

'Knowledge' project saving weapons design process

Much incidental information not part of official records

By Howard Kercheval

Lab News Staff

With nuclear weapon design seemingly becoming more and more an obsolete craft and the designers leaving their labs and fading into retirement, several Sandians are scrambling to preserve that part of the arcane knowledge about their work they shared but never wrote down.

And it's surprising how much of that there is, and how valuable it is, says Keith Johnstone of National Security Policy and Planning Dept. 5006: what was thought about and not tried; what was thought about that technology couldn't do at the time; what was tried and didn't work, and why; and more.

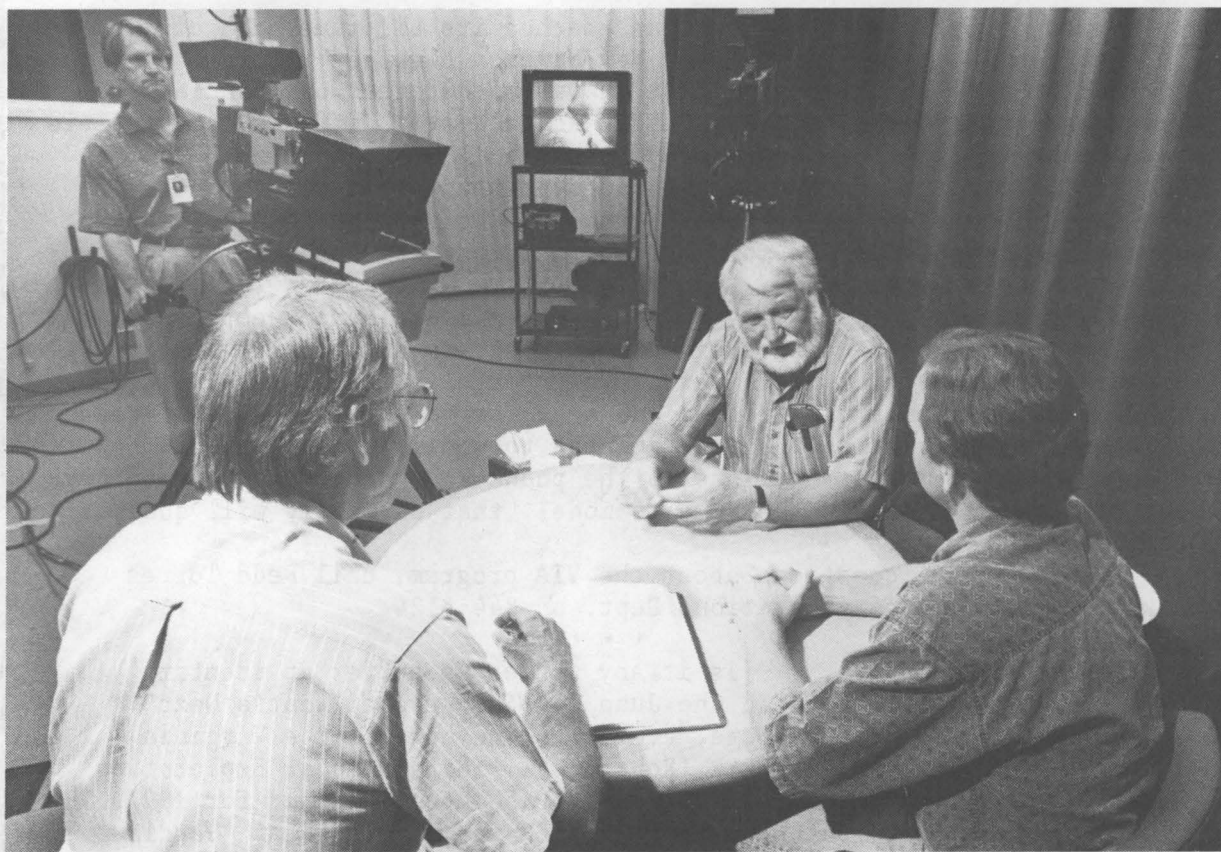
"In designing a weapon, we know what solution was finally decided on because we know what the weapon is," says Keith, "but we don't know what process they went through to get to that particular solution, nor do we know if that would be the solution today.

"Maybe one of the solutions they had to reject 20 years ago they could easily implement today, with today's technology, and it would be a better solution," he adds. "But that kind of information exists only in their minds."

Carmen Ward of Recorded Information Management Dept. 13213, project leader for the Knowledge Preservation Project, says five former and about-to-become-former Sandians have been interviewed to date. They are retirees Max Newsom, Jack Wirth, and Charlie Burks;

(Continued on page 6)

"All of these journeymen designers are beginning to retire."



PRESERVING MEMORIES — Jim Lloyd (operating camera) of Video Services Dept. 13417 tapes a session in which Keith Johnstone (left foreground) of National Security Policy and Planning Dept. 5006 interviews Henry Street (with beard) of Exploratory Batteries Dept. 2223 as David Weigand (2223) listens. Henry, who plans to retire soon, was among the first five Sandians and former Sandians interviewed to preserve nuclear weapons design expertise.

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Sandians mobilize for Galvin task force panel review

Hundreds contributed to effort; a crucial evaluation for future of the Labs

By Ken Frazier

Lab News Managing Editor

The fate of Sandia and the other DOE national labs may be in its hands, so when the so-called Galvin Task Force sent its key National Security Subgroup to Sandia June 16-17, an all-out marshaling of forces was essential to make sure its members got a clear vision of what Sandia is all about.

The Sandians who helped coordinate this intense effort — which drew on hundreds of Sandians in what they say was itself a major example of Labs teamwork in action — think that task was accomplished.

No one can anticipate the outcome of the Galvin Task Force's crucial review of alternative futures of the national labs, expected to be completed for Secretary of Energy Hazel O'Leary by February 1995, but VP for Laboratory Development Paul Robinson (4000) and the core group who led the project believe Sandia made a good showing.

And they can't say enough about the extraordinary cooperation on the part of everyone who contributed — from secretaries, technicians, and staff who did all sorts of special things, to tech art and tech writing people who scrambled to accommodate endless last-minute changes in presentation materials, to the presenters who described for the subgroup their work and its significance, to specific individu-

als such as new Sandia Protocol Officer Deborah Payne (12670), who impressed them all with abilities honed by her experience as protocol aide to General Colin Powell.

"What we saw was this intense response, wherever we asked, from people to do whatever was required in a way that I haven't seen for a long time," says Dennis Hayes, Director of

(Continued on page 4)

Finding new uses for unused explosives

Excess propellant, gunpowder may power lights, feed sheep

Stored in Sandia igloos and at various Army depots and remote testing sites across the country reside the by-products of 50 years of weapons testing: millions of pounds of unused rocket propellants and other explosive materials.

Currently the Labs owns about 16,000 unused rocket motors, some containing as much as 8,000 pounds of solid propellant, as

well as tons of bulk explosives used to create "harsh environments" for weapon development tests — granular propellants, liquid propellants, nitroglycerin, black powder, spheres of TNT weighing a ton or more, conventional ammunition, and various types of explosive components for nuclear weapons.

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Narath briefings discuss danger to Sandia's core R&D support

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College Bound program brings Sandia support to SIPI students

8

9 Prostate laser treatment undergoing clinical trials

10 More answers to your questions about pension plan changes



This & That

How hot was it? - Albuquerque reached its all-time high of 107 degrees last week, and many other New Mexico towns set records. Johnny Carson I'm not, but I can tell you it was so hot that one Sandia vice president who always dresses formally actually took off his coat and tie last week - no, not at work mind you, but when he went to bed. And the cigarette butts that normally lie all over the Sandia tech area got so hot they migrated to shady areas around some of our buildings, blocking several doors and causing momentary panic among some employees.

* * *

I'm expecting calls any minute now - All New Mexico employees and area retirees should have received their letters and brochures by now explaining the "revitalized" Sandia Volunteers in Action (VIA) program. The package explains the program and asks for volunteers in many areas. I immediately marked down my willingness to model (under "Special Events"), and I'm staying close to the phone so I don't miss out on any opportunities. If anyone asks me to model, that certainly will qualify as a special event.

If you have questions about the VIA program, call Redd Torres Eakin in the Community Relations Dept. on 844-4124.

* * *

Good news, but... - Is it any wonder we suffer an identity crisis from time to time? In the June 24 *USA Weekend* "What's Next" section featuring new products, etc., was the news that a Virginia company intends to ship RATLER (Robotic All-Terrain Lunar Exploration Rover) on the first commercial flight to the moon, planned for 1997. The news item went on to point out that RATLER was developed at "Sandia National Laboratory in San Diego."

* * *

Fiftywise - I wasn't gonna admit this in print, but my many friends (both of them, actually) have been such blabbermouths about this that I may as well announce publicly that I turned 50 late last month. And - lucky you - I've decided to share a few things I've learned and a few opinions I've formed during those 50 years.

- Only about one-third of the people who wear Spandex shorts or pants really should.

- If you don't care much for your teenager, be patient. There's a good chance he or she will turn into a human being in five or six years - even someone you will actually want to talk with!

- Most people are nice, but even some nice people are much too quick to spread rumors - sometimes vicious rumors.

- Sandia may not be the absolute best place in the world to work, but there are plenty of worse places. I know. I've worked for several.

- Despite what some publicity-seeking loudmouths say in the local newspapers, Sandians care a great deal about the environment, and we go out of our way to monitor our facilities and to keep the public informed about any problems (see article at right).

* * *

Rena's recipe - I think my lovely bride was definitely trying to make a point several weeks ago when she told me the one thing she likes to make best for dinner on Friday night - every Friday night! It's not steak, fish, or chicken. It's reservations. - Larry Perrine

Solvent detected in Sandia monitoring well near Area 5

Small amounts of a cleaning solvent have been detected in a Sandia monitoring well near Area 5. The chemical trichloroethylene (TCE) has made its way to the groundwater, the underground reservoir of water that lies beneath the Rio Grande Valley.

Tom Blejwas, Director of Environmental Operations Center 7500, says the low levels detected, the slow rates of underground water movement, the remoteness of the site, and the early detection mean that the chemical should pose no threat to Albuquerque residents. Groundwater in the area moves only about three feet a year, and the closest water production well is more than three miles to the northwest.

Searching for source now

Sandia environmental staffers have already launched an effort to identify the source of the trichloroethylene so they can evaluate what types of future actions might be required. TCE is considered by the US Environmental Protection Agency (EPA) to be a potential human carcinogen. It is found in solvents for cleaning and degreasing in various types of industrial operations. Although it continues to be used for this purpose, the handling and disposal of TCE are now much more rigorously regulated than in the past.

The sample was detected at a depth of 490 feet in a monitoring well installed May 1993 by Sandia's Environmental Restoration Project Dept. 7581. The first signs of any TCE were in a sample taken last December that found it present near the limits of detection. A sample taken in March in cooperation with the New Mexico Environment Department definitely showed small amounts of TCE. These test results were confirmed with another sampling in early June. The most recent tests showed TCE levels of 13 and 14 parts per billion (ppb). The EPA standard for TCE in drinking water is a maximum of 5 ppb.

Several environmental restoration and other sites in the area are being investigated. Preliminary tests have been inconclusive in identifying a source, but work continues to find the source.

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MARTIN MARIETTA



CALIFORNIA CONGRESSMAN Norman Mineta (15th District), second from right, visited Sandia's Microelectronics Program Office in San Jose recently and received briefings on technology transfer, transportation initiatives, and microelectronics at Sandia. From left are Jane Ann Lamph of Sandia/California Governmental Relations (12120), Technology Transfer Director Mike Dyer (8800), VP John Crawford (8000), Congressman Mineta, and Jay Jakubczak, Manager of San Jose Microelectronics Program Office 8006. (Photo by Lynda Hadley)

Sandia kiosk in San Jose features Jupiter comet crash

Multimedia exhibit at San Jose Tech Museum of Innovation

By Pat Radin

Summer Science Writer

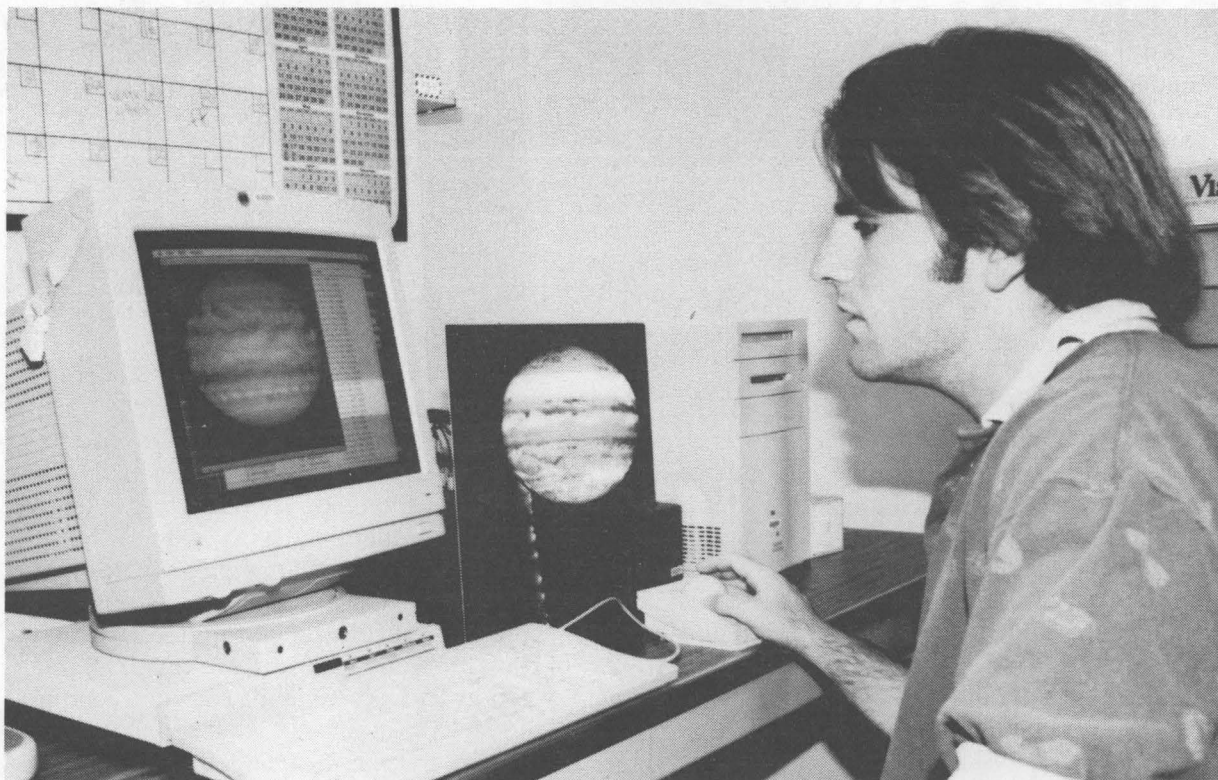
Streaking through the sky at 133,000 mph, a mile-wide comet fragment plunges into Jupiter's ammonia clouds.

Within eight seconds, the superheated comet disintegrates. A thousand-mile-high fireball billows out behind it and shock waves shudder through the huge, icy planet. Whirling vortices of sulfur and phosphorus bubble up through the ammonia clouds. The impact rivals the simultaneous detonation of 10,000 nuclear bombs.

This long-predicted crash of the various fragments of Comet Shoemaker-Levy 9 won't occur for another week (it will happen over 5 1/2 days, July 17-22), but Bay Area residents can see a vivid simulation of it at a kiosk at the San Jose Tech Museum of Innovation in Silicon Valley — thanks to Sandia/California's Presentation and Multimedia Development Group in Distributed Computing Dept. 1952.

In designing the show, Multimedia Group members David Fortner (1952) and Linda Armijo (both 1952) watched one comet impact after another — using a video simulation made by Sandia scientists in Albuquerque — as they considered how to present this unique astronomical event to the public.

Sandia has been one of a few institutions to do detailed predictions of what will happen when some 20 huge comet fragments are yanked, one by one, out of the sky by Jupiter's immense gravitational pull (*Lab News*, April 15, 1994, and Dec. 3, 1993). Using the world's fastest supercomputer, Sandia's Intel Paragon, researchers in Computational Sciences, Computer Sciences and Mathematics Center 1400 worked with shock physics codes of the type



COMET COLLISION — David Fortner (1952) duplicates the photo image of the planet Jupiter for his computer-generated multimedia presentation for the San Jose Tech Museum of Innovation.

originally designed to model nuclear weapon blast effects.

The team's work has appeared in scientific journals and in popular magazines. This summer, Sandia/California, working in cooperation with the Tech Museum, has taken its dissemination one step further.

"Our goal was to take this comet crash millions of miles away — that's kind of hard for people to understand — and transform it into something educational and enjoyable," says David.

Making the show exciting

Multimedia, he explains, is a form of audio-visual technology with the added dimension of interactivity — "that is to say, it creates a player, rather than simply a viewer or a listener." The challenge was how to present scientific information about the comet crash in a way that was accurate, understandable, and interactive. Linda, watching a dramatic video of Jupiter whirling around, recognized the potential to make the show exciting, as well as informative.

"We wanted to grab the public's attention. The animation had to be very dynamic," she says. "We tried to find an interface that would be very user friendly to the public."

David did research at the UC Berkeley library, roamed the Internet for material, and talked with scientists. Conferring with the Tech Museum staff, he and Linda decided to use complementary video footage from three sources: Sandia, which modeled the first 100 seconds of the crash; the Massachusetts Institute of Technology, which calculated the effects of shock waves on the Jovian atmosphere; and the National Aeronautics and Space Administration, which is interested in predicting the possible effects of a comet hitting Earth. (There is speculation that just such an event, 65 millions years ago, wiped out the dinosaurs.) David patiently patched together the show in his computer-packed cubicle, using various software.

The resulting touch-screen presentation is vivid, from the introductory metallic Sandia Thunderbird logo to the last frame of the fireball, pulsing turquoise, red, and yellow against a jet-black sky.

By pushing certain buttons, the user can call up videos of Sandia/New Mexico physicists

Sandia California News

Dave Crawford and Mark Boslough of Experimental Impact Physics Dept. 1433 talking about their National Science Foundation-funded simulation project. The two will visit the Tech Museum on July 24 to give a public talk about the collision, on a stop in San Jose en route home from viewing the event in Hawaii.

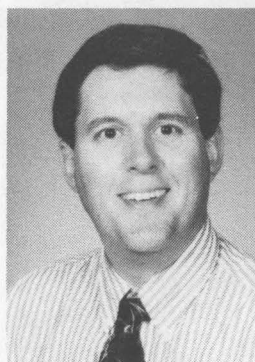
David and Linda say they hope their Jupiter display will help the public understand more about Sandia. Their effort may even lead to a permanent multimedia kiosk at the Tech Museum, with changing exhibits highlighting Sandia's capabilities.

(NOTE: The Tech Museum of Innovation is open Tuesday through Sunday, 10 a.m. to 5 p.m., and is located at 145 W. San Carlos St. in San Jose, phone (408) 279-7150. Admission is \$6 for adults, \$4 for students.)

Supervisory appointment

ROBERT MONSON to manager of Stockpile Initiatives Dept. 5364.

He joined Sandia/California in 1980, first working in the B83 mechanical project group



ROBERT MONSON

as a design engineer, then on the X-ray laser and other directed energy programs. Next he moved to the Janus program as a design engineer, then became lead engineer. Following that he moved to the W82 Test Group to work on the Accident Resistant Container program. Most recently he has been involved in program planning for Complex 21.

Robert has BS and MS degrees in mechanical engineering from UC Davis.



SIXTEEN AREA high school juniors were honored recently by the Sandia Women's Committee for outstanding achievement or significant improvement in math and science. The third annual Math/Science Awards Banquet, hosted by Sandia, was held at the Pleasanton Sheraton Inn. Speaker for the evening was Mim John (8100), shown with microphone. The 16 girls were from Livermore and Granada high schools in Livermore, Amador Valley and Foothill in Pleasanton, East Union and Manteca in Manteca, Dublin High School, and Tracy High School.

Task force

(Continued from page 1)

Defense Programs Capabilities Center 5600.

And there was no complaining, they say. "Literally hundreds of Sandians participated. The whining coefficient was zero," says Peter Mattern, Director of Core Competency Support Center 1010.

Dennis, Peter, and Laura Gilliom, Manager of Dual Use Coordination Office 5603, were the three members of the Sandia core group for the Galvin Task Force who had "ownership" responsibility for the visit of the National Security Subgroup.

The trio all agree with Paul Robinson, the task force's Sandia point of contact, that the intense collaborative effort by Sandians across the Labs in itself bodes well for Sandia's future.

"I found it to be very energizing," says Paul. "I have a feeling that this process is good for the Labs. I think it may bring out pride in what we do." Sandia President Al Narath and VP for Defense Programs Roger Hagengruber co-hosted the visit, and both provided overviews to the panel.

"The Galvin Task Force review is extremely important for the future of Sandia and our partners at Los Alamos and Lawrence Livermore," says Roger. "We must show a creative and energetic view of the future and also demonstrate effectiveness of our interaction of mission and technology base.

"As Sandians, we sometimes forget the interdependency of our core competencies and missions. Yet it is this interdependency that most profoundly conveys our history of continuation and our promise for the future."

The Galvin subgroup, led by William Spencer, President and CEO of SEMATECH, had let it be known that it wanted no tours and not a lot of "techie talk." So Dennis says the Sandians making presentations were told to emphasize "why their work is needed today and why it's important to the future."

"You have the challenge of a group whose recommendations are potentially very important to the future of the labs, many of whom are not terribly familiar with the Laboratories, and you have a day and a half to convey a feeling of what we're all about," says Laura. "That's not easy."

The subgroup had been at Los Alamos the day before coming to Sandia. Paul was with it, so the Sandians had the benefit of knowing how that experience went. And John Cummings, deputy to Paul in the Laboratory Devel-

Galvin Task Force has serious mission

The Galvin Task Force—officially the Secretary of Energy Advisory Board Task Force on Alternative Futures for the DOE National Laboratories—has a very serious mission: to carefully examine options for change within DOE's multiprogram national laboratories and to propose specific alternatives for directing their scientific and engineering resources toward needs of the nation (*Lab News*, Feb. 18).

Secretary of Energy Hazel O'Leary established the task force in response to pressures arising from the breakup of the Soviet Union and other sweeping world geopolitical changes of the 1990s, limitations on nuclear weapons testing, tight federal budgets, and increased attention toward economic competitiveness.

She appointed Robert Galvin, longtime chairman of Motorola, Inc., and now chairman of its executive committee, to head the task force and gave it a firm timeline: final report and recommendations due February 1995.

Several specific charges to the task force are of special interest. She asked it to examine all options for change within the national labs and propose specific alternatives, including possible "redirection, conversion, and/or closure" and "costs and ben-

efits" of same.

The task force was told to become well versed with nuclear weapons-related research, development, and testing needs and the options for satisfying them. And it was asked to examine the current configuration of nuclear weapons R&D and testing activities among Los Alamos, Lawrence Livermore, and Sandia national labs and examine alternatives to that configuration.

Galvin is a highly respected executive who headed Motorola for three decades. Sandia VP Paul Robinson refers to him as "one of those larger-than-life figures on the US scene." The task force Galvin assembled is highly eclectic. Its 21 members come from a variety of businesses large and small, universities, and other organizations. They were chosen more for their experience and abilities than any familiarity with the national laboratories. "Only a few have a working knowledge of the national labs," says Paul, but he notes that they are learning fast. "And they really do represent a wide range of views."

The task force has three subgroups: National Security (the one that visited Sandia this month); Laboratories/Industry/Universities Relations; and Energy, Environment and New Missions.

opment Division 4000 office and leader of the Sandia core group, had been in close contact with the Galvin Task Force. But the die was cast; only fine-tuning was possible by then.

The key was the intense planning since learning only on May 21 of the impending visit, and a "dry run" the week before the visit that served as a "wake up call" for all that wasn't yet right.

Sandia pushed hard to emphasize and reinforce to the visitors several key themes. Among them:

- **A sense of the technical strength of the Labs, of the excitement of the technical work, and of the deep scientific roots of virtually everything Sandia does.** This was considered crucial because Sandia's technical prowess was likely to be less well known to the panel than that of the other two Defense Programs labs.

"What we did was show the connectivity of our mission focus to the scientific roots in everything we do," says Dennis. "And we tried to drive it down as far into our science base as we could."

"We kept using the term 'science-based engineering,'" says Paul. They began to realize that that phrase seems to embody a central essence of Sandia. Related to this was a continuing emphasis that the things Sandia do have a high intellectual content," says Dennis. This is considered an important point, says Paul, because industry in its downsizing and cost cutting is

emphasizing short-term gain and deemphasizing substantive R&D that leads to new knowledge.

- **Sandia's special strength as a fully integrated facility.** "The theme we really tried to present was that of a highly integrated lab," says Laura. "This is a distinguishing feature of Sandia."

Dennis agrees. "The whole idea of integration is, to me, our most distinguishing feature," he says. "We're not only able to integrate multiple technologies in solving problems, but we're also very deep from our applications to our scientific roots. I believe that's what distinguishes us from industries and universities. And our particular science and technology mix distinguishes us from the other laboratories, I think. All speakers tried to show that every application reached down into these technical roots—and most often engage multiple technologies."

Dennis and the others credit Roger Hagengruber with the vision that led to one important facet of the approach. "Roger believed that instead of having separate talks for core competencies, MIE [our strategic thrusts in advanced Manufacturing, Information technologies, and Electronics], tech transfer, our California site, and so on, we should show we embrace them at every stop—make them implicit rather than explicit," says Dennis.

"The core competencies [microelectronics and photonics, computational and information sciences, materials science and engineering, engineering sciences, pulsed power] got mentioned again and again, not as separate subjects, but as cross-cutting capabilities that permeate the Laboratories. I think that's a graphic illustration of how highly integrated we are." Dennis says all the displays for the subgroup were intended to demonstrate this.

- **The core R&D base of Sandia depends strongly on nuclear weapon R&D, and it is essential to shore up that budget.** "Most of our flexibility comes from those dollars, and they have been eroding," says Paul. A related theme, Paul says, was that the competencies

(Continued on next page)



TEAMWORK — Laura Gilliom (5603), Peter Mattern (1010), and Dennis Hayes (5600) review some of the information they provided the Galvin Task Force's National Security Subgroup during its day-and-a-half visit to Sandia. Hundreds of Sandians assisted in the effort.

Misimpressions endanger strength of Labs' core research foundations, says Narath

Quarterly dialogue sessions cover broad range of issues

By Ken Frazier

Lab News Managing Editor

One of the biggest challenges Sandia faces is overcoming a widespread lack of understanding that nuclear weapon research and development cannot suffer further deep cuts without damaging the core scientific foundations of the Labs, says Sandia President Al Narath.

This was one of the main themes emphasized in Al's latest round of quarterly dialogue sessions with Sandia/New Mexico employees June 15. He held two more dialogue sessions at Sandia/California June 30.

"Although funding from DOE's Office of Energy Research and from the LDRD [laboratory directed R&D] tax on all Sandia programs provides essential support, more than half of the basic-research activity at Sandia remains dependent on the nuclear weapons R&D budget," Al said. That budget has been declining at a rate of 10 to 15 percent a year, and the rate of decline shows little sign of diminishing. "We are working very hard to change this trend," he said.

Al also pointed out that the task of defending the need for stable weapon R&D funding is made more difficult by the fact that in the aggregate DOE defense-related work at Sandia has remained essentially constant in recent years. "It is a tough challenge to get policy leaders to fully appreciate the significant difference between activities that sustain basic research and those that benefit from it. Without the nuclear weapons R&D program, our ability to sustain our core research foundations would collapse," Al said.

He said he is hopeful the Galvin committee — the task force reviewing alternative futures for the DOE national laboratories at the request of Secretary of Energy Hazel O'Leary — will strongly endorse the critical role of Sandia's scientific and engineering foundations in serving the needs of its many customers. The Galvin task force's National Security Subgroup, headed by SEMATECH President William Spencer, came to Sandia June 16-17 as part of its review of the national labs (see story this issue).

Al's New Mexico dialogue sessions, two at Sandia and one at the BDM building, covered a

wide range of other issues, including reengineering, the revised Strategic Plan, and the pension plan. Stories on those three matters appeared in the June 24 *Lab News*.

Here are a few highlights from responses to employee questions:

On the likelihood of a DOE-mandated pay freeze at the national labs for a second consecutive year: "I have no reason to believe that the Secretary of Energy will repeat her bold move of a year ago. I don't think it's going to happen."

"I have no reason to believe that the Secretary of Energy will repeat her bold move [pay freeze] of a year ago."

On the perception in some quarters that Sandia and the other DOE labs haven't shared in the pain of corporate downsizing: "We've got to demonstrate that our value is sufficiently great that we don't suffer some arbitrary budget cut."

On the future of the nuclear weapons program at Sandia: "There will be a nuclear weapons program at Sandia for as long into the future as I can project." Sandia has unique responsibilities in the nuclear weapons area, he said, and that is not expected to change. "It's an awesome responsibility. Any time we start taking that responsibility lightly, the country will be worse off for it."

On whether Congress is hoping to shrink the national labs: "The way I interpret the messages from Congress is that we must demonstrate greater operating efficiencies. The burden of proof is on us."

On the seeming paradox that some parts of Sandia are struggling for customers while others are so busy and "oversubscribed" they have to turn customers and work away: "I have been persuaded to believe that we are oversubscribed. I'm also painfully aware that there are some functions that are much less in demand than others. The evolution of the Laboratories is going to have to be guided by what our customers want from us. It's inevitable that some

functions will continue to be in decline while others will have to grow."

Sandia a leader, not a follower

On whether our future depends more on competition or coordination with the other DOE national labs: "I believe as long as we focus on excellence at Sandia, try to be leaders where we are technically and in other ways very strong, then we can also concentrate on partnerships. I much prefer Sandia being a leader over a follower, and I'd like for Sandians to feel that way too. On the other hand, our future is clearly tied to the collective well-being of the DOE laboratory complex. It's in our best interest to help the whole complex succeed. The best way to do that is to emphasize our own excellence, strive hard to maximize all our contributions to our customers, and work with other labs in ways that create value for our customers that exceeds the sum of the individual parts."

On his own future plans: "I have neither any plans of leaving Sandia nor, more important, any desire. Can you imagine a more exciting, interesting, and challenging job than the one I have? Sandia is a great laboratory. We have a billion and a half dollars that we're spending on things that are nationally important. No amount of money could convince me to do something different."

— Dawn Hipsh contributed to this report.

Favorite Old Photo



The recent television documentary "Korea: The Forgotten War" brought back memories. I dug out photos of my time with the Army in Korea in 1950 and 1951, such as this one of me on my tank while we were in North Korea driving north to the Yalu River, to explain to my grandson what had been happening. I think this was taken around March 1951 about midway between the 38th parallel and the Yalu River (the border between North Korea and China). We were part of the 24th Infantry Division. I was 18 years old and was a tank driver with the 6th Tank Battalion. The day after this photo was taken this tank was knocked out by artillery. Its tracks were knocked off. Fortunately I wasn't injured except for a concussion. I stayed in the Army until 1952, and I joined Sandia June 8, 1953. This year I will complete 41 years at Sandia and am retiring.

— Leo A. Armijo (7613-1)

(Continued from preceding page)

that Sandia has built over the past 40 years in dealing with nuclear weapons are the very elements that are going to take us into the future.

• **Sandia's California site provides special advantages because of its West Coast location.** The New Mexico and California activities are interdependent and integrated (Sandia-developed desktop video conferencing software was used to show real-time links between the two sites on a welding application.)

Cooperating with other labs

Although Sandia was certainly seeking to present its strongest case, Paul says Sandia also tried to take the lead through this Galvin process to bring the DOE laboratories closer together. "We proposed that everybody ought to share information on Galvin activities — basically to raise the level of all boats in the process."

Sandia invited all the labs to send a representative to its "dry run." Los Alamos, Lawrence Livermore, and Oak Ridge came. Los

Alamos and LLNL reciprocated by inviting Sandia representatives to their dry runs. In addition each lab had an observer at the actual visits of the Galvin subgroup to the other labs, including at Sandia.

Paul and the others are pleased that this first — and perhaps most important — crucial meeting with a Galvin subgroup went well. "We were told later by one of the key folks, 'I believe you got your messages made,'" says Paul.

But, as John Cummings says, "This is just the first step." On June 23-24 Sandia President Al Narath gave separate presentations in Washington to the full Galvin Task Force and to another subgroup. On August 16 Robert Galvin and several members are expected to visit Sandia. And individual members of the two other task force subgroups as well as members of the full task force may come at other times.

The task force has said it wants to have its subgroup reports by early fall and its draft full report by November. So the next two months, John emphasizes, will be crucial.

Knowledge

(Continued from page 1)

and Henry Street and T.J. Williams, who are about to retire.

Keith and John Taylor (5006) began discussing the need to preserve knowledge incidental to weapon design last August, and those discussions led to development of a program. Defense Programs VP Roger Hagenhuber (5000) sent letters to all vice presidents and directors in February, asking them to name people with weapons work expertise, and the program was funded in March.

From those names, Carmen compiled a list of 180 people to interview and began trying to identify those about to retire so they could be interviewed first. She says DOE has approved extending clearances for six months after they retire so they can be brought back and interviewed.

"We get a list of the projects they've worked on at the Labs, and we sit down with them and one or two colleagues they pick to participate on a panel," she says. "We talk about the topics we're going to cover, then we schedule a taping session."

Modern nuclear weapon design

Keith says they are encouraged to think back over their 30-40-year careers and try to remember issues that came up — in most cases, things they haven't thought about for a long time.

"These people, who came to the Labs in

the mid '50s and early '60s, began modern nuclear weapon design," he says. "The people prior to that were great designers, but their primary mission was to design a weapon that would explode. The people we're seeking now are the ones who refined the concepts, developed safety and surety and reliability, radiation-hardened components — everything in a modern weapon, which is an extraordinary technology."

Although Sandia hires well qualified college graduates, says Keith, learning to design nuclear weapons is a mentoring process, a craft they must assimilate from those who have done the actual work.

"Now, of course, we have no new weapon designs under way, and all of these journey-men designers are beginning to retire," he says. "The question is not only how to maintain the knowledge, but how to recapture the knowledge in the event that sometime in the future we have to reconstitute the nuclear weapon program."

Actual testing, he points out, is an example of the kind of weapons-related knowledge the program is accumulating. Because of the halt in underground testing, says Keith, the people associated with it are leaving, the facilities are being closed, the equipment removed.

"That's an activity that is like no other," he says. "Maybe the answer is that we'll never have to do another nuclear test, but none of the people we've talked to are absolutely confident of results based entirely on simulation. The bottom line is that at some point, you've got to see what actually happens."

Project turns up interesting vignettes on components, geographic-specific weapons

Since Jim Lloyd of Video Services Dept. 13417 began taping interviews for the Knowledge Preservation Project, some interesting bits of information have turned up, says Keith Johnstone (5006).

Among these bits of information: Some weapons components use more electrical power from their lithium batteries than expected when they were designed, and a concept for a geographic-specific weapon that was technologically impossible to execute a couple of decades ago could easily be built today.

The batteries are so reliable — their power supply so measurable — that when it's time to change them, near the end of their lifetime, technicians discharge the remaining charge and measure the energy remaining in the batteries.

Occasionally, says Keith, they find that there is almost no energy left, which indicates the component being powered by an individual battery is drawing more power than it is supposed to.

"This is one of those things that nobody ever knew about before," he says. "Don't

misunderstand: The component would still function. It's not that it's not functioning, it's just drawing more current than it should, so there's something in there that's not exactly right, and they replace the whole component along with the battery."

Also, he says, when designers were doing the initial work on permissive action links years ago, someone or some group of designers thought of making a geographic-specific weapon — one that "would know where it was, and if it wasn't in the proper geographic location on Earth, was not usable."

When the concept arose, it was not technologically possible because computers required to maintain position were too large; they couldn't be miniaturized and put into the weapons.

"However, now that is not a problem," says Keith. "We have miniature computers and the capability to do that. And, we have a global positioning satellite system that hadn't even been thought of back then. Now we could actually build a geographic-specific weapon that would only detonate within a specified area."

Supervisory appointments

ELIZABETH "LISA" DUNCKEL to Manager of Program Planning and Management Dept. 3331.

Lisa joined the Labs in 1984 as a member of the Purchasing/Procurement organization.



LISA DUNCKEL

Other organizations she's worked for include the Medical Administration Department, the Monitoring Systems and Technology Center, and the Staff Employment and Personnel Policy Department.

Lisa has a BC (bachelor of commerce) in accounting/marketing from the University of Calgary and an MBA from New Mexico State University. She has national accreditation as a Senior Professional in Human Resources.

Before coming to Sandia, Lisa worked for the Toronto Dominion Bank in Calgary, Alberta.

LINDA DUFFY to Manager of Preventive Medicine and Employee Assistance Dept. 3335.

Linda joined Sandia in 1988 as a graduate student intern in the Total Life Concept (TLC) Program. She became a full-time employee in 1990, and has worked in the TLC Program since then. She was a team leader on the team that received a President's Quality Award for the TLC Program last year.

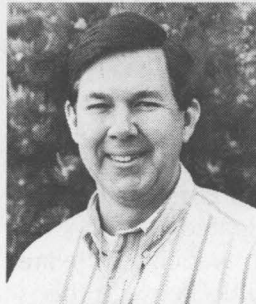


LINDA DUFFY

Linda has a BA in English/psychology from the University of Illinois and an MS in exercise physiology from UNM. Before coming to the Labs, she was a UNM project assistant and assisted in designing and implementing a physical fitness training program for Sandia's Security organization. Linda is a member of the American College of Sports Medicine and is a certified health/fitness director.

CHARLES FIELD III to Supervisor of Arming and Firing and Special Projects Team 9333-1.

Charlie joined Sandia in 1967 as a member of the Nevada Test Site (NTS) Instrumentation



CHARLIE FIELD

and Diagnostics Division, where he designed and fielded diagnostics experiments and instrumentation systems for NTS use. Other Sandia organizations he has worked for include the Navigation and

Guidance Division, where he designed navigation electronics for RIMS (roll-stabilized inertial measurement system), Mini-RIMS, the Wellbore Inertial Navigator, and other flight systems. He also served as project leader for the W88 Firing Set while in the Firing Set Division.

Charlie has a BS in electrical engineering from Mississippi State University and an MS in the same field from UNM through Sandia's Technical Development Program. Before coming to the Labs, he worked on his family's cattle ranch in Mississippi and for the Southern Natural Gas Company.

Fun & Games

Golf— Big Brothers/Big Sisters will hold their 4th Annual Golf Tournament on Aug. 6 at Paradise Hills Golf Course. The entry fee is \$60 per person, which covers the cart, greens fees, lunch, and prizes. For more information, call Redd Eakin (12640) on 844-4124.

Bowling— SANDOE Bowling Association congratulates the April/May Bowlers of the

Month: scratch — Daniel Baca (7814), 575, and Dee Schumpert, 544; handicap — Lea Long, 492 and 630.

The Women's Sandia Lab Bowling League is looking for more teams or individuals to bowl on Thursdays at 6:15 p.m. at Holiday Bowl. The season will begin in late August or early September. For more information, call Dora Gunckel (6400) on 299-4867.

Explosives

(Continued from page 1)

Largely because of the decline in weapon development activity since the end of the Cold War, Sandia today has too many explosives for its needs, says Jack Swearingen, Manager of Technology Applications Dept. 8113.

Jack is chairman of the Propellants, Explosives, and Pyrotechnics Evaluation and Reapplication (PEPER) task force — a group of Sandia explosives users and handlers formed last year partly in response to the 1991 DOE Tiger Team audit. That audit found Sandia to be out of compliance with DOE explosives safety requirements.

"In the past it was uncertain how much explosive material we owned or how stable it was," he says. "We didn't have a formal process for managing explosives."

PEPER's main goals are to compile an accurate inventory of Sandia-owned explosive materials and establish formal procedures for acquiring, storing, using, and disposing of them. In addition, members are seeking ways to get rid of explosives not needed for future Sandia tests as safely and cheaply as possible.

But "getting rid" of unused explosives is complicated and expensive. As soon as you classify an explosive as waste, says Jack, it automatically becomes hazardous waste per Resource Conservation and Recovery Act (RCRA) regulations. It then requires special handling, transportation, storage, and disposal.

What's more, DoD still considers some explosives (such as rocket motors) useful as weapons, meaning they can't be disposed of. Other materials are classified, meaning national security regulations must also be considered.

Recycling explosives

Because of the difficulty of disposing of such materials, PEPER members are finding innovative ways to "recycle" certain types of explosives by finding new uses and new owners for the materials, says Jack.

A pending joint venture with Hercules Inc., for instance, would commercialize "cryocycling," a process by which solid rocket propellants are repeatedly dipped in liquid nitrogen, causing them to fracture into pea-sized pellets. The pellets may one day be used as explosives for mining or welding applications or as fuel in various types of energy converters. Cryocycling was developed at Sandia/California. (Technical contact: LeRoy Whinnery, 8716)

The Labs has also proposed that some granulated explosive materials be burned in commercial combustors along with coal or biomass to create heat or generate electricity.

In addition, Sandia has supplied 20,000 pounds of unused gunpowder to TPL, Inc., a small Albuquerque business. Under contract with the Navy, TPL is investigating the possibility of converting nitrocellulose-based propellants into agricultural products (such as fertilizer), animal feed supplements, or small explosives for oil and gas exploration.

As part of the explosives recycling effort, Sandia and DOE lawyers have agreed on definitions for "excess explosives" that will enable Sandia to establish a "savings account" for explosive materials. The account, called the Resource Recovery and Disposition Account (RRDA), allows excess-but-stable explosives to be stored for a specified period of time while alternate uses or new owners are sought.

Recycling isn't the answer to all of Sandia's explosives concerns, however. Explosives are still needed for many Labs operations. As part of the new "cradle-to-grave" process for managing explosives, PEPER is testing a new labeling and tracking system that stores informa-



PART OF PEPER's (the Propellants, Explosives, and Pyrotechnics Evaluation and Reapplication task force) mission is to inventory the Labs' current stock of more than 16,000 rocket motors identified as not needed for future Sandia tests. Here, Bill Rader of Explosive Storage Team 7617-5 checks writing on the sides of several containers containing Little John rocket motors inside a Manzano Base storage bunker. The Army field utility rocket was probably destined for a Sandia sled track or flight test until weapons testing activities declined following the end of the Cold War. Each Little John contains about 243 pounds of propellant.

tion about explosives in a data base.

Most explosive materials become increasingly unstable as they age and must be destroyed. Kirtland's Explosives Ordnance Demolition Team periodically detonates unstable Sandia explosives, and PEPER members have established a hierarchy of risk to help determine which explosives should be destroyed, says Jack.

Lloyd Bonzon (2514), secretary of the Sandia Explosives Safety Committee (SESC), says PEPER's most important accomplishment is formalization of ownership and responsibilities for explosives users. "Establishing a formal process by which we deal with explosives will ensure that we never get in this situation again," he says.

When PEPER's work is completed in FY95, SESC will assume responsibility for Sandia

explosives management. In the future, however, each Sandia "owner" of explosives will have cradle-to-grave responsibility for this material, says Jack.

New procedures should be in place by the end of this year, and a full inventory of Sandia explosives should be available by the end of 1995. For more information, contact Jack on 510-294-3022.

— John German

! Take Note

The Engineering for Persons with Disabilities Program is hosting a conference, "Leveling the Playing Field for Students with Disabilities in Science, Engineering, and Mathematics," at New Mexico State University in Las Cruces Aug. 4-6. This conference presents an opportunity for teachers, counselors, parents, students, and role models, as well as business, government, and other representatives, to learn ways of reversing the trend of middle and high school students being counseled away from science and engineering courses and careers.

Conference and workshop presenters are being sought on a wide variety of topics. For information about the conference and how to submit abstracts, contact Keith Miller (9818) on 5-8812.

Ray Culy (8632) has completed 35 years as a Sandian, not 25 as was stated with his Milepost photo in the June 24 *Lab News*.

Sympathy

To Mary Chapel (5102) on the death of her daughter Kimberly, May 25.

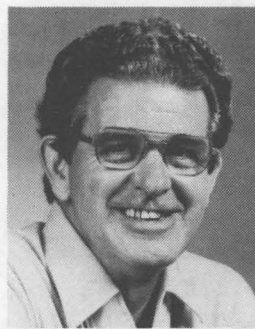
Recent Retirees



Wendell Nelson
10403 34



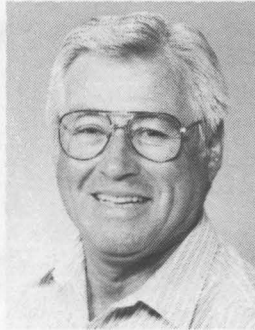
Paul Metoyer
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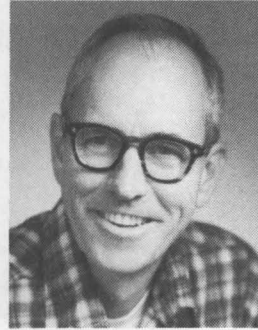
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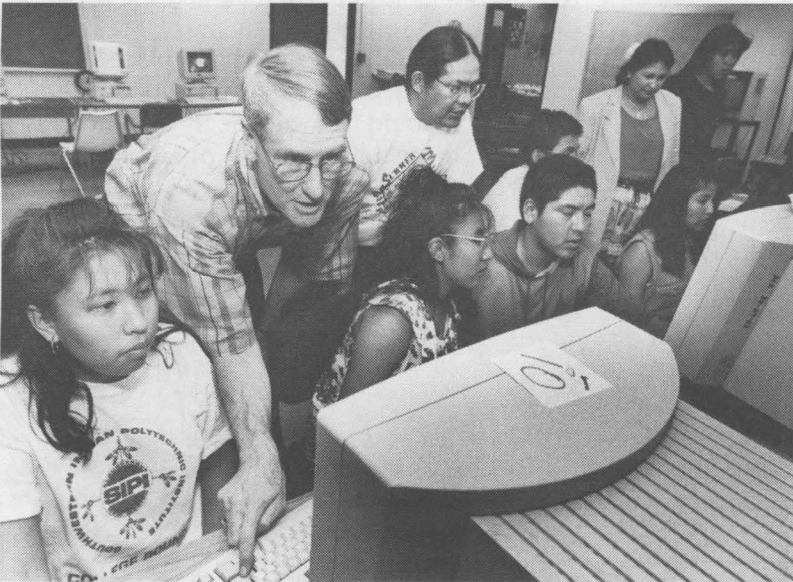
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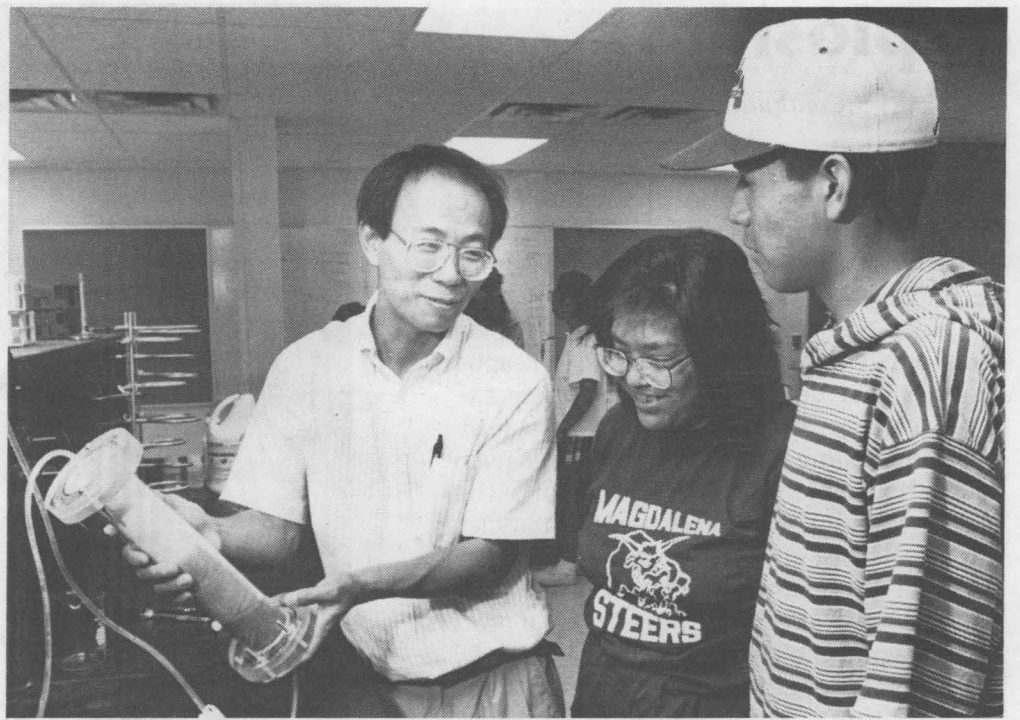
CRAWLY SPECIMENS — SIPI assistant Rose Paulsen sets up a microscope for viewing. The viewing specimen, found on the SIPI campus, resembles a spider, but is popularly known as a "Child-of-the-Earth."



WASTE MANAGEMENT is no easy task. Roger Head (9122) helps student Wilhelmina Segay of Navajo Pine High School prepare a waste clean-up proposal in response to a fictitious Request for Proposals (RFP) as part of a waste management project.



SETTING UP an antenna under the supervision of Ron Malpass (7433, not shown), students working on a Global Information System (GIS) project hope to pick up signals from a passing satellite.



JUST PASSING THROUGH — Wu-Ching Cheng (6626) discusses a water filtration system with Lena Ganadonegro of Magdalena, N.M., and Willard Martine of Cañoncito, N.M. The system, which works by passing water through densely packed sediment, is part of a College Bound group water quality project.

Sandia brings science and support to SIPI students through College Bound

By Dawn Hipsh

Summer Science Writer

Some students never get the chance to drop a beaker, disable a computer, or spill a test sample — all initially discouraging events, but easily remedied with experience. Willard Martine from Canoncito, N.M., might have been one of those students if not for a collaborative effort between Sandia and the Southwest Indian Polytechnic Institute (SIPI). The resulting program, College Bound, gives rural students hands-on experience in science and technology, something they might not get in their hometown schools.

"The primary goal of College Bound is to encourage students in grades 9-12 to finish high school and go on to college to prepare for careers in math, science, and engineering," says Mary Tang of Sandia's Education Outreach Dept. 3020. "Another goal is to explore ways for the national labs to transfer some of their technological expertise into education programs."

Dean Pershall (4221), who spent many years as chair of Sandia's Indian Outreach Committee, says positive experiences with science and technology are important in helping minority students select and succeed in such fields as engineering, computer science, biology, chemistry, and physics. "Some of these students have never seen science labs or even a computer," says Dean. "Not only are they at a disadvantage compared with students from larger, better equipped schools, but they are also not likely to choose a career in a technical field. For many students, confidence in science and engineering must be cultivated through experience."

Sponsored by DOE, the six-week College Bound program began at SIPI on June 13 and will run through July 22. During this time students are being exposed to nearly all (Continued on next page)



SAMPLING THE RIO GRANDE — Lisa Yazzie (left) of Tsaline, Arizona, and Janet Burbank of Chinle, Arizona, prepare Rio Grande river samples for testing as part of a College Bound water quality project. The samples will be exposed to varying amounts of chlorination for water purification purposes.

Laser treatment for enlarged prostate enters trials

Project with Indigo Medical and others

Clinical trials of a unique new laser system aimed at offering an alternative to America's most prevalent in-patient surgery — correction of benign prostate enlargement — were reported recently at the 89th annual meeting of the American Urological Association in San Francisco.

The system is being developed by Indigo Medical, Inc., of Palo Alto, Calif., in collaboration with Sandia, Phillips Laboratory, and Los Alamos National Laboratory. The initial human clinical trials are now in progress at Lovelace Medical Center in Albuquerque.

Low-level lasers used

"There is a strong need for better, more cost-effective therapies for this health problem, and Sandia has been able to offer its expertise in lasers, safety and reliability, and systems integration toward that goal," says Sam Varnado, Biomedical Engineering Initiative program manager, Org. 9400.

Unlike conventional therapy, the system is designed to deliver low-level laser energy directly to prostate tissue. The goal is thermal destruction of the tissue, which will be subsequently resorbed by the body, reducing the size of the prostate and alleviating symptoms.

Sandia and Indigo have signed a cooperative research and development agreement (CRADA) to work together to design, develop, and test a laser system. Sandia is involved in testing system components, such as high-powered lasers and a temperature monitoring system. Bill Kass of Optoelectronic Applications Dept. 2235 is principal investigator.

The laser system is portable and uses advanced gallium-aluminum-arsenide (GaAlAs) laser diodes. These lasers are smaller, more reliable, and less expensive than other types of medical lasers, which often require special installation and maintenance.

Traditional surgery to treat benign prostatic hyperplasia (BPH) is called transurethral

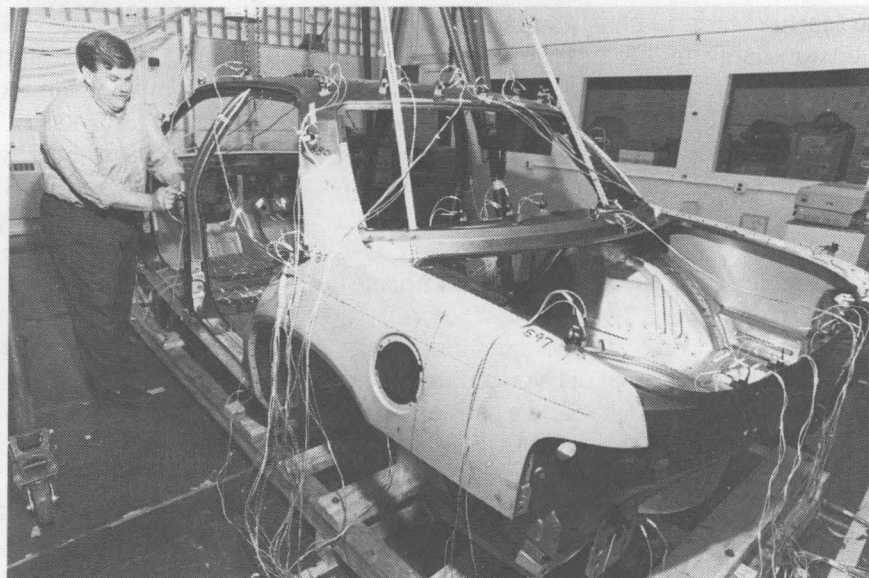
resection of the prostate. It requires removing a portion of both the urethra and the prostate with an electrocautery wire loop inserted into the urethra through a cystoscope. The surgery requires either a general or regional anesthesia, a few days in the hospital, and an extended recovery time. The cost is more than \$10,000.

Indigo's laser therapy uses the same standard cystoscope to introduce a special fiberoptic directly into the prostate via a small puncture in the urethra. There it delivers low-power energy for a few minutes to thermally destroy a controlled volume of tissue. The treated tissue is resorbed, and the prostate shrinks.

The Indigo procedure is expected to require about half an hour and cost less than half as much as traditional surgery.

Indigo, founded in 1990, is dedicated to minimally invasive medical systems for precision delivery of energy for therapy or diagnostics.

— Julie Clausen



WHOLE LOT OF SHAKIN' — Members of Experimental Structural Dynamics Dept. 2741 conduct an experiment on the substructure of a late-model General Motors car. Above, Tom Carne attaches one of an array of accelerometers. At left, Larry Dorrell operates control console in background while the car is subjected to vibrations. The experimental data will support the modeling and computation simulation research being performed by Structural Dynamics and Vibration Control Dept. 1434. This project is supported by a Sandia/General Motors cooperative research and development agreement (CRADA) on Structural System Identification. This is a three-year effort focusing on the process of generating computational structural dynamics models that are automatically updated and calibrated using results of physical experiments. According to John Red-Horse (1434), the results of this research will allow advanced modeling and simulation capabilities to have a direct impact on the manufacturing processes needed for industrial applications. The results will do so by providing reliable virtual prototypes — yielding better dynamic structural designs — and reducing the product development cycle time.

(Photos by Mark Poulsen)

(Continued from preceding page)

elements of college life including working on lab projects, preparing for the Scholastic Aptitude Test, living in dorms, meeting new people, missing home, and in the case of one Alaskan student, trying to survive in a new climate.

Unlike what's been done in the past, this summer's six-week session is focused primarily on project-based instruction. "We wanted students to be actively involved in their education and not just have some teacher in front of the class spouting wisdom," says Dean.

That's where Sandians came in, donating much of their time to create and develop challenging technical projects including a supercomputing project with Lawrence Livermore

National Lab coordinated by Evans Craig (3020).

"The goal was to apply the team concept to instruction," says Mary. Sandians, many of them Sandia Science Advisors, or SCIADs, headed up teams supported by one SIPI instructor and one area teacher. Thanks to such efforts, College Bound participants were able to delve into the world of fractals, learn critical thinking skills through games of chess, roam the Internet, and create computer graphics. Group projects let students explore, in depth, topics such as weather, biology, energy and the environment, radio astronomy, water quality, and astronomy and culture. Students will display their results at a science fair at the end of the program.

Sandia's support, however, doesn't end

with projects and instruction, nor did it begin there. Karen Scott of Sandia/California's Education Outreach Dept. 8528 wrote the initial College Bound funding proposal to DOE, and since the funding was awarded, members of Sandia's education outreach departments have worked continuously to administer the program, from financial accounting and planning to program coordination, evaluation, and assessment. The efforts have been rewarding to students, instructors, and administrators alike.

"I never thought I'd be this interested in this kind of work," says Dean. "I've found I have a real passion for speaking to students.

"There is nothing compared to seeing students eyes light up as they realize, 'I can do what he does.'"

Benefits specialists address pensions, other issues

Questions prompted by May 25 forum

Following is the second installment of questions and answers stemming from the May 25 forum on the Labs' retirement plans and other benefits. Because many questions address the same, or closely related, issues, Sandia benefits specialists have combined them and provided a single answer to each basic question.

Mark Biggs of Pension Fund/Benefit Program Management Dept. 3542 says videotapes of the forum are available at the Technical Library at Sandia/New Mexico and from the Benefits Organization (Bldg. 911) at Sandia/California. He also says any further questions should be addressed to him.

Credited service

If an employee has prior service with a Martin Marietta company, can that service be added to current Sandia service time for pension purposes?

As provided in Appendix A of Martin Marietta's contract with DOE, employees who transfer after Sept. 30, 1993, will have prior Martin Marietta service recognized for pension purposes, subject to applicable service bridging rules. Assets will be transferred from the appropriate Martin Marietta pension plan to support the pension liabilities being assumed by Sandia. Employees with prior Martin Marietta service who were hired before Oct. 1, 1993, are not eligible to bridge that service during their current term of employment at Sandia.

If an employee is vested in a Martin Marietta pension plan, can he or she stay in it and then participate in Sandia's pension plan after the required service?

No. See the answer to the prior question. Assuming you retire from Sandia, your entire pension will be calculated under a Sandia pension plan.

If we retire the first day of the month (e.g., Oct. 1), does the full month count as service?

No. Pension calculations under the Retirement Income Plan's "High-5" formula use credited service through the date of termination.

Is the allocation of vacation time going to change effective Oct. 1, 1994?

Exempt employees with 10 years of service will continue to be granted the full year's accrual (e.g., 24 or 15 days), determined by their employment status and credited service, on Oct. 1 of each year. Full-time employees with less than 10 years of service will continue to accrue vacation time at the rate of 10 hours per month (employees who started working at the Labs after Sept. 30, 1993, who earn 15 days a year) and 16 hours per month (employees who were working at the Labs as of Sept. 30, 1993, who earn 24 days a year). (The vacation benefit for represented employees is covered by their collective bargaining agreements.)

Health insurance premiums

Will the health care premium sharing cost paid by employees who retire after 1994 remain at the 1995 rate or will the cost increase?

The premium sharing cost paid by employees who retire after 1994 is currently fixed at the rates of \$17/month for one dependent or \$28/month for two or more dependents for 1995. Future changes will be based, in part, on Sandia's ability to manage and control its health care costs. Any changes would be negotiated with the DOE since the current Appendix A specifies the rates to be charged. It is anticipated that any changes for future retirees' dependent coverage would be based on comparable changes applicable to active employees. (Employees who retire after 1994, but who have no dependents, will not have to

share in premium costs in 1995.)

Will employees who retire by Dec. 31, 1994, be subject to health care premium sharing in the future?

The Appendix A to the current contract between DOE and Sandia Corporation specifies that "retirees that retire prior to Jan. 1, 1995, will not share in the cost of the standard Medical Care Plan for themselves or their dependents."

Executive-level benefits

Please describe the additional pension plans available to upper-level management.

All director-level and above employees are eligible for the Sandia Non-Qualified Pension Plan, which provides a supplemental benefit based on the following formula:

1.7 percent times adjusted career average pay minus 0.8 percent times Social Security Covered Compensation base times total credited service minus Retirement Income Plan benefit

The plan does not provide any survivor annuity benefits, and benefits are actuarially reduced for retirements before age 60. The total annual cost for providing this benefit is approximately \$28,500, and the 18 retired employees covered by the plan receive an average benefit of about \$132/month from this plan.

In addition, employees hired at the director level or above and age 35 or older are eligible for the Sandia Mid-Career Retirement Plan, which provides a benefit based on the following formula:

Normalized adjusted income times mid career retirement credits times 0.75 percent plus normalized post-base period income times mid career retirement credits times 0.05 percent

No employee has qualified for a benefit from this plan, and DOE must approve any continuation of the plan after Oct. 1, 1994.

Why does Sandia maintain separate pension plans for its upper-level management?

Supplemental benefits are common in private industry to attract and retain mid- and upper-management employees. As with the benefit plans provided to other employees, Sandia attempts to maintain a competitive benefits package based on comparisons to private industry.

How are the non-qualified pension plans funded?

Neither supplemental pension plan is pre-funded, and monthly payments are made to retired participants from operating expenses. The non-qualified pension plans are recognized in Appendix A of the contract between DOE and Martin Marietta. DOE reimburses these expenses as they are incurred.

Do these plans contain an automatic cost of living adjustment (COLA)?

No Sandia pension plan contains a provision for automatic COLAs. DOE Order 3830.1 specifically prohibits automatic COLAs for operating contractors. In addition, neither non-qualified plan has granted an ad hoc increase independently of a similar increase approved for the Retirement Income Plan.

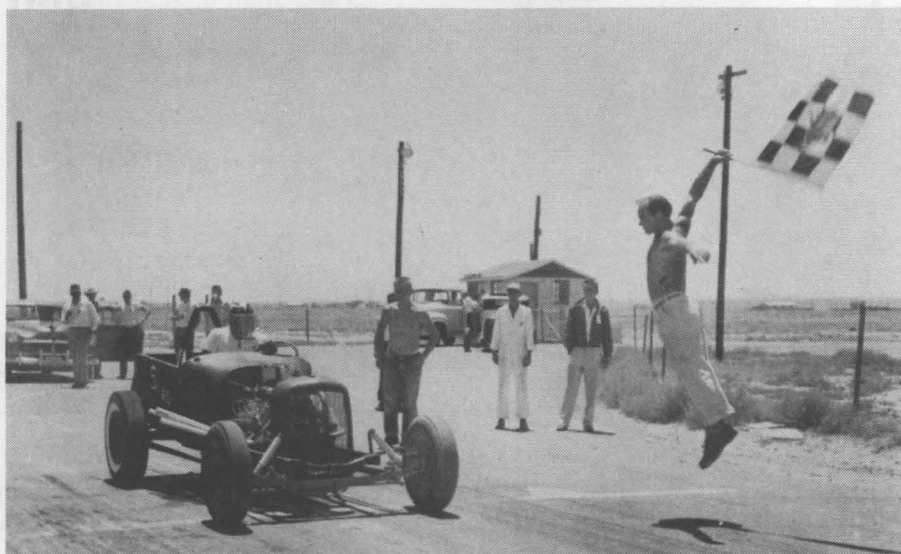
Who receives booklets describing these plans?

Sandia's practice is to distribute plan descriptions to employees as they become eligible for a particular benefit plan. For example, employees covered by the Pension Security Plan do not generally receive a summary plan description for the Retirement Income Plan, and vice versa. Consequently, only director-level and above employees receive descriptions of the non-qualified plans for which they are eligible. Interested employees may review the summary plan description for any Sandia benefit plan in Pension Fund/Benefit Program Management Dept. 3542, or Personnel and Employee Resources Dept. 8522.

Isn't it a conflict of interest for upper-level management to have a supplemental pension plan since they will not be interested in improving the RIP (Retirement Income Plan)?

Changes to the RIP are ultimately approved by Sandia's Board of Directors (which includes two Sandia employees) and DOE. Any member of upper-level management who exercises discretionary control over the administration or management of Sandia's qualified pension plans is a plan fiduciary under the Employee Retirement Income and Security Act. Fiduciaries are bound by certain established standards that require them to act prudently and solely in the interest of the plan's participants. Consequently, the existence of a supplemental pension benefit should not influence their decisions regarding changes to the Retirement Income Plan or the Pension Security Plan.

Favorite Old Photo



LIFE WAS NO DRAG when Sandians and friends gathered to race down the "straightaway" at the Eubank Drag Races in the late 1950s. In this favorite old photo from Dave Straub of Surety Technology Dept. II 5932 — showing the Eubank Gate house in the background — the unidentified starter really gets into dropping the flag for Bobby Davalos. Dave says Davalos, who today is Chief M/Sgt. Davalos and the senior enlisted advisor for the New Mexico Air National Guard, operated a service station on East Central Avenue across from the now-vanished Terrace Drive-In Theater when this photo was taken in early 1958. He identified the man in the white coveralls as Delmar Gronseth, who recently retired from Sandia; the man between Delmar and the flagman as Norm Castle, whose father was chairman of the University of New Mexico Chemistry Department; and the man at far left standing in front of the Hudson car as Moon Mullins, who then worked at Sandia. Dave couldn't identify any of the others.

Feedback

Bringing children to work

Q: Kudos to Sandia for supporting the "Take Our Daughters to Work Day."

Given that it is very difficult to share our work environment with our families, and that Sandia policy is opposed to sexism, is it possible that next year it could be modified to "Bring Your Child to Work Day?" I think my sons would enjoy great benefits from sharing a day at work with me.

A: This national event, which was endorsed by Sandia management and sponsored by the Women's Program Committee, is devoted to young females aged 9 to 15. Research has shown that compared with boys the same age, many adolescent girls experience a loss of confidence and doubt their competence in being successful in school studies and social situations. This is the age span when boys become vocal and extroverted in contrast to girls, who undergo a sharp drop in self-esteem.

Sandia believes it to be very important to participate in events that encourage young women to value themselves and excel in school. Our participation in this national, historical, and important event to assist young females is only one of our education-related programs that we anticipate will produce long-term benefits for Sandia's workforce mix.

Sandia management has received several suggestions to have a "Take Our Sons to Work Day," and a planning group is working on plans for one this summer, likely in early August. Dates and specifics will be published in the *Lab News* and *Weekly Bulletin* when they become available.

Mike Robles (3600)

Mardix booth waiting time

Q: Frequently I come to work a couple of hours before the gates are manned and use the Mardix Booth for entrance. On many occasions, no one responds to my request for entry for what seems like a substantial length of time, even though it may actually be only 10-15 minutes.

There have been occasions when a line has formed at the booth, all of us waiting for entry. Surely the booths aren't that busy at that time of the morning. Is there any way to decrease the response time?

A: After discussing the situation with the employees who operate the Mardix booths, I cannot offer an explanation as to why the described delays occurred, because Mardix traffic is minimal during early-morning hours. If I had had the date and time of the delays, I might have been able to track the incident and offer a better explanation.

Meanwhile, I have instructed Headquarters Command Center employees to monitor and process Mardix booth users as expeditiously as possible. For tracking purposes, it would be helpful if Mardix booth users would inform the on-duty supervisor on 844-3155 as soon as possible after encountering unusual delays.

Frank Gallegos (7400)

Dental plan costs

Q: In the dental plan, why are the maximum preferred fees higher than the reimbursement amounts?

A: Benefits issued an updated Summary Plan Description of the Dental Expense Plan dated Jan. 1, 1994.

In Appendix B, "Reimbursement Schedules," located in the back of this booklet (pages

43-46), the reimbursement amounts for restorative procedures are the dental benefits reimbursed to a participant who files a dental claim for the specific procedure. These dental benefits are shown under the columns titled "Reimbursement Amount per Schedule (\$)." These benefits are scheduled amounts that have increased gradually since inception of the plan in 1976.

The maximum preferred dental fees are shown in the far right columns titled "Maximum Preferred D Fees (\$)." The maximum preferred fee is the contractual fee charged by a network dentist. This amount is not the amount that is reimbursed by the plan, but the maximum charge that you as a patient will be charged. The Preferred D network is fully described in Appendix A of this Summary Plan Description. The utilization of the network is optional for the Dental Expense Plan participant and offers a stable fee for dental procedures.

The Dental Expense Plan reimbursement for restorative procedures covers approximately 50-60 percent of the cost of dental expenses if the participant chooses to use the participating network dentist. The difference between the Preferred D's contractual fee or non-network dentists' fee and the Dental Expense Plan reimbursement amount is paid by you to your dentist.

Ralph Bonner (3500)

Using personal vehicles for business

Q: I have always felt a bit uncomfortable using my personal vehicle for company business, though I do it often. Also, I never charge mileage, so there is no record as to how often this occurs. Our organization does not have a vehicle easily available, so most of the group use their own vehicles for company business.

Could you explain the rules, drawbacks, etc., of an employee using a personal vehicle for company business?

A: Here are the answers to your questions about using your personal vehicle on company business.

- **Liability** — Sandia would generally be liable for damages caused by an employee. Sandia's responsibility to an injured employee would be governed by Workers' Compensation. Sandia's responsibility for damage to an employee's vehicle is for that portion not covered by collision or comprehensive insurance. If the damaged vehicle is not covered by such insurance, Sandia's liability is limited to \$500 (see Sandia Laboratories Policy 2053).

Further, SLP 4600 states that "Employees using personal vehicles must carry the minimum insurance coverage required by the state in which the vehicle is registered." New Mexico minimums are \$25,000 per person, \$50,000 per accident, and \$10,000 property damage (25-50-10); California minimums are 15-30-5.

- **Workers' Compensation** — If an employee is injured while using a personal vehicle for company business, he or she is eligible for Workers' Compensation. Should a non-exempt employee be involved in an accident occurring outside normal work hours, while on company business, the employee must be on a paid status to be covered by Workers' Compensation.

- **Business Activities** — Business activities are activities on behalf of Sandia that are at the direction of Sandia. Whether an out-of-hours activity is "for Sandia" is determined by the

facts of the case. One important factor is whether management directed the employee to perform the activity, or knew of and condoned the employee's performance of the activity.

- **Contractor Employee** — The nature of the liability of a contract employee would probably depend on the employee's contract, and the extent of control Sandia exercises over the contract employee. The more control by Sandia, the more potential liability for Sandia.

- **Charging Mileage** — Charging mileage for all trips is a good idea as it provides evidence that Sandia management was aware of your use of personal vehicles for business purposes.

- **ES&H** — ES&H rules apply to any vehicle; the logic driving the rule is the same. These rules cannot be avoided by using a personal vehicle.

Paul Stanford (10000)
Bob Kestenbaum (11000)

Smoking in government vehicles

Q: According to the latest Code of Conduct book, smoking is prohibited in government vehicles. Yet, I constantly see people smoking in government vehicles. What gives? Do only some of us have to follow the rules?

A: An article titled "Smoking Prohibited in GSA (General Services Administration) Vehicles" that appeared in the April 25, 1994, issue of the *Weekly Bulletin* cited GSA Order ADM 5800.1A, which says violating that regulation could be grounds for terminating vehicle-use privileges. This notice has also appeared in the Logistics Management Center 7600 newsletter, and our quarterly, *Roadrunner*, issued in May.

Prohibiting smoking in government vehicles has been a Sandia regulation for many years, but GSA issued its order (cited above) just this year. If anyone is observed smoking in a government vehicle, it should be reported to the GSA Service Center on 844-5703 or 845-9435, and a notice will be sent to the offender's supervisor.

Shawkeet Hindi (7614)

Contractors' vehicle parking

Q: The employees of an architect/engineer contractor company have been ticketed for parking in the "visitor" and "2-hour-official-business" spaces just north of Bldg. 887. I called security about this, explaining that these contractor employees come to frequent meetings — sometimes carrying large bundles of drawings and related paperwork — and that they bill the Labs for the time going to and from meetings, as well as the meeting time. I was told that none of that mattered; they are contractors and have to park in regular parking spaces.

This policy adds about a half-hour cost to each meeting they attend, a cost Facilities would rather not pay when there are empty parking spaces much closer to their meeting places. These contractors are doing Sandia business just like regular employees, so why shouldn't they have the same parking privileges as Sandia employees?

A: Thanks for your inquiry about contractor parking in "visitor" and "2-hour-official-business" spaces. Anyone visiting the Labs on official business can park in the spaces you have described, as long as they adhere to the time limits, if posted. A memo has been sent to all Protective Force Personnel reminding them of these situations, and they will no longer ticket contractor vehicles in these areas.

Frank Gallegos (7400)

Sandia News Briefs

Security briefings offered by FBI agent next week

"Recognizing the Changing Threat — From Cold War Adversaries to Nontraditional Adversaries" is the title of a talk that will be presented at Sandia twice next week by Special FBI Agent John Hudenko. He will give the presentations Monday, July 11, 2-3:15 p.m., and Friday, July 15, 9-10:15 a.m. Both presentations will be in the Technology Transfer Center (Bldg. 825), and seating will be on a first-come basis. Attendance will count toward Sandians' annual security refresher requirement.

NM students take home honors in National Supercomputing Exposition

New Mexico high school students Bruce Wilton of Silver City and Carrie Gutierrez of Pecos placed second and third respectively in the National Supercomputing Exposition in Washington, D.C., held June 28. Sponsored by the DOE and coordinated in New Mexico by Sandia, the Adventures in Supercomputing Exposition was designed to promote student interest in math and science through opportunities to develop and run research projects on powerful supercomputers.

High-Consequence Operations Safety Symposium July 12-14

Sandia's Surety Assessment Center will host the High-Consequence Operations Safety Symposium July 12-14. Sidney Drell, professor at Stanford University and chairperson of the House Armed Services Committee Panel on Nuclear Weapons Safety, will give the keynote address. Everet Beckner, Principal Deputy Assistant Secretary for Defense Programs and a former Sandia vice president, will be the banquet speaker. Speakers will share strategies, methodologies, and experiences in avoiding high-consequence incidents. Discussions and special presentations will include protective technologies, assessment processes, and lessons from high-consequence events. For information, contact Rebecca Bennett (12331) on 844-0556.

Community funding requests due Aug. 1 for Contributions Program

The Martin Marietta Corporation/Sandia community outreach Contributions Program is designed to support area educational, health and welfare, civic, and cultural needs. The program contributes to scholarships, educational programs, health and welfare agencies serving the disadvantaged, nonprofit public service organizations, arts organizations, cultural activities, and more. Requests for contributions are reviewed monthly at a local level for requests under \$1,000 and annually at a corporate level for requests over \$1,000. The deadline for annual requests is Aug. 1. Requests should be sent to Karen Shane, Manager of Community Relations Dept. 12640, at MS 0167 and should include information about how funding will be spent, a budget, a current financial statement, and evidence of tax-exempt status.

IACMAG recognizes paper co-authored by John Stormont

A paper that John Stormont, Repository Isolation Systems Dept. 6346, co-authored in 1992 has been selected to receive a Significant Contribution Award in the Junior Researchers, Constitutive Laws and Applications, category from the International Association for Computer Methods and Advances in Geomechanics (IACMAG). To recognize significant contributions in a number of topics in geomechanics, the IACMAG awards committee screened and considered approximately 100 papers published over the last two decades or so in various journals. "Prediction of Dilation and Permeability Changes in Rock Salt," was written by John, J.K. Daemen, and Chandra Desai.

Institute of Science Information ranks Sandia high in chemistry research

Sandia was recently ranked 19th out of the nation's top 25 institutions for chemistry research by *Science Watch* magazine. The rankings, derived from the Institute of Science Information's Science Indicators Database, were based on the number of citations of recent research published in top science journals such as *Science*, *Nature*, and *Proceedings of the National Academy of Sciences of the USA*. Only institutions with 250 or more published research papers were ranked.

Communication Products staffers win awards

Mona Aragon of Art Dept. 13419 won an Award of Excellence at the Society for Technical Communications International Conference for her illustration titled "T558 LF7 Piston Locator and Container." Don Wagy, also of Dept. 13419, won an Award of Merit at the conference for his illustration titled "Spectrum X-Gamma Spacecraft." Bob McInteer of Video Services Dept. 13417 and Mona Aragon won a Bronze Award at the NewMedia INVISION Multimedia Awards held in conjunction with the COMDEX Spring 1994 international computer trade show for their entry titled "Sandia National Laboratories . . . A Sampler on CD-ROM."

Sandia aging aircraft facility validating new technologies

Last month the Sandia-operated Aging Aircraft NDI Validation Center received another aircraft to use for validating emerging nondestructive inspection (NDI) technologies. Provided by the Coast Guard, the HU-25A "Guardian" aircraft will be used to test new methods and techniques to find hidden structural flaws in aircraft. A Work-for-Others agreement is being finalized so Sandia can use some promising new NDI techniques to evaluate the aircraft. Based on the results, Sandia will be able to recommend more effective uses of maintenance resources to manage inspection and aircraft fleet repair processes.

Sandian receives SWE Distinguished New Engineer Award

Jan Williams of Sites Planning Dept. 7256 was recently presented a Society of Women Engineers' 1994 Distinguished New Engineer Award at the society's national convention in Pittsburgh. The award, limited to five recipients annually, is given to women with less than 10 years of engineering experience who have demonstrated outstanding performance in both engineering and leadership. Jan was cited for her broad-based experience in several areas of facilities and ES&H, her team-building and project management skills, her service to SWE at local and national levels, and her involvement with church and Cub Scouts.

Sandia link makes shopping easy for electronic components

Project teams with CommerceNet

A recent agreement between the Sandia-led Electronic Commerce of Component Information (ECCI) project and CommerceNet could change the way engineers do their shopping — at least when it comes to electronics and electronic component information. The ECCI-CommerceNet agreement teams CommerceNet, an electronic commerce computer network developed by a coalition of Silicon Valley organizations, with government and industry efforts led by Sandia to provide on-line access to electronic components information.

With ECCI and the CommerceNet link, engineers can use their computers to assess technical and marketing information about devices; get schematic symbols, simulation information, and footprint data; and bring this information directly into the design environment without ever looking in a data book. The time-saving system will help organizations bring products to market faster and with a higher degree of quality, says Raymond Bair, Director of Electronic Components Center 2200.

Driving profits on the info highway

"The ECCI-CommerceNet agreement will enable the business community to use the National Information Highway to make a profit," says Ray. "ECCI supports the timely buying and selling of digital electronic component information through development of a system that takes into account needs of electronics industry manufacturers.

"The system offers the possibility that comparable approaches can be developed for any number of industries where product data is or can be automated," he says. "The long-term impact of electronic commerce will be a more competitive US industry."

Project leader Michael Tebo (2552) agrees. "Joining CommerceNet was an obvious choice because it provides the first large-scale trial of electronic commerce on the Internet," says Michael.

Sponsored by the National Initiative for Product Data Exchange, the ECCI system serves as an "electronic data book" while allowing users to electronically buy and sell associated information via computer. The computer system eliminates the use of paper data, which are often outdated, inaccurate, and hard to find. Because it uses electronic data, ECCI permits the application of engineering tools to data enabling the virtual design of electronic devices.

For the creators of the ECCI-CommerceNet system, collaboration was the key to success. "A single company has difficulty addressing all the technical and business issues involved [in creating such a system], but with a group effort it can happen," says Michael. "ECCI participants chose not to create new standards, communications, or commerce technologies, but to use existing capabilities in innovative ways in their pilot system."

The ECCI project, aimed at design engineers, procurement officers, and others in the manufacturing process, now involves about 30 companies. By eliminating the current paper path for component information, ECCI hopes to offer the electronics industry a better process for providing new consumer products.



Drill cuttings system undergoing tests at Hanford

Sandia containment design makes drilling safer at environmental sites

A Sandia-developed drill cuttings containment system that offers workers at environmental sites a safe method for handling hazardous materials during air drilling operations is undergoing tests at a remediation project at DOE's Hanford Plant near Richland, Wash.

Jim Westmoreland of Environmental Drilling Projects Dept. 6111A, the Labs' project leader for the system, says it was developed at Sandia, with the participation of an asbestos abatement equipment manufacturer. The system has been publicized in *JPT* (the *Journal of Petroleum Technology*), *Environment Today*, and *The Military Engineer*, among others.

As air drilling becomes a more popular alternative at environmental sites, the containment system can make significant contributions to safe operations and disposal of hazardous materials. "We saw a need for better cuttings containment," says Jim. "At hazardous waste sites, all drill cuttings and air need to be vacuumed and filtered for safety and environmental reasons."

He says he is exploring the possibility that development of some components during work on the project resulted in technology that might have patent applications for Sandia.

Researchers in environmental remediation are actively investigating air drilling and other drilling methods that do not use a drilling liquid because drilling liquids can provide a pathway for spreading contamination, in some cases into ground-water aquifers. Air drilling brings cuttings to the wellhead by using compressed air through an air-driven downhole motor and drill bit.

Alabama company built prototype

In the Sandia system, air provided by the compressor flows through the drilling system, and vacuum air created by a large pump pulls material through the containment side of the system. The use of vacuum pressure in the containment system means that any failure of the system will result in materials being drawn inward toward the center of the unit, rather than being pushed outward into the environment. A unique diverter box, fitted with pressure relief valves and other safety features to prevent overpressurization in the containment system, provides a transition for the two air flows.

From the asbestos industry, Sandia researchers identified a vacuum and filter system that could be modified to meet the demands of drilling and handling hazardous materials. Built by Guzzler Manufacturing Inc., of Birmingham, Ala., as a prototype, the 25-foot, 16,000-pound unit offers four separate filtering stages to capture even very fine materials.

A stainless steel cyclone unit first sets the hazardous materials and air stream into a spinning path, which causes heavier materials to fall out of the suspension and be captured in



LARGE CLEANING JOB — Jim Westmoreland (6111A) adjusts controls on the vacuum and filter system that removes particles as small as 0.3 micron and volatile organic compounds from air drilling residue. Sandia and an asbestos abatement equipment company developed the system for use at environmental sites.

the bottom of the unit. This removes more than 95 percent of the materials being vacuumed, says Jim.

expressed an interest in using the drill cuttings containment system for testing and evaluation work.

Following the cyclone unit, a 1,700-cubic-foot-per-minute Roots pump pulls the air stream through a stainless steel bag-house, filled with 36 cylindrical bags that filter particles down to one micron in size.

Filters changed during operation

Finally, the air stream passes through high efficiency particulate air (HEPA) and charcoal filters. The HEPA filters screen particles down to 0.3 micron in size and the charcoal filters remove any volatile organic compounds. The containment unit includes two sections of HEPA and charcoal filters.

Operators carefully monitor each section to determine when filters may need to be changed. Isolation valves allow for changing the route of the vacuum flow for filter changes without disrupting operations. A "bag in, bag out" design allows operators to remove filters without exposure to either the workers or the environment.

Jim and his team began testing the vacuum and filter unit at Sandia's Directional Boring Test Range south of Albuquerque in May 1993. Using a variety of sizes of non-hazardous test materials, researchers gathered data on speed of operations and efficiency of the machine for different materials. The team concluded testing in August, making use of the entire drill cuttings containment system. "The system met or exceeded all of our test criteria," he says.

In addition to the Hanford tests, other DOE facilities have

Recent Patents

Terry Michalske, Robert Rye, and William Smith (all 1114): Method for Forming Hermetic Coatings for Optical Fibers.

Vincent Hietala (1322), David Ginley, and Jon Martens (both former Sandians): Superconducting Active Impedance Converter.

Richard Brow (1845) and Larry Kovacic (2476): High Thermal Expansion Sealing Glass.

Michael Butler, Stephen Martin, Kent Pfeifer (all 1315), and Cecil Land (retired Sandian): Ferroelectric Optical Image Comparator.

Vincent Hietala and Gregory Vawter (both 1322): Traveling-Wave Photodetector.

Joseph Abbin (5093), Clifton Briner (2674), and Samuel Martin (2641): Rolamite Acceleration Sensor.

Douglas Adkins (1513) and Scott Rawlinson (6215): Dual Manifold Heat Pipe Evaporator.

John Medernach (1332): Electrochemical Thinning of Silicon.

Robert Hughes (1315) and Kent Schubert (6219): Extended Range Chemical Sensing Apparatus.

James Novak and James Wiczor (both

1315): Non-Contact Capacitance Based Image Sensing Method and System.

Craig Dean (9403): Method and Apparatus for Collaborative Use of Application Program.

Carol Ashley, Jeffrey Brinker (both 1846), Scott Reed (2476), and Robert Walko (2231): Inorganic Volumetric Light Source Excited by Ultraviolet Light.

Ernest Brickell, Kevin McCurley (both 1423), and Daniel Gordon (former Sandian): Method for Exponentiating in Cryptographic Systems.

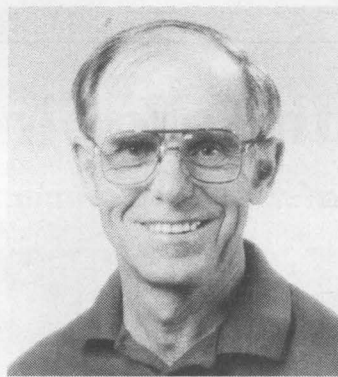
Wayne Corbett (1341) and Harry Weaver (1321): High Performance Static Latches with Complete Single Event Upset Immunity.

Carol Ashley, Jeffrey Brinker (both 1846), Roy Hamil (1212), Scott Reed (2476), and Robert Walko (2231): Luminescent Light Source for Laser Pumping and Laser System Containing Same.



Mileposts

July 1994



Lawrence Lane
12326 35



Linda Gonzales
7002 15



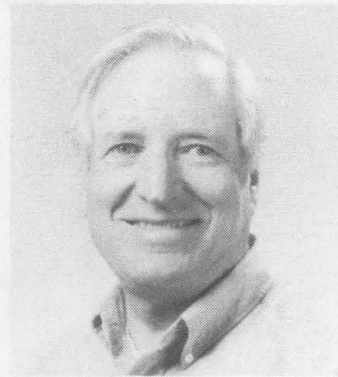
Gene Arnot
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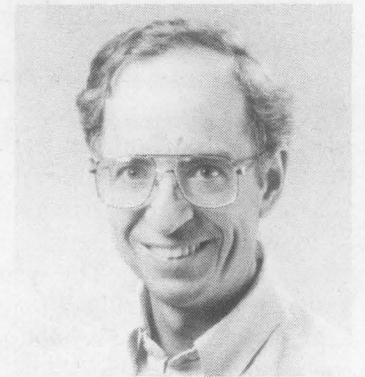
J. Rudy Armijo
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Magdelene Lucero
7442 25



Duane Arlowe
5861 35



Jack Hudson
5913 20



Wayne Cook
9322 35



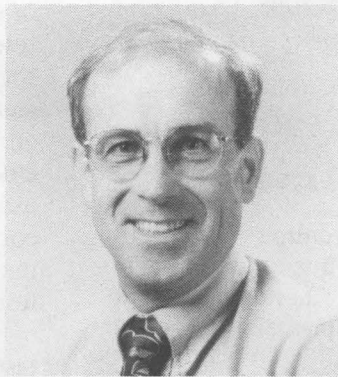
Dennis Mitchell
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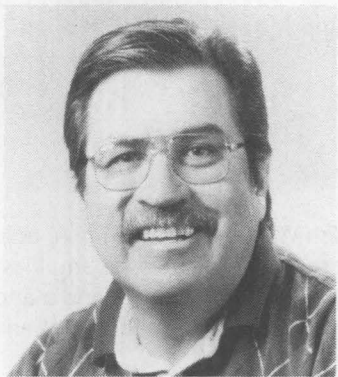
Michael Eaton
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Larry Nelson
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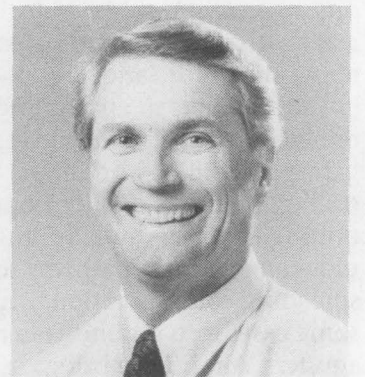
Bob Bradley
5103 25



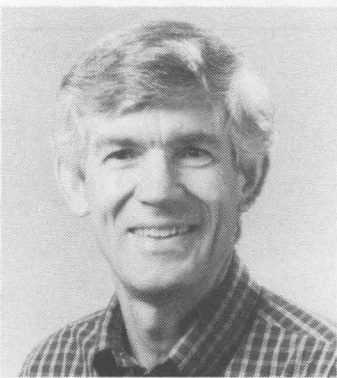
Richard Sanderville
7153 20



James Garsow
9212 15



Joe Abbin
5093 30



Tommy Guess
2472 30



Ann Chipman
5501 20



Michael Robles
3600 25



Ronald Ewing
6643 35



Glenda Maynes
10328 20



Oscar Hernandez
12364 15



Dirk Dahlgren
12400 30

★ Congratulations

To Mary Cocco (5500) and Hal Morrison, married at Nevada Beach, South Lake Tahoe, Nev., June 18.

To Jackie and Craig Boney (2235), a son, James Craig, June 19.

To Renee and Nick DeReu (5102), a daughter, Jessica Anne, June 19.

To Louella and Mike Chadwick (5913), triplets: two daughters and a son, Ashley Lynn, Briann Michelle, and Timothy Michael, June 21.

To Sara Lanham (8613-3) and Glenn Peterson, a daughter, Nicole Elizabeth, April 5.

🤝 Welcome

Albuquerque — Tamera Bravo (2611), Cheryl Kidd (10504), Anne Tomasi (9432), Cynthia Tinlin (10600)

Other New Mexico — Tatianna Dickens (6642)

Missouri — Otis Brooks (5166)

Colorado — Michael Riggins (6314)

Texas — Robert Mays (2231)



☀️ Recent Patents

Douglas Adolf (1812), Mohsen Shahinpoor (1433), Daniel Segalman, and Walter Witkowski (both 1434): Electrically Controlled Polymeric Gel Actuators.

Carol Ashley and Jeffrey Brinker (both 1846), Scott Reed (2476), and Robert Walko (2231): Process for Making Solid-State Radiation-Emitting Composition.

Darrel Frear (1832), Joseph Michael (1822), and Alton Romig, Jr. (1800): Microstructure Control of Al-Cu Films for Improved Electromigration Resistance.

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

MISCELLANEOUS

SANDIA NATIONAL LABS GIFTS: T-shirts, new color (ash), all-cotton, \$9; cups, \$8; caps, \$8; small jackknives, \$10. Proceeds benefit South 14 Village Project. Available at Lab News office, MO-172, northwest corner of Tech Area 1. Lisa Chavez (12660), 5-0845.

RAILROAD TIES, seven 8-ft; 33 4-ft. All for \$130. Cordova, 293-5456.

TURBO ASSEMBLER 2.0, \$35; small jointer, \$50. Clancy, 266-0190.

LOWREY ELECTRONIC ORGAN, w/Genie cord. Watson, 298-2374.

EXHAUST SYSTEM, air filter, and fuel filter, for '86 Nissan Z Turbo, free. Mareda, 296-0135.

ELECTRIC RANGE, self-cleaning, gold, excellent condition, \$100 OBO; full-size mattress, spring, and frame, good condition, \$25 OBO. Mahmud, 281-0221.

WINGBACK CHAIR, Clayton Marcus, 39-in. high, print pattern, brown leaves on tan, ruffled skirt, \$47. Lenz, 884-4835.

PRINTER, Panasonic KX-P1124, 24-pin, dot matrix, high quality printing and graphics, \$85. Goel, 897-3880.

WINDSURFERS, 13-ft. long, BIC manufacturer, \$230/ea. Gage, 293-1707.

LAWN MOWER, rear bagger, runs, 4-hp engine, free. Novotny, 296-7167.

CONTEMPORARY FURNITURE: black couch; two pink/gray chairs; gray marble/glass coffee tables; glass dining room table, w/six chairs. All like new. Griego, 864-2624.

FORMAL DINING ROOM SET, solid oak, w/lighted china cabinet, and two captain's chairs, excellent condition, \$1,000. Bunker, 268-2364.

ORGAN, Baldwin Fanfare, recently serviced, w/bench and books, excellent condition, book value \$1,090, asking \$650 OBO. Randolph, 299-2057.

BASSETT CRIB, new mattress, sheets, \$75; Century car seat, \$20; boy's clothes, infant-2 yrs. All excellent condition. Plank, 296-7919.

SOFA & LOVESEAT, turquoise and mauve, less than one year old, excellent condition, paid \$1,200, will sell for \$600. Langwell, 293-2728.

MICROWAVE OVEN, Little Litton, compact to fit anywhere in the kitchen, works great, 500 watts, \$45. Ask for John or Charles. Stuppy, 898-4720.

ROLLERBLADES, Bauer, size 3, brand new, \$65 OBO; Joggercycle, push when walking or attach to bicycle, \$85 OBO. Poulter, 291-0607.

COMPUTER, Mac LCIII, 12MB RAM, 240MB HD, HP 500C color printer, miscellaneous software, \$1,800. Guffey, 828-2713.

RECORD ALBUMS, 33-1/3 rpm, mostly older country, and 40's and 50's popular music, some Big Band, good condition. Tennant, 294-1347.

DOG, beautiful all-American, loves people and kids, well-behaved, found in NE heights, free to good family. Molley, 296-8653.

CARPET, used residential, includes foam padding, approximately 150 sq. yds., various size pieces, medium brown, good condition. Surbey, 823-2843.

YARD SALE, Four Hills, July 16-17, 8 a.m.-3:30 p.m., linens, books, Meco grill, nice stuff, 1600 Catron SE, follow signs. Pitts, 293-5481.

TYPEWRITER, IBM Selectric-II, dual-pitch, correcting, \$150; AT&T 6300, no HD, 256KB RAM, w/typing and WP software, perfect for student, \$95. Baker, 888-9650.

RESORT WEEK, two bedrooms, kitchen, AC, hot tub, in woods by Texas lake, July 29-Aug. 5, \$400. Forster, 293-7231.

OIL FILTERS, for Yamaha motorcycle, five, \$3/ea. Wright, 296-3850.

RIFLE, 270 Winchester BDL w/Bushnell scope, sling, case, shells, used once, gun \$500 new, asking \$550 for all. Woodward, 293-4369.

CHINA, Mikasa Opus Black, service for 8, w/many completer pieces and matching water goblets, paid \$600, asking \$250. Griego, 864-2624.

RV FURNACE, Duo-Therm Model 90030, heats great, leaks propane into heated space, many spare parts, free. McKenney, 268-7390.

SHOPSMITH MARK-V 500 tables, fences, guards, etc., \$70; deluxe Hotz golf bag, brand new, \$125. Givler, 823-9715.

CRIB, white spindle, \$45; walker, \$6; infant car seat, \$5; Jeep axle, \$90; wedding dress, ivory, size 7. Bentz, 299-3448.

WASHER & DRYER; refrigerator; fire-place tools, screen; loveseat, chairs, ottoman; cross-country ski exerciser, Downsizing. Must sell. Spencer, 866-5377.

MOTORIZED TREADMILL, Sears Lifestyler, Model 2808, Motivational exercise trainer, 1.2-hp motor, 8 mph, \$250. Choate, 889-8166.

GENTLE LIFT RECLINER, Pride, was \$1,200, now \$750; shower chair, without back, hardly used, \$25. McRee, 294-6091.

ENCYCLOPEDIA AMERICANA, 30 volumes, brand new condition, \$150. Zamora, 294-3737.

GAZEBO, 8'x12', redwood lath modules, for backyard or spa, \$250; matching bar, 90", w/four stools, \$65. Holmes, 292-0898.

GARDEN BATH TUB, beige, 48" x 60". Monnet, 865-7941.

KENWOOD FACTORY BOX, two 10-in., two 3-1/2-in., and two 3-in. speakers, four months old, paid \$300, sell for \$200 OBO. Fagan, 877-7878.

PING PONG TABLE. Herther, 298-4823.

DINETTE SET, w/bench seats, \$100; recliner, \$50; rocker, \$35; sofa/loveseat, \$100; two swag crystal lamps, \$25/ea. Rogers, 292-4396.

BICYCLE WORK STAND, \$40. Joseph, 299-6989.

MOVING BOXES, 50+, w/packing paper, washer pack, all sizes and shapes, \$150 OBO for all. Blythe, 281-8287.

'78 JAYCO POP-UP TRAILER, sleeps six, been wrecked, could rebuild or use for parts, tent in good condition. Shrouf, 299-9481.

SCUBA DIVING BCD, Seaquest, medium/large, good condition, \$100. Babcock, 892-7199.

AMIGA 500 HARD DRIVE, extra memory, 1084S monitor, optical mouse, workbench 2.04 scanner, software, \$500; games, \$7; printer, \$45. Cordes, 299-0511.

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.

GOLFSMITH IRONS, \$75. Dwyer, 271-1328.

SEARS EVAPORATIVE COOLER, portable or window mounting, \$60 OBO; Shop Vac, \$25 OBO. Weston, 255-1196.

FLOOR LAMP, \$15; day bed, white, w/brass accents, includes mattress, pad, and two comforter sets, like new, \$200. Hilts, 275-1758.

WATER SOFTENER, Kenmore "Cycle Miser 80," softens fine manually, but automatic regeneration erratic, new cost \$600, \$75 OBO. Schkade, 292-5126.

ELECTRIC TYPEWRITER, \$20. Doran, 255-9321.

KENMORE MICROWAVE, \$60. Drotning, 821-9598.

SWING SET, wood, includes swings, rings, rope, monkey bars, and Eagles Nest tower, \$190. Zablocki, 823-0844.

STROLLER, Graco Seville, \$75; oak high chair, \$75. Both in perfect condition. Ellis, 275-9840.

SKYLIGHTS, two, Velux, 22x38, openable, double-insulated, w/sloped curb kits, new in boxes, cost \$650, asking \$450. Stephens, 822-8584.

GARAGE SALE, July 9, 9 a.m.-noon, 9604 Bolack NE, Freedom Way/Ventura, rower/exerciser, toys, books, boy's clothes. Filter, 823-1232.

ROOT FEEDER, Ross Model 1200B, \$20; Simmons queen-size waterbed, waveless, \$50. Martel, 293-1892.

APPLE NEWTON MESSAGE PAD, \$320; Message Pad 110 upgrade, \$118; RCA Small Wonder Camcorder, \$675. Items never used. Kirby, 268-8666.

CROSS TRAINER/HOME GYM, Weider FLEX 225, has stair stepper and bench stations, \$145. Werner, 292-5520.

GARAGE SALE, July 9, 1228 Landman, name brand clothing (boys 12-16 and Jr./womens 4-10), flute, camping, household, miscellaneous. Harrington, 296-8208.

GE REFRIGERATOR, 14.2 cu. ft., w/icemaker, gold, \$295; small microwave, \$55; Sears humidifier, \$15. All excellent condition. Grieco, 821-6695.

COMPUTER, Commodore 64, w/1541 floppy drive and software, \$80 OBO; Texas Instruments "Compact Computer 40", '83 vintage, \$40 OBO. Leslie, 299-4159.

COMPUTER, 386 PC, w/much software and full documentation, PC tools benchmark of 26.5 vs. 17.5 for IBM PS2 Model 80, \$875. Simmons, 281-3590.

TRANSPORTATION

'85 CHEV. BLAZER, 90K miles, V8, AC, cruise, tilt, AM/FM, sun roof, hitch, radiator guard, running boards, \$4,800. Vaughn, 867-4625.

'86 DODGE COLT VISTA, 4WD, 10K on new engine, excellent condition, \$5,000. Clancy, 266-0190.

'88 KTM MX 250, new tires, o-ring, chain, brake pads, sprockets, \$1,200; road bike, Bianchi Premio, 19-in., \$200. Bentz, 299-3448.

'89 FORD PROBE GL, AC, PS, AT, silver, tinted windows, 69K miles, \$4,550 OBO. Barnette, 294-6682.

'76 CHEV. 1/2-TON PICKUP, short wide bed, 250 in-line 6, 4x4, extras, w/'92 Idle Time overhead camper, w/heater/refrigerator, \$4,500. Mirabel, 296-5222.

'78 PORSCHE 924, black/white, excellent condition, must see to appreciate. Monnet, 865-7941.

'93 SUZUKI KATANA 750 MOTORCYCLE, 2K miles, great condition, \$4,200. McDonald, pager 224-0728 or 899-8578.

'86 TOYOTA MR2, bright white, 5-spd., AC, PW, PL, spoiler, bra, black tinted windows, 83K miles, \$4,700 OBO. Barker, 831-5055.

'84 SAAB, walnut brown, 2-dr., hatchback, 94K miles, \$3,500 OBO. Armstrong, (505) 989-7624.

'83 MERCURY CAPRI, 302 engine, 5-spd. transmission, AC, etc, \$2,000. Prevender, 296-8586.

'77 SUZUKI GS550, 11K miles, full fairing, hard saddlebags, adjustable back rest, great running bike, \$650 OBO. Kelly, 237-9709.

'87 CHEV. BLAZER, full-size, 4WD, Silverado, loaded, tow package, 350 EFI, 89K miles, new tires, \$9,400. Mendez, 293-8649.

'77 MUSTANG, 2-dr., PS, PB, AT, AC, emissions OK, extensive recent maintenance, recently painted red, new carpet & windshield, \$1,800. Weber, 275-3719.

'91 GEO METRO, 4-dr., AT, AC, \$3,900, might take cheap trade. Roeschke, 266-8988.

MAN'S BIKE, 26-in., 12-spd., Schwinn, \$60. Can be seen on north side of Bldg. 855. Rembold, 281-3469.

INTERNATIONAL SCOUT II, 4WD, 304 V8, AT, chrome wheels, excellent mechanical condition, fair cosmetically, new front brakes, battery, and windshield. \$2,400. Salmen, 881-8612.

MOUNTAIN BIKE, '92 Bridgestone MB-3, excellent condition, \$350 OBO. Karnowski, 265-2284 after 9:30 p.m.

'90 CHEV. S-10 BLAZER, 5-spd., V6, white, excellent condition, \$8,000 negotiable. Krivitzky, 837-1274 leave message.

WOMAN'S BIKE, Schwinn, 5-spd., \$35. Drotning, 821-9598.

BOY'S DIRT BIKE, red, 16-in., and scooter, \$15 for both. Zablocki, 823-0844.

'89-1/2 THUNDERBIRD SUPER COUPE, loaded, CD, 30K miles left on transferable warranty, like new, \$400 below book, \$10,000. Cesarano, 299-0407.

KID'S DIAMOND BACK BICYCLE, rotor, pegs, hand brakes, 20" five-spoke wheels, \$75. Van Deusen, 291-8196.

'91 FORD EXPLORER SPORT, loaded, 70K miles, V6, JBL audio, \$13,900; '84 VW Vanagon Westfalia pop-top camper, stove, refrigerator, more, \$5,400. Korbe, 281-4343.

REAL ESTATE

CABIN SITE, Brazos/Chama area, fantastic view, wooded, great recreational area, 5 acres, water and electricity available, \$35,000. Garcia, 293-3937.

3-BDR. HOME, 1-3/4 baths, 1,530 sq. ft., 2-car garage, oak parquet floors, large backyard w/gazebo, security bars, new double-pane windows, roof, and cooler. Becker, 821-4494.

2-BDR. HOME, 2 baths, 1,450 sq. ft., North Valley, near nature center, spacious, elegant townhome w/double garage, \$126,000. Taleah, 856-7877.

3-BDR. HOME, 1-3/4 baths, 1,750 sq. ft., family room, pitched roof, nice landscaping, Ridgecrest area, \$140,000. Kovacic, 256-9867.

WANTED

CRYSTAL PIECES, unusual American Fostoria. Haas, 296-8509.

POP-UP TRAILER, to rent, for family vacation, July 25-Aug. 7. Layne, 857-0989.

TWO FEMALE HOUSEMATES, after Aug. 10, non-smokers, w/preferences, separate bedrooms, share bathroom. Housekeeper, utilities paid (except phone), \$350/month. LeGalley, 822-0676.

CAT TRAP, buy or borrow. Korbin, 299-9088.

OLD JEWELRY, for arts and crafts. Stefanov, 299-7009.

WORK WANTED

FLUTE LESSONS, by high school junior, w/7 yrs. experience, seeking beginning flute students, age 8-adult, references available, 45 minutes/\$6. Harrington, 296-8208.

LOST & FOUND

LOST: Women's Timex Sportswatch, black and green. Blumberg, (510) 294-2902.

Chicago-style jazz coming tonight

Coronado Club activities

CHICAGO-STYLE JAZZ comes to the Coronado Club tonight, July 8. It's the first visit ever from Chicago Six, who are in town for the Rio Grande Jazz Society Festival. They're from San Diego, not Chicago, but they play Chicago-style jazz and swing. They perform at all the West Coast jazz festivals. The club has prepared a jazzy menu for the evening: T-bone steak or grilled halibut — two dinners for \$14.95. There's also the all-you-can-eat buffet with baked ham, baron of beef, roast turkey breast, and poached fish — all for only \$6.95. Check immediately about reservations, as this event may be a sellout.

WITH ALL the hot weather we've been having, don't forget the Pool and Patio

"Splashdowns" each Friday and Saturday from 5-9 p.m. To go along with all the wet coolness, a buffet is served from 5-8 p.m.

NUMBERS GAME — Get your bingo fingers ready, because Thursdays, July 14 and July 21, continue a run of three consecutive Thursday bingo nights. Card sales and buffet start at 5:30, early birds bingo begins at 6:45.

THEY'RE BACK! — The Isleta Poorboys that is, on Friday, July 15, so grab your boots and hats and head on in for an evening of dancing from 7-11 p.m. The dinner menu, 6-9 p.m., includes T-bone steak for \$11.95, grilled halibut for \$10.95, and the all-you-can-eat buffet for \$6.95.

this month in the past...



40 years ago...Sandia Corporation operated a system of housing facilities for the Atomic Energy Commission (AEC) on Sandia Base (forerunner of Kirtland AFB). AEC and Sandia employees were eligible to live in the facilities, which included dormitory-type rooms, efficiency apartments, and houses. Dorm rooms cost as little as \$45 a month, including maid service. The efficiency apartments went for \$55 a month, utilities included. The July 30, 1954, *Lab News* didn't list the cost for the two- and three-bedroom houses.

A book by Alan Pope (now retired), *Wind Tunnel Testing*, went into its second printing. The first printing had sold more than 7,000 copies.

25 years ago...Sandia had a role in the Apollo program that first landed men on the moon (Neil Armstrong and Edwin Aldrin, Jr.) in the Apollo 11 lunar lander on July 20, 1969, and that carried out five other lunar landing missions through 1972. Sandia analyzed and safety tested two cup-sized radioisotopic heaters left on the moon by the Apollo 11 astronauts. Sandia's primary role in the Apollo program was to help with the "SNAP-27" system, which provided power for the Apollo Lunar Surface Experiments Package during several lunar missions.

Gourleys publish practical guide to sun protection

Sandian Paul Gourley (Semiconductor Physics Dept. 1112) and his wife Gail have recently written and illustrated a book that

would seem especially pertinent to those of us in New Mexico, California, and other sunny climes.

It's titled *Protect Your Life in the Sun*, and it describes for a general audience, especially outdoors enthusiasts, how to protect

HOT TOPIC: Cover of the 102-page book by Paul and Gail Gourley.

skin and eyes from ultraviolet (UV) solar radiation. The 102-page book has been published by Highlight Publishing, and Paul says it's already available at several places in Albuquerque.

The idea for it began after Paul constructed an ultraviolet photometer to measure the UV light passing through the atmosphere's ozone layer. He found that the meter was also useful for testing sunscreen lotions, sunglasses, and auto glass, as well as for characterizing UV reflectivity off various surfaces and transmittance through clothing.

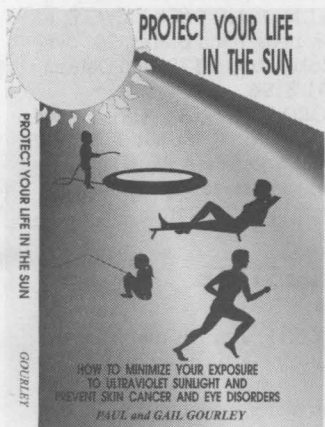
Reports from the American Academy of Dermatologists indicate that more than 900,000 new cases of skin cancer are diagnosed each year in the US and that 16 percent of all Americans will develop skin cancer in their lifetimes. Paul says recent studies also link UV from sunlight to the formation of eye cataracts. More than a million cataract surgeries are carried out each year.

Ultraviolet-induced skin and eye damage is especially prevalent in the higher altitude arid regions of the Southwest. In fact, Paul notes, Albuquerque is sometimes referred to as the "skin cancer capital of the US."

"We used humorous cartoons, personal stories, illustrations, and simple discussions to try to explain ultraviolet hazards for different skin and eye tissues and how to get the maximum protection for the least cost and effort," says Paul. The Gourleys also provide tips on selecting sunglasses and

sunscreen lotions.

Paul considers the book "semi-technical." It summarizes surveys conducted by the National Institutes of Health, with demographics of skin cancer and statistics on body parts most susceptible to skin cancer. It has graphs of different wavelengths of UV and skin response and provides a map of solar radiation in the US. The Gourleys also explain skin types, the sun protection factor, Food and Drug Administration regulations for sunscreens, and American National Standards Institute labeling of sunglasses.



BLASE GAUDE of Vulnerability Assessment Dept. 5931 was recently named the "Disabled Engineer of the Year," one of three top awards given annually by *CAREERS & the disABLED* magazine. Blase, a quadriplegic from a 1978 football accident, is a Senior Member of the Technical Staff who specializes in the assessment of safety- and security-critical computer applications. He also serves on various Sandia teams to provide feedback regarding the effectiveness of Sandia's compliance with the Americans with Disabilities Act and cooperates with Sandia groups working to commercialize Sandia-developed technologies that might address the needs of the disabled. Outside of work, Blase counsels people who have recently sustained a spinal cord injury and has served as a Governor's appointee on a task force working to get inappropriately placed disabled individuals out of nursing homes. Also, Blase can be found in high schools and community groups talking to teenagers about dangers and results of spinal cord and head injuries.