

Spongy new aerogels shrink, spring back to form

After 60 years, novelty materials may find some intriguing new uses

By John German

Lab News Staff

What do you do with a material that's almost as light as air, that's nearly transparent, that's a far better insulator than fiberglass, and that can support more than a thousand times its own weight?

Scientists can think of hundreds of uses for the world's lightest solids, known as aerogels, which derive their near-weightlessness from their minimalistic content. Some aerogels, containing as much as 99.9 percent air with a dash of silicon, are little more than whipped glass.

Over the years researchers have speculated that the phantom-like materials could be used as lightweight components in spacecraft, as building materials on a space station, in sensors to detect chemical warfare agents, or as super-insulation between window panes.

Overcoming old hurdles

But despite their intriguing properties, the wispy chunks of nothingness haven't amounted to much commercially in the six-plus decades since their invention.

Conventional production methods rely on soaking the aerogels with hazardous solvents, then subjecting them to high temperatures and pressures in an autoclave, explains Jeff Brinker of Ceramic Synthesis and Inorganic Chemistry Dept. 1846.

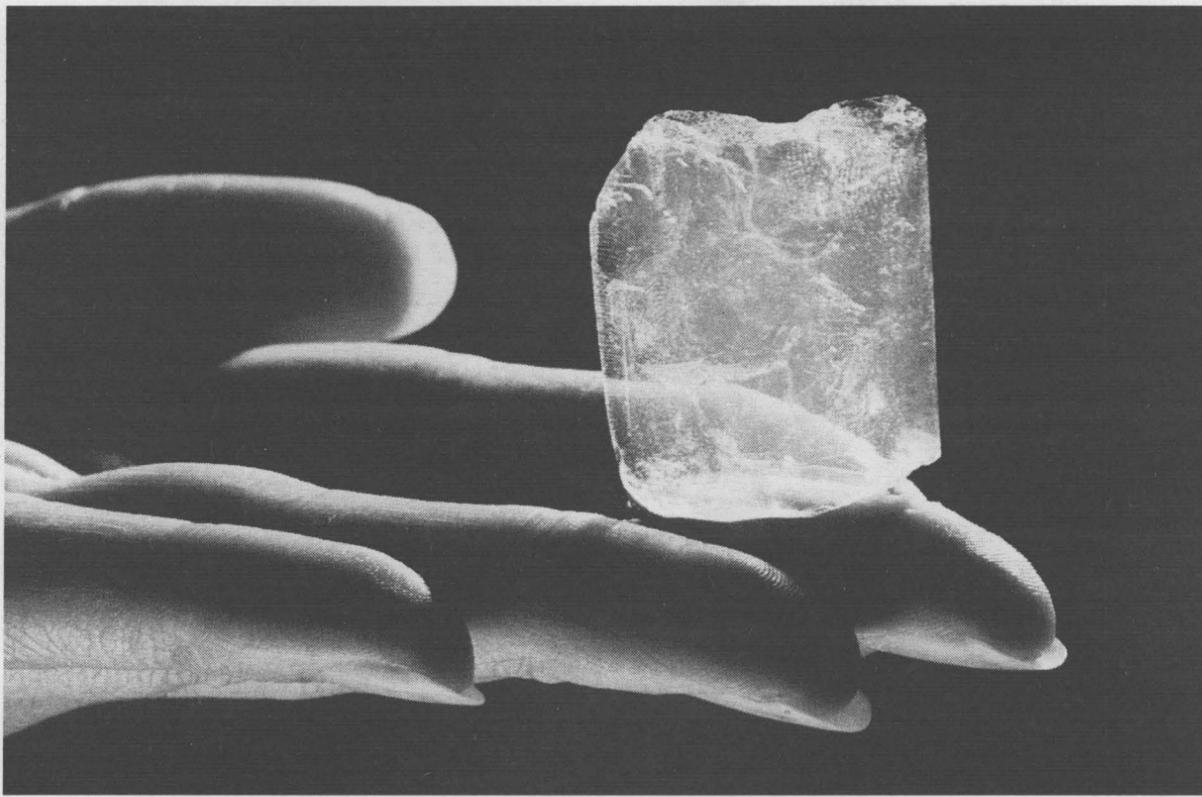
"It's an impractical process," he says. "It's hazardous, it's expensive, and it necessitates

batch rather than continuous processing. It's not very amenable to manufacturing."

Recently a group of New Mexico researchers — Jeff, Al Hurd of Ceramic Processing Science Dept. 1841, and University of New Mexico students Sai Prakash and

Sudeep Rao — reported they had overcome some of the 60-year-old hurdles preventing widespread use of aerogels.

Their discovery makes it possible to produce aerogels at room temperature and pressure, (Continued on page 4)



PHANTOM-LIKE aerogels, some containing as much as 99.9 percent air, are little more than whipped glass. Yet scientists and manufacturers hope to use the lightweight, high-strength, near-transparent materials on satellites, between window panes, and in sensors that detect deadly gases. (Photo by Randy Montoya)

Mentorship program sows seeds of cross-divisional cooperation

By Mary Hatheway

Lab News Intern

Bill Moffatt isn't trying to save the world through the work he does at Sandia, but he is trying to make it a better place.

As part of a new mentorship program being piloted at the Labs, Bill, a ceramist in Ceramic Processing Science Dept. 1841, has had the opportunity to work with veteran weapons scientist Dave Nokes on nuclear nonproliferation in the former Soviet Union. Dave is Manager of Cooperative Measures Program Office 5091.

Bill says the program has enabled him to combine his technical training with his interest in policy-making, and to help his children. "Technical work isn't all I've done in this program," he says. "The mentorship program has allowed me to use my technical training and to learn about nonproliferation on the job. I can go to bed at night feeling like I've done something positive for my world and for my children's future."

About growing up as professionals

So far, Bill's mentorship seems to be an embodiment of the type of experience the program's founder, Bert Westwood, Vice President of Research and Exploratory Technology Div. 1000, envisioned. Bert says the program's focus should not be restricted to its impact on the participating organizations. He encourages participants to consider the moral consequences of their work and the human value issues that he says are often left out of the world of science.

Through the Defense Programs (DP) Mentorship Program, he hopes participants will move beyond technical contributions to

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Sandia Sandia National Laboratories

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Employees are using EAP program again after 'significant' changes

System that had deterred some from seeking help revamped

By Kathy Kuhlmann

Media Relations Dept. 12621

Two years ago there was growing worry among the work force that seeking help from Sandia's Employee Assistance Program (EAP) for emotional or substance abuse problems could jeopardize an employee's DOE security clearance, particularly when the periodic reinvestigation rolled around.

And losing a clearance has always been seen as tantamount to losing your Sandia job.

As a result, by early 1993 participation in EAP dropped dramatically to an all-time low of two percent of the employee body. A special survey of employees revealed that 42 percent of the respondents said they wouldn't use EAP

because they feared losing or jeopardizing their DOE clearance.

That acknowledged lack of faith in "the system," some hard work by a number of directly affected employees, and a determination by EAP and DOE security officials to change things have led to what Linda Duffy, Manager of the Health Promotion and Employee Assistance Program, calls "significant improvements in the system."

"News of many of the success stories — people who have been to EAP, been through a DOE clearance reinvestigation, and kept their clearances — is getting out," she says. "Our participation rate is back up to where it should be — about six percent of the work force, which is

(Continued on page 6)



3 California community leaders play round of 'green' prosperity games

9 Hundreds of Sandia daughters visit parents' offices and labs

This & That

Art's different dream - Most folks anticipating retirement dream about spending lots more time on the golf course or at their favorite fishing hole. Others have different dreams - Sandia retiree Arthur Ahr, for example. I learned recently that Art's dream came true about a year ago when he earned his law degree at age 62 from the University of New Mexico Law School. He received his Juris Doctorate degree last May and was granted his license to practice law in October. And did he do it to get rich? Nope. Art volunteers legal services to the elderly. He says becoming a lawyer was his dream since high school, but raising three children and working full time for 30 years at Sandia didn't allow him to go for it until he and his wife Patricia retired from Sandia in 1991. Art worked for various Sandia departments, including Applications Systems Development and Support, which he also supervised.

* * *

Your help needed, please - As mentioned previously in this column, I'm on a several-month special assignment to study how Sandia might communicate news and other info to employees faster, more effectively, and maybe even at less cost. I'll be sending out a survey soon to some employees to get your opinions and ideas in this area. Although recipients will be selected randomly, I'd be glad to send a survey to other folks who want to participate. Completing the survey should take no more than 15 minutes. If you want to participate, please let me know. Send your name and mail stop to me (Larry Perrine) at MS 0129 or via e-mail.

* * *

Ken not even close - As reported in the last issue, Ken Davis (2172) thought he might have the Sandia record for most supervisors in a short time - five in his first 16 months at the Labs and seven in his 5-1/2 years here. Sorry Ken, but relative newcomer Peter Swift (at Sandia about 19 months) claims the record - seven supervisors in a period of 10 months, from June 1, 1994, through March 30 of this year. Peter gave me the details in a note, but I won't relate them all here. It was a strange set of events though, involving several moves on his part and several managers/directors and acting managers/directors being moved around him, all in Division 6000. I enjoyed the way he signed off at the bottom of his note: "Peter Swift, 6707 (I think)."

* * *

A wrap on cheep shots - Twice in recent issues, I've discussed the idea of testing the ability of aircraft windshields to withstand bird impacts by "shooting" dead chickens at them. Although we've determined now that Sandia probably never actually did this, several folks called or sent messages confirming that this is a fairly standard industry practice. George Libman (11500) even sent a copy of the first page of an old patent for a "chicken gun," and James Finch (5501) sent a message telling me that the standard integrity test for an aircraft windshield is a four-pound chicken at 350 knots. My overriding thought is that I'm glad my job isn't cleaning up the lab after those tests.

* * *

Strange brew - A Sandian sent me a business card for a bar in Atlanta that supports the notion that everybody's got a gimmick today. Underneath the bar's name on the card is this slogan: "Hard Liquor & Health Food." Go figure.
- Larry Perrine (845-8511, MS 0129)

DOE announces a major downsizing

DOE Secretary Hazel O'Leary last week announced a major downsizing of DOE that will cut the number of DOE employees by 3,788 (27 percent), including 2,338 at DOE headquarters, and close 24 offices. She said the "strategic alignment and downsizing initiative" would yield \$1.7 billion over five years toward reduction of the federal deficit.

"Today, we take a historic step in restructuring the Department of Energy for its vital post-Cold War missions," she said in her May 3 announcement. "Our downsizing and alignment commitments will enable us to do our work better and at lower cost."

She said the reduction in employment at headquarters would be accomplished by merging programs, creating "matrix" management structures, moving work to the field, and cutting unnecessary work. The field office staff would be reduced by 1,450.

Contractors to downsize too

None of the offices to be closed is directly associated with Sandia responsibilities. But the cuts in field office staff, DOE said, would involve reductions across the field complex as well as closings and consolidations of specific offices.

"Regarding contractor employees at the Department's laboratories," the DOE statement said, "we are setting a goal of a 10 percent reduction over the next five years, which would result in a cut of approximately 5,900 employees from a FY 1994 workforce base of approximately 59,000. This reduction would be facilitated through reform of the Department's oversight procedures of the labs - enabling the labs to eliminate employees and streamline internal systems of operations. Some workforce reductions at the labs also will be the direct result of cuts in programmatic funding." The statement added that mission activities would be preserved by reducing overhead costs.

Plan for labs in works

DOE said details of reductions in employment levels at its national labs will be developed through implementing the recommendations of the Galvin report on alternative futures of the national laboratories. It said a plan would be released with DOE's FY 1997 budget.

Nevertheless, Sandia officials say it's too early to know specifically how the DOE downsizing will affect Sandia. "We don't know the impact on Sandia," says Paul Robinson, VP for Laboratory Development 4000. "But certainly the recommendations by the Galvin report about downsizing government oversight seem to have been taken very seriously."

He also said he is sure that DOE will expect the national labs to follow suit by likewise reducing costs and employment levels and achieving greater efficiencies. He notes that Sandia has been doing just that. "I think we are probably vectored in the right direction," Paul says.
- Ken Frazier

Fun & Games

Tennis - A Memorial Day Tennis Tournament is scheduled for May 27-29 at the Coronado Club tennis courts. Events include men's and women's singles and doubles and mixed doubles. Gift certificates and other prizes will be presented to winners and runners-up. SERP and Coronado Club members and military personnel are invited to participate. Consolation matches for first-round losers will be played. Participants' guests may play doubles. Entry deadline is Monday, May 22. For more information and entry forms, contact the SERP office on 844-8486.

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Web hot sites

The "Sandia Only" homepage - For Sandia Web users who don't have access to the internal restricted networks, or for Sandians with dial-in access only, Sandia's Web experts have created an external Web site (<http://www.sandia.gov/SandiaOnly/>) that allows access to Sandia-registered computers only. Find *Heads Up!*, the *Weekly Bulletin*, Web use statistics, and more.

Other DOE labs - Find out what Sandia's sister labs are doing at <http://www.lanl.gov/> or <http://www.llnl.gov/>, or by following links from Sandia's external Web access page. Lawrence Livermore also publishes a useful resource, LLNL's List of Lists (<http://www.llnl.gov/llnl/lists/>), which provides links to various technical societies, field-specific technical information, technical publications, government budget tables, grants and contracts info, and an on-line periodic table of the elements.

Web Hot Sites can be practical, educational, even a little fun, as long as they pertain in some way to Sandia work. To submit your favorite Web site, send e-mail to John German (jdgerma@sandia.gov), or call 844-5199. Make sure to include an accurate http address for each submission.

'Prosperity games' exercise seeks green solutions

Sandia, Silicon Valley explore environmental enterprise

By Nancy Garcia

California Reporter

A Northern California town declining after a military base closure is the proposed site of a demonstration landfill/sewer project that recycles, composts, or converts 75 percent of the waste in an environmentally acceptable and technically advanced fashion. Impatient investors want to site the project near an estuary and luxury golf course, or else in a foreign country. Local environmentalists are divided on the proposal.

An east Oakland company is negotiating for permits to build a "green factory" to produce pollution-free batteries for electric cars mandated by the California Air Resources Board, although the company is also discussing placing the plant across the border in Mexico.

Other companies want to capture and destroy volatile organic compounds at oil refineries, or clean up contaminated soil using new technologies.

For three days in San Ramon, Calif., about 100 community leaders working with Labs employees recently tackled scenarios such as these in a Sandia-designed "Environmental Prosperity Game."

Most complex so far

The exercise, a fast-paced microcosm of real-life development issues, uses a format similar to move-countermove and seminar war games. Sandia has previously applied that format to Prosperity Games focusing on global competition in the electronics industry (*Lab News*, April 1, 1994). This was the first major Prosperity Game to address environmental business competition.

Sandia California News



CALIFORNIA EDUCATION CHIEF— California State Superintendent of Public Instruction Delaine Eastin visited Sandia/California recently for a tour and briefings on Sandia's education outreach programs and technical capabilities. During a stop at the Integrated Manufacturing Technologies Lab she got a lesson on "surfing the Internet" from Hisup Park (8205, left) as Jane Ann Lamph (12120) and Louie Tallerico (8205) watch.

(Photo by Lynda Hadley)



GOING GREEN — An Environmental Prosperity Game team playing regulators used a patio area to plot strategy and explore the feasibility of one-stop shopping for regulatory permits, a goal specific to this particular seminar-style exercise.

"It's the largest and most complex we've ever tried," says Marshall Berman, Manager of Innovative Industrial Alliances Dept. 4701, who ran the game in conjunction with a unique new environmental business incubator, the Silicon Valley Environmental Partnership. The game was also sponsored by the Alameda County Economic Development Advisory Board and Bay Area Economic Forum.

Game theory was the subject of the 1994 Nobel Prize in economics (shared among three economists), says Ted Briggs, President and Chief Executive Officer of the Silicon Valley Environmental Partnership. Briggs said he hoped the people playing their real-life roles in the game would make "something tangible" of their experience once they returned to work.

In the game, teams representing four environmental technology start-up businesses interacted with three teams representing regulators, environmentalists, and the public. Six other teams influencing the process included investors, media, suppliers, customers, legislators, and members of the legal and judicial system.

Manages conflict

In addition to handling input from other teams, entrepreneurs were dealt unanticipated setbacks or advantages along the way through chance "Kards." By the time the game ended, players had reached an imaginary year 2000. Marshall, described by some players as the "game god," determined that all four competing companies had successfully forged the agreements needed to commercialize their technologies.

More important, he said, they had explored how they could compete and win, or cooperate and reach compromise. The games,



IN CONTROL — Sandians at the control table include game director Marshall Berman, center, co-director Kevin Boyack, right, and Cheryl Mitchell, left (all 4701).

he said, "bring conflict to the surface and force players to manage it."

After the game, Marshall began analyzing the strategies that players investigated for developing a one-stop permitting process for environmental technologies. Players indicated in a closing poll that they strongly favored finding a regulatory approval process that combines requirements of national, state, and local agencies and spans different aspects of the environment, like air, water, and soil.

Staff from Sandia and Lawrence Livermore National Laboratory helped run the game, held at a training center provided by Pacific Gas and Electric Co.

Aerogels

(Continued from page 1)

thereby eliminating much of the hazards and expense associated with conventional processing methods. The new technique, published in the March 30, 1995, issue of the journal *Nature*, won one of nine DOE Basic Energy Sciences Awards for 1994 (*Lab News*, Jan. 6, 1995).

"The potential for aerogels is tremendous," says Jeff. "We anticipate that this new technique will greatly expand their commercial uses."

Molecular meshes

An aerogel starts out as a delicate three-dimensional framework made of clusters of molecules linked by long, unusually flexible chemical bonds. The linked clusters create a "springy" molecular mesh with thousands of vacuous pockets, or pores, filled with fluid — something like a wet sponge. The liquid molecules help support the framework and hold the clusters in place.

To produce an aerogel, the liquid molecules must be carefully removed from the mesh, leaving a dried, hardened network.

Under normal conditions, capillary pressures generated by the fluid's evaporation force the framework to collapse on itself. As the gel's interior walls are squeezed together, reactive molecules inside permanently bond, or stick to each other, leaving a compressed, semiporous gel that's a fraction of its original volume.

To avoid this "network collapse," researchers and manufacturers have subjected wet gels to supercritical conditions (high temperatures and pressures), which gasifies the liquid and allows it to be removed from the framework gently without destroying the mesh. But the supercritical technique is prohibitively expensive and hazardous, especially when volatile organic compounds such as alcohols are used as a support fluid.

Super sponges

By chemically modifying the interior surfaces of the mesh, however, the New Mexico researchers say they can create a spongy frame-

work that collapses during normal evaporation at room temperature and pressure, then springs back to its original form.

The secret, they say, is preventing the "sticky" reactive groups inside the framework from bonding to each other as they are squeezed together.

"We 'cap-off' the terminal hydroxyl groups in the mesh with nonreactive organosilanes that prevent reactive groups from bonding with each other when compressed," says Jeff. "When the pressure is released, the aerogel springs back."

The result is a dry, porous aerogel solid that can be as much as 98.5 percent air. The technique has been successful for both bulk and thin-film aerogel processing.

In fact, says Al, the team has created aerogel thin films, using a unique dip-coating method, that spring back to as much as six times their compressed volume.

And by varying certain pre-processing factors — such as dilution, aging, organic modification, heat treatment, and dip-coating conditions — the team can create an array of aerogel films with porosities as low as 10 percent and as high as 98.5 percent. That opens up a whole new range of applications, particularly in the optics and acoustics fields. (See "Lens coatings, supercapacitors, sarin sensors, and more" below.)

The Holy Grail

Perhaps the most valuable property of aerogels is their extremely high molecular surface area, says Jeff. Scientists say if you could flatten out all the interior surfaces within a one-inch cube of the stuff, they would drape a good sized parking lot.

That's particularly useful in sensors and catalysis, where a highly porous material such as aerogel can be used as a platform, or host, for other molecules.

"Implanting something in aerogel is as close as you can get to suspending it in air," he says.



SPONGY AEROFILMS — University of New Mexico graduate student Sai Prakash applies an aerogel film to a substrate using a simple dip-coating procedure. The imaging ellipsometry (laser and camera) equipment in the foreground allows film thickness and refractive index to be measured during film deposition, enabling the researchers to determine how much the aerogel's molecular structure compresses and then springs back when drying stresses are eliminated.

Aerogels also are great thermal insulators, primarily owing to their ethereal framework combined with their tiny cell size. One inch of aerogel is said to offer about the same amount of thermal insulation as 10 inches of fiberglass.

For that reason, cheap aerogels might make perfect super-insulators in refrigerators, water heaters, thermos bottles, and walls.

But the Holy Grail of aerogel applications, adds Al, is developing invisible insulation for use between window panes. Unfortunately, (Continued on next page)

Lens coatings, supercapacitors, sarin sensors, and more

Although researchers have touted hundreds of possible uses for aerogels in the 60-plus years since they were invented, the ghostly solids have remained more of a scientific novelty than anything else.

In the 1970s, aerogels were used in Cerenkov detectors for monitoring gamma and X-ray radiation, and for detecting high-energy particles emerging from collisions inside nuclear accelerators.

In more recent times, a Sandia team considered using light-emitting, tritium-loaded aerogels surrounded by solar cells as low-power, long-life batteries for deep space probes (*Lab News*, April 19, 1991). And Lawrence Livermore scientists explored aerogels as "gentle mitts" aboard satellites that could catch tiny "micrometeoroids" without destroying them.

NASA considered using the materials as lightweight thermal insulation in spacecraft.

And plasma physicists have given serious thought to using aerogels as high-tech golf tees, to hold fusion fuels in place while lasers blast them.

Jeff Brinker (1846) says recent advances in aerogel processing could reveal a whole new range of applications in optics, acoustics, electronics, and sensors.

Tuning refraction

Because the researchers can control the porosity (and thus tune the index of refraction) of aerogel films, antireflective coatings made from aerogels might help reduce distortion on optical devices such as camera lenses, eyeglasses, and laser lenses. Similarly, super-reflective coatings might enhance the reflectivity of certain mirrors.

Aerogels also make excellent sound dampers and could help reduce noise in appliances and automobiles. Aerogel coatings with

customized impedances could increase the range of ultrasonic distance-sensing devices, such as on autofocus cameras.

On integrated circuits, thin insulating layers made from aerogel films might reduce unwanted capacitance between semiconductor layers and ultimately contribute to faster and more compact computers and batteries.

And aerogels' extremely high surface areas could be exploited to create ultra-sensitive molecular recognition sensors that detect deadly warfare agents such as sarin (used in the recent terrorist attack on the Tokyo subway), or that enable stockpile weapons to continually monitor themselves for signs of aging and corrosion.

Other possible applications include gas-separation filters, catalyst hosts, and flat-panel displays.

Lockheed Martin ad campaign promotes Sandia technology

Ad has appeared in Wall Street Journal, Washington Post

Tom Cost of Los Lunas, N.M., is enjoying a healthier, more active life, thanks to his state-of-the-art implanted cardiac defibrillator.

His defibrillator owes its long life to a corrosion-resistant glass called TA-23, developed at Sandia. The new glass, used to seal the defibrillator batteries, is much more resistant to corrosion than other glasses that might come into contact with the defibrillator's special liquid electrolyte.

The "super-glass," originally developed to protect batteries in nuclear weapons, will reduce Tom's need for repeated replacement surgeries. The TA-23 glass is also being used in devices such as oil well logging instruments, spacecraft atmospheric probes, and portable Army communications equipment. (See July 28, 1989, *Lab News* story, "Sandia's novel glasses used many ways.")

A series of full-size Lockheed Martin newspaper and newsmagazine advertisements (like the one reproduced here) touting this DOE-funded Sandia-developed technology has begun appearing in national publications, including the May 1 *Wall Street Journal* (Washington, D.C. edition) and May 9 *Washington Post*. The ad will be seen many more times between now and August.

Publishing these ads is part of Lockheed Martin's involvement in a



This defibrillator is just one application of TA-23 super-glass technology. Batteries sealed with this corrosion resistant, sure-sealing glass are also used in a variety of other devices, from oil well logging instruments and spacecraft atmospheric probes to portable Army communications equipment.

campaign to raise Congressional awareness of the direct benefits the public receives from DOE scientific research. Jerry Langheim, Director of Public Relations & Communications Center 12600, who has oversight of the Lockheed Martin program, described the campaign before Energy Secretary Hazel O'Leary and contractor CEOs during a recent meeting at DOE headquarters.

A second ad will feature ion implantation for artificial hip joints, the result of DOE-funded research at Oak Ridge National Laboratory, also managed by Lockheed Martin. In addition, Sandia technology will continue to be featured in a new monthly DOE newsletter, *Science in the National Interest*.

The Sandia ad will appear (often in full color) in other publications, generally in three consecutive issues: *The Washington Times*, *The Hill*, *Congressional Quarterly*, the Washington editions of *Fortune*, *Time*, *US News*, *Newsweek*, and *Business Week*, as well as in the *National Journal*, *National Review*, *The New Republic*, and *Civilization*. For specific publication dates, call Tammy Locke (*Lab News*) on 844-1860.

Nigel Hey, project manager of Media & Employee Communications (12620), located Tom through Albuquerque cardiologist Dr. Charles Karaian and coordinated the advertising copy with the battery manufacturer Wilson Greatbatch and the Gray Kirk VanSant advertising agency. — Tammy Locke

Tom Cost Has A Vital American Resource Implanted In His Chest.



Tom Cost is living better thanks to space-age glass developed at the Department of Energy's Sandia National Laboratories in Albuquerque, New Mexico. ♦ Like many Americans, Tom needs a defibrillator to control his heartbeat. But the materials used to seal its batteries could corrode in the presence of the defibrillator's special liquid electrolyte. Within a few months, a replacement would be required. ♦ Fortunately, Tom's defibrillator is sealed with TA-23, a corrosion resistant super-glass originally developed at Sandia to protect batteries in nuclear

weapons. Without the ordeal of repeated expensive replacement surgeries, Tom can enjoy a healthier, more active life. ♦ It is broadly applicable innovations like TA-23 glass that demonstrate the value of basic research conducted at Sandia and other national labs. As the manager of Sandia, as well as Oak Ridge National Laboratories and Idaho National Engineering Laboratory, Lockheed Martin is proud to support this important work. ♦ Our national laboratories are a vital resource that provide "Science in the National Interest." Just ask Tom Cost.

LOCKHEED MARTIN

Letting The Future In

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even the clearest aerogels are still a bit murky.

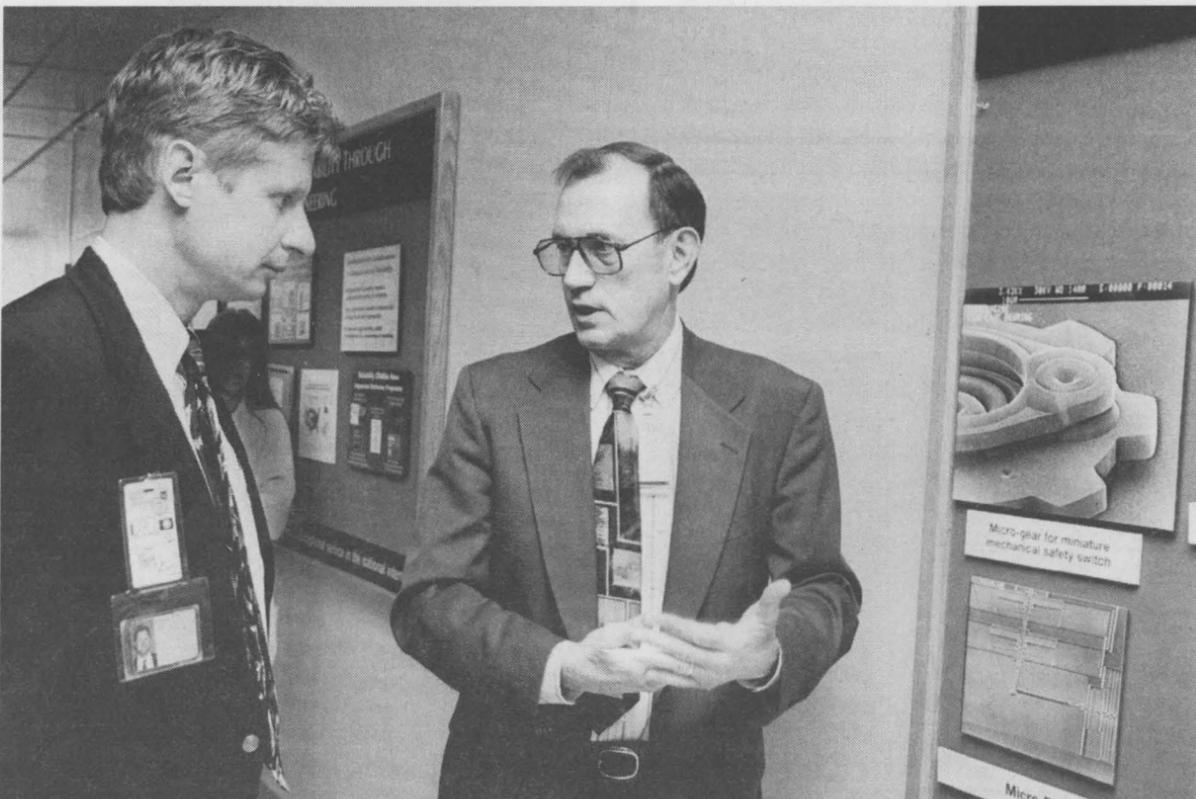
"Creating a truly invisible aerogel would open up a whole new commercial market," he says. "The new technique stands a much better chance of meeting the needed optical properties, but there's still a long way to go."

Doug Smith, a UNM chemical engineering professor, is now starting a venture company to see how cheaply aerogels can be made employing the spring-back method. The team has filed patent paperwork for both the thin-film and bulk processing methods.

"We are starting to see how cheaply aerogels can be made," says Jeff. "We think the new techniques could have a significant commercial impact."

Take Note

The Muscular Dystrophy Association needs volunteer counselors to attend its annual summer camp for children with neuromuscular diseases June 4-10 in Taos. Each volunteer teams up with a camper to enjoy outdoor sports, arts and crafts, dances, and more. Meals, room, and transportation from Albuquerque are provided. For a volunteer application, call the MDA office on 828-1331. Counselors must be at least 18.



BRIEFING FOR THE GOVERNOR — Paul Peery, Director of Microelectronics and Photonics Core Competency Center 1300, describes the workings of a micro engine and other Sandia projects to Gov. Gary Johnson during a tour of the Microelectronics Development Laboratory. Johnson's first official visit to Sandia as governor also included overviews of defense and energy and environment programs and a tour and overview of the Medical Isotopes Initiative. He also had a discussion period with President Al Narath, Executive VP Jim Tegnelia, and other DOE and Sandia executives.

EAP program

(Continued from page 1)

within the national range for utilization rates for employee assistance programs."

At issue were the seemingly opposing goals of EAP and the DOE Safeguards and Security Program. The purpose of EAP is to help employees deal with personal problems that may affect their health, family life, or job performance.

DOE's personnel clearance procedure, on the other hand, is designed to assure that national security is protected by determining an individual's eligibility for DOE access

authorization. An individual with an emotional or substance abuse problem could be deemed a risk in a secure or classified environment.

For example, in the past, if it was revealed through the reinvestigation program that an employee had used illegal substances, his or her clearance would be suspended while the case went through a lengthy administrative review process. If at the end of the review period the clearance was revoked, it was the policy of Sandia to terminate the employee.

Previously few allowances

An employee's case may be placed in administrative review if there is a substantial doubt concerning his or her eligibility for a security clearance as described in DOE regulation 10 CFR, Part 710. This means that DOE has made a determination that the person may not be a good candidate for a clearance; the individual is afforded due process procedures. The individual has the right to present the case to a hearing officer and address any questions

"... employees were reluctant to get help for personal problems if they thought they may lose their clearance and then their job."

concerning eligibility for access authorization.

Linda says the previous policy of DOE made few allowances for an employee's efforts to seek assistance. "As a result," she says, "employees were reluctant to get help for personal problems if they thought they may lose their clearance and then their job."

In the early 1990s, a group of Sandians found themselves in a predicament because of their involvement in EAP: their clearances had been suspended, their cases were pending in administrative review, and they faced probable termination from Sandia. The group organized and brought its concerns to Sandia management, DOE, the General Accounting Office, and members of Congress.

Their efforts contributed to changes in both processes — at Sandia and DOE.

Sandia, DOE revised policies

Sandia revised its policy in June 1993 to make provisions for an employee with a revoked clearance to stay on the job. Today if an employee has a problem that could jeopardize his or her clearance, he or she must follow any recommended treatment program, must demonstrate rehabilitation, and must cooperate fully with management in consideration for an exception. The employee has to have a proven history of good job performance and be someone Sandia believes will continue to do a good job. There also needs to be uncleared work available for which the person is qualified. If all of these criteria are met, an employee may be considered for an exception to the policy and for continued employment at Sandia.

Close on the heels of this Sandia policy change was implementation of DOE's Employee Assistance Program Referral Option (EAPRO) program. It provides job applicants and cleared individuals who have a substance abuse problem an opportunity to enter and complete a rehabilitation program in lieu of having their clearances suspended and being subject to DOE administrative review.

According to Dave Fredrickson, director of the Personnel Security Division at DOE's Albuquerque office, the program was developed in cooperation with EAP professionals, consultant psychiatrists, and DOE security policy managers. Dave says the program "is an incentive for federal and contractor employees to seek professional assistance for treatment of substance abuse problems without fearing what effect it could have on their clearance eligibility."

EAPRO was designed to meet DOE requirements proving rehabilitation. These requirements include monthly, documented drug testing and participation in a treatment program deemed appropriate by an EAP coordinator. If an individual is eligible and chooses to participate in EAPRO, the clearance will not be suspended. However, if treatment is not successfully completed, the clearance may be terminated or administrative procedures may be initiated.

Feedback to DOE since the program began, from both participants and EAP practitioners, has been very positive. Christine McWhorter of DOE's Personnel Security Division, Security and Administrative Branch, in Albuquerque, and a key player in the development of EAPRO, says that so far 37 people have entered the program nationwide. Many of them have met the requirements of the program, resolved their substance abuse problems, retained their clearances, and continued their jobs, she says.

No penalties for seeking help

Christine says EAPRO "has proved to be a very successful program that is being utilized to its fullest. Its impact on the number of cases being processed under administrative review procedures has been significant in that the number of individuals in EAPRO has increased

Eligibility to participate in EAPRO

Those eligible to participate in EAPRO are individuals who, at the time of the personnel security interview are no longer using illegal drugs or alcohol, or abusing legal drugs, but sufficient time (at least one year) has not elapsed to demonstrate adequate evidence of rehabilitation or reformation. If a person tests positive for illegal drug use during a random test, he or she is not eligible to participate in EAPRO and the case is continued under provisions of the administrative review process.

to the point that we now have more individuals in EAPRO than are in administrative review."

"Under the new system, employees won't be penalized for seeking help," says Lynn Smoles, former EAP coordinator at Sandia. "Coming to EAP shows reliability and good judgment. It shows that the person is doing everything possible to solve the problem." Lynn emphasizes that it is essential that the employee provide complete and truthful answers to inquiries made during an investigation or reinvestigation. EAP staff may not discuss an employee's participation in its programs without the staff member's written consent.

EAPRO is also a confidential program, and disclosure of information related to the program is protected by the Freedom of Information and Privacy Act.

'Turned everything around'

Dwight Jennison (1114), an 18-year Sandia employee, was one of the people who directed the effort of Sandia employees to reform the system. "Sandia has always taken an ethical position with regard to employee health," he says. "The changes instituted by both Sandia and DOE have really turned everything around. Now people feel that if they need help they can get it and still keep their jobs.

"Often people feel shame at asking for help for an emotional or substance problem," says Dwight. "Yet, national statistics show that a substantial fraction of adults would benefit from assistance at some point in their lives. For example, roughly 10 percent will have a problem with alcohol and perhaps 20 to 30 percent will suffer depression that can effectively be treated with drugs. Often family histories suggest a genetic link. This is nothing to be ashamed of, anymore than is the color of your hair."

"EAPRO allows security interests and health care interests to course along the same path," says Larry Clevenger, Director of the Benefits and Medical Services Center 3300. "The resolution of concerns that existed in the past has allowed EAP to become a very useful and frequently tapped resource for employees."

Take Note

Retiring and not seen in *Lab News* pictures: Arlene Dyckes (2200), 19 years; Frank Padilla (7812), 27 years; and Wynn Patton (5912), 29 years. ***

Albuquerque's Rio Grande High School Class of 1970 is looking for classmates for its 25-year reunion this summer. Please contact Chris Baca Haskins on 821-7969 or Phyllis Padilla Owens (3030) on 836-7802. ***

Albuquerque High School graduates from the class of 1970 will hold their 25-year reunion August 5-6. Contact Dolores Kaehr on 898-9733 for more information.

Of those seeking EAP assistance:

Emotional health issues	32%
Marital or couple counseling	23%
Family	13%
Alcohol	3%
Drugs	1%

Based on 1994 data

RATTLESNAKE AWARENESS

ORG: 7800

SCHEDULE

- 1:00 - OPENING
- 1:15 - RATTLESNAKE PRESENTATION
- 2:45 - HANTAVIRUS
- 3:30 - BEE STINGS & INSECT BITES

PRESENTED BY: **AREA SAFETY REPS**

PLACE: TTC

DATE: WED, MAY 17

TIME: 1:00 - 4:30

DOOR PRIZES!

DP mentoring

(Continued from page 1)

become strategic thinkers and citizen leaders who will set their sights on making real and significant contributions to Sandia and society.

"This is about growing up as professionals," Bert says. "We have to dedicate our creativity to improving the quality of life of all Americans, as well as our military and economic security."

Under the program, researchers and department managers in Div. 1000 work with DP line and program managers on projects within the DP sector, says Jim Asay (5602), one of the mentorship program managers. The goals of the program are to encourage stronger research ties between the two divisions and to use the collective scientific knowledge base of Div. 1000 to help solve the complex technical problems of the Defense Programs sector.

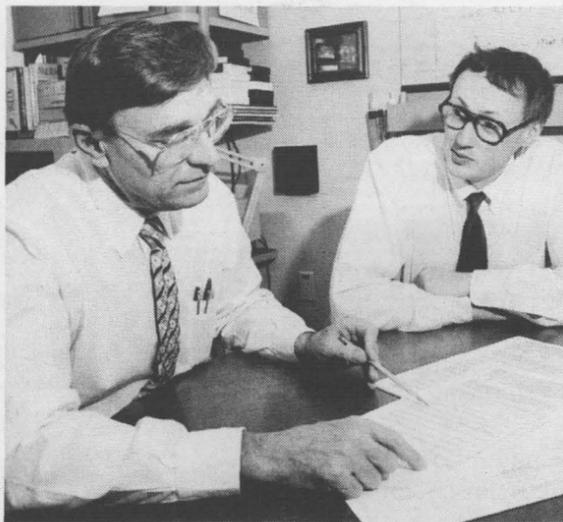
Mentors and their "protégés" plan to meet on a regular basis for at least one year. Protégés devote between 10-20 percent of their time to working on identified program activities.

"We think the mentorship program will strengthen the ties between the DP sector and the research staff," he says. "It's a great opportunity for cross-fertilization between the two."

Growing together

For instance, Bill and Dave's work has focused on developing contracts to help provide work for the nearly 2,000 Russians with critical nuclear weapons design skills, many working at Russian nuclear weapons laboratories like Chelyabinsk-70, Arzamas-16, and the Institute of Automatics.

The aim of the contracts is preventing



DAVE NOKES (5091), left, and Bill Moffatt (1841) discuss operating costs for the work they do through the Cooperative Measures Program Office. Dave and Bill are two of 23 individuals piloting a new mentorship program designed to strengthen the ties between the DP sector and the research staff in Research and Exploratory Technology Div. 1000.

nuclear proliferation by providing non-weapons-related work to the Soviet scientists, keeping them employed and using their skills to benefit the Russian economy.

Dave says that since Bill began working with him, he has seen how the mentorship program is benefitting his office. "Bill is a full participant in the Cooperative Measures Program Office," Dave says. "He's learning how we do business, but he is also approaching things from a different viewpoint, injecting proposals and new ideas. He's been a leader in looking for natural partnerships between our organizations and linking them together."

Don Wayne (1516) sees the mentorship

program as an opportunity for personal growth for both the mentors and their protégés and believes that committing to the program entails an understanding that the mentors also have something to gain from the protégés.

Indeed, Don's mentor, Don Bohrer (5303), became involved with the program because he wanted to create closer ties between the research and the stockpile management communities at Sandia, and he sees the mentorship program as an effective way to accomplish this objective.

"Don (Bohrer) was my first mentor at Sandia," says Don. "He taught me that if you stick your big toe in, you become the project manager. That's how he let you grow. And I'm still growing, expanding my horizons and, I hope, expanding Don's horizons, too."

The DP mentorship pilot program will run for six months, and, assuming successful interactions, will then be expanded to include more mentorship pairs and perhaps other organizations throughout Sandia, says Kay Hays (5606), the other mentorship program manager. California Laboratory Div. 8000 also is participating in evaluating the pilot phase of the program.

Editor's note: A separate mentorship program, the Corporate Mentoring Program, kicked off in pilot form on April 10 and will be covered in a future Lab News issue.

Sympathy

To Isabel Castillo (13421) on the death of her father in Albuquerque, April 7.

To Lee Owen (13412) on the death of his father in Albuquerque, April 19.

To Paul Plomp (2483) on the death of his father in Denver, May 4.

Tech Library open house May 19 will introduce Horizon system

Sandia's Technical Library (Bldg. 804) in New Mexico will introduce Horizon — its new automated client-server library system that replaces DOBIS — along with other new electronic resources on Friday, May 19, 9 a.m.-4 p.m. (This date was changed from the May 11 date announced in the May 1 *Weekly Bulletin*.)

Horizon allows Sandians, from their PCs or Macs, to search for books, periodicals, technical reports, videos, and maps. It provides more ways to look for information in the Library database and allows users to save lists of items into a file and then sort these items by title, author, or publication date. More Horizon capabilities will be added eventually.

Open house visitors will see demonstrations of Horizon's capabilities and learn how to connect Horizon to their PCs or Macs. They will also see demonstrations of other Library additions and electronic resources such as its new World Wide Web homepage, Official Airline Guide, databases, and encyclopedias on CD-ROM.

Training classes for Horizon will be held May 8-29. To enroll, call Connie Souza on 845-8187 or Sharon Gorman on 845-8287 (both in 13415).

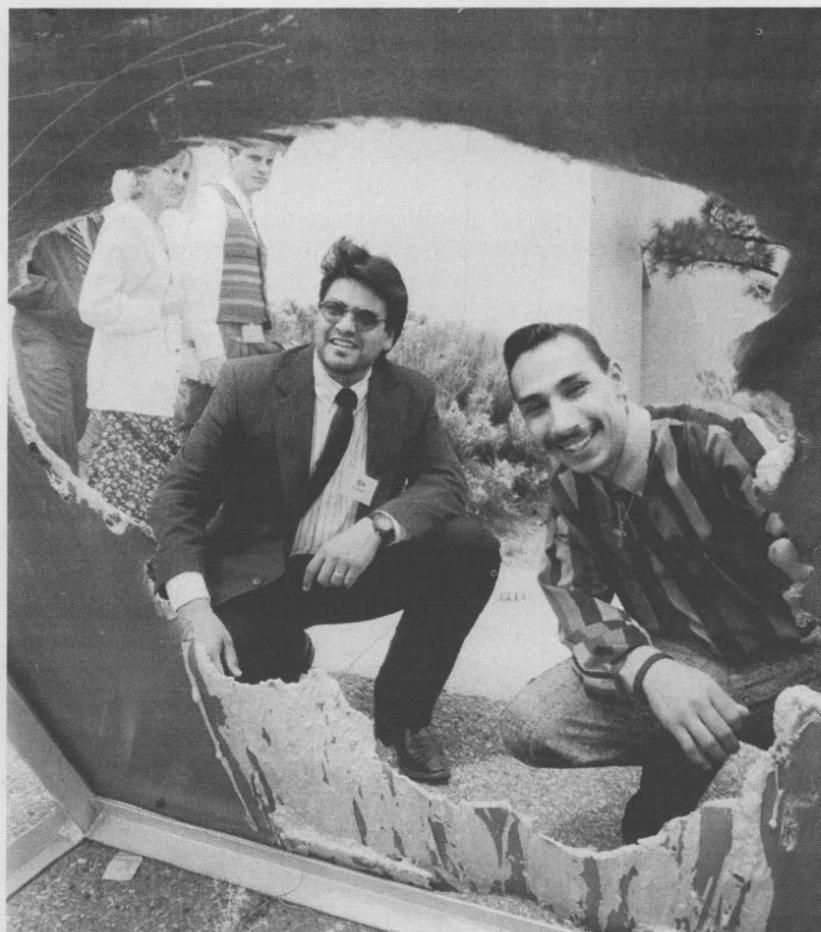
The Technical Library is located in Tech Area 1, Bldg. 804, behind Bldg. 802. Refreshments will be served at the open house. For more information, call Mary Compton (13415) on 845-9268.

Narath dialogue sessions to focus on impact of Congress' actions

All Sandians are invited to attend Sandia President Al Narath's upcoming quarterly employee dialogue sessions. He will speak about the potential impact of current and anticipated Congressional actions on Sandia. Questions can be about any Sandia-related subject.

In New Mexico, sessions will be held Thursday, May 18, at 10 a.m. in the BDM Building and at 1:30 and 3 p.m. in the Technology Transfer Center (Bldg. 825). Employees located off-site should attend the morning session at BDM. On-site employees with last names beginning A-M should attend the 1:30 p.m. session; those with last names N-Z, the 3 p.m. session.

In California, two sessions will be held Tuesday, May 23, in the Sandia/California auditorium (Bldg. 904). Employees with last names beginning A-M should attend the session beginning at 8:30 a.m., N-Z the session at 10 a.m.



THUNDERBIRD AWARD WINNERS HONORED — Thunderbird Award winner Mike Baca (right), and his mentor Ron Romero, a School on Wheels counselor, inspect the power of solar energy at Sandia's solar tower. Lockheed Martin sponsors Thunderbird Awards of \$1,000 per student, presented April 20, to 16 seniors, one from each Albuquerque public high school, including alternative high schools. The awards, presented by Jerry Langheim, Director of Public Relations & Communications Center 12600, and Charlie Emery, Vice President of Human Resources Division 3000, honor students who have turned their lives around by overcoming major obstacles in their lives. Award recipients maintain high grade point averages and plan to continue their educations after high school. This year's luncheon and solar tower tour for winners, their parents, and mentors was organized by Mariann Johnston and Redd Eakin (both 12671).

(Photo by Randy Montoya)

Sandia-sponsored Science Bowl team finishes fourth in nation

Four students from Armand Hammer United World College in Montezuma, N.M., sponsored by Sandia, finished fourth out of 55 teams in DOE's fifth annual National Science Bowl, April 30-May 1 in Washington. "The students were ecstatic, having achieved a place in the nationals," says Dominique Foley Wilson of Education Outreach K-12 Dept. 3613, coordinator of the Sandia-sponsored team.

The Armand Hammer United World College (which despite its name is a high school — it uses British terminology in calling high school "college") sent four students and a coach to the national competition, where the team participated in 11 matches. The high school's achievement was especially remarkable because three-fourths of the team learned English as their second language — 70 countries are represented by the 200 students at Armand Hammer. Also, the team alternate could not attend, forcing the four-person team to carry the whole load for all 11 matches.

The team toured Washington. One highlight was a White House tour arranged by New Mexico Senator Pete Domenici, and Dominique says "they were enthralled."

Sandia-sponsored teams have participated in the National Science Bowl every year since the competition began and have always placed among the top ten teams. The national and local Science Bowls are sponsored by DOE and Cray Research Foundation. The regional sponsors are Cray Research Inc. and Harcourt Brace publishers.

Dominique says "DOE did a spectacular job on logistics" and praised "the magnitude of its effort." Besides organizing the contest, DOE arranged tours and a picnic for nearly 400 students, coaches, and coordinators.

The Sandia-sponsored team and the other winners were honored at a luncheon featuring keynote speaker DOE Secretary Hazel O'Leary.

Albuquerque's La Cueva High School team, sponsored by Los Alamos National Laboratory, also participated in the national competition, and although the members didn't make it to the final rounds, they gave their support to the Armand Hammer team.

Sandia in the News

This is a periodic column listing a selection of recent print and broadcast news reports about Sandia. It is provided by Media Relations Dept. 12621 to give Sandians a sense of what is being said about Labs work in national and international media.

U.S. News & World Report reported on the work many underpaid Russian nuclear weapons experts are doing for other countries. Russia's work with Sandia, Los Alamos, and Argonne national labs in tightening the security of nuclear materials was mentioned.

Smithsonian magazine ran an extensive article on the gridlock over nuclear waste disposal, mentioning Yucca Mountain, Ward Valley, and the Waste Isolation Pilot Plant (WIPP). Wendell Weart (6303), chief scientist for WIPP, was quoted. ABC-TV News also interviewed Wendell about various issues surrounding WIPP.

The Washington Post reported on technological solutions to terrorism, in particular the development of electronic devices to detect bombs. Dennis Miyoshi (5800) was quoted on Sandia's explosive detection work.

Stories about Sandia's smart gun and its developer Doug Weiss (2314) are popping up all over. A report was on CBS radio's "The Osgood Files," which reaches 11.6 million listeners. *Associated Press* ran an article that's been picked up by papers with a combined circulation of 4.3 million. Doug's also done phone interviews and radio talk shows with stations in Miami, Detroit, New York City, Minneapolis, and London. News radio icon Paul Harvey also reported on the work —Kathy Kuhlmann (12621)

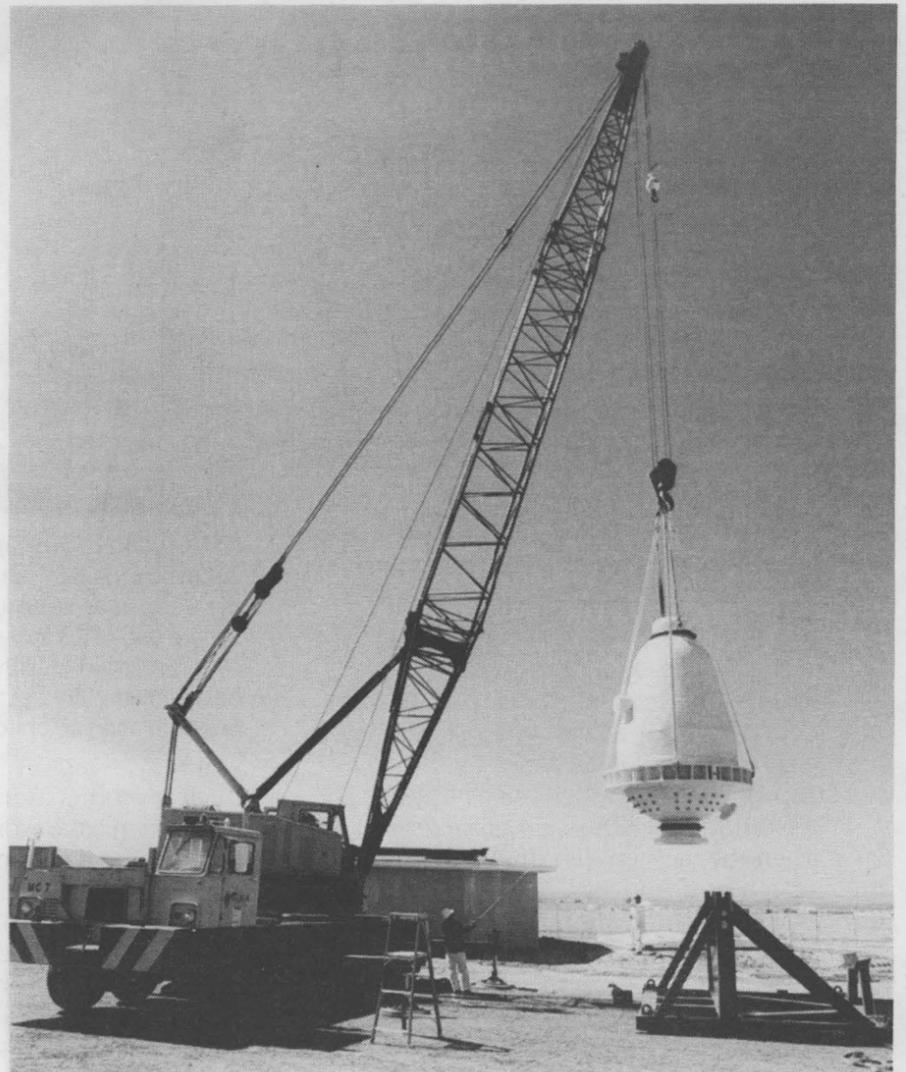
Annual retiree picnic is May 25

Retirees and their spouses are invited to the 32nd annual retiree get-together and 25th picnic on Thursday, May 25, 4-7 p.m., at the Coronado Club.

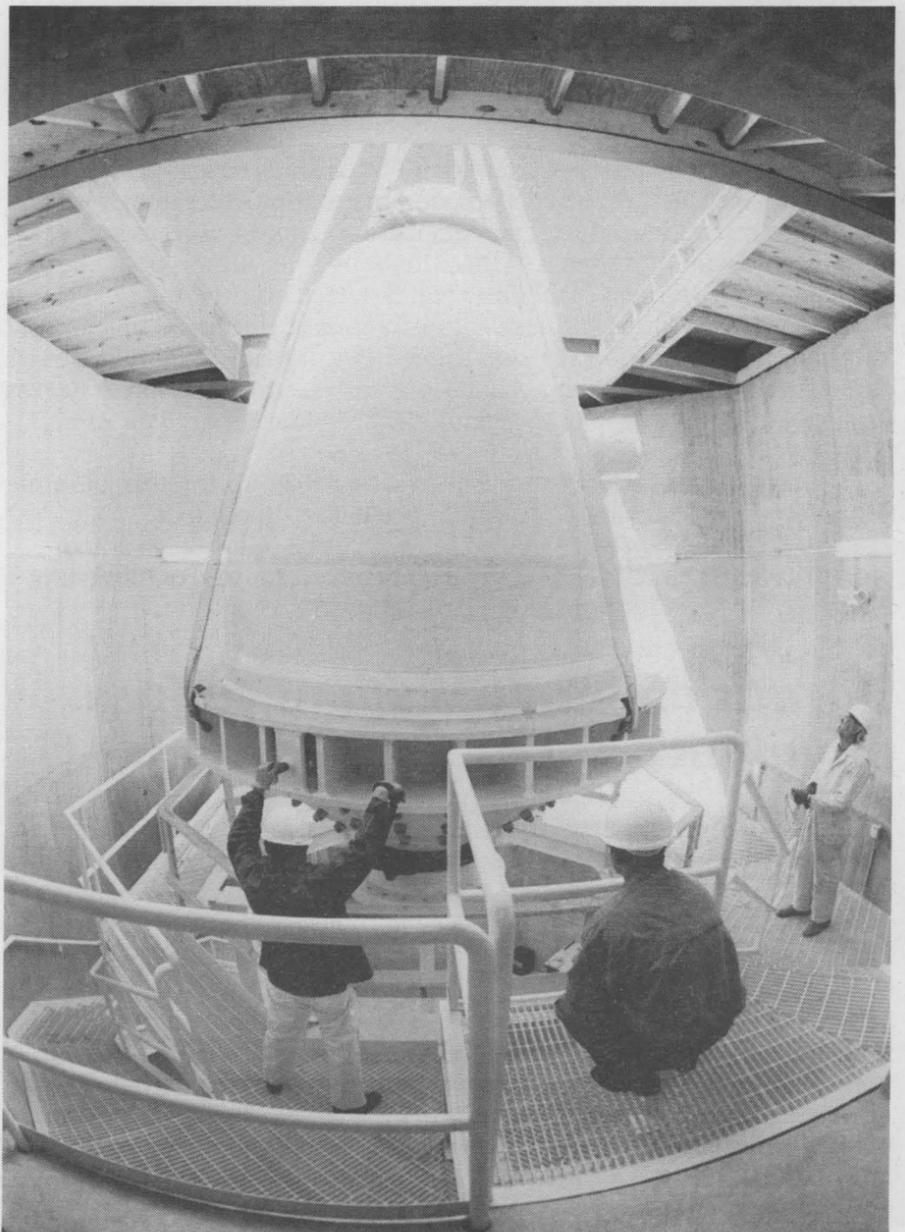
Members of Sandia's Large Staff will join the retirees and their spouses at the picnic. Entertainment will be provided by the Bob Weiler Band. Reminder: This is an adults-only picnic; children are not allowed.

Parking will be available at the Coronado Club, the Base Chapel, Que Pasa Recreational Center, and Sandia Base School (east of the club). A shuttle bus will operate between the parking areas and the patio entrance. Security guards will direct traffic to the parking areas. No parking is allowed along residential area streets or in spaces reserved for delivery vehicles in all lots.

Handicapped parking will be in front of the main entrance to the Coronado Club. Handicapped attendees only can use the main club entrance. All others should enter at the swimming pool/patio entrance.



CONTAINING THE VESSEL — A crane lifts a one-tenth scale model containment vessel — designed and fabricated in Japan for use in nuclear generating facilities — that Sandia will begin testing several months from now. The vessel arrived in the US by ship and was trucked to Albuquerque. In the photo below, Vincent Luk of International Nuclear Safety Dept. 6403 (kneeling, foreground) watches as the vessel is lowered through the temporary roof of a specially constructed building east of Tech Area 3 where tests will be conducted. The test building will have a steel beam and concrete roof and will be covered with four feet of dirt before the vessel is eventually pressurized in the test series designed to determine its integrity. The buried, specially constructed building was designed to contain debris if/when the vessel comes apart under extremely high pressure during testing.



Young women in the Labs see the real side of work

More than 600 girls came to work on "Take Our Daughters to Work Day" at Sandia/New Mexico April 27 despite the scarcity of special demonstrations and tours. This year's lower-keyed event gave the young visitors a more normal view of what it's really like in the workplace.

Sandia's Women's Programs Committee sponsored the event for girls ages 9-15, and 24 volunteers distributed welcome packages as parents and girls signed in at various tech area gates. Packages contained a solar calculator in the form of a computer diskette, pencils, erasers, puzzles, water bottles, shoestring eye-glass straps, and information about opportunities for women in the workplace.

"I talked to several girls about their experiences at Sandia," says Melanie Florez, Supervisor of Personnel Security/Visitor Control Team 7437-1, who coordinated registration and badging. "There were more hands-on opportunities this year, and the girls asked more questions about job possibilities and what is involved in some of the careers they saw here at Sandia."

Stacey Zender and her friend Ashley James were able to see several sides of work at Sandia, administrative and technical. Stacey's mother, Theresa Zender, works in Customer Services and Space Management Dept. 7312 and her father, Gary Zender, works in Electron Microscopy/Metallography Dept. 1822. "I can't believe how much they're comprehending about what we do at Sandia," says Theresa.



SCANNING METAL SURFACES — Gary Zender (1822) shows his daughter Stacey (center), 14, and neighbor Ashley James, 11, what the surface of magnesium looks like under a scanning electron microscope. Stacey, a Manzano High School cheerleader, says her favorite subject is math. Ashley enjoys reading. Both girls say they're undecided about what to do when they grow up.

"The girls asked lots of questions, and it was a good opportunity for them to see how to apply the math and science they learn in school to practical work in the real world." She says that people in labs they visited took time to explain

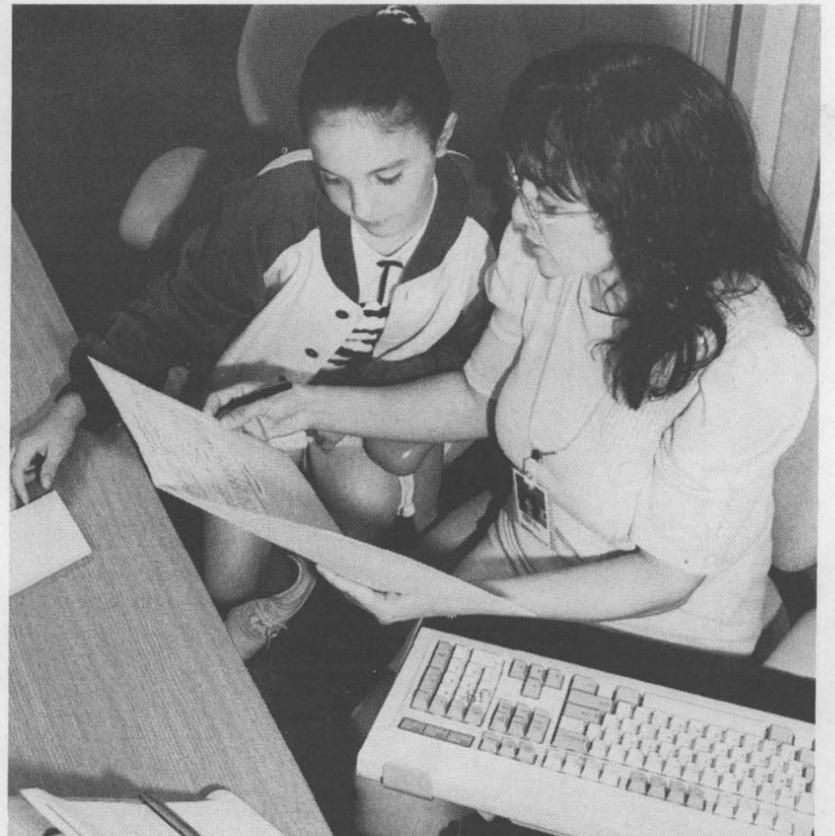
in terms the girls could understand the different kinds of work done at Sandia.

A similar event for boys is being planned. The date will be announced in an upcoming *Weekly Bulletin*.

— Janet Carpenter



HALLOWEEN PROJECTS came to mind when Brigitta Baugher of Properties of Organic Materials Dept. 1812 showed her sisters Colleen, 13, and Clare, 11, how bubbles keep foaming when you add dry ice to water and soap. "When I went to school there wasn't much fun science," says Brigitta. "Although I can't show them the actual work I do (sol-gel experiments) because it's dangerous to expose them to the chemicals, I've tried to find fun things to do in a chemistry lab. Each fun experiment leads to questions and suggestions. It shows they're thinking."



FIRST-HAND EXPERIENCE was an eye-opener for 10-year-old Jennifer Fouk, daughter of Shirley Chavez-Fouk, order entry clerk in APS/GSS/JIT Operations Team 10220-1. "Jennifer had never been to work with me," says Shirley. "I wanted to show her what it's like." Although Jennifer spent "Take Our Daughters to Work Day" learning how mom orders supplies for Sandia employees, she says she still wants to be a saxophone player or an actress.

Feedback

Q: Everyone in our center recently received an e-mail message from the VP's office titled *Guidance for Upcoming DOE/EH-24 Environmental Audit*. This note contained the sentence, "Most important, answer just what was asked of you; **DO NOT VOLUNTEER INFORMATION**; if they want to know something, they will ask."

Given the various new "whistleblower" statutes or regulations, isn't it about time folks stop

writing and otherwise communicating this kind of message? Isn't this message another way of just ordering "don't be a whistleblower?"

I'd think the proper message might be something like, "If you have issues you might wish to discuss with the auditors and you have yet to discuss them with your management, your management would like to know, and you are reminded there are policies in effect stating you

should do so."

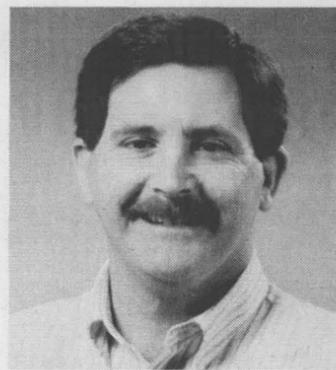
A: I agree! I discussed your proposal with the creators of the guidance and they agree too.
Jack Dickey (12700)

The Lab News is printed on recycled paper and can be recycled again along with regular white office paper.

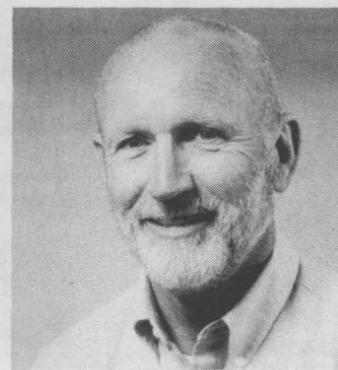


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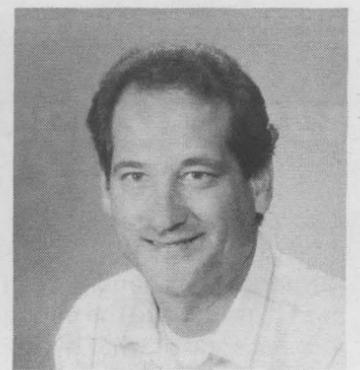
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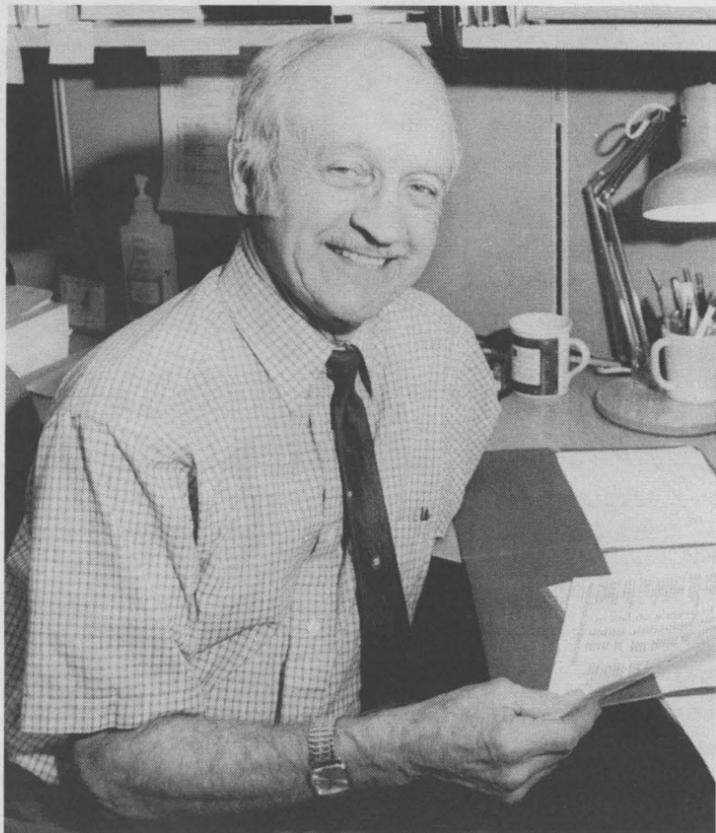
Nicholas Durand 15
7513



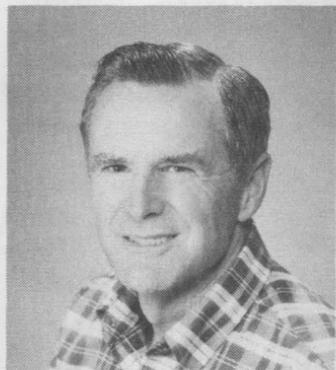
Eric Jones 30
1113



Paul Canepa 15
8613



Robert Leslie 40
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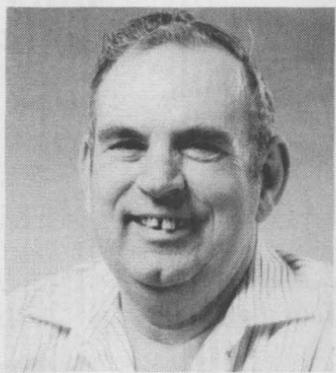
John Liebenberg 30
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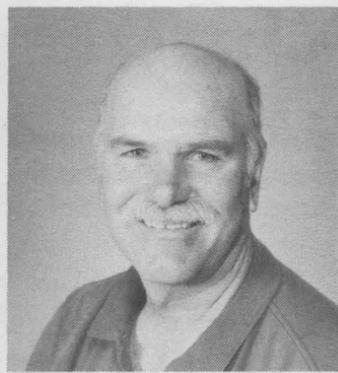
Rosemarie Renn 15
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Pat Leary 25
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Ray Josephson 15
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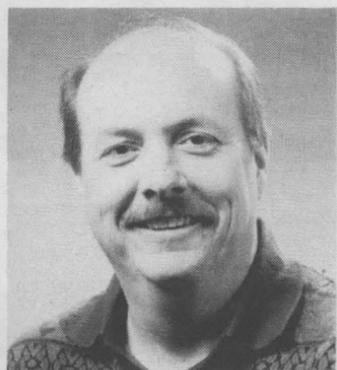
Ted Hebebrand 30
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Sheryl Buck 15
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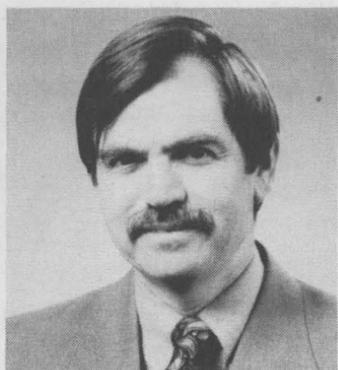
Betty Carrell 15
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Steve Pink 20
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Doris Johnson 15
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John McAuliffe 25
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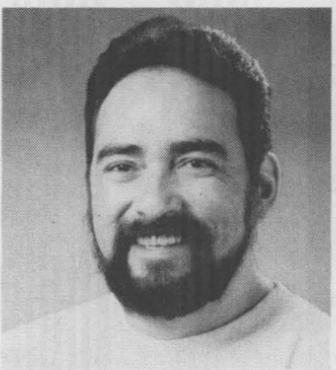
Rolando Serna 15
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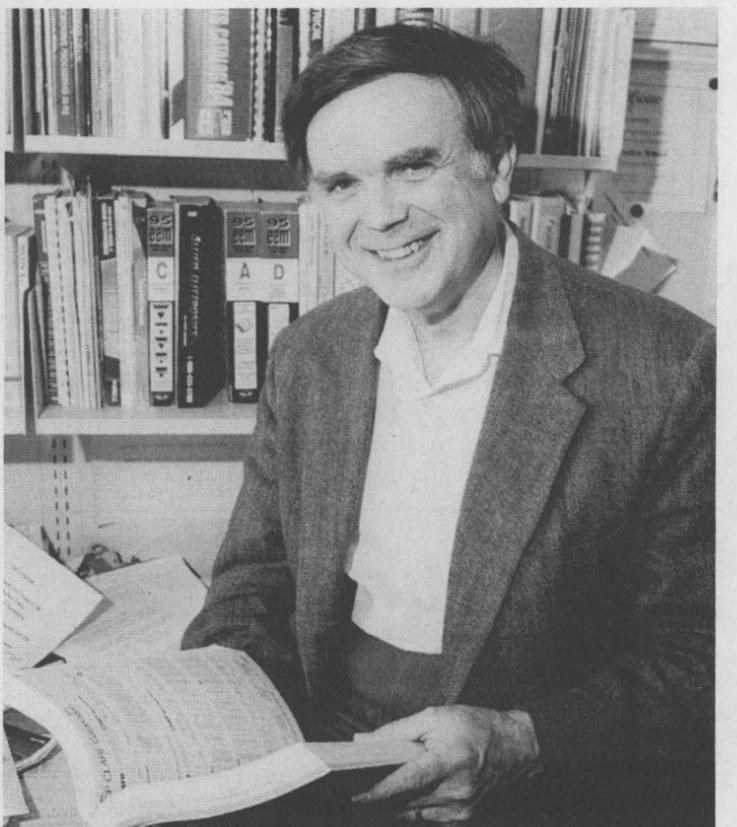
Dick Isler 25
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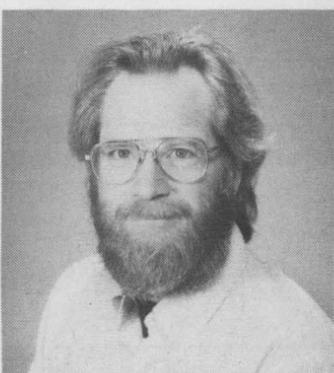
Barry Schrader 15
8502



Andy Garcia 15
7612



James Hanlon 30
2252



Don Meeker 15
8716



Mary Komen 15
10501



Donna Opdahl 15
8528

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

MISCELLANEOUS

FREE ADDING MACHINES: Canon P21-D, Royal 112-TD; shower curtain w/rings, pastel blue & peach, also free. Armstrong, 266-2334.

SLEEPER SOFA AND MATCHING LOVESEAT, earthen tones w/matching Southwestern colors, excellent condition, \$250/both. Hernandez, 296-8498.

CEMETERY PROPERTY, Sunset Memorial, Garden of Gethsemane, 4 plots, value \$800/ea., \$3,200/all. Mincks, 510-447-3649.

KITCHEN DINING TABLE, w/2 cane-back Breur chairs, 34-in. diameter Formica w/solid oak trim, perfect for small nook area, \$75. Kelly, 271-9589.

CONVECTION TURBO-OVEN, Faberware, excellent condition, timer & heat controls, cookbook included, \$65. Sturgeon, 281-9035.

DESKTOP COMPUTER, DEC MicroVAX 2000, 4MB RAM, 69MB HD, 32-bit hardware, SP/DP FPU network, modem, printer ports, \$200. Key, 856-1588.

COMPUTER SYSTEM, Packard Bell 486SX, 14-in. SVGA, 4MB RAM, 100MB HD, KX-P1124 printer, sheet feeder, software, hutch, \$1,000. Mann, 343-0524.

FUTON, finished pine, queen-size frame (no mattress), \$215; small matching table, \$20. Schkade, 292-5126.

BATHROOM FIXTURES: cabinet, countertop w/sink, toilet, light, make offer; upright vacuum cleaner, \$15. Hendrick, 296-2163.

WOOD-BURNING STOVE, large, cast-iron, great condition, \$350 OBO. Tapia, 857-0475, after 6 p.m. on weekdays.

WOODSTOVE INSERT, Arrow, 2 electric motors, like new, glass & solid door, \$625 OBO. Benton, 877-2473.

MICROWAVE, 1.6 cu. ft., 1,500-watt, excellent, \$85. Guttman, 888-5114.

COUCH, excellent condition; dual heater, 35,000 Btu, \$150. Sanchez, 836-5672, call after 4 p.m.

FIBERGLAS FURNACE FILTERS, 7, free to good home, 16" x 25" x 1". Barnard, 256-7772.

KING-SIZE WATERBED, \$100; cartop carrier, \$40; 6-drawer dresser, \$35; nightstand, \$35, CD player, \$25. Jean, 293-4833.

SOFA, sectional w/sleeper, \$450; octagonal, glass-top cocktail table, \$75; children's kitchen & desk. Moodie, 298-8835, after 6 p.m.

FIVE-PERSON SPA, beautiful, above-ground, excellent condition, natural redwood frame, thermal cover included. Girven, 899-8573.

KEYBOARD, Technics SX-KN800, w/stand, cover, owner's manual, \$600 OBO; Crown accordion, amp hookup, 7 stops right, 5 left, \$700 OBO. O'Rourke, 246-8281.

OAK/BASS DAYBED, w/Sealy mattress, \$300; 2 bridal gowns, w/veils, both size 5. Clavey, 292-7667, after 6 p.m.

STUDENT DESK, pine, 1 center drawer, 3 side drawers, excellent condition, \$150. Keahbone, 831-6177.

STORAGE SHED, Arrow Hamlet, 8' x 6', w/base, original packing, never opened, asking \$100. Goel, 897-3880.

LAB PUPPIES, black or yellow, free to good home. Ganley, 281-6622, after 6 p.m.

POOL, above-ground, 24-ft. round, pump, filter, accessories, solar cover, solar-cover reel, winter cover, needs liner, \$150. Higgins, 299-3669.

RADIAL ARM SAW, Sears, 10-in., 2.5-hp, w/lockable wheels, chisel-tooth blade, 200-tooth blade & sanding wheel, \$400. Adams, 821-9079.

UTILITY TRAILER, 4' x 8' x 22" sides, includes wheel for spare, \$350. Torres, 831-3539.

USED ROCK CDs, \$2-\$5; Casiotone 32 keyboard, w/adaptor, \$50. Estill, 883-1531, call evenings/weekends.

DINING SET, cherry, 6 ladderback chairs, 2 leaves, great condition, \$500. Smith, 899-2281.

GARAGE SALE, May 13-14, 9 a.m.-3 p.m., 1036 Indiana SE, '63 Ford Falcon Classic (as is), rear-tine rototiller, machinist tools, household items. Eberhardy, 265-0808.

REFRIGERATOR, Crosley, white w/ice maker; stove, Kenmore electric, both in excellent condition, \$800/both OBO. Rodriguez, 764-8212.

GARAGE SALE, Saturday, May 13, 8 a.m., 705 Georgia SE, between Southern & Kathryn, household items, computer programs. Suderman, 265-1786.

ANTIQUES, oak icebox, White Mountain Grand; 2 chests of drawers, both oak. Petersen, 275-7467.

TWENTIES FURNITURE: excellent condition, buffet sideboard, \$175, drop-leaf table, \$200; exercise bicycle, \$45. Bennett, 889-0929.

COLOR TV, Sharp, 20-in., comes w/remotes, made about '87, works all right, draws 85 watts, \$30. Homer, 836-5043.

EXERCISE MACHINE, Schwinn "Air-Dyne," seldom used, like new (you know the story), \$300. Nusser, 271-2919.

FUTON FRAME, walnut, \$215; extra-thick futon, w/cover, \$325; bed-frame/headboard, walnut, \$110, all double. Price, 242-0263.

SOFA SLEEPER, queen, & matching loveseat, Guildcraft "Desert Dawn," Fabri-Coated, 1 yr. old, impeccable, paid \$1,298, sell for \$700. Malcomb, 294-6975.

FILL DIRT, approx. one cubic yard, free, you haul. Neidigk, 822-8247.

TILLER, Sears, 5-hp, front tines, excellent condition, \$250. Booker, 299-3554.

RUNNING STROLLER/BIKE TRAILER, Motiv Jog 'R Cycle, \$75, yellow, w/canopy & attachment, for hooking to bike. Hendrickson, 275-3119.

PRECIOUS MOMENTS COLLECTION, \$35-\$100. Wenzelburger, 256-9370.

GE ELECTRIC RANGE, yellow, double oven, self-cleaning, excellent condition, many extras, \$350 OBO. Deller, 298-5705.

ELECTRIC STOVE TOP, Thermador stainless-steel, 4 burners plus grill/griddle, (new \$700) asking \$350. Harris, 265-4792.

WATERBED, super-single, bookcase headboard, padded rails, heater, \$80. Getz, 299-4865.

RCA COLORTRAK TV, 25-in. diagonal, pecan-finish console, 100% solid-state, casters, \$105; plate-glass mirror, 55" x 45" x 1/4", w/framed, \$40. Stang, 256-7793.

BUNK BEDS, solid wood, 1 yr. old, includes ladder & foam mattresses, no side rails, \$200. Weiss, 296-1226.

EXERCISE BIKE, stationary Vitamaster Model 67C, exercise monitor includes speed, distance, pulse, calories, (\$150 new), asking \$75. Guthrie, 299-7182.

GOLF CLUBS, Lynx Parallax, 2-PW, Lynx Predator metal woods 1, 3, 5, \$350; RCA XL100 TV/VCR, \$150; Packard-Bell stereo, cabinet, \$100. Mitchell, 299-5144.

IBM-COMPATIBLE COMPUTER, 386SX40, 85MB HD, 1.44 FD, SVGA card, less monitor, other parts for upgrade or repair, \$290. Stoker, 897-9175.

DOG TRAVEL KENNEL, (door 10" x 11"), \$40; doghouse, \$10; electric fence, w/insulators, \$20; cabinet, chest, 30"H x 24"W, \$10 ea. Newcom, 293-5180.

YARD SALE, May 13-14, 10308 Propps, 1 block SW of Morris & Candelaria, off Los Arboles. Jean, 293-4833.

FIBERGLASS DISH, 8-ft., Beachcraft stereo JR300, TV receiver, Norstat Video Cipher II, satellite descrambler, 2000-E Macom, \$775 OBO. Gonzales, 823-2081.

ELECTRIC RANGE, Whirlpool, almond, used/nice, \$75; baseboard heaters, \$10, 5 for \$45. Sepulveda-Chavez, 873-2365, evenings.

PEACH-FACED LOVEBIRDS, pair, w/cage, nesting box, \$140 OBO; Wurlitzer organ, \$500 OBO; Atari 2600, \$25. Rainey, 294-8642.

APPLE IIC COMPUTER, two monitors, Imagewriter printer, software, used 25 hrs. \$250; Smith/Corona wordprocessing typewriter, w/spell-write dictionary, \$100. Langwell, 293-2728.

OAK CRIB & THREE-DRAWER DRESSER, Simmons, w/mattress, excellent condition, \$300. Sniegowski, 294-7329.

HEATHKIT COLOR TV, 25-in., wood cabinet, all manuals, works well but some noise, free to good home. Knapp, 294-6359.

NAVAJO RUG, Two Grey Hill, approx. 3' length x 2' width, by artist. Becenti, 836-1261.

MARBLE BATHROOM COUNTER, one-piece, w/double sinks, 22" x 60", \$120 OBO. Montoya, 899-4154.

DEADLINE: Friday noon before week of publication unless changed by holiday. MAIL to Dept. 12622, MS 0413, or FAX to 844-0645. You may also send ads by e-mail to Nancy Campanozzi (nrcampa@sandia.gov). Questions? Call Nancy on 844-7522.

Note: The number of ads received is steadily increasing; our space is not. To resolve this, we are now limiting people to one ad per issue. We will also strictly enforce the word limit and ask your help to keep ads as short as possible.

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 the ad submission.
3. Submit the ad in writing. No phone-ins.
4. Use 8 1/2-by-11-inch paper.
5. Type or print ad legibly; use accepted abbreviations.
6. One ad per issue.
7. We will not run the same for sale or wanted ad more than twice.
8. No "for rent" ads except for employees on temporary assignment.
9. No commercial ads.
10. For active and retired Sandians and DOE employees.
11. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.
12. "Work Wanted" ads limited to student-aged children of employees.

LAWN MOWER, push, w/grass catcher, \$35 OBO. Aidun, 265-4792.

CALCULATOR, TI 59, w/instruction manuals, electronic programs & PC100C printer; all for \$50. Henry, 266-6467.

TRANSPORTATION

'86 ISUZU TROOPER II, 4WD, 2-dr., 134K miles, AM/FM cassette, good condition, \$3,200 OBO. Anderson, 292-8432.

'93 CAMARO, black, loaded, AT, V6, 27K miles, Bose stereo system, still under warranty, \$15,500 negotiable. Reed, 294-2915, ask for David Sierra.

'87 TOYOTA CAMRY, 5-spd., gray in/out, new tires, AM/FM cassette, AC, 4-dr., 98K miles, \$4,200 OBO (\$525 below NADA). Dubicka, 296-6557.

'93 4X4 SILVERADO, extended cab, 19K miles, custom shell, towing pkg., dark blue/silver, loaded, must sell/see. Gonzales, 298-0190.

'84 CADILLAC ELDORADO, diesel, very good condition, 22+mpg., stereo, \$2,100 OBO. Winowich, 255-2611.

'82 CHEV. IMPALA, 305 V8, 81K miles, transmission blown, motor runs well, fix or for parts. Raymond, 293-7730.

'83 PRELUDE, rebuilt head, steering, suspension, brakes, cooling, needs short block, retail book \$3,000, firm at \$1,495. Mowrer, 865-0607.

'87 FORD MUSTANG GT, convertible, 5-spd., 5.0L, very fast, excellent condition, \$7,900 OBO. Anderson, 292-8432.

'79 DODGE OMNI 024, hatchback, 2-dr., 4-spd., \$995. Roeschke, 266-8988.

'84 MERCURY, Colony Park station-wagon, runs well, good tires, windshield cracked, relocating out of state, must sell, \$500 OBO. Clavey, 898-8484, after 6 p.m.

'80 SUBARU, 5-spd., 2-dr., hatchback, clean, good rubber, good commute or school transportation, \$800. Underhill, 294-1775, after 5 p.m.

'78 SPORT AMX, 6-cyl., 5-spd., 48K miles, \$2,900 OBO. Carson, 831-0373, leave message.

'56 GHIA, first year, 85K miles, great condition, many new parts, must sell, new baby, below book, \$4,500 OBO. Cunico, 892-8365.

'94 FORD ESCORT, stationwagon, 4-yr. warranty, 5-spd., AM/FM radio, \$10,750. Soltau, 291-8250.

'93 TOYOTA COROLLA LE, loaded, AT, OD, PW, PL, AC, CC, tilt, AM/FM cassette, 30/40 mpg., only 13K miles, \$12,300. Wade, 296-0617.

'92 MITSUBISHI, Eclipse, 31K miles, alarm, warranty, 5-spd., 1 owner, burgundy, AC, excellent condition, \$9,999 OBO. Bianchi, 856-2003.

'90 HONDA CIVIC, 3-dr., 4-spd., AC, AM/FM cassette, \$5,450. Beer, 262-9873.

'82 JEEP WAGONEER LIMITED, 4WD, manual hubs, AT, PS, PB, AC, leather, \$3,500. Pace, 292-8249.

'87 TOYOTA MR2, new engine w/warranty, AC, AM/FM cassette, sunroof, custom tires & wheels w/warranty, maintenance records available, \$4,950. Johnson, 884-7764.

'76 CORVETTE, numbers match, records, 8K miles on rebuilt engine, drivetrain, suspension, brakes, new interior, paint, \$6,900. Wenger, 822-1487.

'89 CHRYSLER LEBARON GTE, convertible, turbo-fuel injected, premium model, climate control, power, leather, electronic instruments, 34+ mpg., \$8,500. Barr, 856-1767.

SHELBY GLHS, Shelby's first Dodge, very special, quick, #200/500, only one in NM, \$7,800. Lachenmeyer, 268-7818.

'87 VOLVO 740 TURBO, 4-dr. sedan, AC, AT, sunroof, seat warmers, +extras, well-cared for, clean, \$7,200 OBO. Vandewart, 281-2252.

'87 FORD F150 XLT LARIAT, 4x4, fully loaded, LWB, 5.0 liter, V8, 4-spd., dual tanks, original owner, oil changed every 3K miles. Rowley, 281-0774.

'90 DODGE CARAVAN, loaded, transferable factory warranty, well-maintained, one owner, 55K miles. Vogel, 275-0774.

'70 PONTIAC CATALINA, 42K original miles, AC, cruise, interior perfect, \$1,000. Zipperian, 821-2309.

'85 PLYMOUTH COLT, Vistawagon, front-wheel drive, 5-spd., 104K miles, very good condition, \$1,900. Knapp, 294-6359.

'89 TOYOTA CAMRY LE, fully loaded, 66K miles, excellent condition, \$8,700 book. Miyoshi, 821-9118.

'88 ACURA INTEGRA LS, 3-dr., red, 5-spd., 93K miles, good condition, sunroof, AC, \$5,800. Holswade, 294-2017.

RECREATIONAL

'95 POWER SCOOTER, low mileage, 15-mph., 2-cycle, cost \$425, asking \$390. Babcock, 299-3121, leave message & phone number.

'90 TERRY RESORT, 26-ft., rear bedroom, fully equipped, excellent condition, w/awning, \$8,500. Wade, 892-1216.

GIRL'S BICYCLE, 10-spd. Schwinn, excellent condition, \$50 OBO. Kjeldgaard, 268-8835.

'85 SKI BOAT, VIP Kona, 20-ft., fully loaded, 1/0, all accessories included, new cover, \$11,995. Pullen, 296-0230.

MAN'S MOUNTAIN BIKE, 26-in., 18-spd., "specialized hard rock," thumb shifters, bionic sprocket, gseat rack, \$200. Wade, 296-0617.

'91 YAMAHA TW200, 9K miles, new sprockets & rear tire, black paint w/blue seat, super-wide tires, great trail riding, \$1,300. Wistor, 266-0138, ask for Mike.

'93 VACATION AIR, 39-ft., Park model, 2 tipouts, custom interior, W/D, heat/air, house-type appliances, \$27,000. Jarrett, 254-1035, after 6 p.m.

'94 CANNONDALE DELTA V700, 19-in., LX components, Cook Bros. racing cranks, many upgrades, \$900 OBO. Smith, 899-2281.

'82 YAMAHA MOTORCYCLE, 6K miles, 650cc, electric or kick start, \$1,000 OBO. Carson, 831-0373, leave message.

'88 KAWASAKI, Concours Corbin seat, regular maintenance, 25K+ miles, excellent condition, \$4,000 OBO. Yip, 294-8124.

ALUMINUM BOAT, 16-ft., w/tilt trailer, 6-hp Mercury, \$1,900; 16-ft. aluminum, 50-hp Evinrude, \$1,600, all OBO. Padilla, 294-3127 or 255-8816.

'82 HONDA 1100 MOTORCYCLE, w/terraplane sidecar, numerous accessories, for show/fun, \$5,000 OBO. Rainey, 294-8642.

ROAD BIKE, specialized Sirrus, 21-spd., 50 cm., less than 1 yr. old. Evans, 897-7954.

'76 NOMAD TRAVEL TRAILER, 23-ft., at Elephant Butte. Zipperian, 821-2309.

REAL ESTATE

2-BDR. MOBILE HOME, '84 Wayside, 14' x 26', 2 baths, all appliances, wood stove, must sell, best offer. Sainz, 281-1556, after 5 p.m.

3-BDR. HOME, North Valley, 1,850 sq. ft., 950-sq-ft. studio, 1/2 acre, 1-car garage, w/guest room, hot tub, trees. Orear, 897-0567.

3-BDR. HOME, Taylor Ranch, 2,034 sq. ft., 1-3/4 baths, updated, large, landscaped lot w/sprinklers, handicapped accessible. Sharpton, 897-2883.

2-BDR. VACATION HOME, Eagle Nest, NM (30 miles east of Taos), recently remodeled, one bath, stone fireplace, garage, partial basement, city water/sewer. Jones, 293-0497.

4-BDR. BRICK CUSTOM HOME, FSBO, 2,300 sq. ft., 2-1/2 baths, on cul-de-sac, La Cueva High School district, \$195,000. Zipperian, 821-2309.

WORK WANTED

BABYSITTING, certified, 4 yrs. experience, references, own transportation (most instances), available summer & weekends. Mundt, 291-9453, ask for Kristin.

BABYSITTING, in NE Heights, teenager who loves children, has car. Gregory, 275-3855.

WANTED

JEEP, Grand Cherokee or Wagoneer Limited, low mileage, reasonable price. Dubicka, 296-6557.

WHITE KITTEN, long-haired, 6-8 weeks old, preferably female. Clavey, 292-7667.

MATERNITY CLOTHES, professional style, rent or buy, size 6 or small. Moya, 856-1245.

CAPOEIRA LESSONS, does anyone know how to contact folks giving capoeira (Brazilian martial art) here in Albuquerque? Starr, 821-6480.

SUMMER COMPANION for 13-year-old boy, flexible days/hours, access to car would be helpful, responsible person who enjoys activities. Schneeberger, 298-5955.

BEDROOM DRESSER, for young girl's room, 3-4 drawer. Miller, 892-3257.

PAPER CUTTER. Lambert, 292-8417.

CAMPER, Vanagan/Westfalia, etc., to rent end of July. Goodness, 281-3052.

FIREPLACE GLASS DOORS, to fit 32" wide x 24" high opening. McConahy, 884-5071.

EMPTY PRINGLES CHIP CANS, & large Arizona tea cans (at no charge), to make noise makers. Romero, 296-1081.

CHICKEN EGGS, for children's chick-hatching project, would prefer brown egg breed, such as New Hampshire. Heald, 281-7885.

MANDARIN SPEAKERS to form conversation group, want to rebuild fading fluency, meet and chat 1-3 times weekly. Kercheval, 864-6549.

MOTOPLAT IGNITION, for '73 Husqvarna 125 CR, (or where to find one). Lachenmeyer, 268-7818.

"SECRET OF MONKEY ISLAND" SOFTWARE for IBM PC. Dellin, 293-8318.

LOST & FOUND

FOUND: on parade ground, April 27, a chain with gold-colored pendant, containing picture of young brown-haired girl. Buckwalter, 844-1285.

FOUND: key-chain thermometer. Brower, 844-6131.

LOST: large, light-aqua pin, irregular form, need it for use, sentimental value. Street, 844-5986.



Sandia News Briefs

Sandians introduce National Science Education Standards at APS teacher workshops

Mary Jo Comber (3615), Ken Eckelmeyer (3615), and Vicki Kay (Albuquerque Public Schools) led three one-day workshops April 18-20 for more than 100 APS elementary and middle school teachers, introducing them to a newly released draft of the National Science Education Standards. Teachers participated in hands-on science experiments to learn the standards-recommended instructional approach, examined instructional resources, prepared lesson plans, and developed strategies for changing science instruction. The workshops were sponsored by the National Science Foundation's Systemic Initiative for Math and Science Education.

Ken Eckelmeyer appointed to National Research Council steering committee

Ken Eckelmeyer (3615) has been appointed to the steering committee of the National Research Council's Regional Initiatives for Science Education (RISE) Program. The RISE Program's goal is to engage scientists and engineers to enhance K-12 science education in their community's schools. Bruce Alberts, President of the National Academy of Sciences and Chair of the National Research Council, asked Ken to help direct this national effort based on Ken's leadership of the Sandia School Partners project.

Yvonne Riley will receive Jefferson Award for service to community

Yvonne Riley of Interactive Media Dept. 12616 will receive the Jefferson Award, which honors New Mexicans for public service to their community. Each year, seven recipients receive the award, sponsored by KOAT-TV and American Home Furnishings. Yvonne will be honored May 19 for chairing the Junior-Miss National Scholarship Program, participating as a project leader for the 4-H Club in Valencia County, and hosting foreign exchange students for six years as part of the EF Foundation's student exchange program.

Sandia student intern Dale Chen earns Tandy Prize for excellence

Dale Chen, Sandia student intern from La Cueva High School, has been selected to receive the Tandy Prize for academic excellence in mathematics, science, and computer science. Dale is one of 100 recipients selected from nearly 8,000 US students nominated this year. He will receive a \$1,000 scholarship, and his photograph will appear with other Tandy scholars' photos in *Time*, *Fortune*, and *Forbes*. Dale has been a Sandia student intern since last year, working first on the "AC project" for Primary Electrical Standards Dept. 1142, then on the "fabrication and characterization of Langmuir-Blodgett films" project for Ceramic Processing Science Dept. 1841.

Send potential Sandia News Briefs to Lab News, Dept. 12622, MS 0413, fax 844-0645.

this month in the past...



45 years ago...A 1950 Sandia Laboratory Weekly Bulletin (forerunner to the Sandia Lab News) announced, "Here it is . . . your brand new social and recreation center . . . the CORONADO CLUB!!" Felix Padilla, staff artist for the Bulletin, won six months free dues (initially set at \$2.50/month) for coming up with the name that "clicked" with the name contest committee and the board of governors.

40 years ago...Sandia parking space was an issue even in 1955. An experimental parking allocation system was developed for employees parking in the lot north of Bldg. 880. Drivers were given identification stickers for their cars to correspond with their parking space number, which they received in a drawing.

30 years ago...Two Sandia-designed instruments — a remotely operated television system and a film camera optical measuring system — were being used to study a cavity created the previous October by a 5-kiloton nuclear device detonation (Project Dribble) in an underground salt formation near Hattiesburg, Miss. Project Dribble was part of a research program to improve means of detecting, locating, and identifying underground nuclear explosions.

15 years ago...Groundbreaking ceremonies took place for Sandia's new \$8.6 million Systems Research and Development Lab (Bldg. 823).

Retiree deaths

Robert Hunke (68).....6227	April 1
Glenn Morter (80).....1714	April 4
Jean Naughton (82).....3424	April 15
Ember Gunderson (73).....3436	April 16
Robert McBride (78).....3435	April 18
Warren Ballard (77).....3242	April 20
John Miller (65).....3429	April 23
Elzie Greene (89).....7412	April 27
Simona Quintana (76).....7631	May 3



DETECTING GAPS — Mike Valley (2752), left, shows Gary Thompson of Northwest Airlines a method for using shearography to nondestructively inspect an aircraft for disbonds. Disbonds are gaps in the glue or bonding material of an airplane's structure. Gary is one of more than 50 aircraft inspectors who were in Albuquerque for a safety committee meeting of the International Association of Machinists and Aerospace Workers, District 141. During the meeting, Sandia's FAA Aging Aircraft NDI Validation Center (AANC) held an open house to give the inspectors hands-on experience with emerging inspection technologies, including shearography, thermography, advanced ultrasonics, and eddy current. The AANC was established at Sandia in 1991 to improve and test aircraft maintenance technology and practices and to disseminate the technology to the airline industry.

Coronado Club

May 12 (tonight) — Kids' bingo night. Buffet, 5 p.m., with cartoons and movies. Bingo starts at 7 p.m. Free hot dog and soft drink for all kids playing bingo.

May 14 (Sunday) — Mother's Day Brunch. Baked ham, turkey, baron of beef, breakfast items. Adults \$8.95, children 4-12 \$4.95, children 3 and under free. Reservations are required and will be taken for 10 a.m., 12 p.m., and 2 p.m. only. All moms receive a flower.

May 18, June 1, 8 — Thursday bingo nights. Card sales and buffet start at 5 p.m., early birds' bingo at 6:45 p.m.

May 20, 21 (Saturday, Sunday) — Preseason swimming pool open house. Pool open 11 a.m.-5 p.m.

May 25 (Thursday) — Coronado Club is closed for Sandia retirees' picnic. Music for picnic by Bob Weiler and Los Gatos, 4-7 p.m.

May 26, June 2 — Friday night dinner/dance. \$7.95 buffet, 6-9 p.m. Music by Isleta Poorboys, 7-11 p.m.

May 29 (Monday) — Memorial Day pool party, 11 a.m.-6 p.m. Low-cost buffet served noon-5 p.m. Admission free for C-Club members, guests \$2. Music for party by Bob Weiler and Los Gatos, 2-6 p.m.

Recent Patents

Jonathan Weiss (2231): Impurity-Doped Optical Shock, Detonation, and Damage Location Sensor.

Kevin Linker (5808) and John Moyer (9614): Transportable, Modular, High-Security Vault Utilizing Pin Connections.

Kevin Killeen (1126) and Kevin Lear (1312): Method for Accurate Growth of Vertical-Cavity Surface-Emitting Lasers.

John Hohimer (11500) and David Craft (9136): Interferometric Ring Lasers and Optical Devices.