

## Electromagnetic Launcher Could Hurl Artillery Shells Electrically

You've heard of the all-electric kitchen, and lots of us hope to see a practical electric car. The next step could be all-electric artillery.

Induction coilgun technology being developed

at Sandia may lead to long-range artillery guns that are all-electric powered. Research at the Labs funded by the Ballistic Missile Defense Organization (BMDO) has focused for the past few years on

demonstrating coilgun technology in small scale for large military and space applications. That research is now moving into industrial and commercial applications.

An induction coilgun is an electromagnetic launcher consisting of individual magnetic field coils stacked end-to-end to form a barrel. The coils are energized sequentially to generate a wave of magnetic energy that pushes an electrically conducting projectile through the barrel. The magnetic field is 20 times as strong as that of the strongest permanent magnets.

Coilguns offer advantages over conventional guns, such as precise control of velocity and acceleration in the gun-barrel, and the possibility of longer barrel life because the projectile doesn't have to fit tightly.

But to realize these advantages, developers have to come up with a design to hurl a projectile as far as a conventional gun that's exerting 60,000 to 75,000 pounds per square inch on the base of a projectile at the instant of firing.

The Sandians think they've done so. "We have a coil that's scalable to high fields and pressures," says Bob Turman, Manager of Electromagnetic Propulsion and Beams Application Dept. 1221. "The load-supporting structure has been designed into the structure."

"It's mechanically robust," says project leader Ron Kaye (1221).

### Longer Barrel, Faster Projectile

Conventional guns accelerate projectiles by burning chemical propellant to form a hot, high-pressure gas that pushes against the base of the projectile. As the projectile moves through the barrel, the gas expands. That means the pressure

*(Continued on Page Four)*



SANDIA COILGUN, a 35-stage version, is checked by Roque Feliciano, Jr. Electromagnetic Propulsion and Beams Applications Dept. 1221 is developing induction coilgun technology for a variety of potential military and commercial uses. (Photo by Randy Montoya)



# LAB NEWS

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### Economy, Like War, Uncertain

## Pace VanDevender Isn't Just Playing Games with Industry

Shouting, coaxing, haggling, and politicking their way to a consensus, captains of the US electronics industry laid forth their best plan for achieving US economic dominance. Meanwhile their Pacific Rim counterparts plotted against them.

Then they all went to lunch.

Pace VanDevender, Director of National Industrial Alliances Center 4700, has developed a model for a mock strategy exercise he calls "Prosperity Games." The role-playing exercise — a "board room game" rather than a board game — brings together technology policy makers to develop strategies that result in enhanced economic competitiveness.

"When I started this job [as 4700 Director] and went around talking to potential customers in industry and government," he says, "I found that there were a lot of issues and very few answers, and that the proper resolution of those issues required each of those groups to talk to each other, and there was no forum."

The exercise is an adaptation of military war games in which teams of military strategists play the roles of opposing military forces in simulated battle scenarios, each side anticipating and reacting to the other's moves. By fighting an imaginary war,

the participants get to put their best war strategies to the test — to evaluate and learn the consequences of their decisions in a simulated war setting.

Instead of playing on a simulated battlefield, however, Prosperity Games participants fight on a simulated economic front. Teams of government, industry, national laboratory, and university officials, rather than military leaders, make decisions and pay the consequences. And the spoils aren't real estate, but market shares.

"Like war, the economy of the future is very uncertain," says Pace. "Prosperity Games allows technology policy makers from government, industry, academia, and the national labs to work together to explore the complex international competitiveness problems faced by American industry."

### Blue, Purple, and Green

Although Prosperity Games is still in crude prototype form, Pace and a team of Sandians are now supervising games with participants from industry consortia. In January more than 50 industry executives, all members of the Electronics Industry Association (EIA) Board of Governors, played a trial game. And in March, a second trial

*(Continued on Page Five)*

### Monitors Epitaxy Growth

## New System Aids Making Precision Electronics

One of the main obstacles to making very precise advanced electronic and optoelectronic devices — lack of a way to monitor and control growth rates as the process is occurring — has been eliminated by two researchers at Sandia.

Scott Chalmers, who has completed a post-doctoral appointment in Semiconductor Materials Dept. 1311, and Kevin Killeen of Chemical Processing Science Dept. 1126 have developed a real-time molecular beam epitaxy (MBE) control

**MBE produces beams of elements that condense and crystallize onto a surface to form atomically thin layers.**

system that offers the accuracy and reproducibility necessary to produce high-precision devices.

Molecular beam epitaxy is an indispensable technique for growing modern electronic and optoelectronic (semiconductor laser) devices. MBE produces beams of elements that condense and crystallize onto a surface to form atomically thin layers of new compound semiconductor and

*(Continued on Page Four)*

**Sandia/California's  
'State of the Labs' —  
See Page Three**



# This & That

Stanford or prison? - Many New Mexico Sandians may have missed a thought-provoking comparison in the last issue, published on page three with other Sandia/California news. Former Sandian Tom Cannon (now back with AT&T), speaking at a February event at Sandia/California, pointed out that it costs about the same amount to keep one person in the California prison system for a year as it does to educate one student for a year at Stanford - \$25,000.

Hmmm - I wonder who is likely to be the more productive member of society later? I wouldn't even suggest that society pay to educate every one at Stanford, but Tom's comparison may be worth thinking about the next time we consider whether to invest in education for our youth.

\* \* \*

Ugly truth about plain people - According to a recent article in the *Albuquerque Journal's* "Business Outlook" section, two economists have found that "all other things being equal, 'plain people earn less than people of average looks, who earn less than good-looking people.'" If that's true, I have to wonder why our directors are paid so much more than I am. (Have you taken a good look at many of 'em up close?) Maybe it has something to do with that "all other things being equal" part.

\* \* \*

A moving experience - Now that spring is here, I think I know why they call these lovely buildings that the LAB NEWS occupies "mobile offices." The extremely high wind gusts we get on some spring days make you grab for something heavy and hope. Some of us here have started putting rocks in our pockets when we come to work to help hold these babies on the ground!

\* \* \*

Even windier - Writing about strong winds reminds me of some mighty tall tales told by some members in a Wisconsin liars' club. One said the wind was so strong one day last winter that when his brother stepped outside, the wind blew the bald spot off his head and he's had a full head of hair ever since. I can think of several Sandia VPs who might relish getting in that type of wind, but my sense of good taste (and my need to keep a paycheck coming) prevent me from naming them.

\* \* \*

Ed's "re-butt-al" - After the last issue came out, in which I repeated my thoughts about those "screaming yellow" butt cans in front of Building 800, my good buddy Ed Graham, Director of Facilities Operations and Maintenance Center 7800, called and left me a message. It said he could arrange to have our power, lights, air conditioning, water, etc., shut off if I don't butt out. But I recognize an idle threat when I see or hear one - Ed's really a pussycat.

I called him back and struck a deal with him. Ed said I could have those cans repainted any color I like if I provided the paint. Early this week I sent him three cans of earth-tone spray paint. (Call if you need more, Ed.) Because I know he's a man of his word, I'm betting I'll see those three butt cans repainted soon.

By the way, thanks to the hundreds of Sandians who sent notes supporting my position (OK, OK, it was only six). Several of you raised related points that I'll talk to Ed about as soon as those three cans in front of Building 800 are repainted.

●LP

You Can Get a Copy

## Narath Testifies Before House Panel Studying Future of Weapons Labs

The scientific and engineering foundations of the three DOE weapons labs — Sandia, Los Alamos, and Lawrence Livermore national laboratories — could be in jeopardy if overly restrictive legislation becomes law, said Sandia Labs Director Al Narath during testimony before a US House of Representatives panel on March 22.

His testimony was given to the House Armed Services Committee Panel on Military Application of Nuclear Energy. Al's testimony was given regarding House Resolution 1432, the DOE Laboratory Technology Act, introduced last year by Representative George Brown of California. In general, the resolution seeks to define what the national labs can do in the future and possibly to consolidate some labs.

Al expressed his concerns about the resolution and discussed the historical and continuing role of Sandia in weapon programs, today's role in weapon dismantlement, nonproliferation and counterproliferation work, growing alliances with industry, and how technology transfer and nuclear weapons R&D benefit one another.

"The cardinal message . . . is that the scientific and engineering foundations of the DOE national security laboratories are in jeopardy," said Al. "This is a matter of grave concern to those of us who manage and operate the laboratories, not because our institutions may suffer, but because our ability to perform critical DOE missions may be impaired."

### Al Urges Caution

"I urge you to exercise caution as you evaluate proposals for changing or restructuring the DOE laboratories," he concluded. "A national laboratory is more than a collection of research facilities and people with technical skills. The technical leadership of the DOE national security laboratories is the result of decades of stable support that permitted the cultivation of outstanding core competencies. Those competencies, and the synergy they develop under good management, may be difficult to reconstruct under other circumstances or at another time."

The Panel on Military Application of Nuclear Energy is chaired by Representative John Spratt of South Carolina. Representative Brown attended the March 22 testimony as did Representatives Steve Schiff and Bill Richardson of New Mexico.

Also testifying before the panel were Director John Nuckolls of Lawrence Livermore National Lab, James Jackson of Los Alamos National Lab, Vic Reis of DOE, and others.

Sandia/New Mexico employees who want a copy of Al's complete testimony should fax or mail requests to the LAB NEWS, fax 844-0645, mail stop 0413 (please, no phone requests). Sandia/California employees should send requests to LAB NEWS Reporter Barry Schrader, fax 294-3524, mail stop 9111.

## Take Note

Walk-a-Thon — Sandia's Volunteers in Action program is looking for volunteers for a team for the March of Dimes WalkAmerica Walk-a-Thon on Saturday, April 23. If you are interested in joining a Sandia team, call Redd Eakin (12640) in the Volunteers in Action office on 844-4124 or Jeanette Denaple (2653) on 298-2778 (after 5:30 p.m.).

\* \* \*

The next Sandia/DOE Singles Club meeting is Monday, April 4, 5 p.m., at the Coronado Club, downstairs. All singles are welcome to join.

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**MARTIN MARIETTA**

## Kathy Carlson Gets Woman of Year Award

Kathy Carlson, Manager of the Department of Energy's Kirtland Area Office (KAO), received one of several "Women of the Year" awards given March 22 by the Albuquerque (Zia) chapter of Federally Employed Women.

The awards are given to federally employed women in New Mexico for their outstanding contributions in the federal sector, the community, and to other women. Carlson received an award in the professional category. As Manager of DOE's Kirtland Area Office, she has oversight responsibility for Sandia National Labs and the Inhalation Toxicology Research Institute.

Carlson began her federal career in 1975 as a health physicist at DOE's Idaho Falls office. She moved to Albuquerque in 1980 to accept a position as the Transportation Research and Development Program Manager. She has had several DOE positions since then and became KAO Manager in 1991. She is the only woman area manager in DOE.

Among other activities, she is involved with the Albuquerque Chamber of Commerce and is a member of the Albuquerque Armed Forces Advisory Board. She is a Rotary Club member, a parent volunteer for her children's classrooms, and has been a volunteer for the "Day of Caring" sponsored by the United Way of Central New Mexico.





**'State of the Labs' Talk****Partnerships Represent 'New Flavor' for Sandia**

"We have to plant a lot more seeds than you can imagine we need because it is going to take years for some of these new programs to grow." That was one of the main thoughts that Sandia/California Vice President John Crawford conveyed to employees at the annual State of the Labs talk recently.

John reminded Sandians that they will continue to face new challenges, changes, and opportunities, and he said the industrial partnerships Sandia is forging are an important key to the Labs' future.

Looking ahead to 1995 and beyond, he said, "It is a complex picture, but with a lot of hard work we can hold our own even though programs are changing rapidly and dynamically in all sectors and with all our sponsors. Yet there are new opportunities presenting themselves in many areas. If you look at our entire scope of business, it is at least credible that we will remain at a stable level (of

**"With a lot of hard work we can hold our own even though programs are changing rapidly and dynamically."**

funding and people) over the next several years, with a great deal of effort and with a great deal of changing what people are doing and changes in the kinds of programs that we are involved in.

"Even though we have been through a major transition over the last year and a half, from AT&T to Martin Marietta, the first six months with Martin Marietta have gone incredibly well, and I believe we have put together a very powerful partnership."

He said Sandia's new working relationship with universities and private industry in technology transfer is somewhat of a "new flavor" for many, but "we now

view ourselves in partnership with these other institutions, whereas before we were a stand-alone institution just in the nuclear weapons business." A viewgraph portrayed the growing number of Cooperative Research and Development Agreements (CRADAs) at the California site. They now total 21, with a combined value of more than \$100 million.

He was quick to point out, however, that Sandia's commitment to provide continuing stewardship of the

nuclear weapons stockpile as well as play a key role in dismantlement is still a strong one, and retaining the reliability, safety, and security of that stockpile will be critical. Also of importance are environmental concerns and regulations that must be taken into account during dismantlement.

**Proliferation Issues Growing**

Another dimension is nonproliferation, and now counterproliferation, which has grown in importance with the increasing threat of regional nuclear conflict, even though the threat of global nuclear conflict has dramatically decreased.

There is also much technology spinoff in defense programs. One example: "Our people are using their systems analysis capabilities to do



THE STATE OF THE LABS will never be quite the same now that Val Cowan is gone. John Crawford (8000) is seen here holding the door for her as she departs. Val was a secretary for two VPs and several directors during her 34-year Sandia career.

enterprise modeling — both in the nuclear weapons complex and in the health care arena. They are entering into a partnership with a major health maintenance organization to help model their enterprise as it becomes more complex and widespread." Another area where Sandia has made a significant contribution is lesion detection in mammography, providing a tool for radiologists to increase their effectiveness. This method has been through a clinical trial and proven to increase the radiologists' effectiveness by 10 percent, which can be a major advance in cancer detection.

**Envisions IMTL Becoming a User Facility**

He noted that Sandia has initiated a major thrust in advanced manufacturing. The new Integrated Manufacturing Technologies Laboratory (IMTL) complex can tie together all of the different dimensions of modern manufacturing. He cited the examples of "cells" connected through an information system where all the components — design, planning, test, and certification — can be accomplished at one location, covering every



aspect from concept to retirement. A vision he has for the IMTL in seven to 10 years is as a visitor facility where US industry can send its manufacturing talent to work with Sandia staffers on cooperative projects — much like the Combustion Research Facility (CRF) staff does today.

The successes at the CRF and the national and international reputation Sandia has gained in the field of combustion research have led to new interactions with the major auto makers and the US Car consortium, as recent examples. Another area of applied technology that has been spun off from the CRF is in the environmental arena. Sandia's global

**Successes have led to new interactions with the major auto makers and the US Car consortium.**

climate change research got its start there. The Atmospheric Radiation Measurement instruments have been successfully test flown with the use of an Unmanned Aerospace Vehicle (UAV). Its test in November at Edwards Air Force Base provided climate-relevant data of publishable quality on the UAV's maiden flight.

Other points he made:

- The phaseout plan for the Tritium Research Facility is on schedule,

- Bioremediation work is well under way at the site of Sandia's fuel oil spill, totaling 59,000 gallons in the late '70s,

- Education outreach activities are sharing the technical expertise of Sandians with elementary school children all over the Bay Area,

- High performance computing has been extended over long distances, and the NIIT (National Information Infrastructure Testbed) partnership is well established,

- Small business workshops and interactions have been successful through the efforts of technology transfer,

- The opening of the microelectronics office in Silicon Valley will allow Sandia to work more closely with the semiconductor industry and establish new relationships with three major universities in that area, and

- New Equal Employment Opportunity/Affirmative Action efforts, which grew out of the Labor Department audit, have been started, and the jobs posting and bidding process has been improved.

In addition to John's two sessions with employees on site, he took the Sandia story into the local community two days later with a Community Night at Livermore High School, where he delivered a condensed version of his talk and showcased some of Sandia's current programs in several fields of research and development. ●BLS



NO LONGER JUST "The Other Lab" in Livermore, as the popular T-shirt slogan stated a year ago, Sandia/California now has its own freeway directional signs to help visitors find it from Interstate 580.

EXPANDING YOUR HORIZONS in Math and Science was the subject of a recent day-long conference for young women, sponsored again this year by Sandia/California and Lawrence Livermore National Lab at Pac Bell in San Ramon. Deana Butler of Safety Dept. 8643 (seated) shows two unidentified students how to make model rockets from household materials. The young women shot the rockets up to 35 feet off a launch ramp. Sandia co-chair for the annual event was Shelia Daigle-Beard of Health Protection Dept. 8641.



*(Continued from Page One)*

## MBE Control

optoelectronic materials. But MBE manufacturing yields have been limited by the absence of a method for monitoring growth rates in real time.

Researchers have long considered using light passed through the beam of atoms to try to measure the density and velocity of the atomic beam and therefore the rate at which it deposits material onto a surface. But it has been extremely difficult to develop a system that is accurate, reproducible, and compatible with an MBE growth environment. Growth rates need to be determined to within 1 percent, and that requires measurement of the light transmitted through the MBE beam to within about 0.01 percent.

Scott and Kevin have now done that. They reported recently in *Applied Physics Letters* that they have developed an optically based flux monitoring MBE control system that monitors the

growth rates of aluminum and gallium in real time with unprecedented accuracy and reproducibility.

### More Flexible, More Usable

In a demonstration experiment, they have grown a series of nanometer-scale mirrors with layer thicknesses accurate to within 0.3 percent. The reflectors are used in advanced devices such as new visible-light vertical-cavity surface emitting lasers, which have great promise in replacing conventional semiconductor lasers for numerous applications. They say no adjustments were necessary during the growth process after the initial calibrations.

"With our technique, we can keep the growth rates constant or vary them as we wish during the process," says Kevin. "This makes the system more flexible, and makes it possible to grow more usable material."

"This is one of the 'Holy Grails' of MBE technology to be able to do this," says Scott.

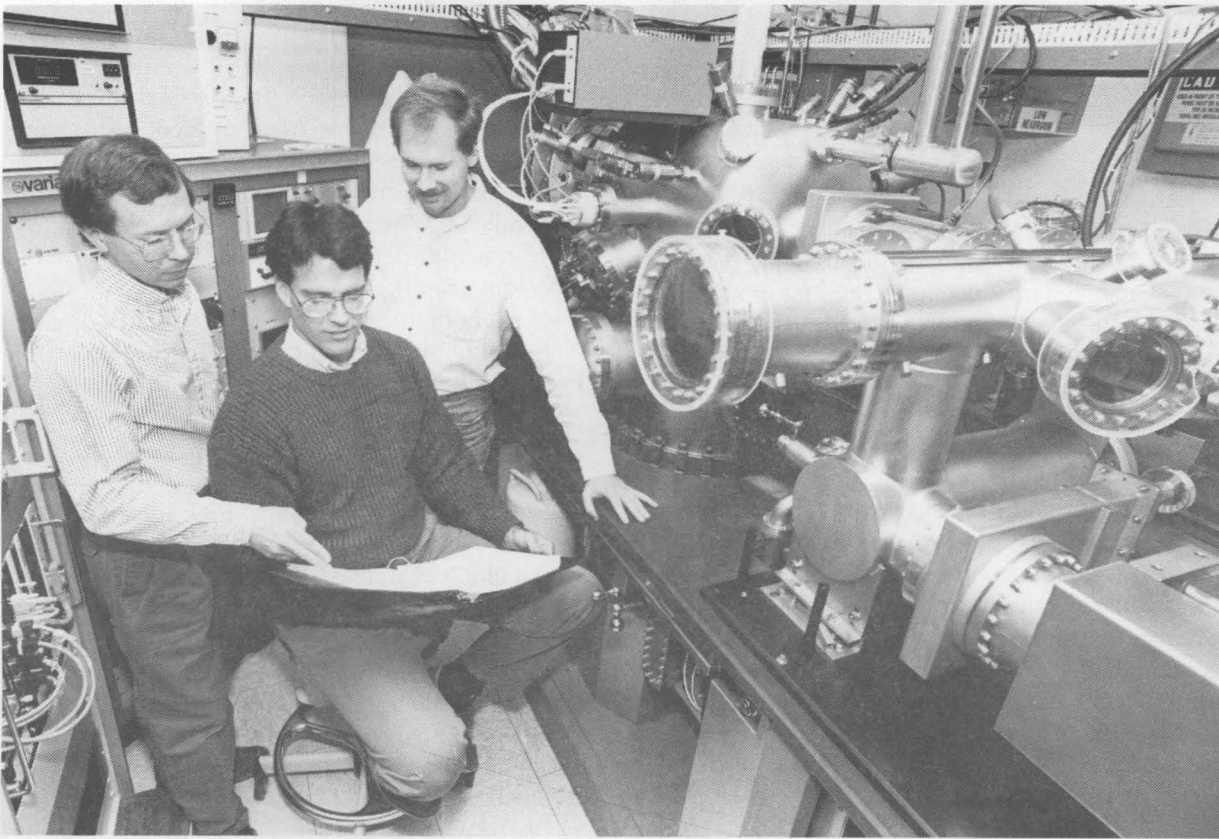
The system is designed to be compatible with

present MBE machines as a simple add-on. This also is important, because a typical MBE machine costs about \$1 million. "Our technique is the only one that's compatible with MBE chambers as they sit today," says Scott.

Scott and Kevin are moving their prototype laboratory system to a "workhorse" MBE machine in John Klem's (1311) laboratory down the hall. There they will add an ability to control temperature and the MBE shutters, extend the system to indium, improve the software control, and make the whole system more robust.

This integration into a more manufacturing-like environment is part of a Sandia partnership, sponsored by the Advanced Research Projects Agency, with companies including Hughes and Texas Instruments and state universities including Colorado, New Mexico, Southern California, and Virginia.

The Sandians say the concept should be applicable fairly soon to the manufacturing of new generations of sophisticated semiconductor lasers and other devices. Without such a development, says Scott, manufacturers will soon encounter an obstacle to making them. Scott, who has started his own company, Optical Solutions, and is also in business school at UC Berkeley, is continuing his collaboration with Kevin to develop the method further. ●KF



**REAL-TIME CONTROL** — Researchers John Klem (1311, left), Kevin Killeen (1126, with notebook), and Scott Chalmers check data from a molecular beam epitaxy (MBE) experiment. Kevin and Scott have developed a real-time MBE control system that provides unprecedented accuracy and reliability for making precision electronic and optoelectronic devices. Their optics-based control system will soon be installed at one of the ports on the MBE machine at right.

*(Continued from Page One)*

## EM Launcher

decreases — and the acceleration with it.

In a coilgun, the accelerating force is constant as the projectile moves through the barrel. Velocity increases as the square root of the barrel length.

Because propulsion doesn't depend on hot, high-pressure gas, there doesn't have to be a tightly sealed fit of the projectile to the barrel. Nor does the projectile require electrical contact with the barrel. That offers the potential of long barrel lifetime.

The Sandia researchers have developed 2-inch coils that, when scaled to 8-inch size, will develop an average pressure equivalent to that generated with propellant guns. A 50-foot-long coilgun on a Navy ship could launch 8-inch-diameter, 130-pound projectiles to 75 nautical miles. That's more than five times the range of existing guns.

Because coilgun technology is based on fundamental principles that apply to any size, characteristics of scaled-up guns don't depend on factors that have to be determined experimentally, as conventional guns do.

"The results show that we can start doing things that are interesting with a reasonable length

barrel," says Barry Marder of Beam, Plasma, and Electromagnetic Theory Dept. 1241. Barry developed computer codes that precisely predict the behavior of the coilgun and its projectiles.

### High-Speed Trains Coming Up?

The Sandians say the same propulsion method could be used in high-speed trains, both steel-wheel and magnetically levitated. Another possibility is levitated hypervelocity sleds for testing, as Sandia's rocket sleds are used now.

Ultimately, earth-to-orbit launchers could cost-effectively augment the US rocket-launch program. In fact, this was one of the first applications explored for the technology used in coilguns.

The technology could also be used in advanced industrial processes, such as high-power motors and fast, powerful actuators.

For the high-speed-train propulsion concept, Sandia researchers are attempting to develop and demonstrate a new type of linear synchronous induction motor. It would use much the same concept as a launcher, with the coils mounted on the vehicle and pushing electromagnetically against fixed plates. The plates would be attached to a passive guideway. Such a motor could propel a train at high speed and would be able to move the train up significant grades. ●KF

## It's All Done With Light

The Sandia real-time molecular beam epitaxy (MBE) control system splits the light from a hollow cathode lamp into a signal beam and a reference beam. The signal beam goes through a port in the MBE vacuum chamber, passes through the atomic elements being deposited during crystal growth, and is measured on the other side by a photodiode. The reference beam does not.

The computer-controlled system takes the ratio of the signal and reference beams continuously during growth, providing instantaneous readings of the atomic-beam flux and therefore a measure of the rate of surface deposition.

One key to the system's precision is to control the output of the hollow cathode lamp to less than 0.1 percent, a tricky problem because lamp outputs normally vary by as much as 10 percent. But Scott Chalmers and Kevin Killeen used the output of the photodiode that measures the reference beam intensity as feedback to reduce the lamp variations and thereby provide stabilization. They say this feedback reduces the lamp variations to less than 0.1 percent, which, combined with the two-beam referencing, achieved the required measurement stability and accuracy.

## Recent Patents To Sandians

Gerald Grafe (1413) and James Hoch (former Sandian): Sequencing and Fan-out Mechanism for Causing a Set of At Least Two Sequential Instructions to Be Performed in a Dataflow Processing Computer.

Collins Clark (1248), Barry Marder (1241), and Dale Coleman (former Sandian): Method and Split Cavity Oscillator/Modulator to Generate Pulsed Particle Beams and Electromagnetic Fields.



**Labs Campaign Runs April 11-22****US Savings Bonds May Yield 'Free Lunch' for Sandians**

When Sandians get the 1994 US Savings Bonds campaign material, they should look it over carefully, says this year's campaign Chairman Jennie Negin, "because some of them will find there is such a thing as a 'free lunch.'"

In some employee "profiles" that will be delivered before the start of the April 11-22 campaign will be gift certificates for free lunches at restaurants close to Sandia, so those profiles should be read carefully, says Jennie, Manager of Information Systems Development and Training Dept. 10323.

Jennie refers to the profiles as "truth in bonding," because they describe each employee's options for bond deductions and registration of bond ownership. Although the profiles have instructions printed on the back and are intended to be self-explanatory, she says canvassers and center representatives will be available to explain the new form and answer any other questions, including the value of older bonds with varying interest rates.

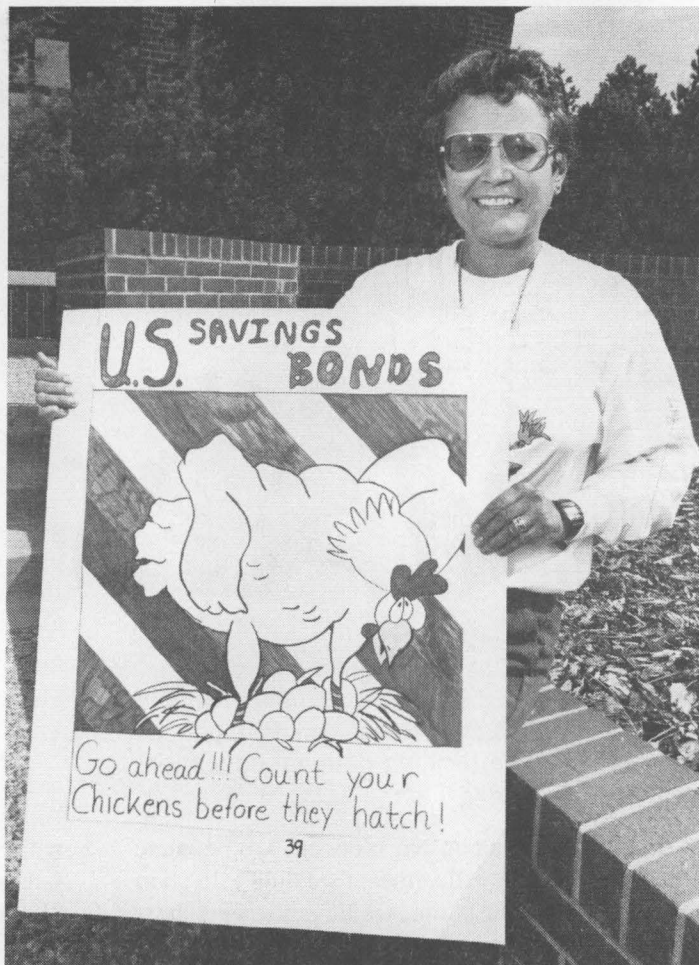
The goal for this year is 90 percent Labs participation. US Savings Bonds are currently paying 4.25 percent interest, but their market-based rate can change every six months. Series EE bonds never pay a lower rate than that in force when they are bought, but the rate can increase, if market fluctuations trend upward.

**Labs' Performance 'Remarkable'**

"Of the 124 on the Savings Bond Honor Roll of companies with more than 5,000 employees and at least 50-percent participation, there are only eight with a higher percent of participation than Sandia," says Jennie. "That puts us at the 93 percentile. It's a remarkable performance."

Executive Staff Director Virgil Dugan (12100), in a videotaped presentation on savings bonds, alludes to Sandia's historic

high percentage of participation. "When 90 percent or more sign up, it's a distinctive event, and it signifies us as being exceptional," he says.



PUT YOUR EGGS in the US Savings Bonds basket and you won't have to worry about that basket, is the message from Erin Gundlach, a fourth-grader at Whittier Elementary School in Albuquerque. Erin won the statewide US Savings Bonds poster contest for first- through sixth-graders with the entry displayed here by Juanita Sanchez of Community Relations Dept. 12640, who also helped judge the contest March 2 in Santa Fe. The poster will compete against other state winners April 22 in Washington for the honor of becoming the official 1995 US Savings Bonds campaign poster.

"Those kinds of things may be a bit indirect, they may even be a bit abstract, but they can be very important in influencing minds and perspectives of those who make decisions for this nation."

A more personal perspective of the value of US Savings Bonds is given on the same videotape by Nancy Freshour, Manager of Information Sys-

**"When 90 percent or more sign up, it's a distinctive event."**

tems Dept. 7903. She says she and her husband received bonds as special-occasion gifts from their families for years while they were living in the Alaska bush country.

Then in 1978 her husband was killed in a fishing boat accident, leaving her with two children.

"I was a school teacher, but I thought I probably couldn't raise my children that way, so I cashed in the bonds, went back to school, and got my master's degree," she recalls. "That's what allowed me to come to Sandia."

That experience made US Savings Bond purchases a habit, she says: "I buy bonds now for my grandson."

**Welcome**

Albuquerque — Michael Du Mond (7575).

Elsewhere: Colorado — Lothar Bieg (2401), Nancy Missert (1153); New Jersey — Robert Jarecki (1324); New York — Christian Lastoskie (5848), Ann Sastry (1562).

**Congratulations**

To Alice Starcher (5913) and Gary Walters, married in Albuquerque, Feb. 17.

To Debbie and David (5913) Yocky, a son, Jonathan Andrew, March 1.

To Lori and Mark (7614) Crawford, a daughter, Kaila Nicole, March 15.

(Continued from Page One)

**Prosperity Games**

was played by members of the American Electronics Association Board of Governors, together with representatives of the national labs, various federal technology agencies, national labs, and universities.

"The players thought that the game stimulated thinking, helped develop an understanding of the different roles, initiated the development of relationships, and encouraged the industry players to

**The Green Team (market place) determined the ultimate winner.**

explore the long-term consequences of their strategies," according to an EIA report.

During the day-long trials, participants joined one of several teams, each team representing a different function in the world electronics market. Four Blue Teams played the roles of high-level members of US government, industry, universities, and national laboratories, responsible for recommending to the President changes in US technology policy that would result in enhanced economic competitiveness.

A Purple Team represented foreign technology policy makers bent on taking market share away from the US. A Green Team represented the market place. (In newer models, a President's team is added to accept, stimulate, or reject recommendations made by the Blue Teams.)

The Blue and Purple Teams were then asked to plot strategies that would result in greater market shares for themselves 10 or 20 years down the road. Based on policy changes made by the Blue and Purple teams, the Green Team determined the ultimate winner.

**Interaction the Key**

The games were the subject of a March 14 article in *New Technology Week*. "The Sandia model . . . will be highly valuable in helping industry and federal policy makers understand shortcomings in product development strategies and federal policies affecting investment and manufacturing," stated the article.

But Pace says the true value of the games is not necessarily in determining which strategies work and which don't work, but rather in helping participants from various federal agencies and industrial regimes understand each other and their foreign competition.

"Each of the players lives in a fairly narrow, isolated world," he says. "By interacting so

**The true value of the games is in helping participants understand each other.**

strongly and so personally with the other groups, barriers drop and understanding replaces misunderstanding.

"The game is highly interactive, very personal, and it generates real commitment," he adds. "Peo-

ple tend to learn and explore much more freely and in-depth than they would in, say, a traditional conference meeting."

A poll of EIA players showed strong support for conducting future games with industry, government, laboratory, and university leaders. Although the trial games focused on the electronics industry, Pace hopes to extend the use of Prosperity Games to other sectors of the US economy. He's working on a plan that allows other government agencies and industry associations to replicate and conduct the games themselves.

**Idea Descendant of GUILD**

The concept for the games originated in a meeting with staff members from Sen. Jeff Bingaman's office and in discussions with Lee Buchanan, Director of the Defense Sciences Office at the Advanced Research Projects Agency. Buchanan suggested the war games approach, says Pace.

But the Prosperity Games model, as it's applied to industry, is also a descendant of the GUILD concept pioneered by Gerry Yonas, VP for Systems Applications Div. 9000. (GUILD stands for government, university, industry, lab development.)

"The theme of Prosperity Games is working in teams with government, industry, university, and labs personnel, to see how together we can be greater than the sum of the parts," says Pace. "Prosperity Games and GUILD both take into account the same number of players and the diversity of those players, and that we all have something to contribute." ●JG



**He'll Work for Education Group**

# As He Departs, Lee Bray Sees a Strong, 'Can-Do' Sandia

Former Executive VP Lee Bray leaves Sandia optimistic about the Labs' future, pleased with a successful transition from AT&T to Martin Marietta, and looking forward to new personal challenges with a national education organization.

And he admits to mixed emotions upon departing after almost 10 years at Sandia.

Following a farewell reception on Tuesday, Lee's last official day on Sandia premises was yesterday (March 31). This signaled the end of six months as AT&T Liaison Executive. In this role he had responsibility for ensuring that all matters pertaining to AT&T's former contract to manage Sandia, which AT&T let expire last Sept. 30, were concluded properly.

On June 2, Lee will complete 35 years with AT&T, and he says he will formally retire from the company at the end of that month.

In an interview with the LAB NEWS during his last full week at Sandia, Lee shared some of his thoughts.

### Sandia's 'Results-Oriented' Attitude

"In spite of all the uncertainty regarding the future role of DOE and the national labs," he says, "it appears to me that Sandia's industrial heritage has positioned it well for the evolving missions of DOE specifically and the federal government generally."

"There is an expression that I like: 'science is the pursuit of truth, and engineering is the pursuit of results.' It's obvious that nationally the pendulum is swinging more in the 'results' direction — people want to see evidence of 'payback.'"

"That means strong engineering capabilities coupled with a 'can-do, results-oriented' mentality are the attributes necessary for success in the future. And those are the same attributes I would use to describe Sandia. So I believe Sandia is very well positioned to meet the evolving national challenges that require a technical response."

He notes that at times Sandia has worried about whether it was a science lab or an engineering lab.

"We were a little bit schizophrenic. We hated



HE'S LEAVING Sandia for the last time, but Lee Bray will soon be tackling national education-performance issues.

to be thought of as an engineering lab because people might assume that meant we didn't do good science. My belief is that we have the very best balance of science and engineering of any of the national laboratories.

"Obviously it takes some good science to support good engineering. So we need to continue support of good science, but the real payoff is going to be our engineering capabilities, our can-do attitude, and our results orientation. Those three things, I think, are going to put us in the right position.

"People will tend at times to have too short a view on the payoff, and we'll have to live with that, but I think an organization that has our

approach has the best chance of success in the future.

"A lot of credit goes to a lot of people in the past who have brought us to, and maintained, that balance

**"My belief is that we have the very best balance of science and engineering of any of the national laboratories."**

between science and engineering. Without them the Labs wouldn't be in the positive position it is now."

As for the transition from AT&T to Martin Marietta management, Lee says all the details have now been completed. The transition is complete as far as AT&T is concerned and apparently also as far as DOE is concerned. "No legal or proprietary property issues have surfaced, nor do we expect any," says Lee.

"AT&T is delighted that the transition has gone very smoothly and that Martin Marietta came up to speed rapidly as expected. My personal thanks for a job well done go to the Transition Council and the many individuals who so ably supported them."

### Measuring Schools' Performance

In the personal arena, Lee has been invited by the Boston-based Community Training and Assistance Center (CTAC) to do development work for them, and he will start that on July 1. He will be Director of System & Reform Evaluation. "I'll be developing better methods of assessing system performance and/or reform impact for education systems across the country."

He will thus be able to continue his involvement in education-reform efforts, which began for him about six years ago at the city and state level here. (As chairman of the Governor's Business Executives for Education, Lee has worked to bring Malcolm Baldrige criteria and awards from the private sector to local schools.)

"This group (CTAC) is doing parallel activities and it's something I'm very interested in and I

*(Continued on Next Page)*

### Clinton Thanks AT&T for Its Sandia Service

## Two Presidents, Two Letters

In a letter famous to all Sandians, President Truman in May 1949 wrote to the president of AT&T asking the company to manage the "Sandia Laboratory. . . a vital segment of the atomic weapons program," and thereby render "an exceptional service in the national interest."

Now, marking the end of the 44-year AT&T era at Sandia that the Truman letter initiated, President Clinton has written to current AT&T Chairman Robert Allen, thanking the company for its more than four decades of exceptional service as Sandia's manager. It says AT&T can be proud of its "sense of patriotic duty" and "outstanding technical direction" in such a historic undertaking. "You have made a substantial contribution to the nation's security and to peace around the world." The full text is reproduced here.



Commemorative medallion

Last week Sandians received commemorative copies of the Clinton letter and the Truman letter, with drawings of both Presidents by Sandia retiree Jim Walston, along with a special gift from AT&T, coaster/paperweights commemorating the Sandia/AT&T/DOE relationship.

"It is very gratifying to me that this 44-year chapter in the history of both AT&T and Sandia has been closed in such a positive way," says former Sandia Executive VP Lee Bray, who just concluded his service as AT&T Liaison Executive at Sandia. (See "As He Departs, Lee Bray Sees a Strong, 'Can-Do' Sandia.")

He says the Clinton letter is good for AT&T, Sandia, and DOE. "It's good for Sandia because Sandia was the way AT&T carried out that responsibility, and almost every time the letter says 'AT&T' it can and should be read as 'Sandia.' And it's good for the Department of Energy because it lets everyone know that they and the contractor separated on good terms." DOE recommended the letter to Clinton.

THE WHITE HOUSE  
WASHINGTON

October 26, 1993

Mr. Robert E. Allen  
Chairman of the Board  
AT&T  
32 Avenue of the Americas  
New York, New York 10013

Dear Robert:

In 1949, AT&T responded to President Truman's call to operate Sandia National Laboratories, an activity he described as "of extreme importance and urgency in the national defense." AT&T accepted this challenge with a genuine sense of patriotic duty.

During the Cold War, AT&T brought outstanding technical direction to the important task of developing and supporting a strategic nuclear deterrent. It is encouraging to note that these talents are now being applied to national needs in the fields of energy, environment, and industrial competitiveness.

As we leave the Cold War behind and look with hope toward the future, AT&T can be proud of its participation in such a historic undertaking. You have made a substantial contribution to the nation's security and to peace around the world.

On behalf of the citizens of the United States of America, I thank AT&T for more than four decades of exceptional service in the national interest.

Sincerely,

*Bill Clinton*



**Diversity Volunteers Needed****Five Diversity Action Teams Take Aim at Workplace Issues**

A lot of people have been doing a lot of talking about diversity at the Labs during the past several years.

Two "Sandians' Perspectives" (Stanek) Surveys, a Department of Labor audit at Sandia/California, and various consultants, focus groups, and diversity groups have produced enough information about Sandia's work force to muddle many managers.

And Sandia's Diversity Leadership Committee (made up of Labs directors) and Corporate Diversity Team (a cross-section of employees) have looked at that information, done some strategic planning, and started Sandia along the road to diversity.

But in September five new Diversity Action Teams (DATs) were created to go beyond identifying and planning and to begin implementing Sandia's diversity plans — to make real changes happen at Sandia on a corporate level. Each team has from 5 to 10 members representing a cross-section of Sandia employees.

"The DATs were created to be the working arm of the Corporate Diversity Team [CDT]," says Linda Lovato of Diversity Planning Program 3612. "Their ultimate purpose is to take action on diversity issues." (The CDT was established in March 1993 to help improve the Labs' work environment and productivity by making better use of people's differences.)

For the last six months, members of the five action teams (appointed by their directors) have been laying the groundwork for putting new diversity programs into place. Now that much of the initial preparation has been done, more team members are being solicited. (See "Wanna Be a Diversity Volunteer? Here's How.")

Here's what the five DATs are about and what they've been working on:

**Awareness Team** — Purpose: to inform Sandia's work force of diversity issues, sensitivities, and solutions. Members have been responsible for airing six Radio Sandia broadcasts, initiating two LAB NEWS articles, and preparing standard 15- to 60-minute presentations that diversity staff members or others can deliver to Sandia organizations.

Team members are also working with the Training DAT to establish a diversity section at the Sandia/New Mexico Technical Library and have identified appropriate books, handouts, and videos. A new diversity-related newsletter for department managers will debut this spring. The team has also developed a process for getting Sandia management more involved in the diversity effort. (Chairperson: Ajoy Moonka, 6471)

*(Continued from Preceding Page)*

**Bray Departs**

think is very important. The real trick is: Can we somehow assess a school system's performance in such a way that we can recognize improvement if we experience it?"

It's almost like a whole new career, but Lee is ensuring it won't take over his life. "My requirements were that I continue to live in Albuquerque and that I have about 10 weeks of vacation a year so I can spend more time with my granddaughters in Atlanta and Houston."

"Leaving Sandia certainly generates a set of mixed emotions," says Lee. "I will always consider myself a Sandian as well as an AT&T'er. In work as in life, it's the people you interact with that make all the difference, and at Sandia I've had the good fortune to work with the best. I look forward to many great successes of the Laboratories as a whole and of the very talented individuals who make up the Labs." ●KF

**Cost/Benefits Team** — Purpose: to create a clear picture of the cost/benefits of all employees adopting and actively managing diversity. Drawing on the '91 and '93 Stanek surveys, Labs work force consultants, and available reading materials, members have collected and analyzed data on such issues as employee retention, productivity, employee satisfaction, corporate reputation, and cost of compliance with Affirmative Action/Equal Employment Opportunity guidelines.

The information is being used to develop a business case: a business-oriented strategy that relates diversity to business goals. (Chairperson: Pauline Ho, 1126)

**Training Team** — Purpose: to build a framework for inclusion of diversity training into existing Sandia classes. Members have developed a 15-minute introduction to diversity (to be delivered to new hires during orientation) and are developing a two-hour follow-up training session that new hires will attend three months later.

The team is also working with Sandia's Education and Training organization to identify current Labs classes, particularly career development courses, that are appropriate candidates for inclusion of diversity training. Training packages (including group exercises, skits, handouts, and videos) are being developed for those courses. (Chairperson: Frank Biggs, 9312)

**Teamwork Team** — Purpose: to enhance teamwork by respecting, valuing, and utilizing diversity. Team members have created a first-draft document, called "Principles and Guidelines for Diversity and Teamwork," that offers practical ideas and concepts to managers and other Sandians who are forming teams.

The document offers information about the role of diversity in selecting team members, group dynamics, differences among people, how those differences can help teams, and rewards and recognition. (Chairperson: Gary Randall, 2645)

**Data Gathering Team** — Purpose: to collect data for the other four DATs on Sandia's work force demographics, to identify trends and issues, to compile internal data useful for building a business case for diversity, and to gather external data from companies with active diversity programs.

**Wanna Be a Diversity Volunteer? Here's How**

Nominations are now being taken for employees who want to help usher diversity into Sandia's work environment, says Linda Lovato of Diversity Planning Program 3612.

Employees who are selected to be new Diversity Action Team members don't necessarily need to know much about diversity, she says, but they do need to be committed.

Each volunteer will serve on a Diversity Action Team for six months and will provide about 12 hours of work to the team per month. A case number will be provided.

To nominate yourself, fax your name, organization number, mail stop, phone number, and manager's name to Linda Lovato (fax 844-4624). Include a brief description of your experience working on teams, experience working on projects, and your reasons for wanting to participate on a Diversity Action Team. Deadline for nominations is April 8.

Two California Sandians have already been selected by their directors to serve on the DATs, but all California Sandians are welcome to nominate themselves. Special arrangements are being made for their participation.

Although the new DATs may not be the same as the original DATs, you may state which diversity issues you prefer to be involved in (data gathering, awareness, etc.).

Team members have used Personnel information, consultants, the '91 and '93 Stanek surveys, and available reading materials to support the data needs of the other DATs and to explore such issues as recruiting practices, terminations, morale problems, diversity-related trends and issues, and building a business case. They also have identified and visited 10 local companies with diversity programs. (Chairperson: Gina Bell, 7142) ●JG



**GETTING RIGHT TO WORK** — Sandia's new Corporate Historian Leland Johnson (left) looks through bound copies of the LAB NEWS with Corporate Archivist Myra O'Canna in the Technical Library. Both work in Recorded Information Management Dept. 7145. Myra also is serving as Leland's official escort while he is awaiting granting of his security clearance. His most recent publication is a 50-year history of Oak Ridge National Laboratory, but he also has written a number of other books and articles, most on the history of the US Army Corps of Engineers. He holds a doctorate in history from Vanderbilt University.



# fixed kiback

*Q: There is a minority contractor person in our area who is one of the biggest goof-offs I have ever seen. I noted when she was inputting data recently, which is her job, she worked at it only 25 minutes during the whole work day — which started well after 8 o'clock and finished well before 4:30. The rest of the day she was on the phone, visiting, or was absent.*

*When I mentioned this to a co-worker, he said she had stated that if anyone questioned her conduct, she would file a discrimination grievance. This is certainly enough cause to cause grown men or women to blanch.*

*I feel very helpless in this situation, about redressing this. In the name of affirmative action, she is defrauding the taxpayer. She is also blackmailing her supervisors. I would like to believe that this should be a crime, but I guess it is not in this instance. What have we done in the name of ethnic diversity?*

A: The issue you raise is related to performance management and needs to be addressed by the contractor and Sandia management. Whether a person is a Sandia employee or a contractor, it is expected that work be performed in a responsible manner, observing regular hours of work and keeping absences to a minimum. Tardiness, abuse of established break and lunch periods, unexcused or excessive absence, and idleness during work periods is subject to disciplinary action, up to and including termination.

There is no equal employment opportunity, affirmative action, or diversity program that prevents or prohibits managers from taking appropriate action to ensure maximum productivity from all employees and contractors, regardless of ethnicity, race, gender, etc.

Perhaps a clarification of what equal employment opportunity, affirmative action, and diversity means will assist in understanding the issue.

- Equal employment opportunity means equal treatment of all employees, without regard to race, color, gender, sexual orientation, ethnicity, national origin, religion, veteran status, marital status, age, or disability.

- Affirmative action means taking positive actions to identify, recruit, hire, train, and promote qualified individuals from certain groups (minorities, females, etc.) who have historically been underrepresented in employment.

- Diversity simply means respecting differences in people.

The concepts of equal employment opportunity, affirmative action, or diversity do not "protect" poor performers. If a manager needs to address performance issues, he or she should feel free to avail himself or herself of a variety of Sandia resources to assist in maximizing employee or contractor performance.

Mike Robles (3600)

*Q: I know Sandia is in a state of confusion — much like that described by Los Alamos Lab Director Sig Hecker in an Albuquerque Journal story in January — due to ES&H regulations. I believe things are going to get worse before they get better. It seems to me that there is no "personal accountability" at Sandia anymore. The "ownership" concept was a good start to restore accountability, but more needs to be done.*

*The dock of Bldg. 807 needs attention. Lots of people walk by this mess every day, but has anybody reported it yet? The dock recently had:*

- Cardboard box stored on flammable cabinet
- Smokers' ashtray close to flammables
- Unused pallets left on dock
- Trash on the ground

*Can you at least get this area cleaned up?*

A: Because the Bldgs. 805-806-807 dock areas are being populated by contractors doing renovations, there is a constant movement of old material being

replaced by new material. Deliveries to the dock areas are made daily, and unused pallets are picked up for reuse. Meanwhile, the smokers' ashtray was removed, since this is a nonsmoking area, and the owner of the empty flammable cabinet has been instructed to send it to Property Reapplication.

We are coordinating efforts with all Sandia contractors to keep the docks clean at Bldgs. 805, 806, and 807, but if other problems are spotted, the ES&H coordinator for this area is Bess Campbell-Domme, who can be reached on 4-7951.

Bruce MacLeod (7613)

*Q: We have come a long way, concerning smoking, since the days of ashtrays on every desk and cigarette machines in every building. Why not go the rest of the way by banning smoking on any Sandia property?*

*To mitigate the affect of this, a policy of active "stop smoking" assistance must be provided. Can't we pay for attendance and materials (nicotine patches, etc.) for these programs? I'm sure that the costs would be offset by more productivity and less sick time.*

*Of course, this program should also be made available to contractors on site. I have a contract employee — who has tried to stop on his own — who says he would quit if he received the kind of support I've suggested.*

A: In November 1990, Sandia adopted a smoking policy which effectively prohibits smoking in all Sandia facilities, buildings, and government vehicles. This policy seems reasonable and addresses the increasing health concerns associated with "passive smoking" in confined spaces. Employees who presently smoke have been consistently compliant with this policy and responsive to the explicit health and safety needs of nonsmokers. The prohibition of smoking in open-air areas does little to further the notion of health protection to nonsmokers, but does add an additional burden to those who currently smoke or are attempting to quit.

The Occupational Medicine Center considers smoking to be a preventable health hazard and offers programs to alter smoking habits. Classes in smoking cessation have been regularly offered during the last 10 years, and Sandia's benefits organization has offered, on two occasions, additional temporary health care benefits designed to support smoking cessation programs outside Labs programs. Individuals interested in smoking cessation programs are encouraged to contact the Total Life Concept (TLC) Program (844-8238) in the medical organization for additional information.

Finally, it is important to note that the combination of an appropriate smoking policy, smoking cessation classes, and an ever-increasing health-conscious employee population has resulted in a prevalence rate of smokers at Sandia of about nine percent, substantially less than the 20-percent national average.

Larry Clevenger (3300)

*Q: Currently, much data and analyses performed at Sandia are lost to most Sandians. Experimental results get transmitted in the form of a letter to an individual customer or a short distribution list. This means that the information is not available to other Sandians who might also benefit from it now or later.*

*Wouldn't an internal Sandia technical report method help us find and track data and ideas we have generated? The reports could be numbered and electronically filed with the central controller and repository. Then an engineer doing a library search could locate relevant internal memoranda by entering important words or subject names related to the research topic. These retrievable and proprietary reports would be informal, as with the current cover letter system (minimal signatory approval). The numbered SAND report is tracked by the library; but by its formal nature (extensive*

*signatory approval and defined format) and transmission to DOE, it is normally reserved for larger completed projects.*

A: There are presently two ways to collect and preserve technical information not published in formal SAND reports. The first is to write an internal memorandum. Internal memoranda do not undergo the formal review and approval process, and are for internal use only, if not otherwise restricted. They are indexed and added to the Technical Library's collection, and now require a SAND number.

The second method is to send documents to the Technical Library's Central Technical File (CTF). CTF is a permanent collection of informal documents such as test reports, trip reports, progress reports, letters, memoranda, and minutes of meetings containing information of lasting value concerning the technical programs at Sandia. Documents included in CTF fall between the formal review and approval process and raw data. All CTF documents are indexed for the Library's collection and documents are preserved on microfilm or on paper.

There are some restrictions on the types of documents that are included in CTF. The Technical Library's on-line catalog provides access to internal memoranda and CTF. Both internal memoranda and CTF documents can be obtained by visiting Room 100 of the Library, or by calling the Reports Information Desk on 845-8187. For more information, please call Mary Compton on 845-9268.

Herb Pitts (7100)

*Q: The new requirement on sending drug bills to the contractor who does the discount, etc., then transmits them to Mutual of Omaha is only adding cost. I have to fill out two of the same forms, one for the doctor bill and one for the drug bill, and mail them to two different places, one of which then transmits it to the same place the doctor bill went for payment. I'm not about to change drugstores, as I have an account and have been with the same one for 30 or more years, and I don't use the other contractor. I should be able to send both bills to Mutual of Omaha directly to attain less cost all around and less delay in handling the account.*

A: If you are not using the Select retail pharmacies (Kmart, Wal-Mart, and Smiths) that electronically file your prescription drug claims, you are required to send the paper claim to Caremark Prescription Drug Claims at the address shown on the November 1993 version of the Medical Care Plan claim form. You are correct that this change in filing paper prescription drug claims with Caremark will require an additional claim form and may cause inconvenience for those participants using non-Select pharmacies. However, claim processing costs for Sandia are not increasing, and the use of Caremark as a specialty drug vendor provides important services that Sandia is seeking for Medical Care Plan participants.

As stated in the Feb. 8 information flyer to employees, Caremark will provide Sandia with in-depth, pharmaceutical data allowing Sandia to manage health care costs and negotiate for the best pricing. In addition, through the Select Network and Mail-Order pharmacies, Caremark provides Sandia's participants with drug utilization review services that alert the pharmacist and patient to possible drug interactions. This service is particularly important for the patient who uses multiple drugs from different physicians. Drug interactions are among the leading causes of hospitalizations for elderly participants.

While the new system may cause inconveniences for some participants, the advantages of using Caremark as a specialty vendor outweigh the disadvantages. We hope that participants will use the Select pharmacies and the Caremark Mail-Order in order to take advantage of the services and the convenience of electronic claim filing.

Ralph Bonner (3500)



# The Steamy Side of Sandia

Photography by Randy Montoya

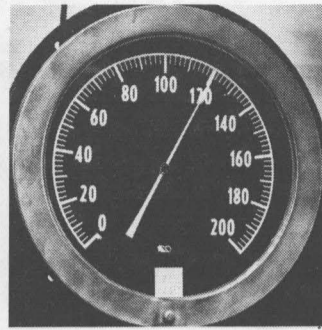


IT'S A FINE MORNING for making steam. Jimmie Hendry checks things out at boiler stack No. 6.

Do you know where the heat — or refrigeration — for most Sandia buildings comes from?

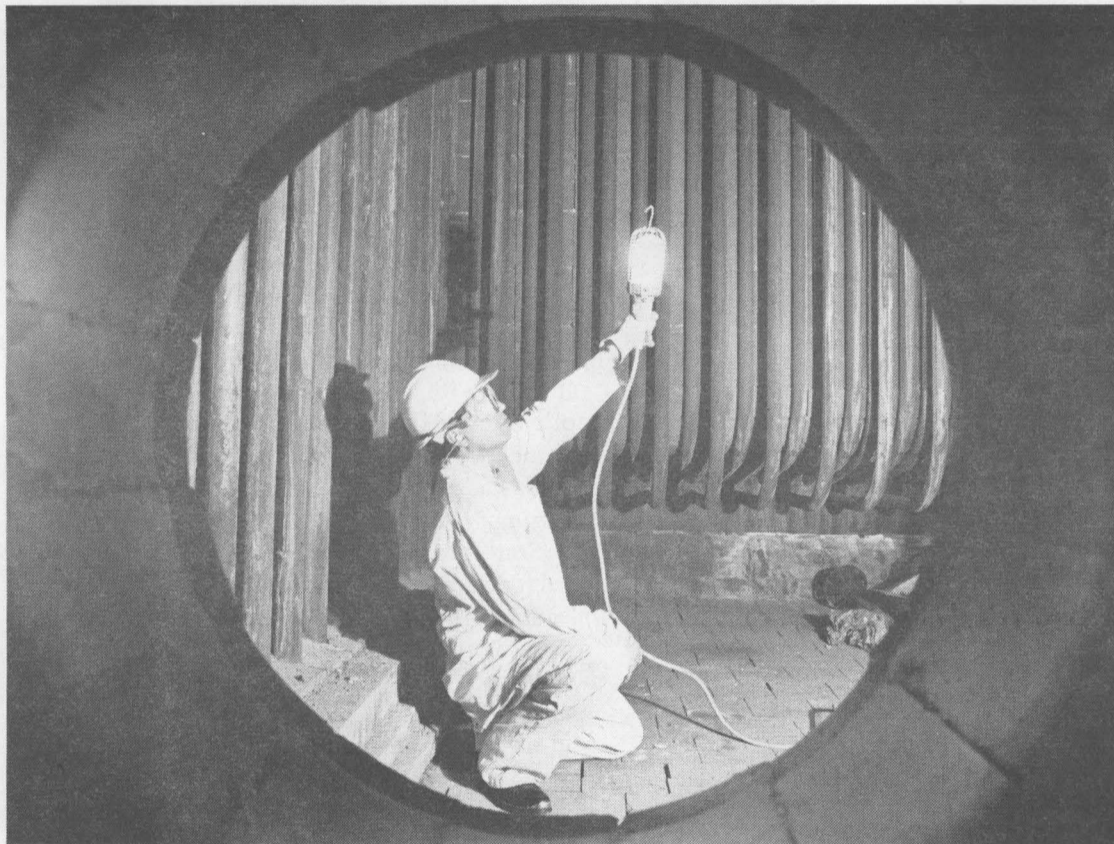
Few Sandians probably ever think of it, but the Central Steam Plant operates 24 hours a day, 365 days a year, producing and distributing steam throughout the Labs for heating/refrigeration units and to run associated equipment such as low-pressure turbines. It distributes the 350-degree F. steam through an underground network of 35,000 feet of piping, which also serves the DOE complex, various KAFB buildings, and the Coronado Club. The steam plant, just east of Wyoming Boulevard behind the Credit Union, is

operated and maintained by 18 employees from Mechanical Utility Systems & Central Steam Plant Team 7811-2, including 12 Plant Facilities Operators who work three seven-day rotating shifts a month.

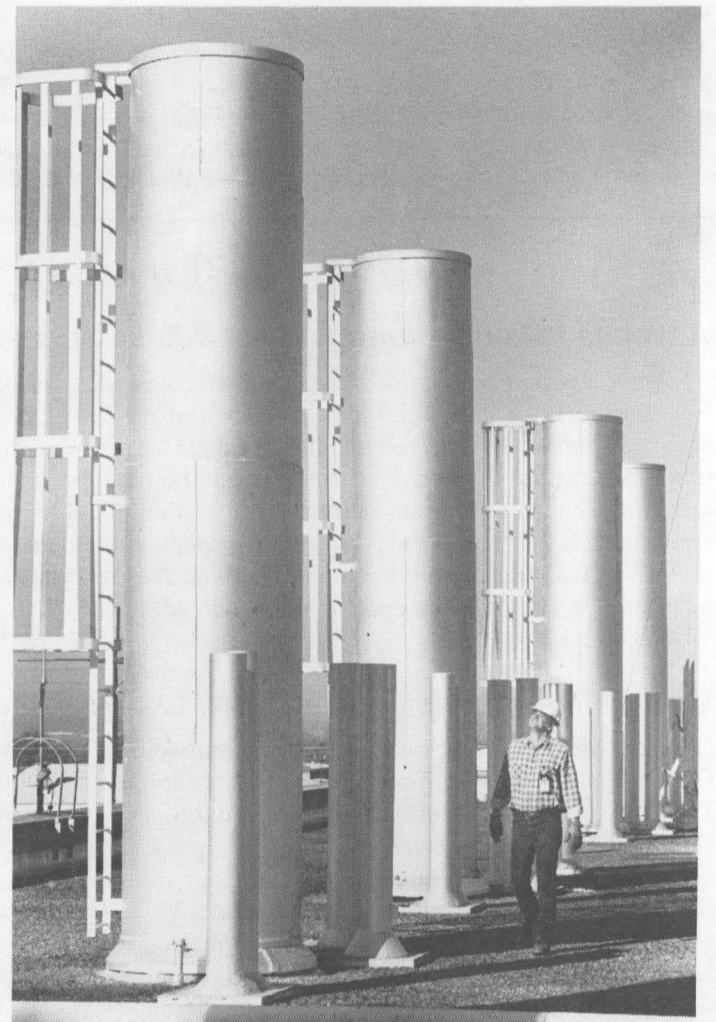


Three people are on duty at all times, including one who operates the Central Monitoring System. One to five steam boilers are operating at any one time, depending on weather conditions. They're powered by natural gas or diesel fuel, and in a typical recent year they used 868 million

cubic feet of natural gas (costing \$2.4 million) and 29 million gallons of water to produce 647 million pounds of steam.

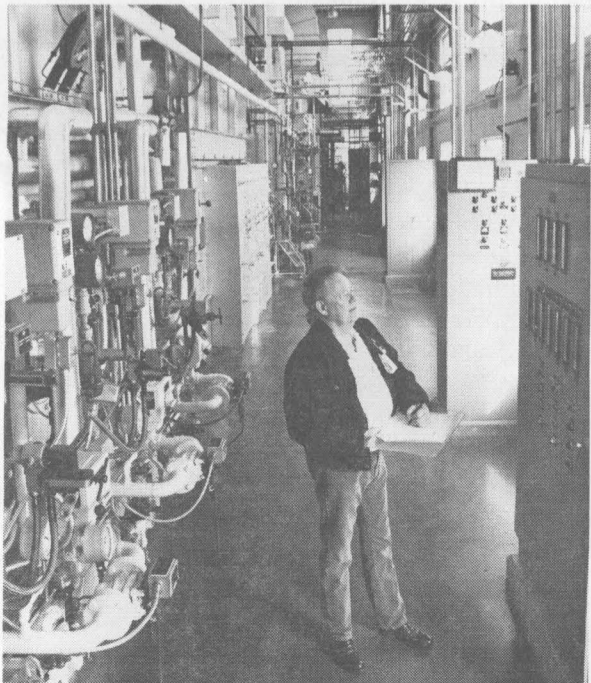


INSIDE THE FIREBOX of a boiler, Rick De La Rosa inspects condition of the water tubes that are heated to make steam. As many as five boilers can be operating at once.

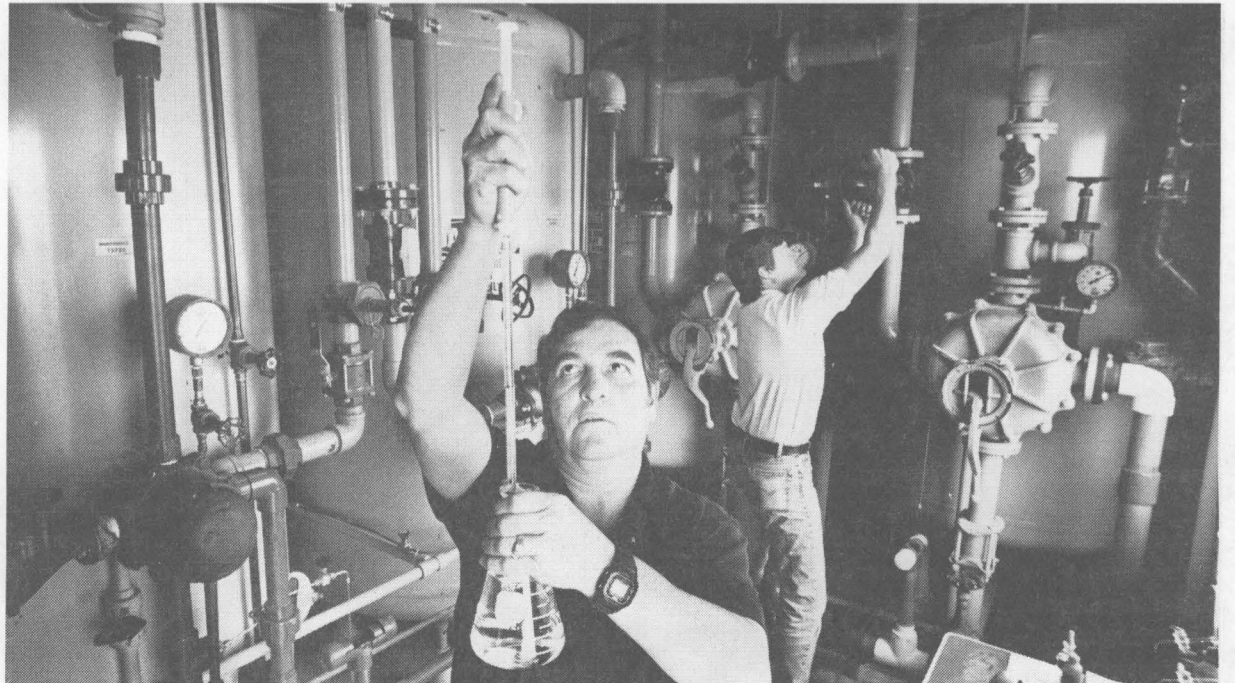


BOILER STACKS 1 to 4 get perusal from Carl "Fitz" Fitzgerald. Natural gas is the plant's main fuel.

## Sandia Spotlight



LARRY GUTTKE takes a reading from boiler control cabinets.



SAMPLING WATER in water softening room are Richard Ronquillo and Curtis Fox. About 100,000 gallons of water are used daily to make steam. Steam is distributed through 35,000 feet of underground pipes.





TREASURES FROM TRASH? — Ken Hanks (6911), left, and Fran Stohl (6212) examine some sample items made from trash. These items are from Agnes Page (7582) and Charlene Luetjens (7581). There will be a "Treasures from Trash" Contest at the Earth Day Festival April 22. Everyone is encouraged to participate and bring their favorite crafts or other items made from discarded materials to Earth Day. Prizes will be awarded. For more information, contact Maria Walsh (7574) on 848-0342 or Ken on 845-9370.

## Sandia News Briefs

### Advanced Manufacturing Day at ISE '94 Sponsored by Sandia

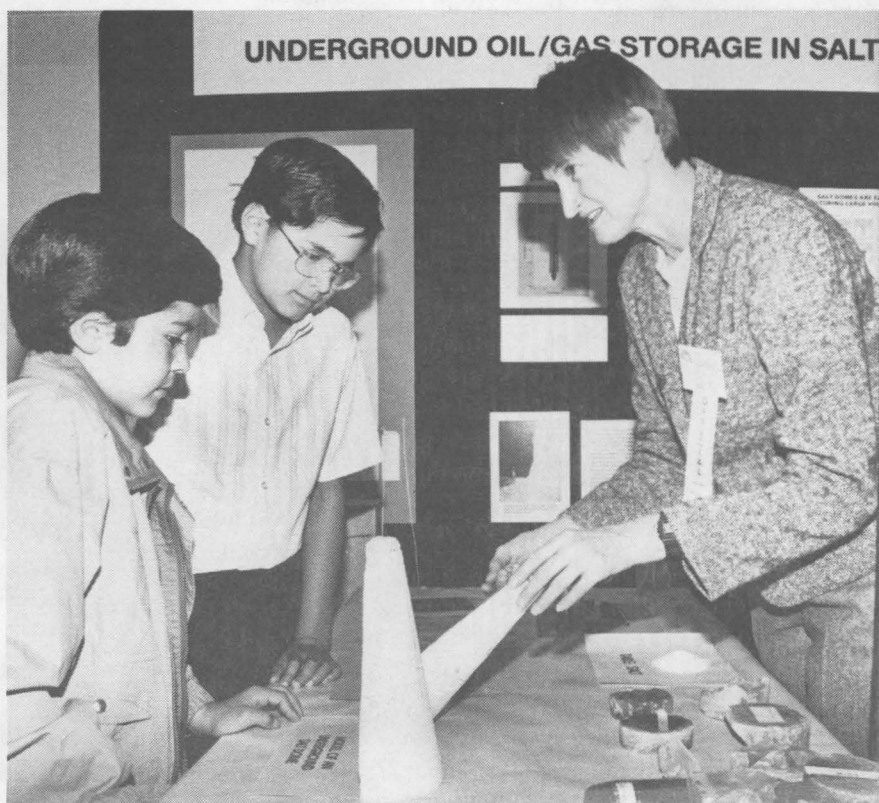
Sandia will present an Advanced Manufacturing Day on Tuesday, May 17, at ISE (Ideas in Science and Engineering) '94 at the Albuquerque Convention Center. Sandia will showcase its broad capabilities in advanced manufacturing technologies in a 15,000-sq.-ft. Product Realization demonstration. The demonstration is adjacent to the ISE show floor. In addition to the technology demonstration, Sandia plans to present seminars about its future procurement activities (Sandia procures more than \$700 million in goods and services each year); technology transfer (Sandia is committed to transfer of technologies to benefit the private sector and US industrial competitiveness); and Prosperity Games (a simulated economic war game environment). These activities are open to all ISE attendees and exhibitors. For information about ISE '94, May 17-19, call 262-1023.

### Gov. King Appoints Larry Bertholf to State Commission

New Mexico Gov. Bruce King recently appointed Larry Bertholf, Director of Information Architecture Center 4400, to the new State of New Mexico Information and Communication Management Commission. The seven-member commission was created as a requirement of House Bill 576, "Information and Communication Management Act," recently passed by the 41st State Legislature. The Commission oversees and advises the governor and legislature about all information and communication systems in New Mexico. Larry will serve on the commission until Dec. 31, 1994. After that date the Governor will select and appoint members to serve for five years. The Commission is required to include one member each from Sandia and Los Alamos national laboratories, and others from state agencies and business.

Send potential Sandia News Briefs to LAB NEWS, Dept. 12660, MS 0413.

SCIENCE FAIR participants Emiliano Valles, 11, of Albuquerque (left) and Charles Rehner, 12, of Los Lunas listen as Elaine Gorham (Geoscience/Geotech Competency Support Office 6101) describes salt dome structures at Sandia's exhibit at the Northwestern New Mexico Regional Science and Engineering Fair at the University of New Mexico's Johnson Center. This year's Sandia exhibit featured the Strategic Petroleum Reserve. In a ceremony on March 19, Redd Torres Eakin (Community Relations Dept. 12640) presented certificates and cash awards to 85 science fair participants. They'll go on to the state science fair next month in Socorro.



## feedback

**Q:** What are the advantages for Sandia to support a time card system where employees guess what hours and case numbers they will be working on for the future? How many employees actually send in corrected time cards every time they should, to correct discrepancies? I feel the current system supports inaccuracies.

Why doesn't Sandia fill out time cards for the past week, eliminating guesswork, the overwhelming number of corrected time cards that should be submitted, and the effort to process most of these corrected time cards? Are there disadvantages to this system used by other companies to keep track of what work has been billed, rather than what work will most likely be billed?

**A:** It is Sandia's policy, articulated in SLP 4115, "Timecards and Attendance Records," that actual time charges be reported by employees. This has traditionally been achieved by having the time cards delivered to Payroll by 9 a.m. on the Friday following the end of the workweek.

There are many reasons why people end up projecting their time on original time cards, rather than reporting actual hours worked. Geographic separation from the Payroll organization, employee absences for events such as planned vacation, and employee travel schedules are among these reasons. When employees are unable to submit precise original time cards, it is expected that they will expeditiously submit corrected time cards to ensure accurate reporting of time that was projected on an original time card.

In their discussions with the Payroll organization, the majority of employees indicate they are familiar with and fully comply with Sandia's policies in this area. Because time projections are routinely corrected to reflect actual hours worked, Sandia has no problem ensuring the integrity of its charging system.

Some process changes that could decrease the need for employees to project time charges have been identified. The Corporate Policy Department has been asked to organize a review of policy changes that would need to be made in support of any process change. Process and policy changes, if they occur, will be made in a coherent and timely manner.

Neal McEwen (10500)

## Take Note

The circus isn't in town, yet lots of people will soon be sporting red noses even if they don't have allergies or a cold. Red Nose Day USA, sponsored by the Sudden Infant Death Syndrome (SIDS) Alliance to fund SIDS research, is scheduled for April 15. Red Nose Day in no way belittles the pain and tragedy of losing a child. Rather, it provides a release for the well-intentioned but shy or fearful donor who always wanted to do something but never knew what do. The gimmick of wearing a red nose, or the "I'm too chicken to wear a red nose" button, will make it acceptable to talk about SIDS and do something about it. More children die of SIDS than cancer, heart disease, pneumonia, child abuse, AIDS, cystic fibrosis, and muscular dystrophy combined. Red noses are available for \$2, chicken badges for \$2.50, car noses for \$4, and truck/van/house noses for \$25, at local businesses and Sandia Laboratory Federal Credit Union (both Albuquerque locations) beginning April 4. For more information about the SIDS Alliance, call Betty Pierce (9213) on 294-0871.

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Retiring and not shown in LAB NEWS photos: William Leisher (6643).

## Sympathy

To Melinda and Harry (5111) Cincotta on the death of their infant son Kyle Andrew in Albuquerque, March 20.



UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

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

MOTORBIKE CARRIER, mounts on front or rear bumper, \$40 new, sell for \$25; RV leveler ramps, \$25. Hole, 255-1444.

POP-UP CAMPER, sleeps seven, sink, 3-burner stove, heater, icebox, \$500 OBO; dishwasher, GE, harvest gold, \$50 OBO. Farmer, 857-0503.

TELESCOPE, portable, 4-in., Meade, motor, case, solar filter, ideal for solar eclipse in May, \$550. Lorence, 275-3586.

STUNT KITE, dual-line control, 8'8" wingspan, rip-stop nylon sail, graphite frame, new \$150, sell for \$75. Montoya, 296-4268 before 9 p.m.

COMPUTER MONITOR 80, Magnavox, monochrome, green, excellent working condition, \$40. Smiel, 865-9081.

EXERCISE BIKE, \$45; wet/dry vac, \$20; patio table, chair sets, \$40-\$125. Spath, 275-2346.

WATERBED, king-size, cream, mirrored bookcase headboard w/gold trim, semi-waveless mattress, heater, very good condition, \$150. Saiz, 842-6936.

REFRIGERATOR, 17.5 cu. ft., side-by-side, GE, almond, 12-yrs. old, \$175. Rechard, 292-1754.

GERMAN SHEPHERD PUPPY, 8-wks. old, female, parents on premises, \$120. Sanchez, 873-2058.

MOVING BOXES: wardrobe, \$4/ea.; mirror, \$2/ea.; assorted other sizes, 40 boxes total. McNiel, 344-7694.

BEDROOM FURNITURE, Drexel "Woodbriar," triple dresser, large mirror, chest of drawers, excellent condition, \$750. Seager, 299-7629.

SEWING MACHINE, Nordic, in wood cabinet, good condition, \$125; lamp, blue, Care Bear w/shade, like new, \$15. Locher, 266-2021.

MICROWAVE OVEN, Tappan, large-capacity, w/browner and touch controls, \$75. Dudley, 255-3626.

DOG, collie/golden retriever-cross, 2 years old, neutered male, free to good home. Miller, 823-1070.

TENNIS RACQUETS, two Wilson Prostaff, one Dunlop Revelation, new strings. Hunter, 293-8707.

DOG, red heeler, 8 mos. old, all shots, spayed female, \$40. Sanchez, 292-1982, weekdays after 5 p.m.

COMPUTER, IBM 486 SX PS1, VGA color monitor, fax modem, 24-pin color printer, mouse, software, \$1,200. Savage, 275-0024.

PRINTER, HP Thinkjet for PC, needs cable, virtually new in box, put in cartridge to test, \$95. Hobbs, 291-8267.

TREADMILL, Precor Model 9.2, up to 9 mph and 10% incline, like new, cost \$2,000, asking \$1,000 OBO. Bateman, 237-1205.

SHED, 7' x 10', aluminum, on wooden base, free if you take it away. Tonnesen, 266-3894.

GOLF CLUBS, Tour Model II, 3-SW irons, like new, \$135; miscellaneous golf clubs, \$5/ea. Dwyer, 271-1328.

OAK BEDROOM SET, mirrored headboard w/lightbar, nightstand w/bookcases, dresser, \$500, open to offers. Martin, 296-8154.

CHILD CARRIER, Tough Traveler, Stallion model, adjustable, exceptional comfort and control for parent, used for one child, \$60. Koch, 856-1362.

REFRIGERATOR, for garage or cabin, good condition, \$35. Bazar, 898-1467.

WHIRLPOOL CLASSIC RANGE, electric range, microwave, and oven, w/hood, excellent condition, \$399. Banks, 291-1794.

BEAN BAG CHAIR, black, large, excellent condition, \$20. Hessel, 296-9124.

WASHER & ELECTRIC DRYER, almond, dryer in good condition, washer needs work, will deliver, \$65 OBO for both. Martinez, 888-3067.

OSCILLOSCOPE, Tektronix 7603, \$450; Belgian Browning .22 back-packing rifle, \$290; Fluke 8025 multimeter, \$125; Orion binoculars, 10x70, \$160. McDowell, 281-1509.

DISHWASHER, GE, harvest gold, needs power cord, \$50. Farmer, 857-0503.

TENT TRAILER, for motorcycle or small car, towing setup for Suzuki Samurai; Bronco brush guard. Brock, 865-4055.

COMPUTER, Amiga 2000, keyboard, mouse, two floppy drives, 1MB Agnus, 2MB RAM, Nexus SCSI controller without disk. Perdreauxville, 294-4398.

PING-PONG TABLE, 60" x 108", regular playing size, converts to play-back position for solo practice, \$50. Jensen, 823-9203.

GOLF CLUBS, Graphite SuperDriver, like new, \$90; Burke Tommy Armour irons, 2-SW, used, \$90; Haig Ultra Woods, 1-4, \$50. Philbin, 828-2414.

RUNNING BOARDS, for full-size Chev. dually, stainless steel, will fit regular to crew cab models. French, 856-6126.

RECORDS, old 78s, new LPs; football, autographed by '73 Dolphins; Super 8 movie camera; '68 World Book encyclopedia. McGovern, 293-3829.

COMPUTER, PC Limited 286, 8Mhz, 1MB RAM, 21MB RAM HD, 14-in. color monitor, Epson EX-800 dot matrix printer, \$250. Trelue, 292-7369.

ROUND TABLE, 60-in., glass top, bamboo-look, w/four matching cushioned chairs on rollers, Southwestern colors, beige, peach, green, \$200. Seyfer, 292-0179.

CONN ALTO SAXOPHONE, w/jazz mouthpiece and stand, excellent condition, \$900; student instrument. Lujan, 873-2122.

POP-UP CAMPER, '91 Jayco 1006, w/heater, awning, screen room, used only eight times, excellent condition, \$4,500. Jaramillo, 865-7832.

EXERCISE BIKE, Lifecycle 5500, one yr. old, excellent condition, \$800. Sandoval, 275-0904.

STORM WINDOWS, 9' x 4' and 6' x 4', make offer; boat anchor, Danforth style, 15-lb., \$25. Horton, 883-7504.

BEDLINER, for Dodge Ram 50, \$45; RV luggage carrier, \$40; vehicle security system, Excalibur Model AL900 ATZ, new, cost \$250, sell for \$85. Sanchez, 831-4906.

SKI BOOTS, 9A, \$25; Atomic skis, 180cm, \$25; comforters, twin-size, \$30/ea., rose comforter, queen-size, \$20; two Atlantic suitcases, \$25/ea. Kravnik, 856-1683.

RV MICROWAVE OVEN, Sears, includes wall mounting board and bracket, excellent condition, \$75. Hayes, 299-1200.

GLASS COFFEE TABLE and two end tables; swivel chair, carved wood, w/matching foot rest, needs restoration. Rowe, 299-0961.

CENTURY PLANTS, agave, various sizes, home grown, \$10-25. Bando, 856-7330.

NINTENDO GAME BOY, w/three games, all brand new, best offer. Wanya, 891-0018.

POOL TABLE, 8-ft., 1-in. slate top, like new, originally \$1,890, asking \$1,100 OBO. Cawfield, 294-5893.

FIRST COMMUNION DRESS, white w/veil, beaded headpiece, size 7/8, \$25; AC welder, 295-amp., two ranges, w/wheels, like new, \$250. Stang, 256-7793.

STEREO EQUIPMENT: Klipschorns, reel-to-reel, turntable, amplifiers, tuner, speaker, 8-track recorder, cassette deck. All top brands. Cundiff, 256-0043.

TENOR BANJO, piano rolls, microphone stand, easels. Lewin, 898-2303.

DOUBLE-OVEN RANGE, electric, Hot-point, self-cleaning, avocado, works well, \$150. Cassell, 298-5262.

CLASSICAL GUITAR, Pimentel Grand Concert, appraised at \$5,000, asking \$4,500. Muench, 867-5115.

STEREO SYSTEM, famous maker, cheap; cocktail ring, sapphire and diamond, \$200. Duncan, 281-8792.

**Feeling Rejected? Please Follow the Rules**

Some "unclassified ads" are rejected because they do not meet requirements. LAB NEWS staff members do not have time to call people who submit ads, so non-qualifying ads are rejected *without notice*. The most common reason for rejected ads is that Sandians do not list their full names and organization numbers; this information is not printed, but it is necessary to verify that the ad was submitted by a Sandian. The rules are printed at the top of this page in each issue, and Sandians are encouraged to clip and save a copy.

BEAM ANTENNA, Cushcraft Model A3, 10-15-20 meters, excellent condition, \$150. Drake, 299-1209.

MULTI-GYM, DP Bodytone 300, like new, \$35. Gardner, 293-8617.

WORKSHOP MANUAL, by Haynes, for Ford Mustang II, '74-'78 model years, \$8. Wyant, 298-0371.

CLOTHES DRYER, \$75. Gabaldon, 292-7340.

SOFA, w/matching chair, off-white, Southwestern print; oversized sofa, green. Both excellent, two years old. Gomez, 828-1464.

TABLE, w/chairs, country pine; antique oak Belgian buffet; drafting desk w/chair; Santa Fe coffee table. Levan, 293-0079.

SOFA SLEEPER, neutral colors, good condition, \$150. Klavetter, 299-4299.

SEWING MACHINE, Kenmore, w/cabinet; antique treadle sewing machine, w/cabinet; waterbed, queen-size, waveless. Patterson, 299-1062.

ESTATE/GARAGE SALE, April 3, noon-3 p.m., 6008 Vista Campo, dining set, china closet, antiques, crystal, more. Schultz, 821-5158.

POP-UP TRAILER, '82 Jayco Jayflight 4, sleeps four, stove, sink w/pump, icebox, excellent condition, \$1,500. Shrouf, 821-0765.

CAMELBACK SOFA, loveseat, dining table, Craftsman lawnmower. Armistead, 237-2452.

COLOR TV, Montgomery Ward, 25-in. screen, console, remote control, good condition \$225. Jones, 899-1187.

PUPPIES, Labrador, chocolate, AKC-registered, great hunting lines, great pets, only four left, \$200 and \$250. Garcia, 293-3937.

RADIAL TIRES, four, 185/R14, two like new; two all-season radial tires, 185/70R14. Zirzow, 281-9896.

ELECTRIC LAWN MOWER, Craftsman, w/bag, flip handle, 18-in. cut, 2 yrs. old, used on small yard, like new, \$150 OBO. Mooney, 822-1600.

**TRANSPORTATION**

'89 BUICK REGAL LIMITED, 2-door, light blue, super clean, fully loaded, new tires, shocks, brakes, etc., \$6,000 OBO. Torres, 265-7194.

'88 HONDA MAGNA, VF700, Vetter fairing and bags, 24K miles, excellent, smooth ride street or highway, \$1,995. Norwood, 292-0072.

BICYCLE, blue, Nishiki, 12-speed, frame size approximately 21", accessories include headlight, rack, kickstand. Hesch, 298-4902.

'87 DODGE RAM-50, mini-truck, 5-spd., tinted glass, red, high mileage, runs well, \$2,500 OBO. Cordova, 831-5458.

FUJI RACING BIKE, Campagnolo/Cinelli, make offer. Riley, 299-5868 after 6 p.m.

VW SINGLE-CAB PICKUPS, two '61 models, one '70 model, no engines, \$450-\$1,650. Roberts, 866-5422 after 6 p.m.

'85 FORD ESCORT, 2-dr., 87K miles, used for commuter car, good condition, \$1,600 OBO. Hobbs, 291-8267.

TRIATHLON BIKE, Canopus, Columbus tubing, Shimano 600 components, Scott DH bars, grip shift, 57cm, blue/black, excellent condition, \$450. Dwyer, 271-1328.

'73 FORD F350 PICKUP, camper special, AT, PS, 390 V8, dual-exhaust, excellent condition, \$4,000, open to offers. Martin, 298-6150.

TEAM FUJI BICYCLE, 12-spd., 19.5 lbs., 21-in. frame, like new, paid \$560, will trade for mountain bike or other trades. Gabaldon, 292-7340.

'89 FORD AEROSTAR VAN, extended, EFI V6, AT, AC, AM/FM cassette, dark windows, running boards, ski rack, excellent condition. Everett, 296-8786.

'87 ALFA ROMEO MILANO, 4-dr. sedan, many extra goodies, excellent condition, needs good home, \$8,000. Broyles, 265-6710.

'80 VW DASHER WAGON, 80K miles, new AT, very dependable, great first car for teenager, \$800 OBO. Sobolik, 292-3959.

'71 VW BUG, red, \$800 firm. Schear, 865-6457.

'88 PONTIAC 6000 LE, AC, PB, AM/FM cassette, AT, new brakes and tires, excellent condition, \$3,750. Stewart, 281-7906.

JET BOAT, '77 Nordic Bubbledeck, 460 Ford, tandem trailer, \$5,500. Cotter, 897-1470.

BICYCLE, girl's 10-spd., 28-in., like new, \$50 OBO. McGovern, 293-3829.

'85 MAZDA GLC DELUXE, 5-spd., AM/FM cassette, 4-dr., \$1,000. Suderman, 265-1786.

'91 CHEV. BERETTA GT, 18K miles, V6, AC, AT, excellent condition, \$10,000. Sandoval, 275-0904.

'73 FORD F500, 1-1/2-ton, 41K original miles, \$8,500. Baca, 296-8474.

'89 CORVETTE CONVERTIBLE, white w/white top, red leather interior, fully-equipped, 23K miles, original owner, new condition, NADA average retail \$21,575. Martin, 299-8276.

ALUMINUM BOAT, 14-ft., Sea King, 7-1/2 hp motor, excellent condition, \$500. Hayes, 299-1200.

'71 FORD PICKUP, 3/4-ton., excellent condition, w/6-ft. camper, sell together or separately, \$3,800 for both. Cawfield, 294-5893.

BOAT, '91 Sunbird, w/trailer, V6, OMC Cobra engine, 175-hp, 18-ft., excellent condition. Southward, 281-7858.

'90 HONDA ACCORD EX, low mileage, white, 2-dr., sunroof, extras, \$9,500. Sobel, 281-8792.

'67 PONTIAC CLASSIC FIREBIRD, convertible, 326, AT, rebuilt transmission w/guarantee, one owner, 143K miles, \$5,000 OBO. Layne, 296-7159.

'82 MAZDA RX-7 GSL, 117K miles, gold, 5-spd., AC, PW, tinted windows, sunroof, CD stereo, records, great condition, \$3,600 OBO. Godshall, 294-2214.

GIRL'S BIKE, 20-in. wheel, \$20. Kravnik, 856-1683.

'84 DODGE CONVERSION VAN, 48K road miles, garaged, must see to appreciate, \$8,000 OBO. Schultz, 291-1600.

'79 MINI-MOTORHOME, Mobile Traveler, 18.5-ft., sleeps four, low mileage, good condition. Sharp, 243-1498.

'83 BMW 320i, 5-spd., AC, sunroof, excellent mechanical condition, runs and drives great, \$3,300 OBO. Berry, 294-0597.

10-SPD. BIKE, \$45. Spath, 275-2346.

'92 CHEV. S-10 PICKUP, 4-cyl., 5-spd., 20K miles, one owner, excellent shape, \$7,100. Hindi, 271-2018.

**REAL ESTATE**

3-BDR. HOME, Northeast, 1,800 sq. ft., 1-1/2 baths, corner lot, 25,000-gallon in-ground pool, shown by appointment. Brady, 291-0305.

3-BDR. HOME, Ridgecrest, 1,680 sq. ft., 2-3/4 baths, 2 fireplaces, large modern kitchen, 2-car garage, wood deck, sprinkler, \$139,900. Romero, 255-3782.

3-BDR. HOME, SE heights, 1-3/4 baths, 1,400 sq. ft., vaulted great room, double garage, covered patio, excellent condition, \$99,500. Smith, 298-9588.

**WANTED**

PUPPY, Australian shepherd/Labrador retriever-cross, female. Hamilton, 271-8643.

HOUSE OR APARTMENT TO RENT, furnished, for visiting scholar, June 18-Aug. 27. Heinstein, 291-1525.

AQUARIUM, w/accessories, reasonably priced, for my children. Ghanbari, 883-3819.

HOUSE OR APARTMENT to sublet or housesit, for responsible couple, June and July. Cabrales, 835-8986, call collect.

4WD PICKUP, F250, standard transmission, 350 or larger, '89 or older, clean, without engine, chassis, or suspension modifications. Brainard, 266-3417.

CHILD'S MOUNTAIN BIKE, 24-in., in good condition. Bixler, 856-3555.

VENDORS, for "Cherished Creations" Craft Show, Lomas/Eubank, open house, April 1 and 2, 9 a.m.-6 p.m. Self, 296-4137.

USED VIDEOTAPES, Beta format. Meirans, 271-2313.

PARTNER, Chinese Mandarin Shuo-hua, lets get together to practice conversation and tell stories/experiences. O'Farrell-Mei, 265-6175.

SCIENCE ADVISOR, at LaMesa Elementary, '94-'95 school year, great teachers, great kids. I will assist you. Sobolik, 848-0777.

NIGHTSTAND OR NIGHT TABLE, Victorian, off-white, for girl's bedroom, preferably by Dixie, in good condition. Wagner, 823-9323.

FREE-STANDING BASKETBALL SET, adjustable from 4' to 6'; Little Tykes Junior Activity Gym. Rogulich, 298-5261.

EVAPORATIVE COOLER UNIT, RV-type, roof mount, 12-volt. Barnaby, 255-7767.

FIBERGLASS SHELL, for Toyota pickup w/long bed. Patterson, 299-1062.

ELECTRIC AIR COMPRESSOR, portable, prefer 2-hp or greater. Zirzow, 281-9896.

**LOST AND FOUND**

FOUND: Turquoise earring, March 15, directly across the street from Dome, on 12th Street. Call Gloria, 844-6063.

LOST: Wedding ring, plain gold band. Skinner, 844-8269.





**Coronado Club Activities****Kids' Easter Egg Hunt and Party**

IT'S TIME for the Easter Bunny, and so tomorrow, Saturday, April 2, bring your kids to the Children's Annual Easter Egg Hunt and Party from 10 a.m. till noon. The Easter Bunny will be on hand to visit with the kids (parents too!). Cartoons will be shown continuously for parents' enjoyment (kids' too!).

DON'T FORGET to bring an Easter basket so the little ones can join in the egg hunt at 11 a.m. A low-cost buffet will be served. Admission is free, but members only, please — no guests for this one.

THEN COME for the Easter Sunday Brunch Eggstravaganza, April 3. You and your whole family can relax and enjoy a sumptuous feast. The special Easter menu includes honey baked ham, baron of beef, turkey with all the trimmings, our

famous green chile stew, and many other delectable dishes from breakfast items to salads to dessert. All this is only \$8.95 for adults, \$4.95 for children 4-12 years. Tots 3 and under eat free, as always. Reservations are required and will be taken for three time slots only: 10 a.m., 11:30 a.m., and 1:30 p.m.

FEEL LUCKY? Bingo Night returns every Thursday evening this month. Card sales and buffet at 5:30 p.m., early bird bingo begins at 6:45 p.m.

THEN FRIDAY evening, April 8, it's time to get limbered up again for dancing with the Isleta Poorboys, 7-11 p.m. Start things off right with a dinner of T-bone steak (\$11.95), grilled halibut (\$10.95), or the all-you-can-eat buffet (\$6.95), from 6-9 p.m.

**Sandia in the News**

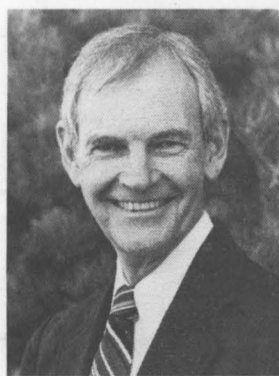
This is a periodic column listing a selection of print and broadcast news reports about Sandia. It is provided by Media Relations Dept. 12630 to give Sandians a sense of what is being said about Labs work in national and international media.

The *New York Times* ran a significant piece — headlined "Fastest Gun on Earth: Goals Go Beyond Planet" — about Sandia's new enhanced hypervelocity launcher, which blasted a small projectile to a speed of 10 miles a second. The piece offers several quotes from project leader Lalit Chhabildas (1433).

TV news viewers in Detroit and Boston saw Sandia's sticky foam, which may be suitable for subduing violent persons, on WKBD-TV and WFXT-TV, respectively.

**More 'Goo Gun' Coverage**

Steve Scott (9611) is quoted in the *Amarillo News* about Sandia's nonlethal "goo gun." "I think all nonlethal weapons have their place," he says.

**Employee Death**

DICK BRODIE

Dick Brodie, Special Assistant for Weapons Dept. 25, died March 29 after a long illness. He was 58 years old.

Dick was Sandia's specialist on weapon-program issues, such as weapon safety, and provided technical analysis on a broad range of weapon concerns.

He had worked in the weapon safety area since joining the Labs in 1976. Before that, he served 20 years with the Air Force, beginning as a fighter pilot. His service included two tours at the Air Force Weapons Lab (now Phillips Laboratory) on Kirtland AFB. He was assigned to the Office of the Secretary of Defense at the Pentagon when he retired in 1976 as a colonel.

Dick received a DOE Award of Excellence in 1982 and was named a Sandia Distinguished Member of Technical Staff in 1983. He was honored in 1992 for teaching more than 1,000 Sandians in his in-hours course titled "Survey of Weapons Development and Technology."

In 1993, he received the prestigious DOE Distinguished Associate Award "for his contributions to the surety of nuclear weapons and nuclear weapon systems, and for his outstanding leadership. . ."

He is survived by his wife Genelia, son John, and daughter Valerie.

*Military & Aerospace Electronics* quotes Ken Grothaus (2522) in an article about advances in battery development. "Our next target," Ken says, "is the development within two years of a thermal battery which will run for four hours."

*Design News* reports on Sandia's partnership with four US companies that's designed to result in improved rechargeable batteries for portable electrical appliances. It quotes Sam Levy (2523).

The *El Paso Herald-Post* and *El Paso Times* both reported on Sandia's new work with some 25 El Paso-Juarez maquiladoras (production-sharing plants) to help them become more environmentally friendly.

Details of General Motors/Sandia cooperative research and development agreements (CRADAs) are reported in *Mechanical Engineering*. There's also a color Labs-supplied photo of R&D designed to improve thermal spray process technology leading to high-volume production of wear-resistant coatings on cylinder walls of aluminum engine blocks.

Vance Behr and Larry Whinery (both 1552) are recognized in the *Logan (Utah) Herald Journal's* story about a rocket-building project for Utah State University students. Vance and Larry provided some technical support.

Work by William Flower (8111) and Nina Bergan French (8113) on an in-situ monitor that provides real-time data about toxic metals contained in aerosol emissions is part of a story in *Photonics Spectra*.

*Managing Automation* has a story full of comments from Jim Voytko (4200), who is on detail in Washington as project manager of the National Machine Tool Partnership.

IEEE's *Software Magazine*, in an article about refocusing national security labs to increased technology transfer, offers a laundry list of Sandia technologies or expertise ripe for transfer or already being carefully examined by industry, including engineered materials and processing, massively parallel computing architectures, mesh-generation software, and a code to model the impact of meteorites or orbital debris on space vehicles.

**Sandia Centers Featured**

*Microcontamination* offers up a nearly five-page feature on technology transfer that's full of Sandia photos. A sidebar on tech transfer centers and resources offers thorough descriptions of the Labs' Contamination Free Manufacturing Research Center and the Center for Microelectronics Technologies.

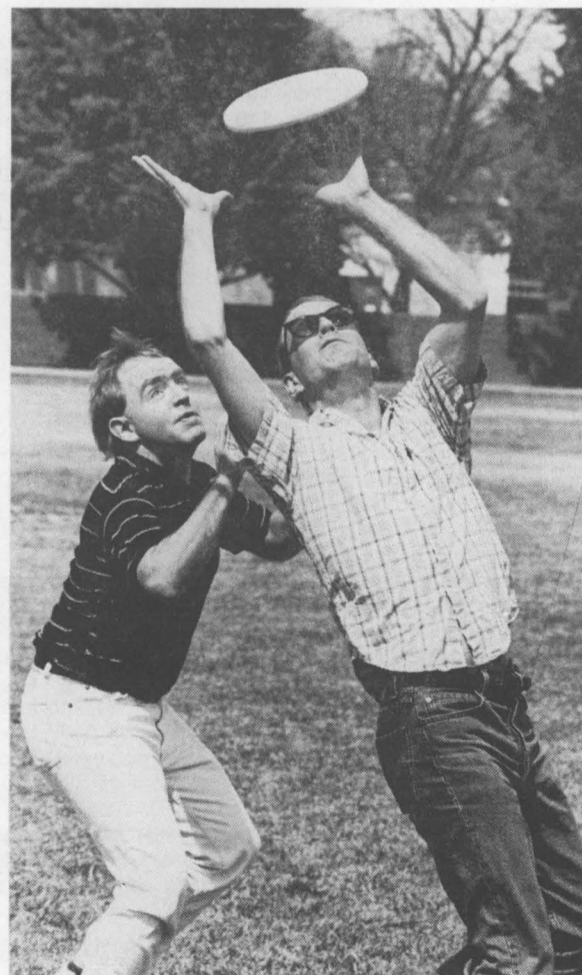
A *Denver Business Journal* piece, "Albuquerque emerges as relocation competitor," says the presence of Sandia is a key reason why New Mexico "has been able to attract high-tech industries. . ."

**Take Note**

The 1994 Space Power Workshop, "Space Power for a Changing World," sponsored by the Aerospace Corporation, the Air Force Phillips Laboratory, and the Air Force Space and Missile Systems Center, will be held April 18-20 at the Albuquerque Marriott Hotel. For 11 years, the Space Power Workshop has provided a forum in which issues concerning spacecraft and launch vehicle power systems can be presented and discussed. For the first time, the workshop will be unclassified and open to all participants. Topics include programs and requirements, power systems, analysis and simulation, primary and secondary batteries and advanced energy storage components, solar cells and arrays, nuclear power, and dynamic power systems. Registration and a reception for all participants will be held April 18 with technical sessions on April 19 and 20. For more information, call Debbie Marchand at Tech Reps, Inc., on 266-5678.

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The American Vacuum Society, New Mexico Chapter, is sponsoring a short course program in conjunction with the AVS 30th Annual Symposium at the Albuquerque Holiday Inn Pyramid April 18-22. Courses include basic vacuum technology, controlling contamination in vacuum systems, vacuum system design, gas flow in vacuum systems, cryopump technology, total pressure gauging techniques, material microcharacterization, partial pressure analyzers, vacuum leak detection, safety concerns in using vacuum equipment, surface preparation for thin film deposition, and vacuum sealing and joining techniques. Leonard Beavis (2566), Chuck Peebles (ret.), and Woody Weed (2471) are among the short course instructors. Registration is required. For information concerning course content and prerequisites, contact Woody on 845-9267. For registration information, call the AVS/NM Short Course Registrar on 271-9216.



ULTIMATE FRISBEE — Randy Saunders (1815, left) and Charlie Hanley (6904) practice their skills in Ultimate Frisbee, a seven-member team sport, during a recent lunch break. The Sandia Ultimate Frisbee group has begun practicing and playing pick-up games. It is looking for more members. The group meets every Monday, Wednesday, and Friday at 11:30 a.m. at Pershing Park, across the street from the Coronado Club, and Fridays after work. For more information, call Gary Bailey on 281-4383. (Photo by Mark Poulsen)