

Tiny New Device Could Put Labs on the Micromechanics Map

First there was the flea circus. Then there was the world's smallest violin (rubbing two fingers together to express sympathy sarcastically).

Now researchers in Sandia's Microelectronics Development Laboratory (MDL) have introduced a new, not-so-imaginary device into the world of the truly tiny — the world's smallest steam engine.

The minuscule motor, several of which could fit inside the period at the end of this sentence, is known by its inventors — primarily Jeff Sniegowski of Silicon Technologies Dept. 1325 —

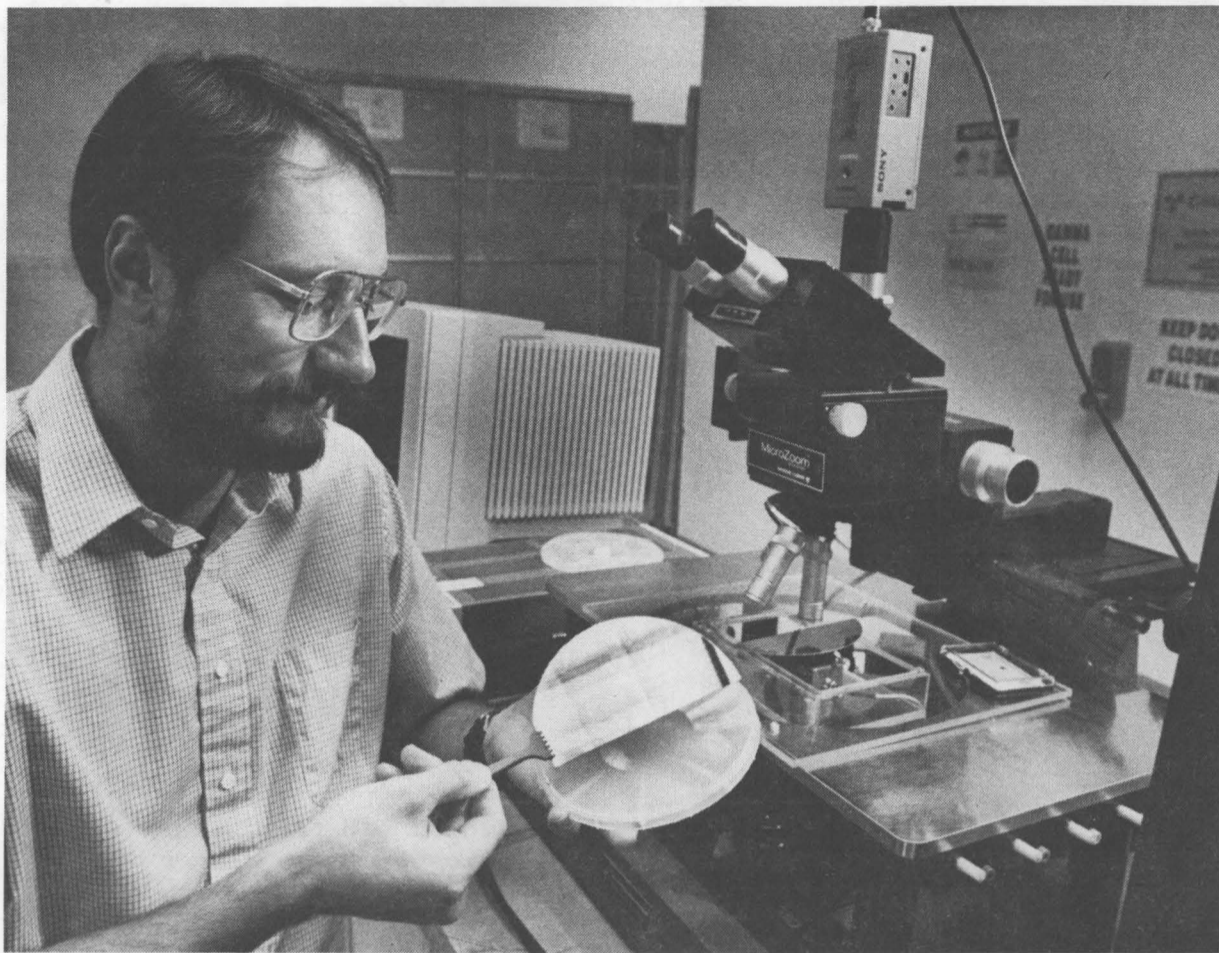
"This device . . . will allow us finally to do useful mechanical work at the micron level."

as a micromechanical actuator. And if dynamite comes in small packages, then this totally new type of actuator may soon make an explosive entrance into the fast-growing US micromechanics industry. (See "Micromechanics: Big Machines Shrunk Down to Micron Size" on page four.)

Tiny Piston, Gigantic Forces

"Jeff's invention improves the horsepower of micromechanical actuators 100 times," says Paul McWhorter, Manager of Dept. 1325. "If not revolutionary, then this device is a significant breakthrough that will allow us finally to do useful mechanical work at the micron level."

Several months ago, Jeff was working with
(Continued on Page Four)



MINUSCULE MACHINERY — Jeff Sniegowski of Silicon Technologies Dept. 1325 examines part of a wafer covered with thousands of micron-sized mechanical devices, each a fraction the diameter of a human hair. Jeff is inventor of a tiny new "micromachine" powered by an expanding bubble of steam. The world's smallest steam engine, as it's called, is 100 times more powerful than conventional electric-powered micromachines.

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SEPTEMBER 3, 1993

Hellish Mixtures of Molten Metal

Sandia Researchers Ask: How Much Torture Can Nuclear Plants Endure?

The last line of defense against a severe accident in a nuclear power plant is the containment building: Breach that, and radioactive matter could escape to the outside world.

Sandia researchers have taken on the job of helping the nuclear power industry make sure that plants' containment structures will hold firm. A series of more than 30 experiments at Sandia during the past three years demonstrates both the importance and the reliability of this final physical barrier. The experiments, simulating a severe type of accident that has never occurred in a nuclear plant, have implications for both existing and new designs, says Marty Pilch, principal investigator in Severe Accident Phenomenology Dept. 6422.

"Sandia results to date show that the industry's 'defense in depth' philosophy will stand up even in a severe accident," Marty says. Although plants are continuously monitored by well-trained operators, Sandia researchers empha-

size that the nuclear power industry continues to work to improve safety features.

To simulate a type of potential accident called "melt ejection," investigators construct a scale model of a particular commercial power plant. Then they melt a mixture of metallic fuel-like material in a special crucible and inject it with steam into the containment model. Using a variety

(Continued on Page Nine)



STEEL LINER for scale model of containment building looms over Marty Pilch of Severe Accident Phenomenology Dept. 6422. (Photo by Randy Montoya)

Early Entry Key to Program

DOE Loosens Regs For Self-Identified Substance Abusers

Sandia's Employee Assistance Program (EAP) manager says a new EAP Referral Option (EAPRO) developed by DOE's Albuquerque Operations Office and approved by DOE headquarters should cheer a small but significant number of Sandians.

The program, says Harriet Morgan, Manager of Preventive Medicine/Employee Assistance Dept. 7035, is designed to allow employees with already-acknowledged substance abuse problems to enter an EAP program for treatment without fear of losing their security clearances.

"As long as employees are working with us in a progressively positive way, DOE will allow them to keep their clearances, instead of suspending

"As long as employees are working with us in a progressively positive way, DOE will allow them to keep their clearances."

them," says Harriet. "Further, if someone who's already had a clearance suspended because of substance abuse will agree to get into a program with us, there's a high probability DOE will reinstate the clearance."

Dave Fredrickson, Director of the Personnel Security Division at DOE/AL, says at least one other DOE office has had a similar program in
(Continued on Page Eight)

Who Reports to Whom Starting Oct. 1? — Find Out on Page Five

This & That

The Technical Cream - The LAB NEWS congratulates the 34 new Distinguished Members of Technical Staff who have reached the top rung of the Sandia technical ladder (see page six). These folks were selected based on their professional history, technical contributions, support of corporate values, and other criteria.

Nice Move, DOE! - Several months ago, the LAB NEWS published several stories taking a critical look at the Department of Energy's policies regarding clearance suspensions and revocations for folks who have experienced substance-abuse problems, but who have acknowledged their problems. The policies just didn't seem fair to employees who are willing to admit problems and who genuinely want to fix them through Sandia's Employee Assistance Program (EAP) or other, private programs.

Now DOE's Albuquerque Operations Office has made some real improvements to give these employees the opportunity to fix their problems, while keeping their clearances. We want to be as quick to congratulate as we were to criticize, so we say nice move, DOE! This enlightened attitude and new policy should improve DOE's credibility and that of Sandia's EAP. Read about the new policy on page one.

Norm Augustine Knocks 'Em Dead - If you were in the audience when Martin Marietta CEO Norman Augustine spoke to Sandians three weeks ago, you know he has a fine sense of humor. I did stop to wonder, though, whether he would have been amused if he had seen how the videotapes of his meetings were mislabeled when I first saw them: "Martian Marietta."

After learning that he had written a book, *Augustine's Laws* (Viking Penguin, Inc.), several years ago, I decided I had to have a copy. Being a typical "extremely frugal" Sandian, I managed to finagle a freebie. The book uses lots of humor to make some serious points about business management, and I think you would find it worth reading. (No, you can't borrow mine. Don't be so cheap!)

Here are just a few of Augustine's Laws (more later):

- It costs a lot to build bad products.
- It is better to be the reorganizer than the reorganizee.
- By the time the people asking the questions are ready for the answers, the people doing the work have lost track of the questions.
- The early bird gets the worm. The early worm . . . gets eaten.
- Two-thirds of the Earth is covered with water. The other third is covered with auditors from headquarters.

Convinced, But Not Converted - In the last issue, I was poking fun at the buzzword "stakeholder" and asked if anyone could send me a dictionary entry supporting the way it's used around DOE and Sandia - someone who has a stake in our work or future. I didn't think so, but Sharon O'Conner, a Sandia contractor employee, sent me this entry from the *American Heritage Dictionary*: "One who has a share or an interest, as in an enterprise." However, Sharon made it clear she was just sending it, not defending it.

The real problem with buzzwords isn't that they are used, but that they are so overused. It's unusual to pick up a memo or internal communication today without seeing stakeholder and several of the following: paradigm, overarching, world class, champion, synergetic, win-win, facilitate, infrastructure, metrics, proactive, and benchmark. ●LP

Outstanding Example, Says Governor

Labs' Mixed Waste Landfill Project Praised by Gov. King

A recent exchange of letters between New Mexico Gov. Bruce King and DOE Secretary Hazel O'Leary indicates that Sandia's Mixed Waste Landfill Integrated Demonstration (MWLID) is having a real impact.

The MWLID project is funded by DOE's Office of Technology Development to develop cleanup technologies for mixed waste sites. The project is led by Environmental Restoration Technology Dept. 6621. Department Manager Jennifer Nelson is the MWLID project coordinator.

Governor King, in his letter to Secretary O'Leary, said, "This young program is one outstanding example of how to best take advantage of the expertise of the laboratories in solving national problems. This program's value is realized in New Mexico by assisting in technology based economic development, reducing the cost of the state's environmental cleanup and furthering the advancement and use of our technical education system."

The Governor continued, "Through its participation with the MWLID, Science Engineering Associates (SEA), a small New Mexico business, developed, field demonstrated, and commercialized SEAMIST, which has potential worldwide application as an environmental characterization and monitoring tool. Recently SEA sold the geologic portion of the SEAMIST patent to Eastman-Cherrington Environmental for \$500,000."

The letter mentioned other New Mexico firms that benefit from the project, then pointed out that there are 27 industrial/academic partnerships in 13 states that have benefited from their association with the MWLID.

"The New Mexico Environment Department intends to recommend the usage of innovative landfill cover designs demonstrated and evaluated by this program for our municipal and state landfills," said Governor King. "The use of these landfill covers will be less costly to install and will result in less ground water pollution than our current technology permits."

"I would like to emphasize my delight with DOE's Mixed Waste Landfill Integrated Demonstration at Sandia National Laboratories, and I urge your continued support for this exceptional program," the Governor concluded.

DOE Plans More Demonstrations

Secretary O'Leary expressed her appreciation to Governor King and said she anticipates that several more technologies developed as a result of the MWLID project will be commercialized next year.

"We intend to continue our sponsorship of new and innovative environmental cleanup technologies, including technology systems at a community landfill in New Mexico," she said. "Industry and university involvement in this project continues to grow, with private-sector cost sharing projected at 50 percent in 1994."

The MWLID is demonstrating technologies at three closed landfills: (1) Sandia's Chemical Waste Landfill, (2) Sandia's Mixed Waste Landfill, and (3) Kirtland AFB's Hazardous and Solid Waste Amendments Site. ●LP

Take Note

Boating - The US Coast Guard Auxiliary is offering "Boating Skills and Seamanship" and "Sailing and Seamanship" courses. These courses introduce students to basic piloting, navigation rules, legal requirements, seamanship, and more to help them enjoy boating. Classes begin Tuesday, Sept. 14, 7 p.m., at the Armed Forces Reserve Center (400 Wyoming NE), and continue for approximately 13 weeks. Charge for each course is \$15, which includes text and worksheets. Additional family members pay \$5 for worksheets only. To register, call 897-1695, 298-0116, or 822-7918.

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Fun & Games

Biking - The 12th Annual Northern New Mexico Bicycle Trek to benefit the American Lung Association is scheduled this Labor Day weekend, Sept. 4-6. The tour is fully supported with food, gear trucks, sleeping facilities, and showers. All levels of cyclists are welcome. The trek starts and finishes in Albuquerque, with the first overnight stop near Battleship Rock in the Jemez Mountains and the second night spent in Santa Fe. The final day tours down the historic Turquoise Trail south of Santa Fe past Cerrillos, Madrid, and on to Albuquerque on old Route 66. For more information, contact the American Lung Association on 265-0732.

Golf - The Sandia Golf Association Mountain Classic was held July 9 at Los Alamos Golf Course. Winners include: A Flight - Dennis Gutierrez (9216) and Joey Gutierrez, first place; Charlie Salazar (2482) and Pres Herrington (9236), second; Fred Hooper (2484) and Anthony Pulos (2481), third; and Gil Lovato (2412) and Chuck Ladig (2481) tied for fourth with Ron Andreas (2300) and Andy Wilken (9811); B Flight - Robert Martinez (5932) and Bob Mata (2725), first; Tim Dubay (2663) and Randy Montoya (2881) tied for second with Orlando Vigil (7819) and Dave Begeal (2512); and Dave Geene (5102) and Glen Whiting (5004), Paul Longmire (5407) and Richard Prairie (4308), and John Dye (2337) and Dale Brandt (2337), all tied for fourth.

To Boost State's Competitiveness

Sandia/California Signs Agreement with Community College System

A far-reaching memorandum of agreement was signed between Sandia and the Chancellor of California's Community College System on Aug. 20 that will share Sandia's expertise and technical facilities with the state's community colleges, industries, and workers to help improve the work force and California's economic competitiveness.

Sandia VP John Crawford (8000) says, "By working through the statewide network of 107 community colleges, Sandia can provide internship programs for instructors and students, offer technical assistance to industry and small business through cooperative programs with colleges, and even share our seminars and employee training programs with those from the colleges."

California Community Colleges Chancellor David Mertes comments, "This is a first step at establishing an infrastructure with national laboratories such as Sandia so there is a formal procedure in place to take advantage of the technical resources we have right here in California."

Prepared by the Technology Transfer Office at Sandia, the agreement spells out objectives, challenges and opportunities, focus areas, and commitments for both parties. It says, "Services and retail trade are expected to account for more than half the job growth during the next decade in California. . . . Professional and technical occupations will have the largest number of job openings requiring a high level of education. In addition to [training] young people, employment and training programs must meet the needs of dislocated workers, public aid recipients, veterans, older workers, and low-income persons."

John says, "The community colleges and Sandia can focus and direct their efforts in areas of their strength and expertise to meet these needs and be a part of the solution for maximizing California's economic potential. Our efforts will capitalize on growing and emerging occupations and foster the school-to-work transition by linking education and training."

Sandia will assist the colleges in such areas as

- Combustion sciences, manufacturing technologies, computer modeling, and environmental cleanup and monitoring;



SIGNING a cooperative agreement between Sandia and California's community colleges are (at the table, left) Sandia VP John Crawford (8000) and State Chancellor David Mertes. Also taking part in the ceremony are (standing from left), Subra Subramanian of Technology Transfer Office 8101, Karen Scott of Education Outreach 8527, Chabot-Las Positas Vice Chancellor Barbara Mertes, and Chabot-Las Positas District Chancellor Terry Dicianna.

- Ready access to technical information on advances in these fields;
- Short-term workplace consulting on issues related to the above; and
- Approaches to improve training in the same areas among the community college population.

During the initial phase, the two parties plan to establish a network and communications link to facilitate institution-to-institution information sharing, develop a technical data base related to Sandia's core competencies, and organize a seminar series and employee exchange program to introduce community colleges to Sandia's facilities and technical expertise.

Also present for the signing (which followed a tour and briefing by Sandia officials) were Chabot-Las Positas College District Chancellor Terry Dicianna and Vice Chancellor for Planning, Research and Development Barbara Mertes.

•BLS



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Q: On a recent trip, I had my first chance to use Hertz cars. They offered a nice feature wherein they will refill the car with gasoline at a price slightly lower than current market.

I thought that was a great idea, since it would save both time and money, but when I said I would take that option, they indicated it was not available for Sandians. Perhaps I don't have the full picture of how this works because it seemed like a good program to me.

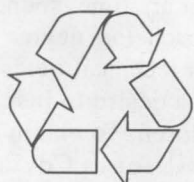
A: As you know, we are currently piggybacking onto the AT&T contract with Hertz Rental. The terms and conditions of the contract state that "AT&T renters are not entitled to, and are not to be offered the Fuel Purchase Option." This would include all Sandia renters.

Sandia is now negotiating with the rental car companies for agreements to take the place of the AT&T contract. We hope this option will be included in the new agreements.

Pro Padilla (7612)

Congratulations

To Darrla Smith (5365) and John Giersch, married Aug. 7 in Albuquerque.



This newspaper can be recycled with Sandia office paper

Hands Off Books — It's Hands-on Science

Twenty elementary school children (K-3) in the Oakland Public School System got a rare opportunity to do some hands-on science recently during a four-week summer science enrichment program meant to improve science education in the City of Oakland.

Sandia/California, together with the Clorox Foundation, Home Savings, Safeway, and Aurora Elementary School, sponsored the innovative program, which integrates science with language and math skills, says Vera Revelli (8742), the program's designer.

"We emphasize hands-on, cooperative experiences with attention toward integrating arts, math, and literature around the science base, with fun and interest being a constant part of activities," she says.

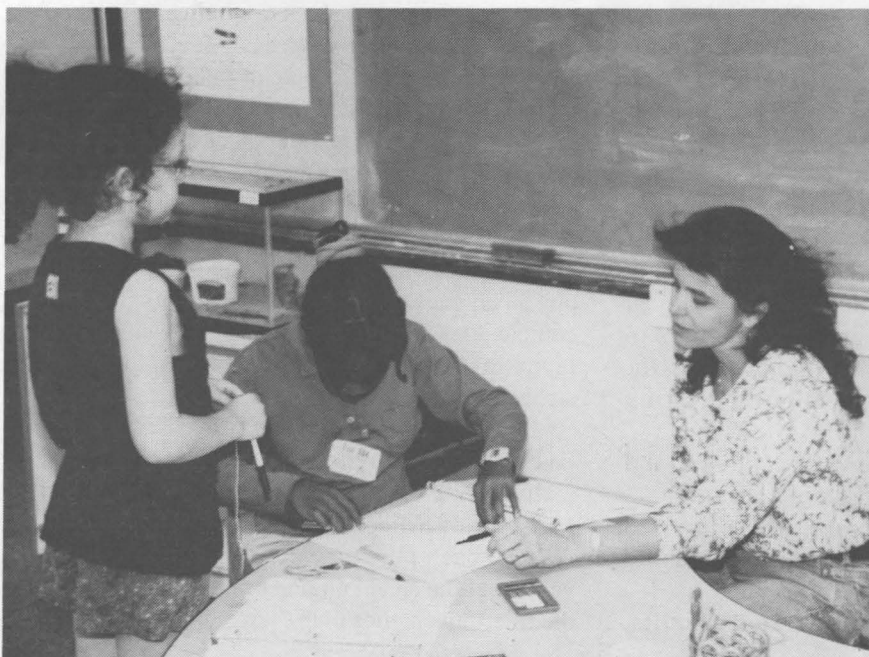
The students were chosen from four Oakland elementary schools (Arts, Chabot, Emerson, and Peralta). Principals and teachers were instrumental in choosing the children for whom the experience would offer the greatest benefit.

"The program is aimed at students who, for financial reasons, would not have a chance to participate in a science program, who could use a boost in self-esteem, and who come from traditionally under-represented groups in science," says Vera.

The program also encourages students to conduct science activities at home with their parents. Parents were encouraged to attend sessions with their child, including an evening meeting to suggest at-home activities.

The students' responses to the program were enthusiastic and appreciative, says Vera.

Teacher Teresa Stasio led the program. Cynthia Davis was the assistant instructor. Bob Whitlow of the Lawrence Hall of Science (the University of California, Berkeley's science museum) was a consultant, and Steve Schneider, an educational programs specialist, helped solicit feedback from parents and students. The program was initiated through Sandia's Education Outreach program in Education and Affirmative Action Dept. 8526. •



VERA REVELLI (8742, right), who designed the summer science enrichment program, helps out in the classroom.

(Continued from Page One)

Tiny Steam Engine

Ernie Garcia of Electromechanical Components Dept. 2641 to develop an improved safety component for nuclear weapons, meant to keep outlaw electrical signals (such as those from fire or lightning) from accidentally detonating a weapon. "To keep stray energy from going around inside a weapon, you need a mechanical motion — not just an electrical — switch," says Jeff.

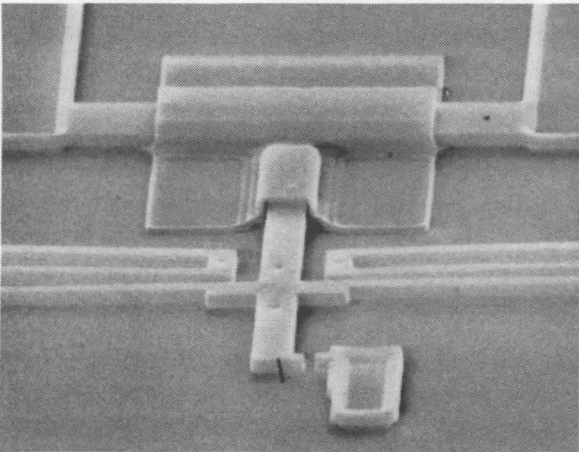
The component's mechanical structure had to be small enough to move tiny parts back and forth a few microns at a time. It also had to be lighter,

"That's a gigantic force for such small dimensions."

cheaper, and at least as powerful as conventional actuators that use electrical voltages to move small distances.

Jeff's solution is a tiny piston (22 microns long) fabricated inside a channel. The channel contains a small amount of de-ionized water. As electrical current is applied to a heater element also within the channel, the water bubble vaporizes and expands, and its surface tension forces the piston outwards through the channel. Outside the channel, the piston works against a tiny external spring. When current is cut off or reduced, the water bubble contracts and the piston returns quickly to its resting point.

Based on preliminary tests, says Jeff, the new



STEAM ACTUATOR works like this: As current is applied to a heater element inside a channel (top center), water vaporizes and expands, forcing the tiny piston outward. The piston works against a tiny external spring (extending left and right). The total length of the piston (interior and exterior) is slightly less than the diameter of a human hair.

Steam-Powered Actuators May Become Tiny Tools, Engines

Ever since Jeff Sniegowski (1325) conceived the miniature steam engine idea, says Paul McWhorter, Manager of Dept. 1325, ideas for its application have been springing up all over. "You just sit here and think of all the possible uses for this device," he says.

Because of their small size and relatively large forces, the actuators might be used as microscopic tools such as tweezers for micro-assembly applications (micron-scale fabrication of microelectronics and micromechanical devices). Jeff is already looking at ways to build such tools.

The actuators might also be used as tiny tools in the operating room. In microsurgery, doctors are increasingly being required to operate in small dimensions, such as for microscopic eye surgery. The actuator, which Jeff thinks can be made in bulk for \$5 to \$10 per device, may be especially attractive in today's belt-tightening health care industry.

The actuator concept may also have uses in computer memory and storage, where precise micropositioning of read heads for magnetic

disks and other storage devices is required.

Other yet-unexplored possibilities include tiny optical shutters for weapons and medical applications, precise mirror positioning for beam systems, and final, precise alignment of fiber-optic cables on fiber-optic boards.

Industry has already expressed interest in the steam-powered actuators, says Jeff.

A persistent problem in the micromechanics field has been achieving useful rotational motion from conventional micromotors, says Paul. Rotating motors are being developed that use electrostatic comb drives (a type of conventional actuator) arranged around a micromechanical gear. As each actuator pushes, it connects with the cogs at a tangential angle and rotates the gear. The horsepower of such systems remains relatively low, however.

Paul believes that if electrical actuators are replaced by steam engine actuators, the same rotational motion can be achieved but with much greater force. Such a system might eventually be useful for weapons and commercial applications.

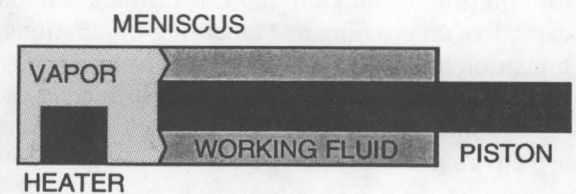
motor's cycle time is a small fraction of a second — the piston pushes out in milliseconds and returns in a few hundredths of a second. Its displacement (the maximum distance the piston moves) is about 20 microns — pretty good for conventional actuators. The piston's movement can also be controlled over its full range of motion — within a micron, Jeff estimates.

Dual-Use, Taken Literally

The forces achieved by the new actuator are what's really impressive, says Paul. "For years the micromechanics industry has been struggling to increase the forces of mechanical micromotors," he says. "The earliest ones barely exceeded friction."

Compared with similar-sized conventional actuators, says Jeff, the steam-powered device delivers forces several hundred times greater — about six-tenths of a micronewton. (A micronewton is one-millionth of a newton.) "That's a gigantic force for such small dimensions," he says.

Jeff and other MDL researchers are now working on refining the tiny engine, making it more durable and trying out different internal "working" fluids. Fabrication cost is another important issue.



CROSS SECTION (lengthwise) of the new actuator's insides. The two shades of gray are water (dark gray) and water vapor (light gray).

"If the actuator can be made by batch fabrication," he says, "the cost can be reduced to \$5 to \$10 per device." That's cheap in comparison with many of today's micromechanical devices, he says.

Even as Jeff and others make the device more attractive, ideas for its commercial use are springing up all over. Microscopic tweezers and rotary engines are just a few. (See "Steam-Powered Actuators May Become Tiny Tools, Engines.")

"We developed this device strictly for a weapons project, but all of a sudden, we see many applications outside of defense," says Paul.

DOE is examining the patent potential for the steam engine concept. For more information, contact Jeff on 844-2718 or Paul on 844-4683. ●JG

Micromechanics: Big Machines Shrunk Down to Micron Size

Stated simply, micromechanics involves the fabrication and use of machinery shrunk to micron size. A single mechanical feature can be less than a micron to several hundred microns in size (the diameter of a human hair is about 100 microns).

The micromachinery includes pressure transducers, accelerometers, and temperature sensors, some of which have already been adopted by industry. Various micromechanical pressure sensors have been used for years in automobiles (to monitor manifold pressure, for instance) and in blood pressure monitoring equipment.

Other devices include valves, pumps, and nozzles that may someday help researchers develop tiny chemical factories to be inserted into people's bodies, periodically releasing medications into the blood or tissue.

As close relatives of integrated circuits,

micromechanical devices are being integrated into microelectronics devices.

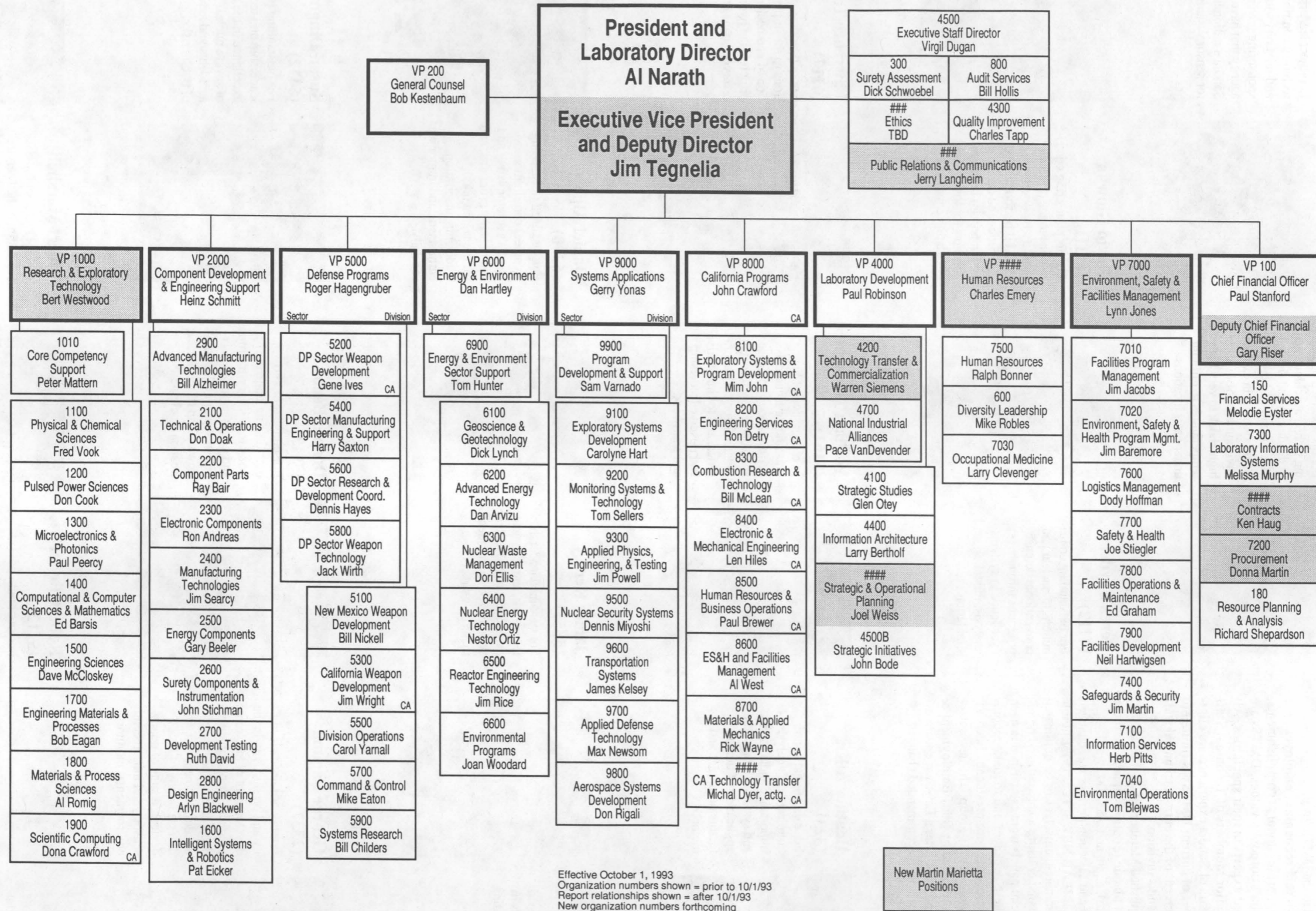
One important attribute of micromechanical devices is that they can be fabricated in bulk — several thousand can be built on one 6-inch-diameter wafer. Tiny features are "grown" on a wafer's surface by adding ultra thin layers of glass and polycrystalline silicon and then chemically etching away selected portions using photolithography techniques (light) to outline patterns. To build complex devices such as the Sandia steam engine, layers of material can be laid down and then etched, one on top of the other.

Sandia's micromechanics program includes five or six researchers. "Micromechanics is really a wide-open field," says Paul McWhorter, Manager of Silicon Technologies Dept. 1325. "We've been playing catch-up for the last few years, but the steam engine might help put us on the micromechanics map."

Take Note

The New Mexico Museum of Natural History and Science is participating in a national program developed by the Science Museum of Boston: Science-By-Mail, which teams up volunteer scientists with children as pen pals. Children in grades 4-9 receive three science challenge packets a year that are designed to foster an interest in science and elicit creative solutions. The children send their solutions to their New Mexico scientist pen pals. After reviewing the solutions, the scientists write back with notes of encouragement, guidance, and support. This year's topics in the challenge packet are time, sound, and structures. Anyone with a bachelors degree in medical, computer, science, or technical fields can be a pen pal. All you need is a desire to inspire the scientific curiosity of children. To obtain a brochure about the program, call Tonya Covington at the New Mexico Museum of Natural History on 841-8837, ext. 75, or send e-mail to covington@apsicc.edu. Registration deadline is Oct. 15.

Sandia National Laboratories



ALTHOUGH CHANGES could be made between now and then, here is the Sandia organization chart that goes into effect on Oct. 1 when Martin Marietta takes over the management and operation of the Labs. As the legend indicates, the screened parts show the names and titles of the vice presidents, directors, and other executives that Martin Marietta is bringing into the Labs. These folks were all profiled in the Aug. 20 LAB NEWS. All organization numbers shown are

current numbers, and changes are expected. At LAB NEWS deadline time, the new numbering system was still being discussed. The new system will be announced soon, and the departments that will report to the organizations shown here will be determined. The pound signs in some boxes indicate that these are new positions/organizations that have not yet been numbered. This chart was distributed to Large Staff members this week, but some changes are likely after Oct. 1.

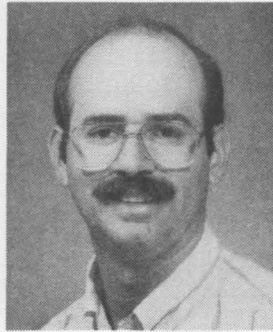
New Distinguished Members of Technical Staff: 34 More Sandians Achieve Highest Technical Level

Thirty-four new names have been added to the list of Sandia's Distinguished Members of Technical Staff. The program began in March 1983. In all, 414 Sandians have been appointed to the DMTS level.

The DMTS program recognizes employees for technical excellence, professional accomplishments, and support of Sandia's corporate values. DMTSs are regarded as seasoned experts in their specialties. All non-supervisory Senior Members of Technical Staff with five or more years of Sandia experience are eligible. The total number of current DMTSs is limited to approximately 10 percent of the current technical staff population in each Sandia division.

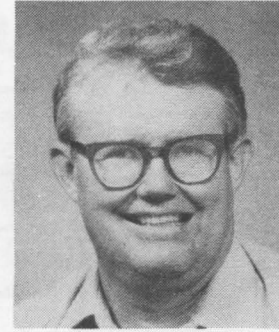
All new Distinguished Members of Technical Staff receive an inscribed plaque (citations appear on these pages with each photo), a pin, and a \$3,000 award.

The nomination and selection process was changed considerably this year (LAB NEWS, Feb. 19). Eligible employees could nominate themselves or be nominated by a co-worker or manager using a standardized nomination package. Special panels were established in each division to review these packages and to make recommendations to their respective vice presidents. Each VP made the final selections for his group. The new selection process was coordinated by Staff Employment & Personnel Policy Dept. 7531 after a Labs-wide team assessed the FY92 process and recommended changes. ●



Ronald Franco (2664)

For his sustained outstanding technical achievements in the design and fielding of telemetry and instrumentation systems in extreme environments from ultra-high-shock to very high temperatures to difficult underwater locations.

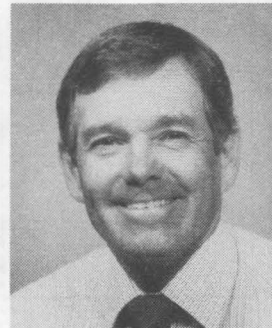


Henry Shefelbine (5941)

For sustained excellence in project leadership, technical contributions, and relations with the sponsoring government agency that have made Sandia a national resource for sensor systems.

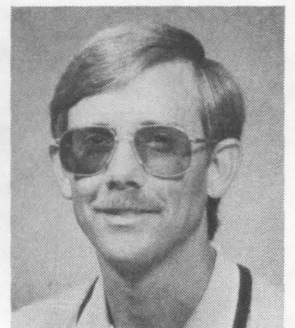
Derek Snyder (4112)

For outstanding contributions to nuclear and conventional defense programs through excellence in systems analysis, modeling, and simulation.



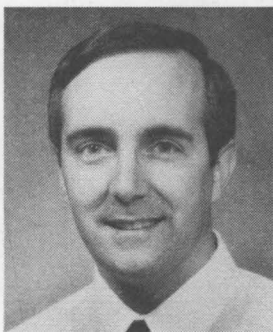
David Glowka (6111)

For his pioneering contributions to the drilling industry by developing PDC bit performance characteristics and design tools and important hardware concepts for lost circulation control.



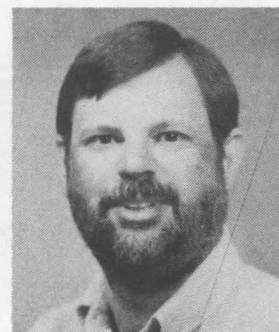
Heather Allen (323)

For exceptional contributions to the analysis of important Sandia issues and systems through the application of human factors principles and methods.



William Tedeschi (5161)

In recognition of his outstanding technical performance in defense, space, and new research initiatives for the Laboratories, and for innovative and positive leadership and teamwork.



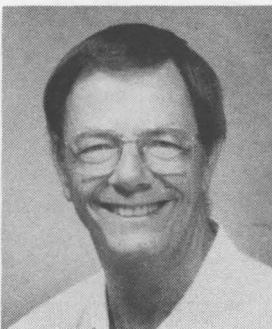
Lawrence Teufel (6117)

For outstanding contributions to the implementation of geomechanics principles in hydrocarbon reservoir management.



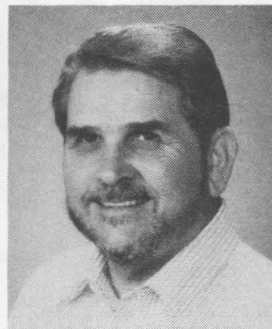
Charles Trauth (331)

For unique and sustained systems studies efforts in numerous areas including planetary quarantine, ES&H, quality, and nuclear safety.



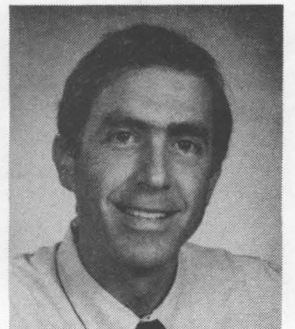
James Kersey (5355)

For sustained leadership, teamwork, and technical excellence in the Nuclear Weapons program; mentor to his co-workers.



Daniel Alpert (6200)

For sustained outstanding technical contributions to Sandia's reactor safety and solar energy programs, and for the teamwork, leadership, inspiration, enthusiasm, and humor we see daily.



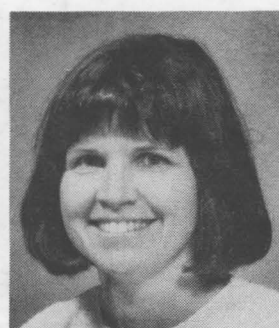
George Laguna (2337)

For his sustained creativity and productivity in the development of electronic products. Principal among these achievements are the development of a diverse family of PLZT devices, a suite of quartz sensors, and most recently environmental monitors.



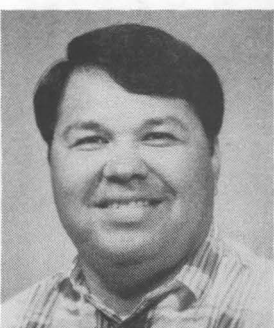
Donald Benoist (5513)

For consistent and outstanding contributions to military training and engineering evaluation in support of Sandia's stewardship of the nuclear weapon stockpile.



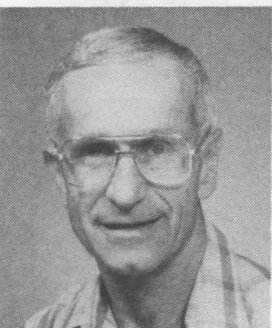
Susan Dingman (6412)

For outstanding project leadership and technical excellence in the analysis of severe nuclear reactor accidents and assessment of public risks.



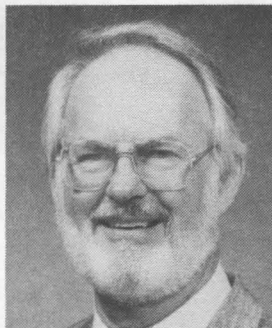
Samuel Levy (2523)

For exceptional contributions to the safety and reliability of lithium ambient temperature batteries and technical leadership in the transfer of battery technology to US industry.



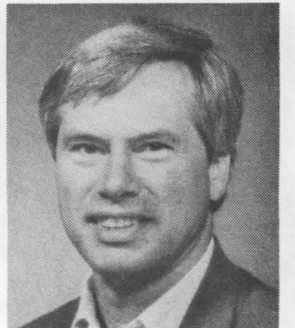
Robert Taylor (5712)

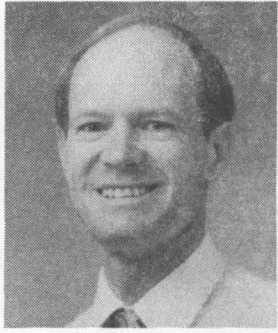
In recognition of exceptional leadership, teamwork, and technical contributions in the areas of Field Testing, JTA Development, POC/ET MILSTAR Integration, and Protected Volume Technology Engineering.



Albert Marshall (6474)

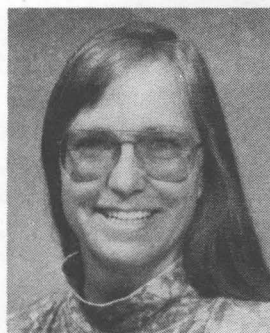
For distinguished service throughout his career with sustained excellence demonstrated by exceptional technical contributions, project leadership, commitment to safety, and his embodiment of all Sandia values.





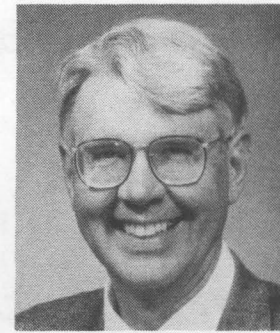
**Ronald Lipinski
(6514)**

For creation and development of innovative concepts in the areas of directed, kinetic, and nuclear energy.



**Christine Morgan
(7903)**

For sustained, superior technical contributions to Laboratory-wide computing initiatives, including application compatibility across platforms, electronic mail, voice messaging, and document accountability.



**Keith Brower
(9221)**

In recognition of sustained excellence in physics research and experimentation.

**Regina Hunter
(6602)**

For exceptional breadth of knowledge and accomplishments in the fields of geologic disposal of nuclear waste, geologic probability theory, and environmental risk assessment.



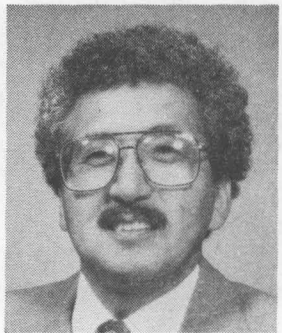
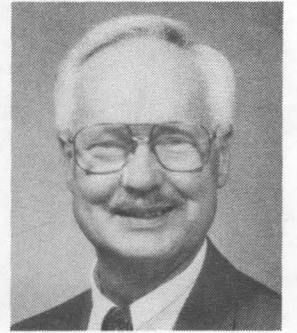
**Cynthia Harvey
(7905)**

For outstanding technical contributions as a structural engineer and project leader of multi-million-dollar construction projects, and as a mentor and technical resource to others.



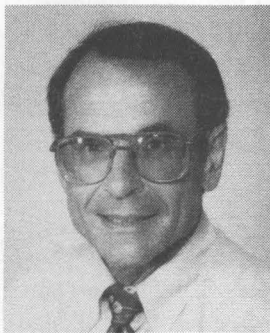
**Dale Breeding
(9236)**

For sustained excellence in development, test, and evaluation of data collection and processing systems for monitoring and measuring underground nuclear tests.



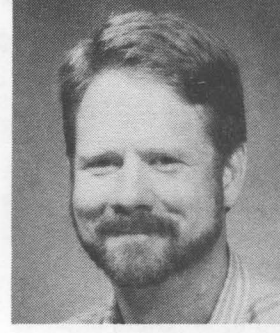
**Richard Yoshimura
(6642)**

For outstanding technical contributions in the development of nuclear materials packaging and transportation systems.



**Martin Abrams
(8114)**

For sustained contributions to Sandia's defense and energy programs in the areas of both thermal analysis and project leadership.

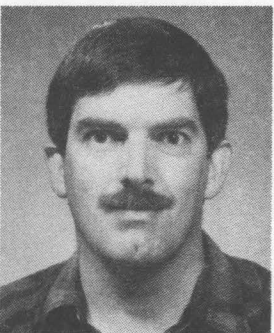


**William Ballard
(9341)**

For leadership and technical contributions toward understanding nuclear radiation effects in electronic subsystems and the development of high-power microwave sources.

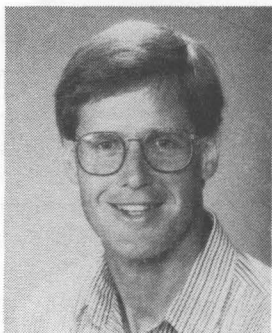
**Richard Stump
(7714)**

For sustained technical contributions to the radiation protection programs, including technical support to line organizations and development of the NTS radiation monitor display system.



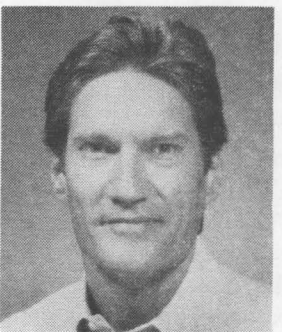
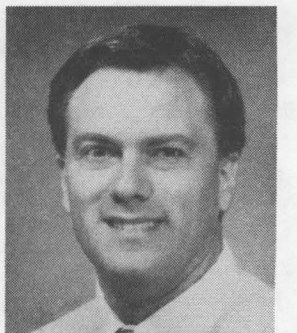
**Glenn Kubiak
(8342)**

For the development and application of intense laser plasma sources to the field of soft X-ray science and technology.



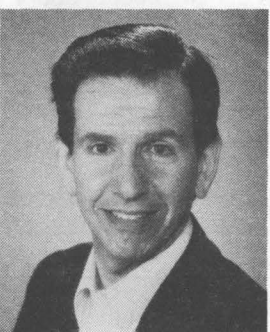
**Mark Hedemann
(9341)**

For leadership and technical contributions that resulted in major improvements in testing technology for nuclear radiation effects.



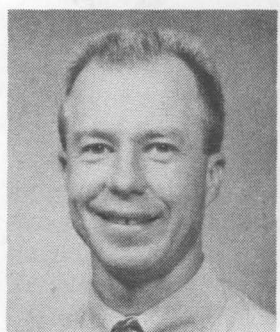
**Dwight Miller
(7733)**

In recognition of outstanding technical contributions and leadership in ergonomics, and in applying human factors analysis to make technology usable and improve worksites.



**Alan Kerstein
(8351)**

For innovative technical contributions and leadership in energy and weapons-related programs, especially in understanding and modeling complex phenomena in turbulent combustion.

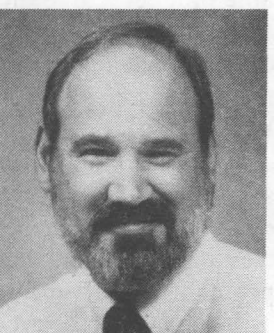


**Bruce Boughton
(9614)**

For development of source term descriptions and advanced models of atmospheric dispersion applicable to both emergency response and risk assessment consequence prediction.

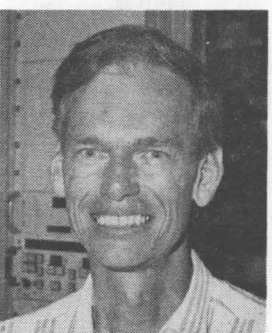
**John Coffman
(7817)**

In recognition of significant achievement in developing process-based quality improvement methodology and implementing it through creating, training, and leading cross-functional teams.



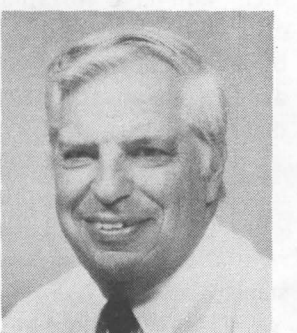
**Rance Edmunds
(9132)**

For outstanding contributions in the area of flight control systems and to programs at Sandia National Laboratories requiring this technology.



**Andrew Wilken
(9811)**

For sustained excellence in technical contributions and demonstration of Sandia corporate values in the development of electrical/electronic components and instrumentation for aerospace flight systems.



ECP Is You . . . Sharing**Single Sandian Is Foster Parent to Troubled Teens**

The 1993 Employee Contribution Plan (ECP) campaign will be held the week of Oct. 18. This is the first of several related articles. The ECP campaign is part of the annual community United Way campaign.



HOGARES, a United Way agency, offers counseling and residential treatment services for troubled adolescents and their families. (Neither of these teens is one of those mentioned in the story.)

Murphy Brown is only a television character, but she's had an effect on the way some folks look at American families. The rumpus during the last presidential campaign about single motherhood, as depicted in the Murphy Brown television series, spotlighted the various forms family life can take in this country. Unfortunately, some mothers and fathers don't love their children or provide for them. The ugly reality is that some children are in danger from the very people who are supposed to love and protect them. These children need someone to care for and nurture them, someone like single foster-parent Sherrie Langlois (7042).

Sherrie, an environmental engineer in Chemical Waste Management Dept. 7042, is foster mother to two teenagers who had been in group homes, shelters, and other foster homes for several years.

While listening to the radio a year ago, Sherrie heard a spot about Rocky Mountain Adoption Exchange and decided to attend the Exchange's informational meeting about foster parenting the next week. The children she learned about were a sister and brother who were abused and

neglected by their parents — a girl now 18 years old, and a boy now 13 years old, who were residents at Hogares, Inc., a United Way agency that provides counseling and residential treatment services for troubled adolescents and their families. Because the children could still be in danger of being abused, their names are not used in this story. Sherrie learned that even though she is not married, she was considered highly qualified to be a foster parent.

Kids Don't Know What to Expect

Children who need help from agencies like Hogares often don't know what it's like being in a family that isn't dysfunctional. They don't know what to expect from their caregivers. "Single-parent households can work out really well because the kids have only one person to adjust to," says Sherrie. "The purpose of foster care is not only to give children a safe and loving environment, but also to try and break the cycle of abuse by having them live in a functional family environment."

Although she doesn't have the traditional family support structure, Sherrie gets emotional support and help in building parenting skills from Hogares, financial support from the State of New Mexico's Children, Youth, and Family Department, and medical help for the children from Medicaid.

Hogares provides individual and family
(Continued on Next Page)

(Continued from Page One)

Substance Abusers

operation for some time, but this program, initiated by the Albuquerque Operations Office, has been officially sanctioned by DOE Headquarters, which is encouraging its implementation at all field offices.

He says 70-80 percent of cases in administrative review (AR) — clearance suspended while a determination is made as to whether to continue or revoke the clearance — involve substance abuse, and that DOE/AL currently has 139 AR cases, about 25 involving Sandians.

Suspension Cases Being Reviewed

"As this program is being fully implemented," Fredrickson says, "we are going through the 139 cases we have in administrative review, and if it appears that an individual meets the criteria for this program, we're telling headquarters we want to offer the program to that individual."

To be eligible for the EAPRO, an employee must at the time of the initial personnel security interview:

- No longer be using illegal drugs or alcohol, or abusing legal drugs, but not yet have demonstrated for at least one full year adequate evidence of rehabilitation and reformation. If consuming alcohol, doing so (1) not habitually to excess and (2) only with the agreement by a DOE consultant psychiatrist that the employee may continue to drink while demonstrating rehabilitation and reformation, and

- Have entered a formal substance abuse treatment program, or

- Have not entered, but intend to enter, treatment, and have abstained from alcohol or illegal drugs by his or her own testimony, substantiated by investigative reports; or in the absence of evidence, have abstinence verified by a DOE consultant psychiatrist.

Fredrickson says anyone who meets these criteria is eligible for the program, unless:

- There is other behavior proscribed by DOE regulations that is not directly related to the substance abuse,

- The employee has violated the terms of a

drug certificate, or

- Current drug use was identified by a positive drug test.

Bill Lawrence, DOE/AL's Chief of Personnel Security Operations Branch, Personnel Security Division, says rehabilitation and reformation have always been part of the criteria used in determining whether to continue the clearance of someone with a substance abuse problem.

Albuquerque Leading Implementation

"Whether someone could show he or she was in the rehabilitative process has always been included in the adjudication procedure," says Lawrence. "But this new plan formalizes that on a larger scale. Even though various other sites have operated under their own policies, this is a consolidation and formalization of the principles, with Albuquerque serving as the lead implementation site."

That DOE involvement is important, says Harriet.

"We believe it's an acknowledgment on their part that the concerns about driving people underground are clear — because of individuals' fear of

"They're basically saying, 'EAP, we want you to design a good program, and we're going to trust that you're going to do that.'"

surfacing a problem that could result in the loss of their clearances — and I believe they are trying to respond," she says.

The new policy allows someone with a problem to admit the problem and undergo treatment while retaining a clearance and continuing to work, says Harriet. One of its most important features, she adds, is that not losing the clearance and, perhaps subsequently, the job, provides the stability needed to be able to continue working toward sobriety.

And particularly gratifying to Sandia's and other DOE contractors' EAPs is the expression of trust, she says.

"They're basically saying, 'EAP, we want you to design a good program, and we're going to trust

that you're going to do that,'" she says. "We're going to let you tell us how things are going. We're not going to come over and check on anything.' I think that's a collaboration we have not had in the past."

Publicity Moved Process Along

Harriet and Fredrickson both say a spate of publicity about Sandia's EAP during the past year has played a role in moving the new policy along as quickly as has happened, although both say discussions about improving the process have gone on for a much longer time than that.

"The publicity certainly made a very human story out of what sometimes had been just a list of derogatory criteria and a DOE order," says Harriet, "and I think that certainly made everyone more aware."

Fredrickson agrees, saying, "I think it's probably safe to say that publicity about the problem during the past year or so has helped us accelerate our interest in the program, although it was already under discussion at headquarters before the publicity here in Albuquerque."

Self-Identification is the Key

While the new program is good news for some, Fredrickson says, it doesn't change everything.

"For example," he says, "if a person tests positive for illegal drug use during a random test at Sandia, that person's not going to be eligible for the new program [such cases would continue to be covered by provisions of the earlier program]. But if a person self-identifies before being caught, then that person may be eligible. It should encourage people with substance abuse problems to seek help through their EAPs."

He says he or members of his staff are available to meet with Sandians to answer questions about the program. Harriet says employees interested in such a meeting, or in learning more about the program before contacting DOE, should call 845-8085.

"I think it's a situation where everybody wins," says Fredrickson. "Contractors win by having employees retain their clearances and do the jobs they were hired for; employees win by getting their problems resolved; and DOE wins by being assured national security is protected." ●HK

(Continued from Page One)

Nuclear Plants

of cameras and instruments, Sandia scientists observe and measure how such factors as spilled water and burning hydrogen affect pressures within the containment building.

This procedure simulates a hypothetical high-pressure accident that would severely try a containment building. In a melt ejection event, the reactor core could melt and flow into the bottom of the reactor pressure vessel. If the pressure vessel failed, the molten core material would squirt into

Scientists see how spilled water and burning hydrogen affect pressures within the containment building.

the cavity beneath the pressure vessel. The resulting heat and pressure in the containment building could, if greater than the building's ability to withstand it, crack open the building and release radioactive material.

In investigating how the nuclear power industry can guard against such accidents, Sandia researchers have conducted 8-12 experiments annually for the past three years, at a cost of about \$2 million a year, to study effects on reactor containment buildings. The test program started eight years ago but accelerated in 1990 after a review by a panel of scientists. The experiments are sponsored by the Nuclear Regulatory Commission (NRC).

Modeling Real Plants

Experiments to date have used scale models of two existing power plants: the Surry generator near Williamsburg, Va., and the Zion Nuclear Generating Station near Chicago. These plants represent about half the nuclear power generators on line in the US. Both are "light water" plants, using water as the cooling agent.

Data from experiments on these models are improving computer simulations of accidents. "These tests were the first to show that hydrogen produced by a high-pressure melt ejection will also burn," says Michael Allen, Manager of Dept. 6422. Previous computer models had predicted that most of the hydrogen would not burn, he says, but Sandia's tests demonstrate that hydrogen combustion could actually cause 50 percent or more of the pressurization during such an accident.

Multiple experiments at different scales help in

Nuclear Plants Rely on Multiple Safeguards

Nuclear power plants supply about 20 percent of America's electricity — second only to coal. To prevent any release of radioactive material from these plants, designers follow a safety- and defense-in-depth philosophy.

This means creating multiple physical barriers, developing a variety of backup systems to protect against equipment failure or operator error, and assuming that even unlikely events may occur. Recent Sandia research has investigated the results of molten core material being ejected from the reactor pressure vessel into the containment building.

Physical barriers include metal-clad ceramic fuel pellets, a steel pressure vessel containing the fuel rods, and a thick concrete containment building with a steel liner.

In addition, the Nuclear Regulatory Commission is studying how potential accidents can be minimized by the responses of plant operators.



CONTAINMENT MODEL — Marty Pilch (left) and Michael Allen (both 6422) examine a containment structure at Sandia's Containment Technology Test Facility. A downsized version of the Surry nuclear power generator near Williamsburg, Va., the one-sixth scale model facility was used to test a severe type of accident that has never occurred in a power plant. (Photo by Randy Montoya)

estimating the effects of a real event. At Sandia's Containment Technology Test Facility in the Coyote Canyon test area, a one-sixth scale test represented the Surry Plant. Another Sandia facility, Surtsey (in Tech Area 3) is used to perform tests with one-tenth scale models. Adding the results of other tests at other research institutions provides still more data for scaling up. For instance, at Argonne National Laboratory near Chicago, smaller tests — typically one-fortieth scale — have been conducted as part of the program.

Scaling 'Match Box' to 'Barn'

"There's always a question about whether the 'match box' experiments will translate to 'barn' size," says Marty. "When you have experience at different physical scales, you can test your ability to extrapolate upward. This gives us good confidence in making the final leap to full-scale predictions for a power plant."

Sandia scientists examined both the Surry and Zion plants firsthand and also used plant drawings, NRC information, and photos of the plants in designing the models. "These are very detailed representations of the plants," says Marty. "You can't tell which scale you are looking at from photos."

The Sandia results can be used by the NRC in its accident management activities, Marty says. This approach recognizes that operators can take active steps during an emergency to reduce its severity. In the meantime, another NRC program is examining ways to avoid a melt ejection accident

"There's always a question about whether the 'match box' experiments will translate to 'barn' size."

by depressurizing the reactor system. Together, these approaches can make the next generation of light-water plants still safer.

A draft report sent recently to the NRC outlines methods that could extend the Sandia assessment to other types of light-water plants. "There are features on the other plants that are different," Marty explains. "Until we have additional information, we can't make extrapolations to these types." The report followed completion of the most recent test series.

●WKeener(7161)

*(Continued from Preceding Page)*

Foster Parent

therapy. Its parent-support-group class teaches parents communication and parenting skills. "It supports not just the foster care system, but also the community and parents who have trouble with teenagers," says Sherrie. "My goal is to help them to be contributors to society and realize their potential for happiness and well-being." Her foster daughter is now a senior in high school. She has a job at Sandia as a Youth Opportunity Trainee, and wants to join the armed services after she graduates from high school. Sherrie's son wants to be an environmental engineer like his foster mother.

Surviving and Thriving

"My kids had always been in survival mode," says Sherrie. "Now they can see there's a future, a life for them. Before coming into my home, both kids were in remedial classes in school and both struggled with just fitting in. My daughter is now, for the first time, in all regular classes and doing well. She also became an officer in Junior ROTC and is studying for her college entrance exams. My son realized his dream of playing Little League baseball this year, and is thrilled to be in Menaul School. Even though he was a poor student in the Albuquerque Public Schools system, he tested 10th- and 12th-grade level for math and science on his entrance exams to Menaul School. Both kids love school and are starting to see themselves as they truly are, not as society has pegged them. They were both labeled poor students and almost lost-causes, based on school records rather than on circumstances beyond their control."

According to United Way of Central New Mexico, 1,465 cases of child physical neglect and sexual abuse were reported in Bernalillo County in 1992. Family and Children's Services, Inc. provided counseling services for 1,423 children and families in crisis last year.

United Way's Strategic Planning Council came up with six priority areas of need in the Central New Mexico community: violence (rape, abuse, crime, and gangs); family dysfunction or families in crisis; access to quality, affordable child care; alcohol and drug abuse; lack of affordable housing; and homelessness.

By donating to United Way and other health care and human services agencies through Sandia's Employee Contribution Plan, we can help nurture and protect the future — our children.

●JC

Sandia News Briefs

Sandia Part of National Center for Transportation and Air Quality

Dan Hartley (VP-6000) and other New Mexico R&D group officials met last month with Governor Bruce King, Secretary of Environment Anita Lockwood, and Secretary of Energy Judith Espinosa to sign the Declaration of Founding Principles for the National Center for Transportation and Air Quality (CTAQ). CTAQ is a creation of the Alliance for Transportation Research, which represents Sandia, Los Alamos National Laboratory, the University of New Mexico, and the State of New Mexico. Among other objectives, the group resolves to work toward improving transportation efficiency and reducing air pollution caused by vehicles.

Sandia Gets Good Grades on Recent Labs-wide Safety Appraisal

Sandia earned good marks during a recent ES&H appraisal of Sandia work sites performed by DOE's Albuquerque Operations Office. The appraisal, which took the place of the long-awaited-then-suspended DOE Technical Safety Appraisal (TSA), was a comprehensive ES&H appraisal of both the New Mexico and California sites. It covered 13 categories of industrial safety, health, and management. The appraisal was completed June 25. Overall, according to draft assessment reports, the Labs scored 39 Noteworthy Practices (above and beyond the minimum requirements), 28 Findings (needs improvement), and 82 Observations (professional suggestions from the appraisers). Coordination and logistics for the appraisal were handled by ES&H Program External Interface Office 7026. Future appraisals will be handled by Appraisal Management Office 7027.

Food-Processing Businesses Get Waste Assessment Advice

Some 50 people representing small food-processing businesses attended process waste assessment workshops around New Mexico this summer. The workshops, an effort of Sandia, New Mexico Cooperative Extension Service, community colleges, and the State Technical Assistance Resource System, were held in Albuquerque, Las Cruces, and Roswell. The workshops were sponsored by Labs organizations involved in Manufacturing Development Engineering, Advanced Materials and Processes for Economic Competitiveness, and the Environmentally Conscious Manufacturing, Technology Transfer, and Training Initiative.

Sandian Aims at Economical Radiation Detector

Jim Corey of Proliferation Projects 5908 has plans — and is advertising for industrial and university partners — to develop an accurate personal radiation detector. A recent ad in Commerce Business Daily announces the opportunity for partnerships with Sandia. The idea of an inexpensive detector originated with Jim and Joyce van Berkel (5913) a couple of years ago. "The detector will allay fears about nuclear power and radioactive wastes by bringing about a better understanding of the subject," says Jim. Previous commercial attempts to build affordable detectors have not been able to bring the price low enough, but Jim believes a concerted industry-government-university effort could lead to a \$25-or-less detector. Possible users include school science classes, medical personnel, environmental cleanup technicians, emergency and rescue responders, and members of the public living near nuclear power plants or other nuclear installations.

'Environmental Bottom Line' Draws 200

"Environmental Bottom Line," an environmental briefing for small business, was held by Dept. 6621's Mixed Waste Landfill Integrated Demonstration last month, with participation by Sandia, DOE, Los Alamos National Laboratory, and New Mexico officials. The briefing attracted about 200 participants, who learned about local and state business opportunities in DOE's Environmental Restoration and Waste Management Program at Sandia and Los Alamos. Environmental research, commercial, and contracting opportunities were covered, as well as governmental (state and federal) small-business programs.

Send potential Sandia News Briefs to LAB NEWS, Dept. 7162.

Technology and National Need

Martin Marietta President Urges Better Tech Transfer

"Don't fall in love with the technology" merely because of its stunning capabilities, Martin Marietta President and Chief Operating Officer Tom Young told industry, government, and lab representatives gathered in Albuquerque last week for a "Coupling Technology to National Need" symposium. Emphasizing the need to get away from "pushing" technology, Young stressed the importance of working toward an arrangement where the private sector is "pulling" for technology at the same time technologists are "pushing" it.

Young was the keynote speaker for the symposium's banquet. He outlined a do-and-don't list for government contractors and private companies that want to benefit from available technology.

Eye on the Practical

Like many of the symposium's sessions, the speech focused on practical advice for smoothing and speeding the technology transfer process. Sandia President Al Narath chaired a Federal Laboratory and Industry Roundtable in which panel members offered their ideas on issues such as the most effective models for partnership and involving universities in the process. Several of the speakers, who represented institutions such as SEMATECH, the Council on Competitiveness, and the national labs, recommended that the labs concentrate their efforts on core competency areas.

The conference, which was the first of its kind sponsored by SPIE (the International Society for Optical Engineering), led off with a series of technical sessions in six subject areas. Presenters covered such topics as the latest breakthroughs in laproscopic surgery (abdominal surgery through a small incision), applying technology for making the nation's highways safer, and environmentally conscious manufacturing.

Many Sandians were involved in organizing the program, presenting papers, and chairing sessions. Art Guenther (4500B) was symposium co-chair.

Take Note

The next meeting of the Sandia Singles Club is Monday, Sept. 13, 5 p.m., at the Coronado Club. Upcoming Club events include attending the Bernalillo Wine Festival on Sept. 4, the State Fair, tennis, jazz under the stars on Sept. 11, country-western dance lessons, a Jemez camping trip on Sept. 18, and birthday parties, dinners, and movies. For information, contact Sandy Culler (1323) on 821-4143.

Retiring recently and not appearing in LAB NEWS photos: Fred Bailey (9216).

Employee Death

Kathy Mitchell of Financial Requirements/Corporate Policy Dept. 157 died Aug. 15 after a long illness.

She was 34 years old.

Kathy was an MLS trainee and had been at Sandia since 1980.

She is survived by her daughter Adrianna.

Sympathy

To Melodie Eyster (150) on the death of her father, Roy Owen, in Farmington, Aug. 6.

To Dave Kiffer (9227) on the death of his father, Walter, in Lake Havasu City, Ariz., Aug. 12.



TRAINING PROCEDURES occupy Joe Perez, background, and David Dellinger, both of Motor Pool Services Dept. 7614, in Sandia's Vehicle Maintenance Facility. Sandia mechanics are going through certification procedures required by the Department of Transportation for maintaining Sandia's big trucks and DOE's fleet of "big rigs" used in transporting weapons and special nuclear material. (Photo by Mark Poulsen)

UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

Deadline: Friday noon before week of publication unless changed by holiday. Mail to Dept. 7162 or fax to 844-0645.

Ad Rules

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

MISCELLANEOUS

BED FRAME, king-size, w/rollers, \$50; Craftsman orbital sander, \$20; movie screen, \$5; projection table, \$10; movie camera, 8mm, \$20. Stuart, 265-7315.

CALICO CAT, female, beautiful markings, friendly, inquisitive, opens doors, needs good home. Willette, 271-2095.

GE WASHER, green, excellent condition, \$75; custom golf clubs; golf balls, assorted types and colors, 5 for \$1. Dwyer, 271-1328.

REFRIGERATOR/FREEZER, Amana 22, w/icemaker, almost new, \$550. Watson, 298-2374.

LASER PRINTER, Okidata OL400, \$425; computer, 8088 clone, 20MB HD, monochrome monitor, Hercules graphics, \$150. Both for \$525. Sullivan, 265-8113.

FILE CABINET, 4-drawer, wood, 52" x 34" x 12", beautiful condition, \$100. Hogan, 296-8846.

WOODSTOVE, Grizzly, air-tight, heats 2,000 sq. ft., glass doors, blower motor, pipe, excellent condition, \$650. Sturgeon, 281-9035.

SLEEPING BAGS, Slumberjack Zero, extra-long mummy style, rated to zero degrees, bags zip together, used once, \$125 new, asking \$50/ea. Montoya, 296-4268.

COUCH & LOVESEAT, neutral colors, 3 yrs. old, great condition, \$350 for both. McDuffie, 292-0459, evenings.

WOODEN DESK, 7 drawers, w/adjustable chair, \$85. Plummer, 823-1619.

HAWAII ENTERTAINMENT BOOK, '93 edition, full of 2-for-1 dining and entertainment offers, paid \$25, sell for \$10. Caskey, 294-3218.

PIANO, Baldwin Spinnet, good condition, \$1,100; saws: 18-in. chain; 10-in. radial; 10-in. table; 9-in. miter. Pierce, 265-5939.

UTILITY TRAILER, 900-lb. capacity, almost new, \$150. Dale, 291-9020.

SPALDING EXERCISE CYCLE, \$100; Tunturi rowing machine, \$100; Bally quarter slot machine, \$1,000; Perego stroller, \$60. Little, 883-9329.

GERMAN SHEPHERDS, white, males, \$100/ea. Gutierrez, 877-1076 after 6 p.m.

COLOR TV, Emerson, 19-in., w/remote, \$100. Babcock, 299-3121, leave message.

LA-Z-BOY SOFA, 82-in., w/two recliners, dark green fabric, 3 yrs. old, excellent condition, \$600 OBO. Adams, 823-1845.

SOFA SLEEPER, blue-patterned, queen-size, w/4 throw pillows, \$350 OBO; kitchen table, white, w/leaf, 2 chairs, \$50. Alam, 281-7760.

MATTRESS, queen-size, Symphony brand, can be used in waterbed frame, excellent condition, paid \$259, asking \$175 OBO. Sanchez, 836-2782.

YAMAHA CLARINET, good condition, \$120. Vieth, 899-9625.

MOVING SALE, Saturday, Sept. 4, 10 a.m.-5 p.m., 1528 Camino Cerrito SE. Crumley, 299-5293.

DRAFTING TABLE, 3' x 5', oak, w/parallel bar, \$150; plotter, "D" size, \$500; digitizer, \$100. Wernicke, 260-1857.

BABY CRIB, \$80. Randour, 821-8523.

RE-CAP SNOW TIRES & WHEELS, L78-15 for Ford pickup; air and oil filters for Ford Escort, Fram # CA-3597 and PH-3600. Dresser, 298-5251.

SPEAKERS, Magnaplaner, 24 x 48 x 1-3/4, \$225; student bedroom set, includes twin bed, 6-drawer dresser, nightstand, desk, and 2-drawer file cabinet, gray Formica, \$250. Landenberger, 294-4849.

CRIB, crib sheets, baby clothes, bottles, baby accessories. Chemistruck, 281-8789.

EXERCISE MACHINE, Soloflex, no attachments, excellent condition, \$200. Stavig, 291-9043.

FURNITURE: dining table, 6 chairs, china cabinet, vanity, bench, corner desk, lamp tables, nightstand, round tables. All solid mahogany. Glen, 294-3168.

THREE-SPEAKER CABINETS, two, record player, blond wood, \$25 OBO. Meyer, 296-9066.

BUNK BEDS, baby bed, desk, encyclopedias, bench, weights, TV, books, craft supplies, cake pans, clothes, misc., multi-family. Self, 296-4137.

MICROSCOPE, Bausch & Lomb, stereo zoom, 10X to 50X, removable sub-base, wide-angle oculars, carrying case, \$600. Fink, 292-8197.

REFRIGERATOR, "gas" Servel, top inside freezer, previously used in mountain cabin, excellent condition, \$150 OBO. Hole, 255-1444.

'84 FORD 300 ENGINE, 4.9L, 6-cyl., complete, \$150 OBO; split-back bench seat, for '80-'88 Ford truck, blue, good condition, \$50 OBO. Brusseau, 891-2841.

BEDROOM SET, black mahogany, oriental, \$400; lounging chair, white upholstery, \$150; grandfather clock, solid mahogany, \$1,500 OBO. Sobel, 281-8792.

DRUM SET, white-pearl Gretsch, snare, bass, tom, Zildjian 20-in. ride cymbal, sock, pedal, good beginner's set, \$300. Skogmo, 292-9773.

EXERCISE EQUIPMENT: stationary bicycle, rowing machine, mini trampoline, as a set, \$50. Woods, 884-4224.

SLIDING GLASS DOOR, aluminum, 5-ft., single glazed, w/remodel framing, \$15; white fabric vertical blinds, 60" x 80", \$15. Van Deusen, 291-8196.

COMPUTER, Macintosh IIci, 5MB RAM, 80 MB HD, extended keyboard, compression card, 14-in. color monitor, loads of software, \$2,200 OBO. Ortiz, 831-0551.

WOODEN DRESSER, 5-drawer, \$190; viola, \$250; large Litton microwave oven, \$95. Geitgey, 856-0829.

REFRIGERATOR, Frigidaire, 20.5 cu. ft., frost-free, works great, avocado green, \$80. Weber, 268-1195.

WOODSTOVES, "Orley," \$600; Parlor stove, \$200. Bauer, 266-8480.

SOFA SLEEPER, queen-size, inner-spring mattress, camelback, navy blue print, was \$1,200, sell for \$700; refrigerator, goldenrod, \$200. Kitta, 823-9317.

MICROWAVE/CONVENTIONAL OVEN, Quasar combination, large capacity, excellent condition, \$225 OBO. Plummer, 828-3028, leave message.

GUITAR, left-handed classical Yamaha, w/case, good as new, valued at \$300, sell for \$150. Normann, 281-7412.

FUEL-SAVER THERMOSTAT & SUB-BASE, Honeywell, automatic heating/cooling, Model T 8085, w/owner's manual, excellent condition. Wagner, 823-9323.

COLONIAL PINE LOVESEAT, w/brown plaid cushions, FlexSteel, \$150 OBO. West, 292-7091.

PROPANE TANK, used, 9 yrs. old, 500-gal., \$300. Kinney, 298-5281.

WATERBED, queen-size, complete, w/padded side boards and foot bench, \$50. Zamora, 294-3737.

AQUARIUMS: 30-gal., glass hexagon, w/wood stand, fish, and supplies; 5-1/2-gal., \$200. Taylor, 883-1211.

SOFA, brown, good condition, \$150; color video camera and portable VCR, \$350. Drotning, 294-4807.

COMPUTER, DEC Rainbow 100+, 40MB HD, 5-1/4" floppy, 3-1/2" floppy, graphics/accelerator card, color monitor, modem, printer, software, \$750. Hutchins, 296-1335.

MOWER, electric, 20-in., w/grass catcher, \$95; bed frame, pine, queen-size, 4-poster, \$100; exercise machine, Wieder band-type, w/stepper, \$150. Patrick, 265-4569.

DRAPE, ready-made, ivory, 138" x 82", rod, three sheer panels, \$40. Worden, 299-4915.

ALTO SAXOPHONE, Bundy, student, excellent condition, \$300 OBO. Smith, 821-0024.

WATER HEATER, electric, 80-gal., \$155. Moss, 298-2643.

REFRIGERATORS, three, ideal for apartment rentals or own use, \$75, \$125, and \$150, or all for \$325. Chavez, 842-6374.

VIOLIN, half-size, Suzuki Nagoya, \$200. Campbell, 294-1380.

LAWN MOWER, Murray, 21-in., self-propelled, rear bagger, 2 yrs. old, \$100. Wright, 891-1998.

COMPUTER, Mac LC w/hi-resolution 1331 color monitor, 10MB RAM, current software, manuals, Excel 4.0, Word 5.0, \$1,600. Yaniv, 268-2320, leave message.

BARBECUE, gas, for camping, trailer; hi-top leather boots, size 12, new; dashboard cover, for '91-93 Caravan, Dash Designs, light blue, new. Stuart, 345-6358.

CAMPER SHELL, long wide bed, custom topper, w/carpeted comfort insert liner, storage space, sliding glass window; rabbits, \$5-10. Parr, 837-1719.

VACUUM CLEANER, Dirt Devil, all attachments, new, \$90; dulcimer, \$100; ice skates, woman's size 8, \$30. Croessmann, 281-2014.

GOLF CLUBS, Persimmon woods, Powerbilt, MacGregor Eye-O-Matic, Spalding Top-Flt., Mizuno Elturbo all-graphite, 2-ping Anser copy-putters, more, Hogan Sure-Out, \$25-\$55. Stang, 256-7793.

TRAILER HITCH, \$15; heavy-duty car or truck jack, \$10; antique branding irons, \$12/ea. Peterson, 256-7514.

EPSON PRINTER, FX185NLQ, \$95; Epson FX100, \$75; cable, \$10; see it work. Dietzel, 294-4702.

VIDEO CAMERA/RECORDER, VHS, charger, carrying case, \$300. Ask for Kathy. Rutherford, 265-1428.

ORGAN, "Thomas," excellent condition, \$400. Lloyd, 889-8934.

ENGINE, for VW Bug, \$150; old color maps, unframed; 19th century atlases; hand-painted and B&W prints from Harpers, etc., no Winslow Homers. Brooks, 255-7551.

WOOD/COAL BURNING STOVE, Godin; Kerosun heater, 8,700-Btu, like new; Aztec radiant wall units, two. Kraynik, 294-1043.

DESK, custom made, 27"W x 76"L x 30"H, glass top, \$350; custom-made cabinets, glass doors, 12"W x 77"L x 20"H, \$200. Greenwood, 298-5268.

POOL TABLE, bar-size, 1-piece slate, w/ping-pong top, \$325; 2-drawer file cabinet, \$12; rocking easy chair, brown, \$65. Buchholtz, 828-9875.

WASHER & DRYER, Hotpoint, white, 3 yrs. old, 2 yrs. warranty on washer, excellent condition, \$400 for both; sofa sleeper, \$80. Tweet, 275-9257.

"IGLOO" DOG HOUSES, two, large, \$25/ea. or both for \$45 OBO. Burke, 266-2334.

BOY'S "SHORTY" WET SUIT, \$50; "Lightning" rollerblades, new wheels, \$50; ash loft bed, \$150; student flute, \$125. Feibelman, 242-1946.

GE REFRIGERATOR, 18.6 cu. ft., w/icemaker, gold, excellent condition, will deliver, \$125. Henfling, 869-4119.

WHIRLPOOL REFRIGERATOR, 19.6 cu. ft., almond, icemaker, frost-free, good condition, \$175; assorted moving boxes, 40, including two wardrobe boxes, \$35. Brost, 298-6969.

PARTITION, for Dodge Minivan, complete w/sliding shelves and compartments, replaces last rear seat, may fit other minivans, \$60. Silva, 265-5523.

'81 WILDERNESS TRAVEL TRAILER, fully self-contained, hitch, equalizers, and spare tire, \$3,300. Ludwick, 296-6447.

'87 SPRINTER TRAVEL TRAILER, 24-ft., sleeps 7, self-contained, excellent condition, \$6,500. Pritchard, 299-3543.

TRANSPORTATION

BOY'S MONGOOSE BIKE, \$100. Feibelman, 242-1946.

'83 CHEV. CELEBRITY, AT, 6-cyl., 4-dr., 81K miles, one owner, good condition, \$2,500. Creveling, 898-1530.

'88 TOYOTA CELICA GT CONVERTIBLE, 5-spd., red/black, 74K miles, every option, book \$10,000, must sell, \$8,900. Dwyer, 271-1328.

'91 GEO METRO, 22K miles, AC, stereo, 50 mpg, excellent condition, \$4,700, or assume loan at SLFCU. Lemon, 881-2661 ext. 1424.

'86 HONDA XR-250, \$850; bike, Gitane, 10-spd., 19.5-in. frame, \$50; bike, SOMA, 12-spd., 23-in. frame, \$40. Plummer, 823-1619.

'86 VOLKSWAGEN VANAGON GL SYNCRO, 4WD, 120K miles, \$5,975 OBO. '84 Ford F150 Supercab, 4WD, 6-cyl., 4-spd., 135K miles, \$4,750 OBO. Loucks, 281-9608.

'76 JEEP CJ5, rebuilt engine, spent \$1,700 in recent repairs, runs well, very reliable, \$3,000 firm. Richards, 265-6775 or 263-2637.

'82 HONDA CM250 MOTORCYCLE, 6K miles, rack, windshield, new battery, owner's and shop manuals, excellent condition, \$600 OBO. Suber, 275-1933.

WOMAN'S BICYCLE, 5-spd., \$45. Meyer, 296-9066.

'88 LINCOLN MARK VII, 2-dr., 26K miles, loaded, showroom-perfect, \$15,000 OBO. Pierce, 294-0871, leave message.

'92 ALUMALITE, by Holiday Rambler, 25-ft., 460 Ford, fully equipped, many extras, excellent condition, book price \$55,000, asking price \$42,000. Kinney, 268-3222.

'81 CHEV. IMPALA, AT, AC, PS, PB, AM/FM stereo, 50K miles, new paint, upholstery, tires, excellent condition, \$2,000. Knox, 268-7328.

'83 SUZUKI GN250 STREET BIKE, very low miles, \$600, might consider trade. Roeschke, 266-8988.

'89 GRAND CARAVAN SE, 5-spd., dark blue, hitch, power vent windows, AM/FM cassette, luxury package, 20 mpg in city, \$9,500. Campbell, 296-5792.

'79 JEEP J10 PICKUP, shortbed, recently rebuilt engine and carburetor, full-time 4WD, runs great, best off-road pickup you can buy, \$2,600. Pletta, 281-4277.

'72 JEEP CJ5, 6-cyl., canvas top, tow bar w/manual winch, roll bars, new tires, clean, good condition, excellent hunting vehicle, \$2,500 firm. Chavez, 299-3839.

'84 ISUZU IMPULSE, wrecked front end, good engine and transmission, 89K miles, good tires, \$650; '76 Saab 99GL, runs poorly, \$600. Axness, 296-4691.

BICYCLE, girl's, 10-spd., Huffy, 24-in., pink and gray, \$30. Skogmo, 292-9773.

'88 FORD RANGER XLT, white w/blue interior, 4-cyl., 5-spd., AC, PS, PB, 66K miles, very good condition, \$4,700. Litts, 265-2063.

'88 TOYOTA CAMRY, original owner, 4-cyl., 33 mpg city, 4-dr., AC, AM/FM cassette, excellent condition, \$6,000. Lucy, 897-1027.

'91 LEXUS ES-250 SEDAN, 4-cyl. 60K miles (highway), cruise, moon roof, leather interior, excellent condition, \$17,000. Buck, 1-438-3873.

'82 FORD F150-XL PICKUP, 8-ft. bed, 300 CI-6, custom topper, PS, PB, AT, AC, cruise, tint, AM/FM, dual tanks, chrome wheels, \$2,900. Hollister, 296-3655.

BICYCLE, Centurion, 10-spd., silver, good college bike, \$80. Croessmann, 281-2014.

'90 FORD RANGER SUPERCAB, 5-spd., cloth seats, AC, PS, PB, 4-cyl., 22K miles, \$7,500 OBO. Treadwell, 884-4221.

'50 PACKARD, good condition, will sacrifice for \$3,000. Lloyd, 889-8934.

'74 VW BEETLE, runs OK, looks rough, \$600 OBO. Brooks, 255-7551.

'89 HONDA CBR600, red, white, blue, 9K miles, original owner, excellent condition, \$3,300 OBO. Oberkamp, 888-1981.

'90 ACURA INTEGRA LS, 4-dr., 5-spd., AC, AM/FM cassette, cruise, full power, privacy glass, low mileage, clean, excellent condition, \$11,500. Owyung, 294-1884.

'81 TOYOTA PICKUP, FWD, E2000 Series, AM/FM, AC, sport wheels, many extras, great condition. Bliven, 821-6787.

'73 VW POP-TOP CAMPER, new paint, radio, good tires, good transportation, \$1,795 OBO. Davis, 294-4614.

BOAT, 14-ft., fiberglass, trailer, 20-hp Mercury motor, not pretty, motor requires work, \$600. Pilch, 291-1689.

'83 FORD CLUBWAGON XLT, PB, PS, AC, dual tanks, cruise, 8-passenger, \$2,900. Morse, 299-9446.

REAL ESTATE

.83-ACRE WEST SIDEVIEW LOT, \$35,000 terms or \$32,000 cash. Marquez, 898-3619 after 6 p.m.

3-BDR. HOME, 3 baths, 2-story, 2,900 sq. ft., recently completed, on spectacular lot, huge 2-car garage, additional 1,200 sq. ft. basement, \$169,000. Castillo, 836-4213.

10- to 100-ACRE TRACTS, south of Rio Communities Industrial Site, \$2,500 per acre, low down, monthly payments, will carry papers. Baca, 864-1402.

4-BDR. HOME, 1-3/4 baths, 1,954 sq. ft., double-car garage, covered patio, French doors from master bedroom, \$127,900. Vesper, 839-0095.

4-BDR. HOME, 2-1/4 baths, Bear Canyon, recreation room, den, study, shop, lots of storage, 3,514 sq. ft., auto sprinklers. Hoover, 821-0341.

2-BDR. EAGLE'S LOFT TIMESHARE, in Pagosa Springs, week 47 (Thanksgiving), excellent for Wolf Creek skiing, \$5,500. Chapman, 292-1198.

RESIDENTIAL LOT, fully improved, near Tierra Del Sol Golf Course, lovely homes, \$15,000. Fjelseth, 296-2257.

WANTED

PROPANE REFRIGERATOR, RV-size preferred, others OK. Skogmo, 294-0133.

STONEWARE, Mikasa "Country Cabin," need not be a complete set. Benedict, 883-2785.

PARTNERS, for off-road motorcycle recreational mountain and desert riding. Plummer, 823-1619.

ROOM TO RENT, male, non-smoking graduate student on DOE fellowship seeks furnished lodging for fall semester. Nicholl, 293-2977.

BICHON FRISE PUPPY or adult, with or without papers, must be reasonably priced and like children. Lewis, 275-2573.

DINING ROOM SET, cherry French provincial; outdoor patio set, table and chairs. Knight, 898-3715.

HOUSE TO RENT, 3-bdr., w/2-car garage, non-smokers w/two well-trained dogs, for 3-4 months, have references and will pay reasonable damage deposit. Gauna, 828-2048.

RESPONSIBLE, RELIABLE PERSON to provide overnight childcare while I'm on travel. Geitgey, 856-0829.

HOUSEMATE, female or male, 3-bdr. house, separate baths, 2-car garage, fenced yard, small pet OK, \$300/mo. + 1/2 utilities. Ewen, 836-3563.

ATV, 3-wheeler, 80-110cc. Denison, 281-2457.

RETIRED SANDIAN that called about the '82 C172 airplane please call me back. I lost your name and phone number. Jackson, 281-8927.

HOUSE TO RENT, in NE heights, for 3-4 months, while building new home, non-smoker, non-drinker, no pets/children. Levan, 293-0079.

LOST & FOUND

FOUND: Diamond stud earring, near Gate 8, contact Patricia. Runyan-Beebe, 4-1673.

FOUND: Woman's Seiko watch in west stairwell of Bldg. 890. Cook, 5-8255.

FOUND: Ring, call Paul to identify and claim. Eckles, 4-0152.

SHARE-A-RIDE

CORRALES RIO RANCHO VANPOOL has space available for new riders. Kuszmaul, 892-4466 or Terchila, 891-8478.



Coronado Club Activities**Board of Directors Voting Starts Tuesday**

MAKE YOUR CHOICE — The Club's annual meeting and board of directors election is Monday, Sept. 13, at 5 p.m. You can cast your secret ballot for four new board members at the Club on weekdays from Tuesday, Sept. 7, through Monday, Sept. 13, 11:30 a.m.-1 p.m. Or you can vote between 6 and 8 p.m. Friday, Sept. 10. Or on the day of the annual meeting (Sept. 13), you can vote between 4:30 and 5:30 p.m.

Any member who is a permanent employee of Sandia or DOE, or a retired Sandia or DOE employee who was an active member at the time of retirement, is eligible to vote. Five candidates are vying for the four open director slots: Anna Bachicha-Reynolds (DOE/AL), Harold Barnett (Sandia retiree), Janice Bauer (822), Fred Sexton (1332), and Deanna Springer (6531). Members attending the meeting can enjoy a sandwich buffet afterward — but please, members only (no children).

POORBOYS TONIGHT — Grab the missus (or the mister) and light out for the Club tonight, Sept. 3,

for some toe-tapping country music by the Isleta Poorboys. They'll be on stage from 7 to 11 p.m. Here's the lineup of vittles: filet mignon or golden fried shrimp (\$11.95 for either), or the famous all-you-can-eat buffet, featuring baked ham, baron of beef, and roast turkey breast, for just \$6.95. Make your reservations now (265-6791).

STOP LABORING for at least a day and be with the relaxed folks enjoying the Club's Labor Day blast — 11 a.m. until 6 p.m. on Monday, Sept. 6. An a la carte buffet will begin at noon and go on until 5 p.m., and C's Sound Effects will provide music from 2 to 5 p.m. Frownbusters will entertain the kids. You'll find out about lots more activities when you get there. Admission is free to all Club members, \$3 for guests.

QUICK NOTES — No space for more, but remember the champagne brunch and tea dance Sunday, Sept. 5, and kids' bingo on Friday evening, Sept. 10.

Sandia in the News

This is a periodic column listing a selection of print and broadcast news reports about Sandia. It is provided by Public Relations Dept. 7161 to give Sandians a sense of what is being said about Labs work in national and international media.

Signal magazine offers a "special report" about Sandia. That translates into a color cover photo, 20 pages of text, and headlines such as "Unique Research Facility Drives Electronic Advances," "Revolutionary Microsensors Stimulate Vast Applications," and "National Technology Center Reorients Advanced Research." Call Public Relations Dept. 7161 on 844-6909 for a copy

Science News' recent cover piece about mammography offers prominent mention of work at Sandia to analyze digitized mammograms. There are lots of quotes from Phil Kegelmeyer (8351), who has "trained" a computer to analyze textures and recognize patterns signifying lesions that result 95 percent of the time in breast cancer. The article closes with this from Phil: "Digital mammography is going to reduce the anxiety for women as well as improve the quality of breast cancer screening."

A major Los Angeles Times article quotes Russell Bonn (6218) and uses a photo by Mark Poulsen (7162). It covers Labs contributions toward helping provide electricity through solar and wind energy to folks who live in regions so far from generating facilities or so lightly populated — like the Navajo reservation or isolated Alaskan villages — that it hasn't been profitable to build

power lines to supply electricity.

Another Mark Poulsen photo recently appeared on the cover of Electronic News. The shot, of Chuck Gwyn (1302) and Harry Weaver (1321) with a piece of equipment IBM recently transferred to Sandia, accompanies an article about efforts to forge new commercial electric industry alliances. Chuck also receives extensive quotes.

Popular Science reports on Labs work into "single event upset" (SEU), which can plague computers. SEU is caused by energetic ions from contaminants that are inevitably contained in an integrated circuit's ceramic capsule.

Basil Steele (9549) received coverage in a major Chicago Tribune article about the job modern security systems are doing at deterring bad guys, particularly those riding in tanks.

Sandia's cooperative R&D agreement (CRADA) total and a few other details about our technology transfer work are mentioned in a Christian Science Monitor piece headed "Federal Labs Open Doors to Industry."

Sandia/General Motors CRADAs are summarized in Automotive News.

A nationally issued Associated Press article describes work under way at Sandia/California and Lawrence Livermore National Lab to develop "cavity-zapping lasers that could one day replace the dreaded [dentist's] drill."

The San Francisco Examiner reprinted a story from the LAB NEWS about "a computer that recognizes human faces!" ●

Feed Back

Q: Please accept my compliments on the TLC (Total Life Concept) program at Sandia/New Mexico. I have found the physical-fitness information, counseling, and classes to be valuable, appropriate, and "the right thing to do."

It is clear that my following the TLC guidance (Portion Control) and attending TLC classes (Stretching and Step Aerobics) will be most beneficial.

A: It is always gratifying to receive positive feedback about the TLC Health Promotion Program, so thank you for your comments.

Our programs are designed to provide opportunities for Sandia employees to achieve and maintain optimal health. Many employees have health risk factors that can be reduced through TLC programs for healthy lifestyle change, such as exercise and nutrition classes,

and we are delighted that you have found them to be beneficial.

Linda Duffy (7035)

Welcome

California — Dahlon Chu (1341); Colorado — Richard Detry (1956); Missouri — Daniel Trudell (6212); Texas — Patrick Brady (6118); New Jersey — Michael Ulrickson (6531); Utah — Gabriel King (7042).

Congratulations

To Bernadette and Fred (7329) Mora, a son, Marcus Ray, Aug. 10.

To Kim and Mike (6216) Prairie, a son, Zachary Steven, Aug. 14.

this month in the past...

Sandia LAB NEWS

40 years ago... James McRae became Sandia's third president, replacing Donald Quarles who left to become assistant secretary of defense (both are now deceased). McRae stayed five years before returning to AT&T as a vice president. Kirtland Military Police were urging drivers to use hand signals while turning on base; a LAB NEWS article said, "Drivers who insist on using electro-mechanical turn indicators place a strain on the eyes as well as the patience of the MPs. In addition to the fact that the blinking lights are hard for the MPs to spot, they indicate the driver's intention only to the car immediately behind him and give no clue to the other cars in the same line."

30 years ago... Paul Stickler (now retired) and his electric car — the "Little Joule" — were featured in the LAB NEWS. He converted a '55 Renault that he bought for \$40 into an electric vehicle that had a 17-mile range and operated for less than a penny per mile. He had experienced no big problems with it in its first 500 miles. (Paul: Give us a call and let us know how long it lasted.)

20 years ago... Dixie Lee Ray, who had recently been appointed to head the Atomic Energy Commission (DOE predecessor agency), visited Sandia/New Mexico and toured the technical area. She brought along her two dogs, a poodle and a Scottish deer hound. A LAB NEWS photo showed her in the office of President John Hornbeck (now deceased), and the poodle was in one of his chairs. The president's smile looked a little forced.



CURB APPEAL — Cynthia Blain of Maintenance Modifications Dept. 7813 brightens the look of the street outside Gate 6 with a little yellow paint. She didn't say whether the new paint job was early spring spruce-up work for 1994 or a "time-challenged" project from spring '93.