the group's annual meeting in Naples, Fla., in early August.

8(a) AWARD — Elizabeth Pohl, president of the New Mexico 8(a) Association, presents Sandia President C. Paul Robinson with its Minority Business Advocacy Award for 1996. Pohl commended the Labs for including four small, minority companies among the nine firms chosen for the new, consolidated staff augmentation contracts (*Lab News*, Aug. 2). Pohl told lunch attendees, who included Sen. Pete Domenici (R-N.M.), that Sandia has demonstrated its commitment to do business with minority companies. Results of the consolidation, she said, also confirm that New Mexico has many highly qualified minority firms. "This award is not widely given, not freely given, and it's not often given," Pohl said. The 8(a) program currently is the only federal set-aside program for minority businesses.

