

Times are turbulent, but Sandia plying a steady course

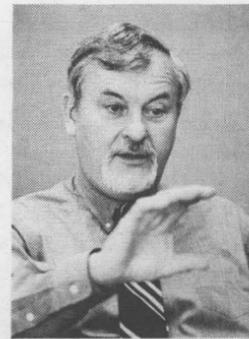
The 1995 State of the Labs interview

Every year the Lab News publishes a State of the Labs interview with the Sandia President and Executive Vice President. Because several months ago, at the time we would normally do the interview, so many things were happening (which we reported as news stories) and events were still in a state of flux, we purposely decided to postpone the interview till now in hopes of being able to provide better perspective. Sandia President Al Narath and Executive VP Jim Tegnalia were interviewed by Lab News Editor Larry Perrine (on special assignment) and Acting Editor Ken Frazier.

LN: The new Congress, budget reductions, employee shrinkage, the Galvin report, DOE's

uncertain future, the Lockheed Martin merger, Kirtland AFB problems. It's been a wild few months. What message do you have for employees about all this? Where do you think Sandia stands?

Al: This is surely the most uncertain, difficult time that I can remember in recent years. The best advice to give is steady as we go. We all understand what the potential problems are. But I'd rather think of them as opportunities for constructive change. Although the outcome of the current turmoil remains unclear at this point, there is clear indication that R&D budgets overall are trending downward. All you have to do is look around and see what's hap-



AL NARATH

pening elsewhere in the R&D universe. Realignment and "rightsizing" is a common occurrence in both public and private sectors. It's unimaginable that DOE's national laboratories wouldn't have to absorb some share of that pain. But

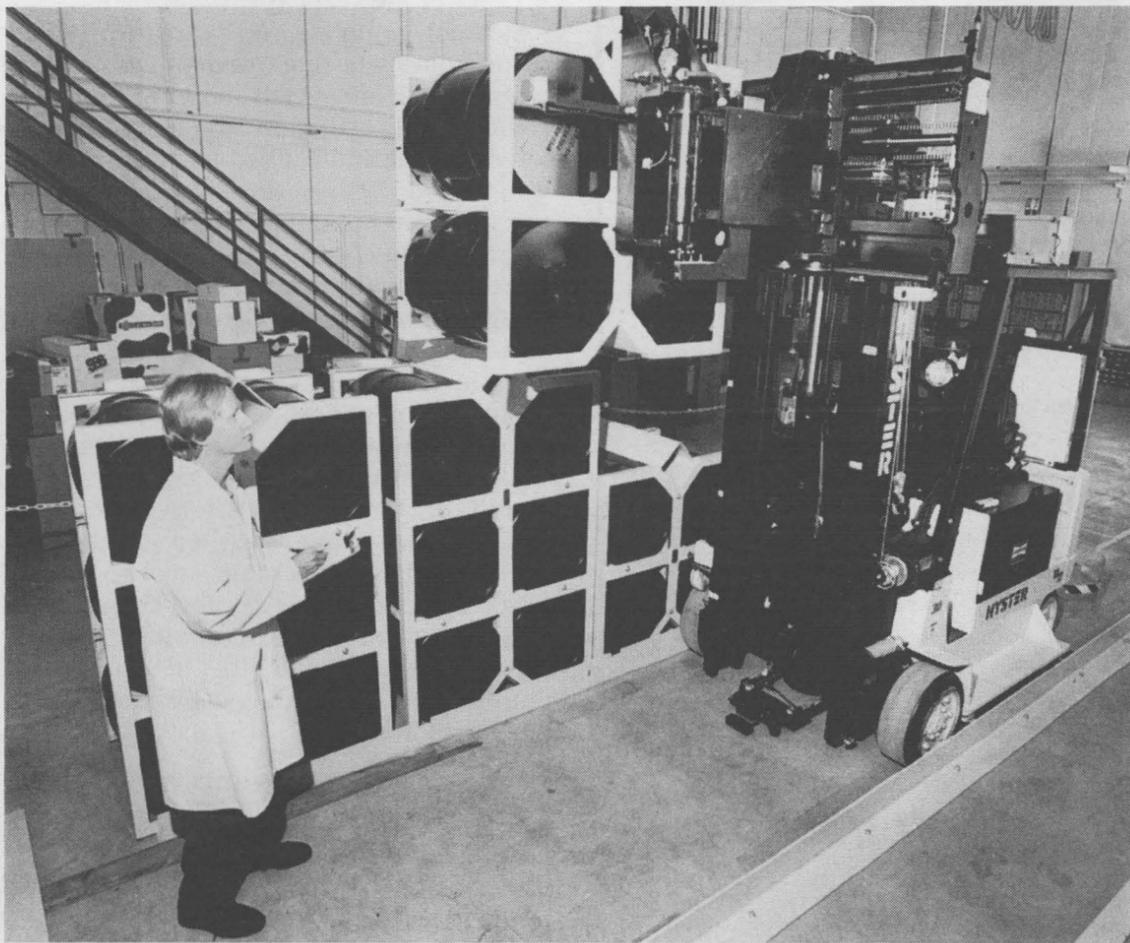
that's something we've recognized all along.

On the positive side, the laboratory is extremely well positioned with its principal customers. We are still well prepared to address most problems for which there is an R&D solution. And we have taken on an important production mission that is well matched to our historic mission responsibilities. It's not that we're running out of important things to do on behalf of the US government. The issues relate to how much is affordable, what are the national priorities, (Continued on page 4)

Sandia National Laboratories

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AWARD-WINNING SMART VEHICLE — James Jones (2172) takes notes as the Project Stage Right Automated Guided Vehicle (AGV) lifts and stacks pallets of storage containers to simulate stacking and retrieval operations at DOE's Pantex Plant. Sandia helped develop the AGV system to help Pantex store the pallets and drums — which normally contain plutonium-bearing "pits" from dismantled nuclear weapons — higher and wider inside existing storage magazines. (Pit storage at Pantex is in increasingly short supply as DOE dismantles its nuclear weapons stockpile.) The AGV system includes on-board sensors and computers for collision-avoidance and inventory functions, a trailer for remote dispatch and control, a graphical user interface, and a video camera and remote monitor setup for operator supervision. Sandia's Project Stage Right team, which developed the system, will be honored along with 11 other teams and 104 individuals June 3 during the second annual Employee Recognition Awards ceremony at the Marriott Hotel in Albuquerque. See the special four-page pullout section in this issue for more about the awards and awardees.

Four Sandia-spawned firms receive TVC start-up grants

By Bill Murphy

Media Relations Dept. 12621

A phone call nowadays to Peter Boissiere at Sandia results in a distinctly different sort of voicemail message. It says:

"You have reached the desk of Peter Boissiere. I will not be available for the next two years as I am on a technology transfer leave of absence."

Peter is one of a growing number of Sandia employees taking advantage of the Labs' "tech transfer leave of absence" program (also called the entrepreneurial leave of absence). The program enables Sandia scientists and engineers to take extended sabbaticals to try their hands as technology entrepreneurs. At the end of two years, the entrepreneur has the option of staying in the private sector or returning to Sandia. The intent of the program is to encourage the commercialization of technologies developed at Sandia.

Strong Sandia connections

Peter left the Labs (Intelligent Systems Dept. 2161) to start Boissiere Engineering and Applied Robotics, Inc. (B.E.A.R., Inc.), a company based on Labs-developed robotics technology. His robots have broad applications in hazardous waste cleanup projects and other work in dangerous environments.

His business and three other start-up ventures with strong Sandia connections are recipients of \$10,000 start-up business grants awarded by Technology Ventures Corp. during the TVC-sponsored "New Mexico Equity Capital Symposium" on May 11.

TVC, founded by Lockheed Martin in 1993, is awarding the grants as part of Lockheed Martin's commitment to provide seed capital to businesses involved in commercializing technologies developed in New Mexico's national laboratories.

In addition to Boissiere's firm, recipients of the TVC start-up grants include VIGA Technologies Corp., Silicon MicroDevices, Inc., and (Continued on page 10)

Silicon lithography producing 'skyscraper-like' microstructures

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New mentoring program fosters employee development

9



This & That

A talk with the top brass - President Al Narath and Executive VP Jim Tegnalia discuss many timely issues in our annual State-of-the-Labs feature that begins on page 1. They acknowledge that these are not easy times. In fact, the first words out of Al's mouth during the interview were, "This is surely the most uncertain, difficult time that I can remember in recent years." Despite that, Al and Jim remain cautiously optimistic about Sandia's future. I think you'll find the feature - and the accompanying stories about the budget and last week's employee dialogue sessions - well worth your reading time.

* * *

Pour Kaopectate in their keyboards? - Once a skeptic, I'm now convinced that e-mail is an efficient way to communicate, but some folks can overdo the e-mail messages. I heard a term recently for that condition: It's called "diarrhea of the keyboard." Although I could list some folks who suffer from that malady, I'll resist because they outrank me, and my creditors and I desperately need for me to retain my semi-prestigious Sandia job.

* * *

Congrats to the top employees - They're getting a nice dinner next week, a nice certificate, and a nice pin, so I don't know that these few nice words will add much to their honor, but the *Lab News* staff and I want to congratulate the recipients of this year's Employee Recognition Awards. A special four-page insert in this issue explains the awards and includes the recipients' pictures.

* * *

A different type of fantasy - Where a certain writer came up with this I'll never know, but *The Ragan Report* communications newsletter recently reported that a writer published a statement in a major newspaper that about 80 percent of the audience of after-dinner speeches are having fantasies - you know what kind.

I really have to question the authenticity of the statement. Maybe it has something to do with my age, but about 80 percent of the after-dinner speakers I hear make me fantasize alright, but about having a nap!

* * *

Irreverence reviewed - I've been known to take a jab or two at bureaucratic language, but I'm a featherweight when compared with the author of an irreverent little publication I came across recently. Connie L. Schmidt, who uses several pen names (including Augusta Wend, Helena Hanbaskitt, and Dee Bunker) has published a delightful ditty called *Paradigm Shaft, A New Age Guide to Personal Empowerment, Planetary Healing, and Enlightened Obfuscation*.

It's full of fun stuff. Several examples: An announcement for a seminar on "The Seven Habits of Highly Expensive Consultants," taught by a certain "management consultant and founder of the Institute for Pretension-Centered Leadership." Then there's an ad for "Geekgo, The Nerd Herb" available at "Ye Geekers Health Food and Computer Superstore" (free pocket protector with every purchase). And finally, there's a promotion for "The Jargon Basement: Designer buzzwords at everyday low prices. . . Sound educated - for less!"

- Larry Perrine (845-8511, MS 0129)

Ken Frazier honored for 'pseudoscience' debunking work

Ken Frazier (12622), *Lab News* acting editor, has received the American Humanist Association's Humanist Pioneer Award for 1995 in recognition of his somewhat unusual hobby - encouraging science and debunking pseudoscience between the covers of a special-interest magazine, the *Skeptical Inquirer*.

The bimonthly magazine, published by the nonprofit Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP, Amherst, N.Y.) and subtitled the *Magazine for Science and Reason*, promotes science, scientific methodology, and critical thinking by investigating claims of pseudoscience and paranormal occurrences.

"Typically a debate gets started when we publish a well-supported criticism of a claim, written by a knowledgeable scientist, scholar, or journalist," says Ken, who edits the magazine from his Albuquerque home in his spare time. "Then we allow the claimants and other critics to publish responses. In that way, a lot of information gets aired, and everybody gets better educated." Ken has edited *SI* since 1977.

Frauds and flummery

Over the years, the magazine has evaluated polygraph testing, handwriting analysis, and honesty testing (used for employment screening); uncovered abuses of hypnosis, subliminal persuasion, and memory recovery techniques; and applied scientific reasoning to alleged UFO sightings, psychic occurrences, and hundreds of other varieties of paranormal claims. *SI's* contributors often include scientific luminaries such as Carl Sagan, Isaac Asimov, Glenn Seaborg, and Martin Gardner.

In 1985, *SI* published the first scientific explanation of how people walk on hot coals at a time when "firewalkers" were selling people costly mind training. And in its January/February issue, the first in its new enlarged format, it published a controversial expose on the work of the late two-time Nobel laureate Linus Pauling, claiming he exaggerated the benefits of vitamin C in combating colds and other illnesses, including cancer. The ensuing debate hasn't yet been resolved.

Distinguished previous winners

In notifying Ken of his award, the AHA said it presents the Humanist Pioneer Award to those "whose lifetime careers or special personal endeavors have contributed significantly to the advancement of the human condition . . ."

"Our board took special note of your efforts to counter pseudoscience, various frauds and flummery where peoples' lives are diminished or threatened, and in addition for your efforts to publish the fine magazine that *Skeptical Inquirer* is, a unique journal bringing needed information to the general public as well as scientists," it said.

Ken received the award May 20 in Scottsdale, Ariz., joining the ranks of distinguished previous award recipients Gloria Steinem, Professor John Dewey, and Will and Ariel Durant. In accepting the award, he became its 21st recipient.

Although he agrees with most of the tenets of humanism, Ken says he's particularly surprised and honored by the recognition because he isn't an AHA member, nor has he considered himself a "humanist with a capital 'H'."

"I was astounded," he says. "I'm humbled just to be mentioned in the same sentence with some of the previous winners."

- John German

Sandia LabNews

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LOCKHEED MARTIN



Web hot sites

Got an invention? - If you need help steering your thingamajig through the US patent process, see Sandia's Patent and Licensing Center page, with information about what is patentable, who to contact, how to apply for a patent, the legal ramifications of keeping laboratory notebooks, and a link to the US Patent and Trademark Office. Find it via the Internal Web Services menu, Miscellaneous link.

Stat-USA - Save research time by checking out Stat-USA (<http://www.stat-usa.gov/>), which provides a wide variety of business and economic statistics compiled by more than 50 federal agencies. Stat-USA is searchable, so you can find just about any statistic you're looking for. Subscription fee.

Internet Patent Search System - For a free, searchable database of US patents, check out <http://sunsite.unc.edu/patents/intropat.html>

Web hot sites can be practical, educational, even a little fun, as long as they pertain in some way to Sandia work. To submit your favorite Web site, send e-mail to John German (jdgerma@sandia.gov), or call 844-5199. Make sure to include an accurate http address for each submission. We may not be able to publish all submissions.

Micromachine manufacture deepens the structures

Silicon lithography molding process offers high resolution for metals or plastics

By Nancy Garcia

California Reporter

In the beginning, there was silicon. Silicon processing techniques originally used for microchip manufacture have spawned efforts to fabricate speck-sized mechanical parts made of this material.

Then came LIGA — a German acronym for lithography, plating, and molding. Techniques being developed through LIGA would use silicon lithography to create molds for electroplating uniquely deep structures made of metal or for casting ceramics, plastics, or other polymers.

With LIGA, says Jill Hruby, Manager of Materials Synthesis Dept. 8716, structures that would be "quite impossible to create with any silicon technology alone" could be produced for the first time — particularly tall, narrow components of metal or polymer that can withstand high pressure and temperature and can transfer useful forces or torques. Already, experimenters have made components as fine as 10 microns that are 100 times longer than they are wide, with resolution as precise as a micron.

Heading up this effort on the West Coast is a team of researchers that formed to advance LIGA and related methods. The "LIGA Participating Research Team" was organized after a scientific meeting two years ago. It has been spearheaded by Jill and her fellow members from Lawrence Berkeley Laboratory (LBL), Lawrence Livermore National Laboratory, and NASA's Jet Propulsion Laboratory (JPL). The team takes advantage of the close proximity of two DOE synchrotron light sources in the Bay Area at LBL and the Stanford Linear Accelerator Center that can be used for this specialized lithography.

Mission to image solar flares

Only two similar efforts exist in the United States. A LIGA technology clearinghouse has been established at the Microelectronics Center of North Carolina, whose top official sits on the Participating Research Team's advisory board (along with officials from Ford Motor Co. and the University of California at Los Angeles). This center has received fabrication assistance from a group led by Professor Henry Guckel at the University of Wisconsin in Madison.

One of the team's first projects is to assist a

planned NASA mission to image the sun's solar flares, tracking the particles that burst in a sudden release of power from areas where sunspots arise. Neither gamma nor neutron rays produced by these solar outbursts have been imaged before. The mission, part of NASA's new emphasis on smaller, cheaper, and faster programs, will rely on LIGA to make telescope imaging grids with features up to 100 times smaller than possible using traditional manufacture.

"You just can't do it without this type of fabrication," says Michael Hecht, an applied physicist at JPL who oversees grid manufacture for the planned mission. "It's a make-it-or-break-it technology."

Using LIGA, the telescope will be less than half the length initially anticipated, measuring overall less than 1.7 meters long. The smaller size allows it to be launched on the smaller, cheaper spacecraft Pegasus. Orbiting almost 400 miles above Earth, the telescope will capture images through a series of 12 mesh grids and detectors. As the telescope rotates through space, it will provide a three-dimensional view of radiation from solar flares.

"In some ways, conceptually it's like a pin-hole camera," Hecht says. Views through the deep, narrow openings in the grids will provide the best spatial resolution of particles streaming from the sun.

The resolution must be as precise as would be needed to distinguish a dime from more than half a mile away, says Bob Lin, project scientific director and professor of physics at the University of California at Berkeley. Making

minute grid features that are much taller than they are wide, he adds, is a feat equivalent to building a skyscraper.

Already, proof-of-concept grids have been electroplated at Sandia for the project, which next will focus on producing perfect, large-area structures, then assembling and characterizing flight instruments.

NASA's proposed launch date for the High Energy Solar Imaging mission is the year 2000.

Besides lending electroplating expertise to the mission, Sandia is also shar-



FINE LINES — Bill Bonivert (standing) and John Hachman (at microscope) of Materials Synthesis Dept. 8716 examine micromachine grids manufactured with the LIGA lithography, plating, and molding process. The inset at lower left shows the magnified grid image.

Sandia California News

ing responsibility for making the silicon masks used like templates to shape Plexiglas molds for LIGA. For Sandia's core missions, Jill envisions valuable LIGA applications in strong links for stockpile surety, fuzing systems, thermal sensors, and related functions that could be retrofitted on warheads to add capabilities such as safing, small mechanical parts, and state-of-health sensors. Discussions are under way about appropriate in-house applications that would be accomplished jointly with Surety Components and Instrumentation Center 2600.

Multiple applications

Other LIGA projects that Sandia is assisting include an attempt to help JPL make a miniature quadrupole mass spectrometer; a partnership with LBL to make a disc drive suspension arm for the IBM Data Products Division; and a project with LBL to make a high-performance stepping motor for a small Bay Area company called Empire Magnetics. That project involves creating a large part with fine-resolution teeth. The entire part will be a nickel-iron alloy.

The ability to make iron-containing parts that can move under a magnetic field is one advantage of LIGA, Jill says. A general disadvantage is that LIGA parts have to be assembled after they are created, unlike micromachines made from silicon wafers.

The development effort requires adapting nearly every aspect of standard silicon lithography. Despite these challenges, Jill sees promise for the future.

"We have always thought of it as a process looking for an application," she says, much like early assessments about computers, "but the tide had changed over the past several years. I believe this technology will be important to Sandia." Beyond Sandia, many businesses have already expressed interest in the approach. Jill has already begun searching for a local vendor to produce the lithography masks, explaining, "Our intention ultimately is to make LIGA a commercially available technology."



ESSAY AWARD WINNERS — The Sandia/California Hispanic Leadership Council held its annual awards banquet recently, giving six Hispanic high school students from the Tri-Valley and San Joaquin Valley awards for outstanding essays. Laura Santos (8601), right, emceed the event. From left are winners Sophia Vallarte from Tracy High, Monica Sandoval from James Logan High in Union City, Laura Chavez from Edison High in Stockton, Ana Gutierrez from Liberty Union High in Brentwood, and Fred Jaramillo of Phoenix High in Livermore. One winner — Quirina Villarreal of East Union High in Manteca — could not be present, but her parents attended to represent her.

State of the Labs

(Continued from page 1)

and who is going to be in charge.

Jim: I guess Al gave you a cumulative impact statement. I have a tendency, I guess, as an operations individual, to take these one at a time. I think if you look at them that way, we're not doing all that badly. I think the Galvin report has actually helped us emphasize some initiatives we were trying to implement in the first place, those having to do with reductions in overhead and the like. And I think parts of the Galvin report will, in the end, have a positive impact on the laboratory.

Lockheed Martin? I don't think that the average Sandian has seen any impact at all on their lifestyle here, and if there's any impact of the merger of two large high-tech companies, I think it will be positive.

Kirtland? The team that has been working on Kirtland has done a super job. I think we have a pretty good case. I think the more they look at it and the more the Air Force looks at their numbers, I think that's going to become more obvious.

Al: Let's get back to the Galvin report ["Alternative Futures for the Department of Energy National Laboratories," prepared for DOE by a task force headed by former Motorola chairman Robert Galvin]. In a real sense, we anticipated most of the conclusions that Galvin and the task force reached. We can demonstrate that very clearly by the actions we set in motion long before the report was issued — such as our Total Quality Management effort that began in earnest around 1990 and led to our current reengineering effort. More recently, DOE has been moving with great energy and dedication to implement the suggestions contained in the report's Appendix B [keeping the basic structure of a system of government-owned, company-operated national laboratories but streamlining DOE oversight and reducing micromanagement]. So that's all very encouraging.

I would say on the whole, our 1994 Strategic Plan is quite compatible with the views expressed by the Galvin task force. The differences are matters of emphasis. There are basically two areas where I would have preferred a slightly different emphasis in the Galvin report. One has to do with the mission focus of the Labs. All along Sandia has been a mission-

oriented institution. Having specific mission responsibilities, as recommended by Galvin, is an enduring part of our culture. But we have also learned that the specialized capabilities that we and the other laboratories have evolved can play an important role not only in addressing DOE's traditional mission areas, but also in many of the new emerging problems facing the nation. There is no encouragement in the Galvin report for DOE and its laboratories to broaden their scope.

The second area I would like to have seen emphasized more is our relationship with the private sector. Our Strategic Plan states clearly that we intend to concentrate on collaborative interactions with both industry and universities. Increasingly, we are emphasizing partnerships with the private sector in all of our programs, both as a way to support our own mission objectives and to create additional value by supporting the needs of US industries and universities. I believe such dual-benefit partnerships will become increasingly important to us as a laboratory, and to the nation as well. The Galvin report is less encouraging in that regard.

LN: Have we had any success in countering those problems?

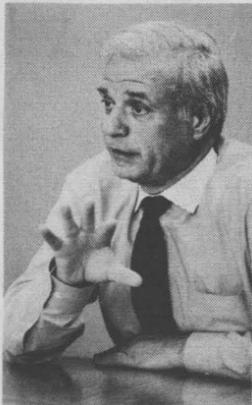
Al: Actions speak louder than words. In this case rhetoric isn't going to change anyone's mind. I believe Sandia has established an outstanding track record in working with the private sector, and we can demonstrate convincingly that these interactions have been of benefit to our government missions, national security and energy/environment, and have also contributed significantly to industry.

Jim: When we look at the future of our industry and university partnerships, the fundamentals are going to be more important than rhetoric. I think we all share the view that working with universities and industry is going to further our fundamental missions. That's going to persevere regardless. I think those programs are doing pretty well.

LN: Do you think the people controlling the purse strings are really noticing such things, though?

Al: Your question suggests that the purse strings are controlled in a very centralized kind of way. That's not really true. While there has been a definite swing to the political right in the congressional leadership, in the end it still comes down to a collective judgment as to what makes sense and what doesn't make sense. I have great confidence in the long-term stability of our system of government. When the dust finally settles, most of us will agree

"There is no encouragement in the Galvin report to DOE and its laboratories to broaden their scope."



JIM TEGNELIA

that whatever the changes in policy direction may be, that they were appropriate.

Jim: I think you have a good question. Congress really is giving programs like the TRP [Technology Reinvestment Program] and ATP [Advanced Technology Program] and the like a very difficult time in the budget process. Those kinds of programs are going to have a difficult time in the next several budget cycles. But when you have partnership programs that are critical to mission performance, we really believe that those will be sustained independent of all the political rhetoric.

Al: Such an approach is entirely consistent with the Galvin recommendations. I do worry, however, that mission relevance may be too narrowly interpreted. The point often missed is that the ability to achieve mission success is enhanced not only through interactions where the partnerships make a direct contribution — but there is often equal or greater value in partnerships in which scientific and technological issues of mutual interest are explored, even though the partners may have very different applications in mind.

For example, our interaction with Goodyear Tire and Rubber Co. Here we're dealing with very complex technical issues involving the computational modeling of high-rate, large-amplitude deformations of thin structures. Collaborating with Goodyear engineers has given us insights that are proving useful in analyzing accident scenarios involving nuclear weapons. Goodyear has benefited as well. Goodyear is not in the nuclear weapons business. Nor does it

produce products that are used in nuclear weapons. And yet this relationship is creating considerable benefit for both parties. And by the way, it also provides a tremendous stimulus to our technical staff. It broadens their horizons. It's something that we intend to continue to encourage.

"None of our missions has disappeared with the end of the Cold War. The debate should focus on mission priorities."

LN: What is the latest word about our budget status? What can you say other than it's a downward trend?

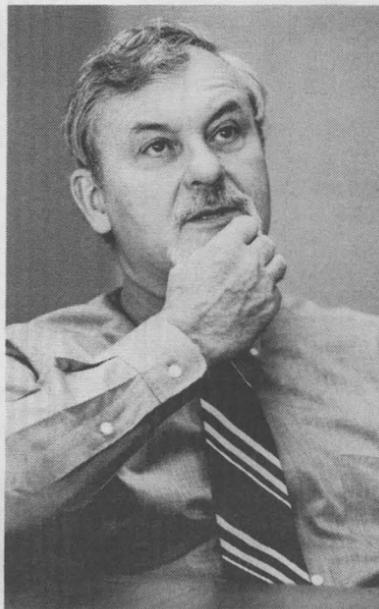
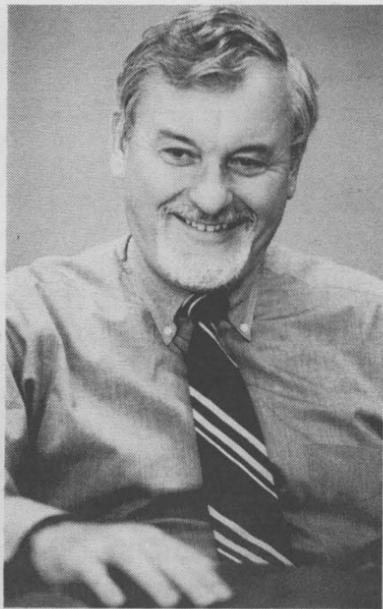
Jim: I don't necessarily think '96 is going to be a downward trend in all of our programs. The current status is that Congress is two or three months behind in its normal way of doing budget processes this year. So the kind of indications you get out of Congress at this point in the year are harder to figure out.

Al: We're also facing a problem that may be difficult to articulate clearly in the *Lab News*. It has to do with the Budget Authority (BA) versus Budget Obligation (BO) problem. For the last two years our spending rate has exceeded our BA because the government has wanted us to reduce the relatively large cushion — or backlog as industry would call it — that we've had in terms of unobligated BA. Now that's coming to an end. We've reduced the backlog to a point where DOE is happy, and now we have to equalize the annual BA and BO.

Jim: One is revenue in, the other is revenue out. We're authorized to spend a certain amount of money, and then there are the actual costs. The bottom line is that this shift alone — if everything stays flat otherwise — will in effect reduce our budget next year by close to \$100 million.

Al: What Jim said earlier is certainly true; at this early stage prospects for '96 in terms of Congressional actions still look encouraging, especially for the nuclear weapon program. But

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because we've now reduced our backlog to a minimum, we have to throttle our spending. And that creates complications. [See "Sandia budget: Outlook beyond FY96 murky" below.] '97 is another question. There is a clear unmistakable commitment on the part of Congress, on both sides of the aisle, to finally deal with the federal deficit problem. The task of bringing the federal budget into balance over the next few years will be exceedingly difficult politically, and all federal agencies are likely to feel the squeeze before it's all done.

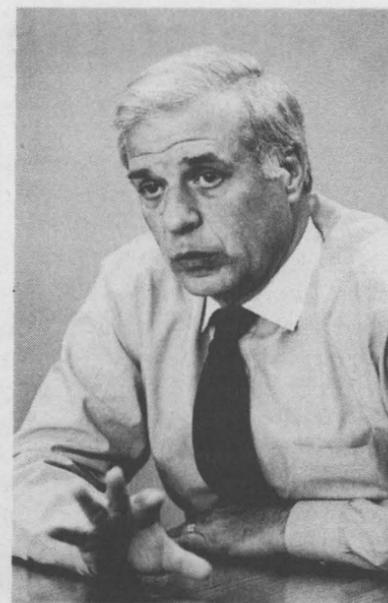
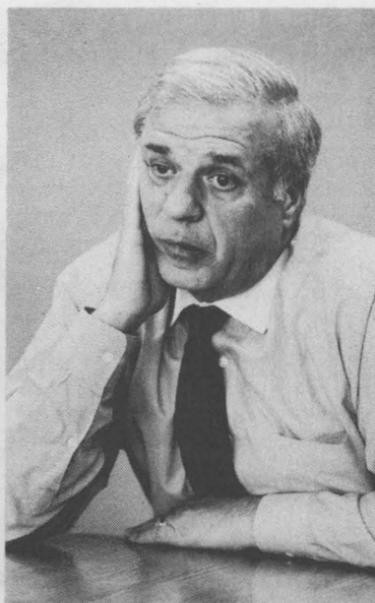
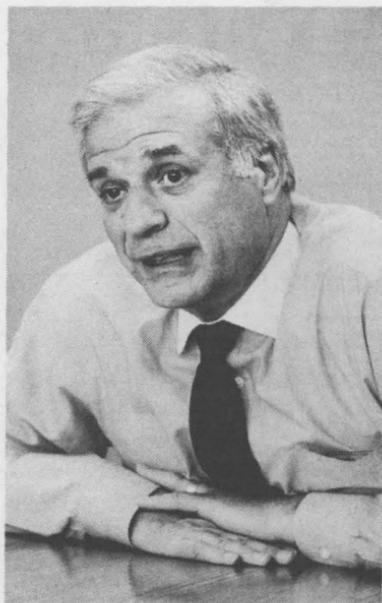
Jim: The other uncertainty we have to deal with is our Work for Others [WFO] programs. We have a lot of uncertainty with that program. We were used to budgets approaching \$300 million a year. This year the latest figures show we will spend around \$240 million and have about \$200 million in revenues. I think DOE's environmental cleanup activities — environmental restoration, waste-management kind of activities — are going to be down. But Defense Programs [DP] looks either flat or up. So it's hard to draw a conclusion now on what the budget situation is going to be.

LN: Is there still any talk of FY95 rescissions?

AI: Rescissions are happening as we speak. But they haven't impacted us in a major way at this point. For example, the Advanced Technology Program and Technology Reinvestment Program have been hit. By the way, it's interesting to note that neither one of these programs, despite very strong Republican opposition, is likely to be canceled outright. Which again supports the statement I made earlier that in the end it's a collective judgment.

Jim: Basically what they did was recall

"We think we can handle our workforce levels with attrition."



unspent, unobligated balances. The programs that we have in those categories are obligated and so are not being impacted.

LN: We announced in our April 14 issue your plan about making us smaller by about 600 FTEs (full-time-equivalent employees) by the end of FY96. Is that going to be attainable through attrition? Are the numbers likely to get worse than that?

AI: The numbers that you quote are right at the boundary of what can be achieved through normal attrition and what would require some encouragement. We obviously are hoping that we can make those reductions smaller. But we're also conscious of the fact that there's a not insignificant probability that they're going to become larger. Until we know, it's really too early to say exactly how we will respond.

LN: What are the possibilities of future layoffs and do we have a plan for dealing with that?

AI: There are really two answers: By and large I don't know any more than the employees know. I suffer the same uncertainties they do. As far as plans are concerned, whatever

happens, we'll manage it.

Jim: I think that given all the uncertainty in what we know today, we do not see a requirement for either inducements to leave early or terminate. We think we can handle our workforce levels with attrition. We may not make employee levels of 8,400 and 8,000 by the end of FY95 and FY96 respectively, but we'll be close enough. Second, it's important to understand that in these uncertain times we would be imprudent if we didn't have plans to be able to handle that eventuality, and in fact we are working that issue. Right now we don't believe we will have to use them. But our responsibilities require that we know what we would do in that eventuality.

LN: Our Human Resources group is at least looking at it?

Jim: Sure. We would be irresponsible if we didn't.

LN: Our technical work often seems to take a back seat in the news recently, with all the restructurings, problems, issues, and cutbacks. It is

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Sandia budget: Outlook beyond FY96 murky

Although the FY96 budget for Sandia may be OK, the outlook beyond is uncertain and could entail substantial reductions if DOE continues to downsize, says Sandia Vice President and Chief Financial Officer Paul Stanford (10000).

Adding to the uncertainty is the potential differential between President Clinton's budget and what Congress may pass, Paul says. "Based on the cost-cutting detail, it appears that the final FY96 congressional budget will be below that submitted by the president," Paul says. "The next opportunity to obtain greater clarity for the FY96 and FY97 budgets will be this fall when congressional appropriations bills are passed, and in January 1996 when the president's FY97 budget is submitted to Congress."

Other uncertainties that could affect Sandia's budget, Paul says, include the Galvin Task Force's suggestion that the national laboratories could be more streamlined, DOE Sec-

	FY95 Cost estimates		FY96 Revenue estimates
	Oct 94	May 95	
Operating costs			
Defense Programs Sector	778.7	749.3	770.4
Energy & Environment Sector	343.0	330.0	297.0
Work For Others Sector	240.1	240.0	200.0
*Total Operating	1,361.8	1,319.3	1,267.4
Capital Equipment	50.0	59.0	49.2
Construction	90.0	89.5	43.6
Total Sandia National Laboratories	1,501.8	1,467.8	1,360.2

* Includes Production Activities of \$65M in FY95 and \$74M in FY96
Source: 10000

Here is the latest update of Sandia's total budget, giving an older and the latest estimate of costs for FY95 and the latest estimate of revenues for FY96 (all dollars in millions).

retary Hazel O'Leary's implementation of the Galvin recommendations, and general federal budget reductions approved by Congress.

"We believe Sandia is not exempt from budget reductions and must plan for the worst and hope for the best," Paul said in a recent interview. "Accordingly, we have chosen to assume that a reduction may occur and are taking several actions."

Those actions, Paul says, include:

from across the Labs, headed by Jim Ney (5003).

- Working with DOE to define a basis for DOE oversight reduction and substituting more cost-effective methods of self-governance based on industry standards.

Paul emphasized the large uncertainty of the FY96 and FY97 budgets at this time and promised to communicate any significant changes as soon as they are known.

- Reducing FY95 expenditures, thus allowing some additional funds to be carried over into FY96.
- Limiting new hires to critical skills.
- Carefully reviewing each employee departure to determine if it is essential that the position be replaced.
- Accelerating reengineering efforts within the administrative area and expanding them to the rest of Sandia.
- Carefully studying the cost-cutting recommendations proposed by a group of directors

State of the Labs

(Continued from preceding page)

presumably still our reason for being. Are we still doing great technical work?

AI: First I would challenge your opening statement. My observation in looking at the *Lab News* is that we do give our technical work a lot of play. If it were not for our technical accomplishments, we would cease to exist. That's obvious. The encouraging thing for me is to see how much good technical work, highly valued by our customers, is being done despite all the distractions. We are still a very large, world-class laboratory, with tremendous capabilities, good facilities, and an outstanding staff, both on the technical and administrative sides. We did not win seven R&D 100 awards because we were idle.

Jim: My perspective may be more of an outsider's than an insider's, but if you take a look at what has happened to the R&D and production base of this country having to do with national security in its broadest sense, Sandia has done exceptionally well. There have to be two reasons for that. The first is we are dealing with an important mission. Second, we are performing that mission very well. So I think the fundamentals have to be good or we would be in a much more difficult situation than we are now.

LN: Do you see any redirection of our R&D effort? Any shifts?

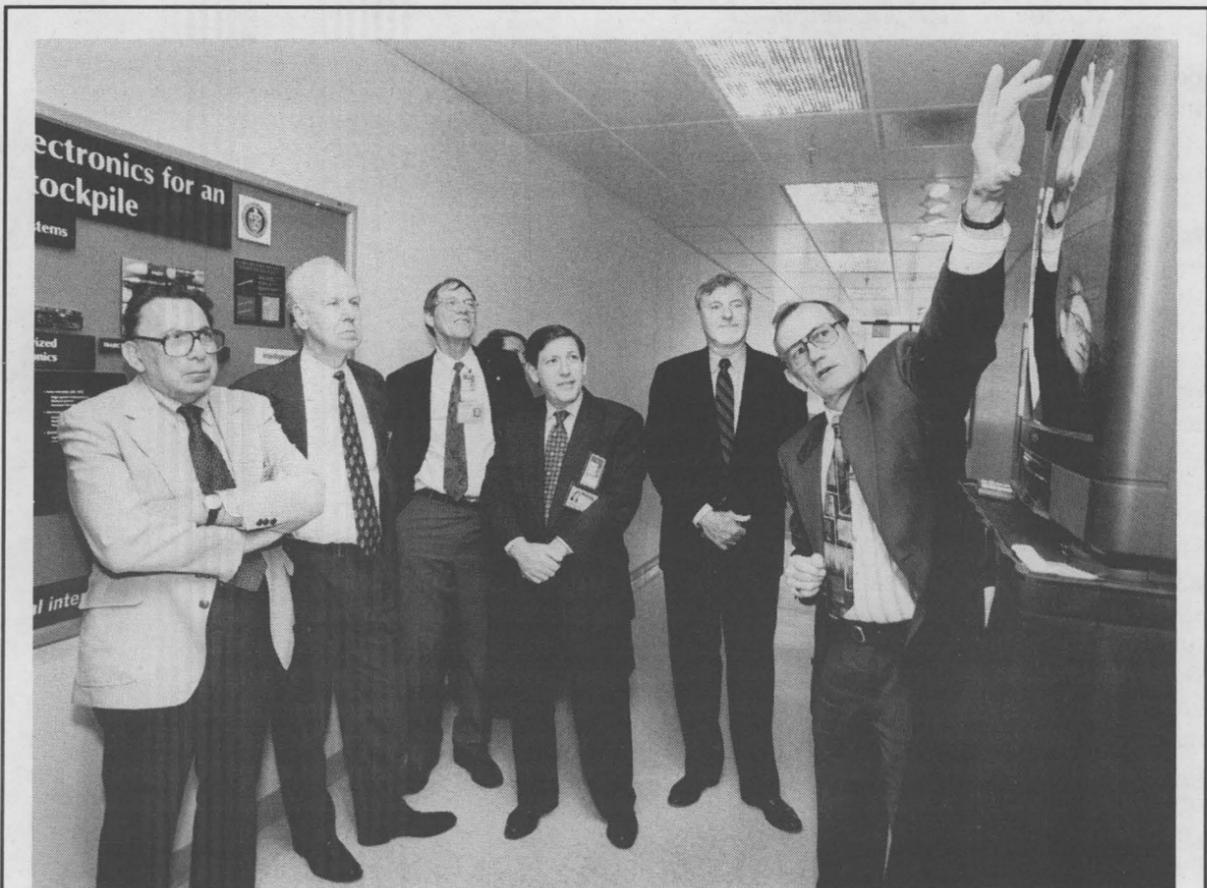
AI: There are always movements, always have been and always will be. At this point, it's clear that we'll see some upturn in the weapon-related activities. Part of that has to do with the new production responsibilities that we took on, which, by the way, I think are having an invigorating impact on our program.

In fact it pleases me to see how far we've come in a short time developing a conceptual plan for maintaining the health of the nuclear weapons stockpile through a program of very thoughtful and deliberate product improvements. These improvements will provide a lot of technical challenges both for the engineering and scientific members of our staff.

Jim: AI mentioned the DP activity, which has just gone through a major planning activity. I think Gerry Yonas [VP 9000] is doing the same thing in Work for Others [WFO]. My perspective on the fact that the WFO budgets are declining is that he is in the process of changing his menu from Cold War programs, which are coming to an end, to a new generation of post-Cold War programs like counterproliferation, which will be the WFO portfolio for the next several years. When you go through a process of cutting down large programs and starting up new programs, you go through a downturn in your budgets and then you grow again. So Gerry is going through this necessary activity of putting together a new set of initiatives in the WFO activity. That's a turbulent activity, but it's something we have to do. It's a positive thing. So there are some

"We did not win seven R&D 100 awards because we were idle."

"I'm excited to see the rapid advances we're making in advanced manufacturing technologies. We're really getting our act together."



HIGH-LEVEL ADVISORS — Members of the new Sandia President's Advisory Council get a briefing on Sandia's micromachined motor from Paul Percy, Director of Microelectronics & Photonics Core Competency Center 1300 (right). From left, members are Erich Bloch, Distinguished Fellow with the Council on Competitiveness and former Director of the National Science Foundation; David Auston, Provost and Distinguished Professor of Engineering at Rice University; Herman Postma, former Director of Oak Ridge National Laboratory; Leonard Spector, senior associate on nuclear nonproliferation with the Carnegie Endowment for International Peace; and Sandia President Al Narath. The group, which will advise AI on strategic issues, program initiatives, and new opportunities for contributing to the nation, met for the first time May 16-17.

changes going on in the mission-related work we do.

AI: But there is still an enduring common technical denominator to all the work we're doing. Programs come and go, at times with dramatic swiftness, but the underlying scientific and technical foundations evolve in a more systematic way. Sustaining the excellence of our scientific endeavors remains an essential imperative. I am firmly committed to maintaining that excellence. At the same time we are improving the focus that we have created in regard to our principal technology development initiatives: manufacturing, electronics, information, and pulsed power. I think that focus has stimulated a lot of progress. These technologies, to some extent even pulsed power, have broad applicability across Sandia and our entire customer base. We can really demonstrate these days how working for multiple customers, all supported by this common science and technology base, is making us a more successful laboratory.

I'm excited to see the rapid advances we're making in advanced manufacturing technologies. We're really getting our act together. The same is true for electronics, where our influence, based in part on partnerships we've been able to develop within both the government and the private sector, has grown rapidly in the last year or two. And I could say the same for information technology.

LN: We've talked about the Defense Programs and Work for Others sectors. What about Energy and Environment? We actually showed a slight growth in the number of employees projected down the road. What is the reason?

Jim: It's mostly for environment — for activities related to DOE's environmental restoration responsibilities. We've had tremendous growth in WIPP [Waste Isolation Pilot Plant] activity, now one of the largest single programs in the laboratory. It's on the order of \$50 million. It's a very large program. More than a hundred Sandians are working on it.

The same thing is happening with our Yucca Mountain [proposed nuclear waste storage area in Nevada] program, which we've just restructured. I was out there a month ago. They are beginning to do a lot of drilling, and the scientific activity is picking up. So Dan [Hartley, VP 6000] has some important activities that are going to be emphasized regardless of the political background.

AI: In line with what we said earlier, we are well positioned in Energy and Environment. Now it's true that applied energy programs have become a target for Congress. But I see us holding our own because most of our work in this area addresses high-priority problems.

Jim: The fundamental work we're doing at both WIPP and Yucca Mountain is being the scientific conscience of both of those projects. And you have to believe that, first, the nation needs both of those projects. And second, with the emphasis that environmental interest groups place on these kinds of projects, that the scientific conscience is going to be a necessary activity for a long time in the future. Dan has a core of activities that are really very important to the Department of Energy.

AI: I mentioned the principal technological thrusts of the laboratory. In the case of energy, it's interesting to note that one of our strategies has been to concentrate on the manufacturability of renewable energy components. Here's something that is making an important contribution to industry. At the

(Continued on page 7)

"The fundamental work we're doing at both WIPP and Yucca Mountain is being the scientific conscience of both of those projects."

Second annual Employee Recognition Awards ceremony June 3 to honor 104 individuals, 12 teams

Sandians honored for 'exceptional efforts' on behalf of the Labs and nation

One hundred four individuals and 12 team representatives will receive the second annual Employee Recognition Awards on June 3 at a ceremony at the Marriott Hotel. The ceremony will be part of an evening that includes a reception and a formal dinner as well as the presentation of the awards.

Sandia President Al Narath and Executive Vice President Jim Tegnalia will present each honoree with a pin symbolizing the award, which recognizes outstanding service to Sandia and the nation during 1994. Recipients will also receive a framed certificate. The individual recipients are pictured on these pages. (Awardees Josie Chavez and Mark Washington, both 7435, are not pictured.)

The team awards go to the Silver and Turquoise Award winners of the Sandia President's Quality Awards for 1994. Members of all those teams were announced in the Sept. 2, 1994, *Lab News*.

Representatives from Lockheed Martin will also be attending the banquet. One of those expected to attend is Bill Ballhaus, Corporate Vice President for Science and Engineering and former president of the American



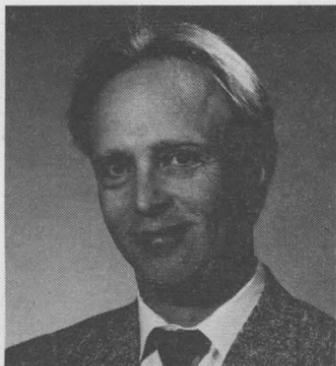
Institute of Aeronautics and Astronautics. Another scheduled corporate representative is Dan Peterson, Lockheed Martin's Vice President for Washington Operations. Sherman McCorkle, President of Technology Ventures Corporation, a Lockheed Martin venture capital subsidiary located in Albuquerque, is also scheduled to attend.

"This is the second annual awards ceremony," notes Al Narath, "and it is an event that many people at Sandia, including myself, have come to look forward to. It's an opportunity for Lockheed Martin to recognize the individuals and teams who made significant contributions to Sandia in 1994. It is these contributions, the exceptional efforts of our employees, that have made Sandia an outstanding research

and development laboratory."

The annual awards event is organized by Sandia's Public Relations and Communications Center 12600 and Human Resources Division 3000. Jerry Langheim, Director of the Public Relations and Communications Center, says the awards "recognize the hard work, the dedication, and the real accomplishments that these folks have contributed to the Labs."

The 12 teams receiving awards include the Tactical Automated Security Systems Team, the Sandia/New Mexico Earth Day Festival Team, the Team for the Lightning Arrestor Connector (Pentagon-S Implementation), the Team for WR Production of the MC4437 Current Stack, the Safeguards and Security Access Enhancement Team, the GPS Satellite Global Burst Detector Team, the Team for the H1501A Transportation Accident Resistant Container Program, the Lithium Battery Quality Development Process Team, and the Project Stage Right Phase 1 Team. Those teams are all PQA Silver Award winners. The Turquoise Award winners are the Team for the Development of a Use Control Technology, the Team for Reengineering Sandia's Environmental Restoration Project, and the American Challenge Team.



Chris Aas
7582



Cindy Alvine
5365



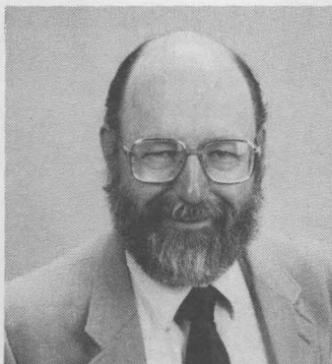
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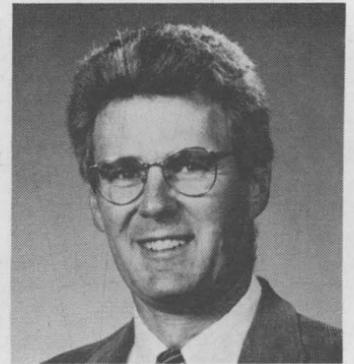
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Albert Ayotte
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Ruth Bargman-Romero
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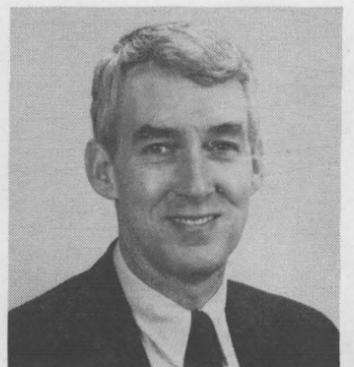
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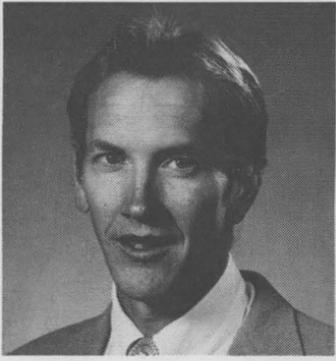
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Joan Bersie
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Will Bolton
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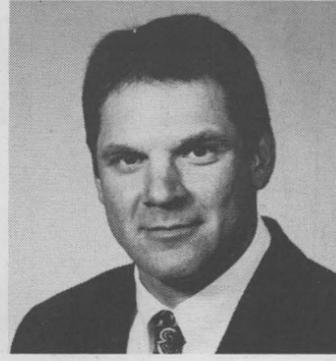
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Richard Brow
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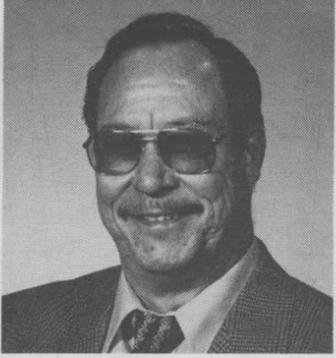
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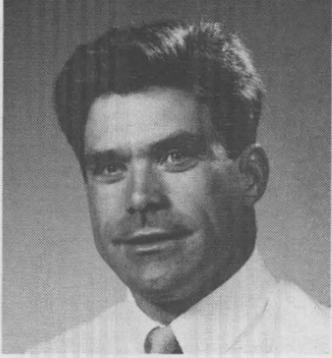
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Debbie Pope Chavez
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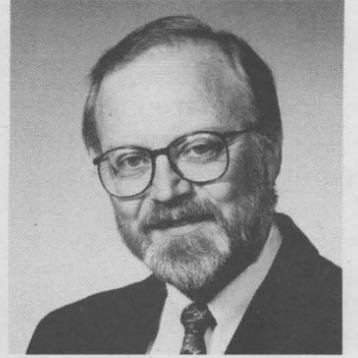
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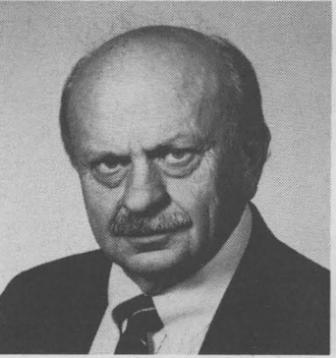
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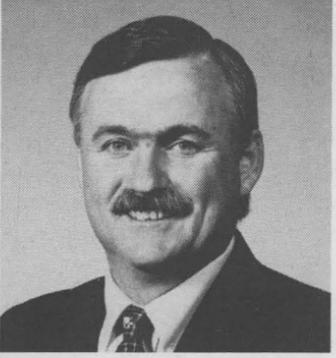
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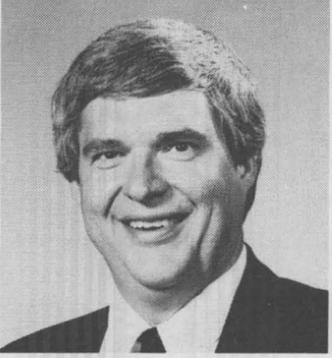
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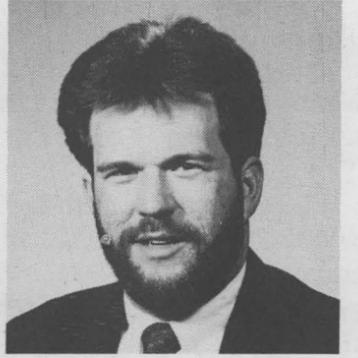
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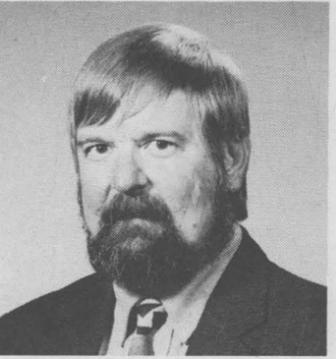
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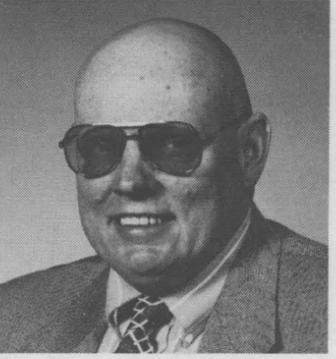
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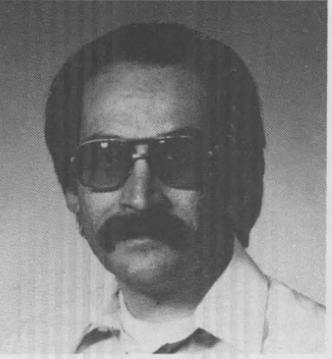
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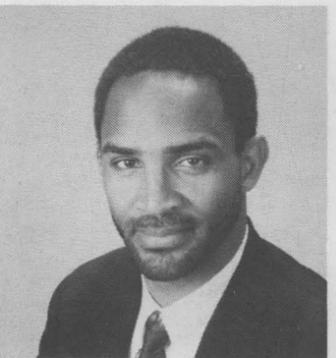
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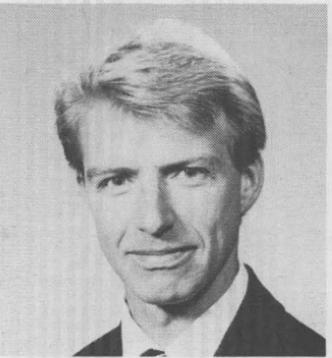
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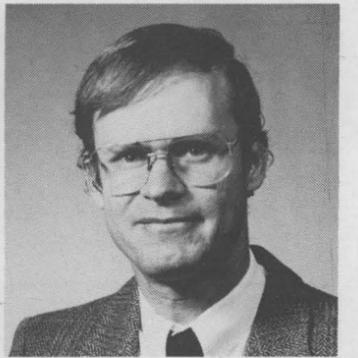
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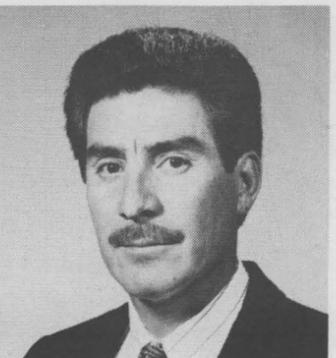
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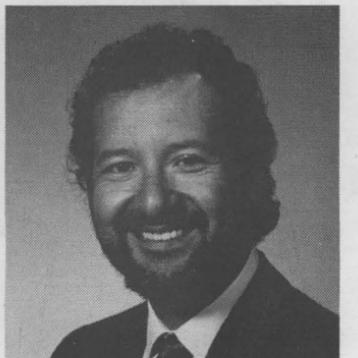
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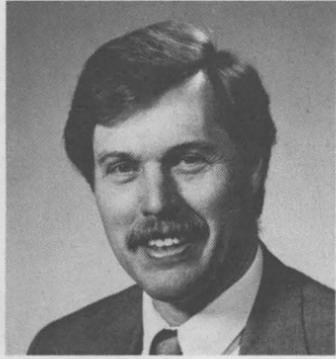
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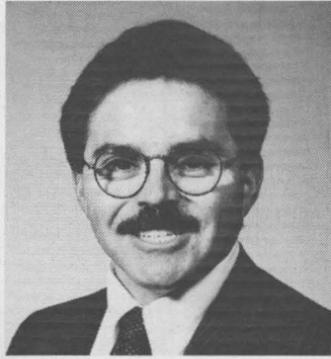
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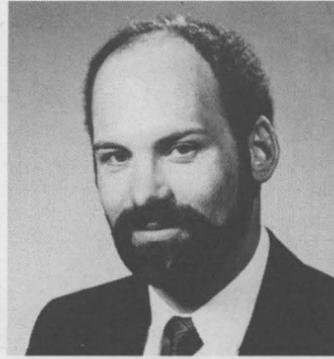
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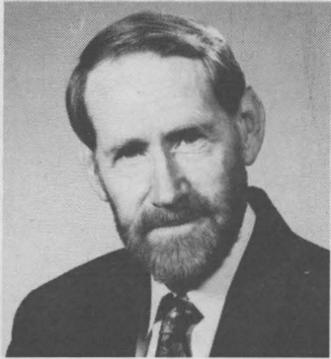
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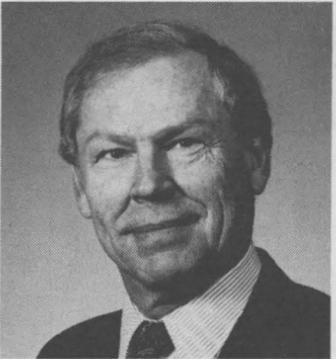
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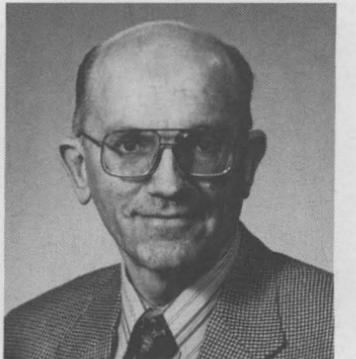
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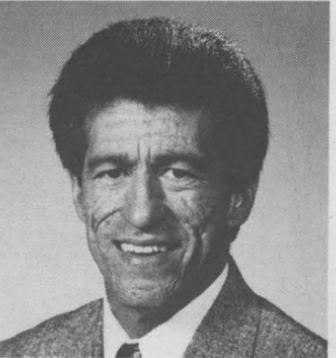
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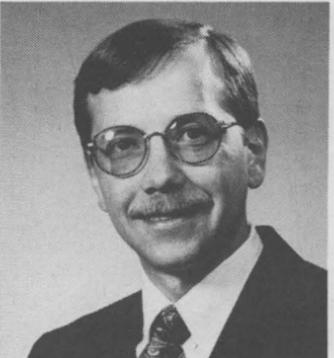
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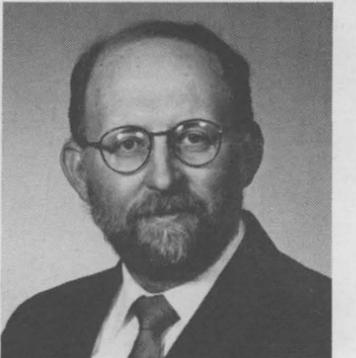
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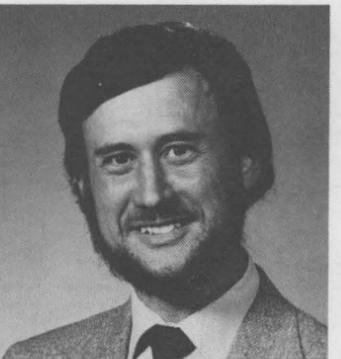
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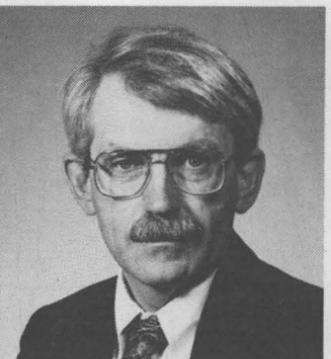
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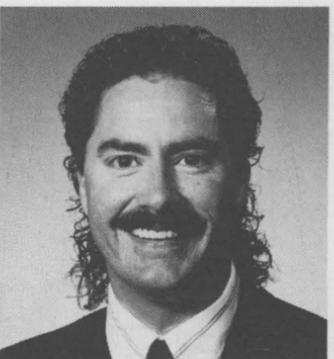
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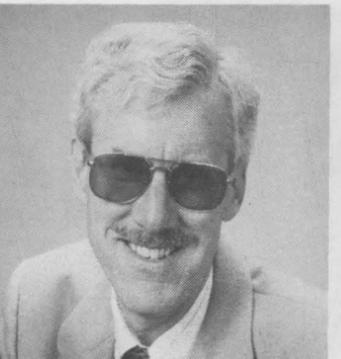
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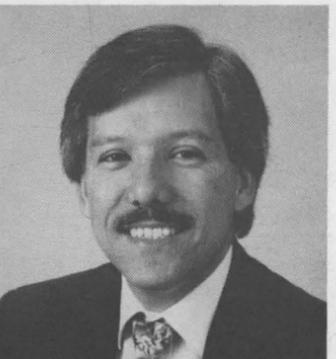
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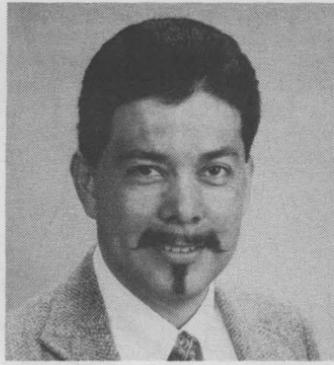
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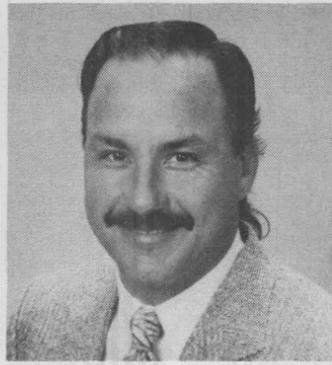
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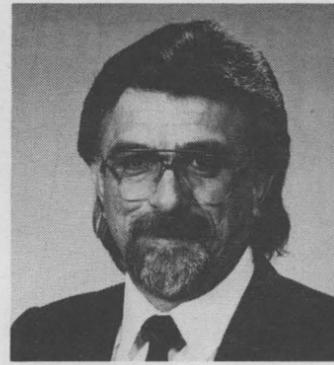
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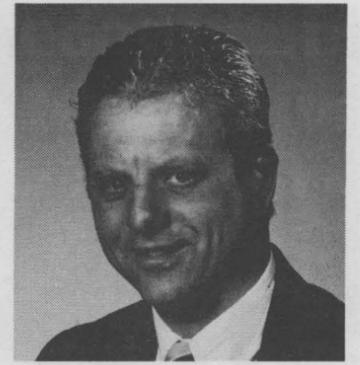
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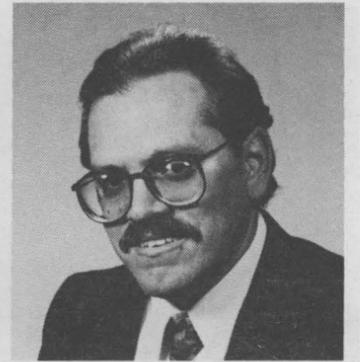
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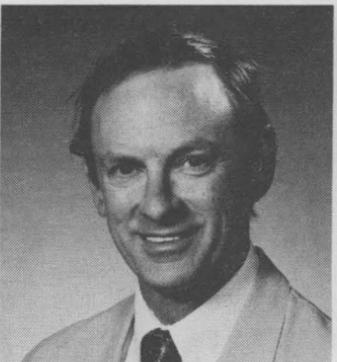
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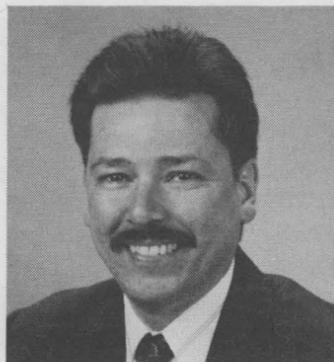
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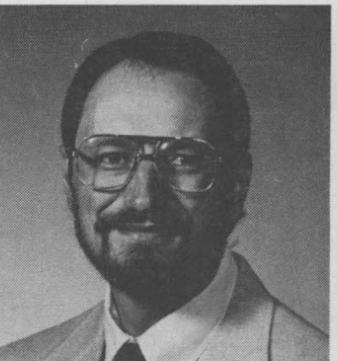
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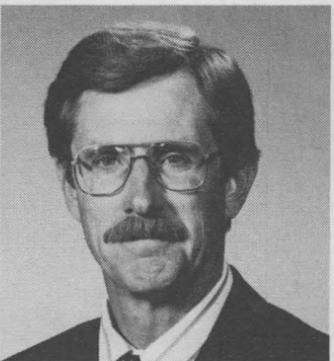
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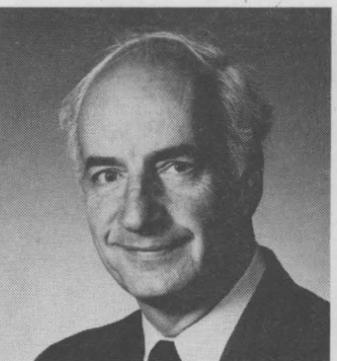
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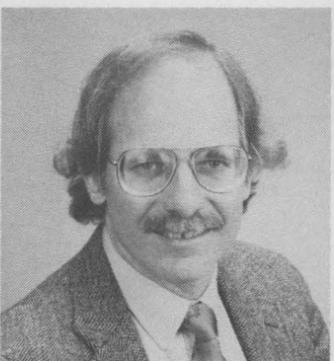
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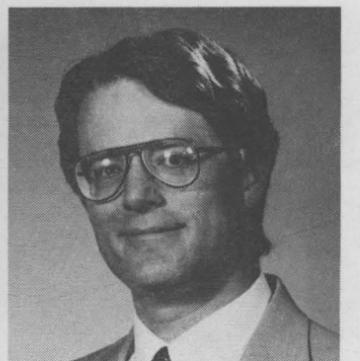
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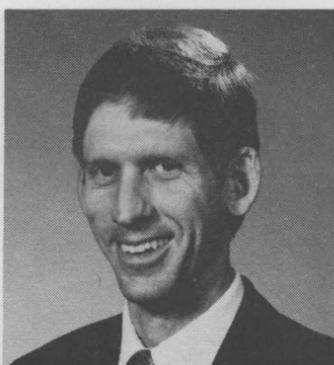
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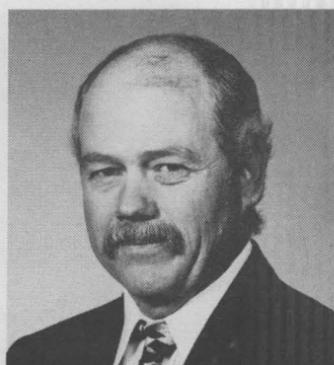
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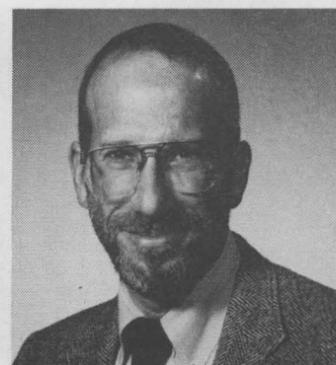
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Jerry Wright
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Rob Yawakie
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Al Zelicoff
5006

(Continued from page 6)

same time it connects up with one of the principal strengths of the laboratory. I believe if we continue to concentrate on our customers, and emphasize those problems that build on and in turn help support our fundamental technical strengths, we will continue to do well.

LN: People are always asking about Sandia/California. The need for Sandia/California. Would you like to reiterate some thoughts in that area?

AI: Reiterate is the operative word here. There seem to be some questions that never disappear. The Sandia/California issue falls into that category, as does the contribution of basic science to Sandia's ability to execute its mission responsibilities. In both cases, the answer is, "Absolutely essential." I cannot imagine a Sandia National Laboratories being as successful as we are today in the absence of Sandia/California. It's an integral part of our institution. Just as integral as basic and applied science is to our core missions. We are and will continue to be a single laboratory, taking advantage of the diversity offered by two interdependent physical locations.

LN: What do you think is going to happen to DOE? What will be the effect on Sandia?

AI: There is no question that DOE is under attack. It's no secret that there are voices in Congress that are suggesting that DOE along with some other federal agencies be eliminated. It will not be in the best interest of Sandia or the other DOE labs for that to happen. It is very important for Sandia to do what it can to strengthen DOE's position. As I said earlier, DOE has embarked on a vigorous program of streamlining itself, gaining greater efficiencies, and restoring its credibility as a government agency. We are committed to helping DOE succeed in this endeavor.

LN: Are you seeing any positive effects of this campaign yet?

AI: It's too early to tell. Until DOE completes the various pilot programs and we see what the results are it would be premature to comment in detail. People are taking it very seriously. The laboratories are deeply involved in efforts to simplify the DOE directives process and oversight functions and make them more effective. I think the prognosis is actually quite encouraging. We have no choice but to achieve real success in this effort. On May 3 the Secretary announced a significant downsizing of DOE as part of her Realignment Initiative [see May 12 *Lab News*]. By the way, I leave it to your imagination: Is it possible for the labs, collectively, to maintain their present size, or even grow if the federal employment level declines significantly?

I would also like to comment that I'm very appreciative of the efforts that the Albuquerque field office and Kirtland Area Office have made all along to encourage real teamwork between DOE and Sandia employees. It's been a good relationship; it will serve us well as we implement necessary improvements in governance along the lines suggested in the Galvin report.

LN: Are they cutting down on some of the oversight activities that cost us a lot of time?

AI: They are. Many of the audits that had been scheduled previously have in fact been either postponed or canceled, in anticipation of revisions in the various oversight processes.

LN: What about the merger?

AI: The change from Martin Marietta to Lockheed Martin to this point has been totally transparent. I think it will continue to be that way. When we add the DOE contracts of the two corporations that came together, it adds up

"It is very important for Sandia to do what it can to strengthen DOE's position."

to something like a \$6 billion responsibility. That is a very large fraction of DOE's budget. Incidentally, that responsibility includes three of the national laboratories: Oak Ridge, INEL [Idaho National Engineering Laboratory], and Sandia.

Jim: We [Lockheed Martin] are by far the largest contractor in the DOE complex.

AI: It's conceivable that there'll be some restructuring of how Lockheed Martin keeps its arms around all of that in the future. But again I don't anticipate that this will have an impact on Sandia that many employees will notice.

LN: When Sandia was first approached about using its research reactor to produce the medical isotope molybdenum-99 (Moly 99), we were somewhat reluctant. Have you changed your thinking?

Jim: I don't believe there was as much reluctance as there was questioning of what we were going to do. We are getting toward the end of the EA [environmental assessment] process, and we're also in the process of putting together the program plan and the costs of doing that activity for the Department of Energy. We expect to be deeply into that before the end of this fiscal year with the intent to be able to start to produce Moly 99 18 months from now. I think it is one of the best examples in Sandia of the transfer of basically Cold War and weapons-related facilities into a very solid facility for the benefit of the civilian-related activities of this country.

The background for this is that the current North American supply is made by a Canadian firm using a Canadian reactor that is 40 years old. The importance of our program was emphasized very recently when that Canadian reactor went down for five days. You'll recall that the half-life of molybdenum is six days, so five days is beginning to get deep into the life of the supply that we have. The pharmaceutical houses had to go to Europe — to Belgium — to get the isotopes to avoid an interruption

(Continued on next page)

Narath employee dialogue sessions draw hundreds of 'concerned faces'

Hundreds of Sandia employees, most displaying what Labs President Al Narath described as "concerned faces," attended three employee dialogue sessions at Sandia/New Mexico May 18 (and another at Sandia/California May 23) to hear Al's perspective on recent developments in Congress relating to the futures of DOE and the national laboratories.

The mood was somber, as employees listened for clues to budget cutbacks, possible layoffs, early retirement options, or other news, good or bad. But because the turmoil in Washington hasn't yet begun to subside, Al said, it's not clear to him, nor to anyone within the DOE complex, what the future could hold for Sandia.

He reviewed some of the surprises from the last six months that could foreshadow a tumultuous next several years for the national labs: recent changes in Congressional leadership, the Galvin report's recommendations, various DOE initiatives to reduce and simplify bureaucracy, the possible realignment of Kirtland Air Force Base, the Lockheed Martin merger, and, perhaps most significantly, the changing role of federal government in research and development. (See the "State of the Labs interview" with Al and Executive VP Jim Tegnalia beginning on page 1.)

He showed a viewgraph listing recently approved Congressional FY95 rescissions, totaling \$139 million in DOE cutbacks, including \$30 million for solar and renewable energy R&D, \$10 million for biological

and environmental sciences, \$7.5 million for fusion energy, \$6 million for ES&H, and \$5 million for Basic Energy Sciences.

But, he said, DOE hasn't yet determined how it's going to distribute those cuts among its programs and facilities.

He compared current budget projections from the House, Senate, and Clinton administration, all of which showed a generally downward several-year trend for the energy R&D budget and a relatively flat national defense budget.

And he identified perceptions in Washington that likely will affect Sandia: Congress is generally supportive of the national labs' defense and basic research missions, but its support of energy R&D, as well as of partnerships with industry, is questionable at best.

Anti-partnership sentiment

Al said he's most concerned about the perception that partnerships among national labs, universities, and private industry are of little value to the nation. He said federally sponsored R&D accounts for 50 cents out of every dollar spent on R&D in this country, and that 40 percent of all papers published by Sandia have university researchers as co-authors.

"Unmistakably there's a feeling at this laboratory that our partnerships are positive and valuable to both Sandia and the nation," he said.

He warned employees that Congress may opt to eliminate DOE and encouraged them

to do what they can to help Energy Secretary Hazel O'Leary win her battle, which she is fighting vigorously. He said he believes the labs would be better off under an improved Department of Energy than under DoD, a new Department of Science, or other entity.

He said DOE now is "vigorously making improvements and gaining efficiencies" at an unprecedented rate for a federal agency. Recently O'Leary announced a 27-percent force reduction for federal DOE employees over five years, with Headquarters being the hardest hit. In addition, DOE is working to reduce oversight of the labs by consolidating audits.

In relation to hiring restrictions and possible workforce reductions at Sandia, Al said, "we are extremely well positioned with regard to our customers and our missions, yet we must heed the political pressures by doing some shrinking. It's hard to argue against reductions in Washington when nobody else, in government or industry, has been spared cutbacks in recent years."

He said although employee staffing targets may change as the budget picture clears (see "Sandia budget: Outlook beyond FY96 murky" on page 5), Sandia should be able to achieve the planned reductions (600 full-time equivalents by the end of FY96) primarily through attrition (*Lab News*, April 14, 1995).

"I'm confident that Sandia continues to make valuable contributions in the national interest," he said. "I remain cautiously optimistic about our missions, our contributions, and our future."

— John German

State of the Labs

(Continued from preceding page)

in the supplies.

So you begin to see that the dependence — overdependence — on one fairly old reactor could have major impacts on radiopharmaceuticals in this country. There are somewhere between 30 and 50 thousand procedures done a day with these isotopes. It's almost as common these days as X-rays. It is becoming something that the medical community is really relying on. And so it's a multibillion-dollar-a-year medical operation in this country for which the supply of molybdenum is fundamental. So it's very important, and it's an important responsibility for Sandia. And I have seen nothing but support in the community for trying to do this and doing it in an environmentally conscious way. The support is very good. We've had positive comments from the local press, including a positive editorial in the *Albuquerque Journal*. So I think it's going reasonably well, and we're committed to the process.

LN: What about the other part of our new production responsibilities, making replacement neutron generators? (The start of production was announced in the April 28 Lab News.)

Jim: Sandians, particularly Gary Beeler's [Acting VP 14000] operation, have put a lot of emphasis on that activity, and they're making solid progress in meeting our commitments. It is a very visible activity that we must perform well. It has high visibility not only in the Department of Energy but the Department of Defense. It's going to become more and more central to our ability to do an acceptable job of stockpile support.

LN: Are there any plans to do any internal restructuring at Sandia in response to the projected slightly smaller Sandia — other than the normal things we've already talked about that are going on through reengineering.

Jim: There's nothing in the works now toward a major restructuring of the laboratory. That doesn't mean that we don't have to follow good management while we go through the kinds of reductions in staff that we already outlined to you. For instance, you can't allow management to stay at the same size while the technical staff of the activity draws down. So as we indicated in your article about this in the April 14 Lab News, we're going to be looking at the span of control and management size to make sure that we keep a good balance between management and overhead costs and staff and the technical work. But no major restructuring other than just solid management practices.

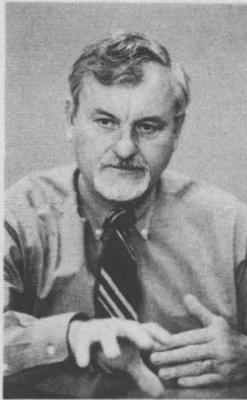
LN: We've heard the statement made — I don't know if it's true — that we have more managers now than we had back when we restructured to get rid of managers.

Jim: First, I can't verify the comment. But I can tell you that we are going through a formal look at the number of managers, how the numbers of managers are varying over time, and we are looking at the span-of-control issues and the proper size of management for the size of staff that we have. Doug Robertson [Jim's Executive Assistant] and I have paid particular attention to the promotion of new managers for exactly the issue that you're bringing up, and we have been trying hard not to create new management positions where the amount

of work in that new organization doesn't justify that.

LN: Anything else you would like to say, perhaps about reengineering?

Jim: The only thing I would add is the need for continued emphasis on control of costs. I think the reengineering activity is going very well, and I appreciate the support from people who have been working on that. I think they're doing a good job. I hear from people on the staff, and I personally believe it, that Mike Eaton's [Chief Information Officer 13100] information utility is beginning to be felt in the laboratory and people are beginning to see improvements that that investment is making. Those efforts are absolutely essential for us to make sure that we present not only a good, attractive technical product but one "at acceptable and affordable cost." My own experience is that cost reductions without major changes in the mission are very hard to achieve. It is



AL NARATH

easy to cut costs whenever you have a product that goes out of production; it is easy to cut structure when you do that. But when everybody says, I don't want you to stop doing what you're doing, just do it cheaper, that's a very hard thing to do. I want first to encourage the laboratory to continue to support that effort and to give my appreciation to the people who are working on what is a very difficult and often thankless job.

To give you a sense of the dynamics of all that: If Kirtland were to close, the entire projected reengineering cost savings would go to increased costs associated with operating the facility because of lack of Air Force support.

When you look at the effort and energy it takes to go through reengineering and then to have the cost savings not applied to increasing our technical effort but applied to operating our facility because of reduction in Air Force support, that is not something we'd like to have happen. That's why we're so interested in BRAC [Base Realignment and Closure Commission] activities.

LN: What are those major areas of costs?

Al: They are all related to infrastructure support that the Air Force is currently providing. Examples are fire protection, security support, traffic control, and road maintenance.

LN: This is just the cost to Sandia you're talking about?

Al: They are DOE costs. DOE would either have to ask Sandia to assume these responsibilities, and here we are talking about almost 300 new people, or contract for these services separately. Either way, the costs would be substantial, without assurance that new money would be found for this purpose.

Jim: The numbers public right now are that our one-time costs to build a fire station, to set up the new perimeter, to create our new security operation, are about \$60 million. The sustained-operation cost — the additional cost per year to operate the facility — would be about \$30 million. We would have one integrated perimeter. And those are the combined costs of both Sandia and AL. We hope it doesn't happen. That's one reason why the Kirtland issue is so important to us.

Al: The other thing that needs to be recognized is this. We have a history of very strong synergism among the Air Force, Defense Nuclear Agency, DOE, and Sandia in the execution of the nuclear weapons program. So, if the DoD functions disappear, in addition to the

increased cost to DOE, the efficiencies associated with having the nuclear weapon community collocated would be lost. These are the reasons why we have taken the Kirtland realignment proposal so seriously. When the final decision is made, it should be based on all available information.

LN: In your experience dealing with both Sandians and the outside community and Congress, what are the most frequent misperceptions that you encounter about Sandia?

Al: The most troubling misperception that I run into, and it applies not only to Sandia but across the board to all DOE laboratories, is the perception that with the end of the Cold War we have lost our mission relevance — that we are consequently struggling to define new missions. I keep making the point that none of our missions has disappeared with the end of the Cold War. Instead the debate should focus on the question of mission priorities. We still have a weapons mission. We still have an energy mission. We still have an environmental mission. We still have a mission to make contributions to basic science in areas that provide the underpinnings for our applied work. None of that has changed. In fact, in many ways the defense mission today has become more challenging and important. And certainly the energy problems of the country have not disappeared with the end of the Cold War. Nevertheless, there is the perception that the country is no longer in great need for federally funded laboratories. This is simply not true.

There continue to be three components of our national R&D enterprise. Just as before, these are industry, universities, and federally funded laboratories. The DOE labs are an important component. And of course I think Sandia is an outstanding example of a DOE laboratory that really has its act together.

Jim: My comment on that would be a variant of Al's. I think there is a perception and misperception in the community at large that the national laboratories are a kind of dinosaur of the Cold War. That we don't need them as big as they are, we don't need as many as we have, and their mission has gone away. I think that misses the dynamics of all the things we just talked about — the fact that those missions are there and that we are changing our programs to become just as relevant in the post-Cold War era. And that those missions are different in the post Cold War but still important. And I don't think we've told our story well in that regard.

Al: It's critically important not to confuse laboratory size with importance. It may well be that we do some shrinking over the next two to three years. If so, it will be driven by current Congressional efforts to gain control over the federal budget deficit. It would not be a reflection of declining significance of Sandia's work. As in the past, we remain committed to finding solutions to problems of critical national importance.

"The most troubling misperception that I run into . . . is the perception that with the end of the Cold War we have lost our mission relevance."

 **Welcome**

New Mexico — Martha Bertsch (10220), Stephen Bepalko (6641), Laura Lang (12830), Tracy Christian-Frear (6115)

Mentors share lessons learned, return favors

Human Resources launches corporate mentoring program pilot

Returning a favor. That's how many Sandians view their role in a corporate mentoring program being piloted at Sandia/New Mexico. Members of the group say the advice and support they received from mentors helped them to learn what it takes to succeed on the job, and they'd like to return the favor.

"Experience is the best teacher because it charges you the most tuition," says Paul Robinson, VP of Laboratory Development 4000, who is serving as a mentor in the program. "I've received lots of on-the-job training by working with some of the best folks around. There have been a whole lot of lessons learned over the years, and if I don't communicate them, they'll be lost."

Paul says over the 30 years during which he's been managing research activities, his mentors have included former Secretary of State George Schultz, his boss when he served as Ambassador and Chief Negotiator to the Nuclear Testing Talks with the Soviet Union from 1988 to 1990, and Harold Agnew, former Director of Los Alamos National Laboratory, where Paul worked for 18 years.

"I benefited enormously from informal mentoring, by working with people who happened to take the time to mentor me," he says. "I see formal mentoring as my opportunity to help others, especially people I might not come in contact with under informal circumstances. And I also see it as a way for me to keep in touch with the line, to be aware of what's going on at every level of the Labs."

Jo Ann Romero (3030), Mentoring Program Manager, says the mentoring program pairs veteran Sandians with new employees, long-term employees seeking new knowledge or experience, or employees taking on new responsibilities, such as a recently promoted employee or a new manager. Each pair determines a specific set of goals they would like to accomplish, and evaluates their progress toward meeting those goals throughout the course of the pilot.

Jo Ann says participants agree on a set schedule for meeting, usually on a monthly basis. Program participants can also attend a series of lunchtime events sponsored by Human Resources, like lectures and workshops, where they can come together as a group and share experiences and network with one another.

Reciprocal relationship

Tommy Woodall, Paul's "mentee" and Manager of Operational Analysis Dept. 4117, says he enjoys the reciprocity of the mentoring relationship. Tommy thinks their one-on-one meetings have helped Paul to reflect on his own career and trace how he deals with management issues today. At the same time, they've offered Tommy some insight into different approaches to problems he may encounter in the future.

"As a new manager, I'm going to have to come up with my own way of doing things," Tommy says. "Paul offers me advice and gives me ideas to mull over. Ultimately, I'll sort out what works for me, and develop my own management philosophy."

But the formal mentoring he's receiving from Paul is not the only mentorship experience Tommy has had. He's also received informal mentoring throughout his career, and he says that although informal mentoring is as important as formal mentoring, they are very different.

"With informal mentoring, you sort of receive things through osmosis, and though

the lessons are important, it's sort of a hit or miss approach," he says. "With formal mentoring, there's a deliverable, and a mentor can say, 'What are the one or two most important things I can tell this person today?' And I think that's where a lot of the value in this program is, in the reflection that goes into the process, in the thinking and talking about different issues."

Tommy says he's already learned some valuable lessons through his mentorship with Paul.

"Paul has encouraged me to make the time to take some courses and has recommended some books I should read, and I intend to do those things," he says. "But so far, the main lesson I've taken away from the mentorship, both through Paul's advisement and his actions, is that you have to take care of your staff, you have to look out for your people. That's the big picture in all of this."

Agile workforce

Charlie Emery, VP of Human Resources 3000, says one motivation for starting the program is the need for an agile workforce to meet the demands of Sandia's evolving mission.

"As Sandia's mission continues to evolve, the need for flexible employees equipped with cross-organizational knowledge and skills is crucial," he says. "This program is unique because it was designed with Sandia's business needs in mind, so it focuses on training our employees to meet changing job requirements, complex customer needs, and new career



JO ANN ROMERO (left), Mentoring Program Manager, discusses the guidelines of the program with Program Coordinator Soila Brewer (both of Leadership and Management Dept. 3030). Sixty-eight Sandians are participating in the pilot phase of the program, which was kicked off in April and will run through October.

opportunities. It's one of several tools Sandia is utilizing to foster employee development."

Charlie says he hopes the program will grow and expand to benefit the Labs and as many employees as possible.

"Human Resources is providing leadership and coordination for the mentoring program, but we do not intend to control the concept," he says. "Eventually, I expect the mentoring system to be coordinated by divisions, and I think we'll see employees' career planning strengthened by the program."

When the pilot ends in October, participants will be asked to evaluate the mentoring program, and it will then be expanded to include more participants.

Editor's Note: A separate mentorship program is currently being piloted by employees in Research and Exploratory Technology Div. 1000 and employees in the Defense Programs Sector (see Lab News, May 12).

— Mary Hatheway

Author/astrophysicist David Brin to give colloquium about future impact of information technologies

David Brin, widely published science fiction writer and astrophysics researcher, will present his ideas about future information technologies at an Advanced Information Technologies Colloquium Tuesday, June 13, 1:30 p.m., at the Technology Transfer Center (Bldg. 825).

Brin's novels, such as *The Postman*, *Startide Rising*, and *Heart of the Comet* (with Gregory Benford), have appeared on *The New York Times* Bestseller List and have won literary acclaim, including multiple Hugo and Nebula awards.

As a lecturer, he is in demand to give talks about various aspects of technology and the human future. His 1990 novel *Earth* is widely credited as including one of the best prognostications about the worldwide data networks of tomorrow, as well as approaching crises in the environment.

Brin was a fellow at the California Space Institute and, more recently, has been a research affiliate at the Jet Propulsion Laboratory. He has participated in interdisciplinary activities at UCLA's Center for the Study of

Evolution and the Origin of Life.

The colloquium is part of Sandia's Advanced Information Technologies Colloquium Speaker Series. The series intent is to engage, excite, and educate the local technical community by expanding minds, horizons, and thinking.

Future speakers will cover topics from robotics, intelligent agents, information surety, and other areas of interest to the information technology community. For information about the Brin colloquium, call host Jim Yoder (1091) on 845-9045.

Sympathy

To Donna McConnell (5848) and Vicki McConnell (on educational leave of absence) on the death of their father, John McConnell, in Albuquerque, March 2.

To Thomas Hobart (2483) on the death of his father-in-law, John Champlin, in Albuquerque, May 11.

TVC grants

(Continued from page 1)

Quantum Manufacturing, Inc.

Tom Murphy, Chief Executive Officer at VIGA, whose principals include Sandia computer scientists Arlan Andrews (2902) and Creve Maples (1415), said the TVC grant is "a sizable amount of money for a small start-up company."

He says the TVC grant is "the first outside funding we've received. I consider it much more than a symbolic gesture; it's very meaningful and very useful for us."

VIGA is developing and marketing advanced virtual reality software technology developed by Sandia. The software has potential market applications in CAD/CAM modeling, manufacturing, chemical and molecular modeling, data mapping, education, and entertainment.

Ned Godshall, founder and President of Silicon MicroDevices, Inc., called the TVC grant money "a very timely infusion of capital." Ned, who is on entrepreneurial leave of absence from Sandia (Dept. 2665), said the grant will help fund company operations until June, when funds from a major equity investor become available.

Transdermal medication delivery

Silicon MicroDevices is developing a patch-like device that applies medication through the skin efficiently and painlessly. Ned says oral ingestion of medication is inefficient (the body can metabolize only a small portion of the ingested drug) while needle-based injections are painful. The company's new technology

enables the patch-like device to deliver a much wider range of medications than is possible with current patch technology. The Silicon MicroDevices approach circumvents the spike concentrations of medication in the body that are inherent in conventional medication delivery methods.

Quantum Manufacturing, Inc. was established to apply Repetitive High Energy Pulse Power (RHEPP) and Ion Beam Surface Treatment (IBEST) — both Sandia technologies — to a variety of industrial applications including surface hardening, corrosion protection, and food irradiation.

QMI principal Regan Stinnett, who with partner Eugene Neau is a Sandia researcher (both are Managers in Pulsed Power Sciences Center 1200), says the TVC grant will enable the company to get off the ground and present the technology to potential investors.

"We appreciate the money, of course," Regan says, "and we also appreciate the vote of confidence from TVC about the commercial viability of our technology."

B.E.A.R., Inc.'s Peter Boissiere says he considers the \$10,000 grant money to be "just the tip of the iceberg" in terms of the support TVC has provided his new business.

"TVC has been instrumental in helping me to develop business plans, financial projections, and numerous business contacts crucial to the success of B.E.A.R.," Peter says.

VIGA's Tom Murphy praises TVC for its support of start-up businesses. He considers TVC "a very valuable asset for small businesses in terms of the expertise it has on tap in the areas of capital formation, marketing, and management."

"On the macro level," he says, "TVC ups

the odds that a company will be able to find the investment capital it needs to stay in New Mexico."

TVC start-ups

The following companies received TVC's start-up business grants.

Boissiere Engineering and Applied Robotics, Inc.

Peter Boissiere, President

Manufacture of telerobotic excavation, manipulation, and retrieval systems for waste remediation applications.

Silicon MicroDevices, Inc.

Ned Godshall, President

Refinement and marketing of a patent-pending transdermal medication delivery device.

VIGA Technologies Corporation

Tom Murphy, CEO

Development and marketing of a new virtual reality (3-D) software technology developed by Sandia. VIGA is licensing the technology from Sandia. Initial activities involve the development of commercial applications for various industries and markets.

Quantum Manufacturing, Inc.

Regan Stinnett and Eugene Neau, principals

Development of market applications of Sandia-developed Repetitive High Energy Pulse Power (RHEPP) and Ion Beam Surface Treatment (IBEST) technologies. These technologies are used to increase strength and surface smoothness for polymers and metals, as well as sterilizing and preserving foods.

IEEE elects three Sandians to Fellow rank

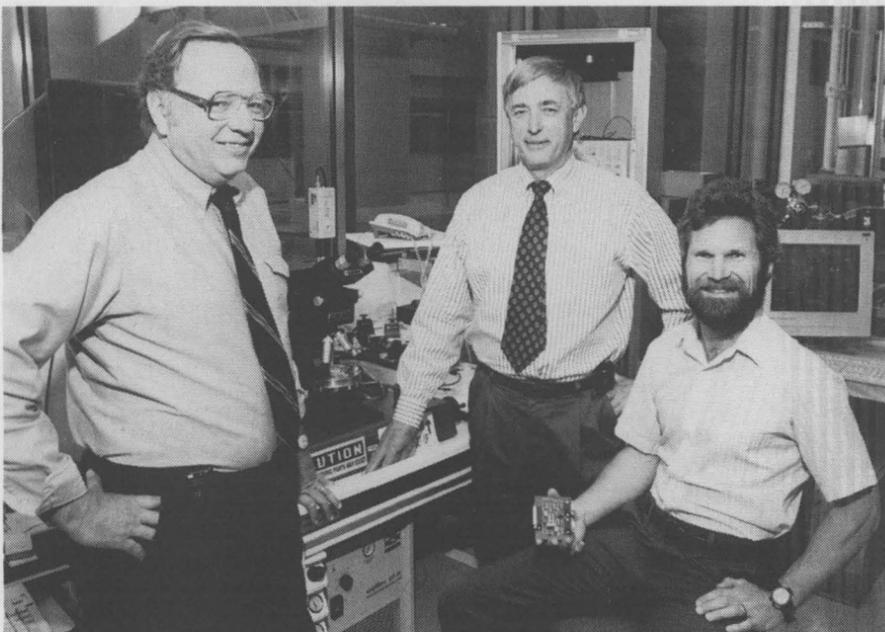
Three members of the Institute of Electrical and Electronics Engineers (IEEE) Albuquerque Section were recently elected IEEE Fellows, and all three are Sandians — Paul Dressendorfer (2277), Lawrence Larsen (9300), and Harry Weaver (1321).

Paul is a member of IEEE's Nuclear and Plasma Sciences Society, having joined IEEE while a graduate student. He has been at Sandia since 1978, and is currently Manager of Multi-chip Module Application Dept. 2227. In addition to his technical contributions, Paul has been very active in IEEE activities. He is editor of the IEEE Transactions on Nuclear Science, and has chaired and served on a variety of conference and technical committees. Paul was elected IEEE Fellow "for contributions to the development and understanding of radiation-

hardened technologies for electric devices and circuits."

Lawrence is a member of IEEE's Microwave Theory and Technique Section, and has been an IEEE senior member since 1982. His work has been in medical electromagnetics — prostate and breast cancer detection research. He is a department manager in Applied Physics, Engineering, and Testing Center 9300. Before coming to Sandia in 1994, Lawrence worked with the US Senate on health care policy as it relates to technology. He was chief of microwave research at Walter Reed Army Medical Center and was a professor of medicine at Baylor College of Medicine. Lawrence was elected IEEE Fellow "for pioneering the application of microwaves to therapeutic and diagnostic medical devices."

Harry is a member of IEEE's Electron Devices Section and has been a member of IEEE for 16 years. He has been at Sandia 27 years, working in the areas of nuclear magnetic resonance, neutron tube development, and microelectronics. He is currently manager of Microelectronics Technologies Dept. 1321. Harry was elected IEEE Fellow "for innovations in silicon and compound semiconductor electron devices."



NEW IEEE FELLOWS — Lawrence Larsen (9300), Harry Weaver (1321), and Paul Dressendorfer (2277).

Feedback

Computers for official use

Q: Sandia has always encouraged civic and community involvement. Does this support extend to the use of Sandia computers and networks for the purpose (in non-work hours) of participating in electronic e-mail groups, news groups, and information sites that promote government initiatives and economic development in New Mexico? Thanks for your answer.

A: Sandia-provided computers are designated for official (not personal) use only. Official use means that one is using the equipment in the best interests of the federal government and not for personal interests. If you and your supervisor decide that using government equipment at no increased costs (i.e., after work hours) to aid your efforts in promoting government initiatives and economic development is for official use and not for personal use, then do it.

Jack Dickey (12700)

Congratulations

To Brenda and James (2483) Pankey, a son, Clayton James, May 10.

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



Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads Sandia Classified

MISCELLANEOUS

PUTTERS, many old & well seasoned, some collectible, \$10-\$50. Homer, 836-5043.

RCA VCR, and GE video camera, \$350; two stabilizers, perfect video copying, \$50 and \$75 OBO. Rainey, 294-8642.

LAWN MOWER, Toro, Keylectric autostart, includes grass catcher, just tuned up, \$120 OBO. Murphy, 892-0288.

FACTORY ALUMINUM MAG WHEELS, Mazda, set of four, 5-1/2" x 13", \$100. Langwell, 293-2728.

VARI-KENNEL, large, \$30; SAM virus protection for Macintosh, V3, \$30 OBO; Norton Utilities for Macintosh, V1.1, \$30 OBO. Poulter, 291-0607.

WALNUT CHINA CABINET, huge, 8 doors, 4 w/glass inserts, lots of hanging stemware space, \$800. Henry, 296-1781.

PICKUP SHELL, & bed liner, fits '92 Toyota long-bed pickup, \$200 OBO. Simmons, 298-8510.

CLOTHES DRYER, Sears, needs some repair; various children's items: stroller, bike helmet, child gates. Nation, 298-5605.

PORTABLE DISHWASHER, Whirlpool, Powerclean Energy Saver, full-size, \$150 OBO. Blaisdell, 875-0719.

ROUND DIAMOND RING, 1 yr. old, .71KT, unique 14K setting, size 6, paid \$2,671, asking \$1,650. Wilson, 243-3372, ask for LeAnn, days.

AQUARIUM, w/beautiful solid-oak pedestal stand, w/matching canopy, 55-gal., external/undergravel filters, saltwater or freshwater setup, paid \$800, asking \$400. Schalip, 892-6681.

"HOOKED ON PHONICS", complete, \$100. Russell, 294-0229.

WEDDING GOWN, size 6, white, summer, \$100; clarinet, \$65. Wing, 296-3826.

TWO CEMETERY PLOTS, side-by-side, Gate of Heaven, Holy Family section, \$1,750 for both OBO. Aronson, 898-8893.

WEIGHT MACHINE, DP Gympac 1500, w/bench, leg curls, extra weights, wall-mounted, \$60. Naylor, 293-0866.

FURNITURE, Brazil Contempo, coffee table & end table; 2 La-Z-Boy recliners, almost new; 2 blue-velvet chairs. Wangerin, 889-3542.

COLOR TV, 27-in. Sony Triniton, \$150. Marshall, 281-1067.

JANSPORT FRAME PACK, height guides, 5'2" to 5'9", \$75; Weber grill, 18-in. kettle, \$25. Edmunds, 856-6918.

TWO QUILTS, hand-sewn, one blue/white, 90" x 66", second tan/red/white/blue/orange, 88" x 94", \$50/\$75. Schulz, 294-5195.

SWIMMING POOL EQUIPMENT, 3/4-hp pump, 32 ft.² DE filter, by-pass valve, 180,000 Btu gas heater, ladder, vacuum head & hose. Fitzgerald, 884-4607.

NINTENDO SYSTEM, 30 games, 2 controllers, super-speed joystick, zipper gun, \$180. Maokhamphiou, 875-4282 (pager).

FEMALE LAB, free to good home, spayed, w/all shots, friendly, 1 yr. old. Roberts, 867-5657.

CORNICE BOARD, new, custom, Southwestern burgundy/green print, 12'L x 18"H x 6"W, \$250; coordinating tab valances, \$150, both OBO. Nelson, 293-9425.

CORVETTE ALUMINUM HEADS, new, #113 castings, valves, rocker arms, heavy-duty valve springs, screw-in rocker studs, \$600. Williamson, 299-4310.

NIKKOR, 300mm f4 ED AF telephoto lens, 82mm UV filter, w/case, \$750 OBO. Hutchinson, 293-9730.

BABY JOGGER, running stroller, w/canopy, holds one child up to 75 lbs., \$155. Hendrickson, 275-3119.

ARC WELDER, Wards Power-Craft, 20-230 amp., 220-volt, 10# rods, \$125. Hanson, 299-6421.

EXTERNAL MODEM, IBM-compatible, 9600 bpm., \$45. Bass, 298-5207.

WEIGHT SET, Olympic & standard barbells, 100 lbs. standard, 300 lbs. Olympic weights, Brutus Excel bench, \$250. El, 891-5732.

TREADMILL, Vitamaster Pro, w/variable speed, used less than 40 hrs., cost \$500 new, asking \$300. Skogmo, 292-9773.

ENCLOSED TRAILER, 4 x 6 x 5, formerly EZ haul, \$400. Seavey, 884-8215.

IN-LINE ROLLER SKATES, Bauer F3, woman's size 7-7 1/2, brand new, retail price \$120, will sell for \$70. Bianchi, 856-2003.

BEAGLE/CHICHUCHU MALE, free, 6 yrs old, housetrained, blonde/white, w/1 blue eye, one brown, very gentle, does not bite. Martinez, 294-5155.

DOG TRAVEL KENNEL, door 10" x 11", \$20; doghouse, \$10; electric fence, w/insulators, \$10. Newcom, 293-5180.

COMPUTER DESK, Bush, U-shaped, w/peninsula, return & hutch, used 4 months, \$250. Bailey, 281-4766.

YARD SALE, Saturday, May 27, 7 a.m., 5801 Cambria NW, south of Montano west of Coors. Muniz, 898-5198.

ELECTRIC FOOD SLICER, Rival, 7-in. blade, \$40; Sunbeam electric skillet, \$15; Oster electric 4-egg poacher, \$10. Freyermuth, 299-2053.

EQUALIZER HITCH, 550 lbs., never used, \$350. Patton, 898-3524.

KING-SIZE SHELF-HEADBOARD, Ethan Allen, \$150; 5 removable aluminum window-awnings, \$150. Newman, 266-6928.

CEMETERY PROPERTY, Sandia Memory Gardens, Mercy Garden section, 2 plots, \$800 ea. Eagar, 916-372-6916.

ZUNI NEEDLEPOINT JEWELRY: 2 bracelets, \$800 ea., 2 rings, \$100 ea. OBO, must see to appreciate. Lightle, 281-7575.

CHILD'S CARSEAT, \$30; booster seat, \$15; bike seat & helmet, \$20; changing table, \$50. Dobranich, 298-4547.

BOY'S BABY CRIB, w/mattress, comforter & matching sheets, \$60. Garcia, 839-9556.

BRA, fits all Isuzu Troopers through '94, used approx. 3 months; new \$125, asking \$85. Petersen, 275-7467.

BINOCULARS, 12x24, Pentax VCF, lightweight & compact, \$95. Lorence, 275-3586.

REFRIGERATOR, Crosley, white, w/wicemaker; Kenmore electric stove; both, \$700/both OBO. Rodriguez, 877-2441, after 5 p.m.

RIMS, set of 4, 15-in., Toyota 4x4, steel, \$100. Gonzales, 877-4100.

OAK DINING TABLE, 40" x 60", country style, 4 cushioned chairs, \$650; free gas lawn mower, for parts/repair. Montoya, 296-0454.

COURT REPORTING STENOGRAPH MACHINE, C.A.T.-compatible, \$325 OBO. Baca, 345-5092, after 5 p.m.

COUCH & LOVESEAT, brown, \$125 OBO. Garcia, 275-0020, after 5 p.m.

EXECUTIVE DESK, 6' x 3', wood drawers, \$150. Zoss, 899-9060.

LAWN MOWER, Sears, 3-hp, electric, 10-in. cut, catcher; 8-in. electric grass trimmer, \$50/both. Re, 298-0290.

WEDDING DRESS, size 6-7, \$300 OBO; piano, \$1,000 OBO; Rottweiler pups, AKC-registered, \$300. Gutierrez, 865-9542.

"I LOVE LUCY" ELECTRIC RANGE, 40-in., '50s model, \$50; portable almond dishwasher, like new, \$150. Colgan, 344-3776.

ROAD BIKE PEDALS, Look style, several pairs, \$20-\$40. Schafer, 292-4712.

PANASONIC FAX, \$250; Sanyo microwave, \$100; desk, \$20; queen-size bed, 2 nightstands, \$100; typewriter, \$50. Mann, 343-0524, after June 1, 268-3108.

COLOR TV, 25-in. console, \$100; microwave, \$85, work well. McAnarney, 293-0794, ask for Greg or Elythia.

BIG-BERTHA DRIVER, Boron graphite, firm shaft, 9° loft, \$165 OBO; Ruff-Hautz, 2-piece molded plastic doghouse, 32" x 26" x 26", \$25 OBO. Stang, 256-7793.

386SX SYSTEM, 3-1/2 & 5-1/4 drives, 40MB HD, 2MB RAM, VGA color monitor, DOS & Windows, \$500. Gilbertson, 869-3468.

FILL DIRT, approx. 1 cu. yd., free, you haul. Mozley, 884-3453.

WINCHESTER SHOTGUN, \$200 OBO; fu-ton, full-size, \$250 OBO; small refrigerator, \$100 OBO. Sais, 845-3389.

WOOD-BURNING STOVE, long-burn capacity, \$375; electric range w/hood vent, \$100. Garcia, 343-8207.

UNOPENED SOFTWARE: CD ROM Screen Singer, children's nursery rhymes/music/graphics, \$15; Lotus 1-2-3, for Mac, w/audio, training cassette, \$15. Lagasse, 298-0977.

COMPUTER, 486/33SX, DOS 6.2, Windows 3.1, 520 HD, 1.2/1.44 Fds, 4 RAM, .28dp/ni Monitor, mouse, 1200B Hayes, 24-pin Epson, \$850. Roose, 298-1971.

ENTRY DOORS, double, solid fir, six-panel w/grilled window, w/hardware, \$100/both. Braithwaite, 822-1998.

FAMILY ROOM FURNITURE SET, 6-piece, ranch style, like new, \$350; pet airline carriers, 2 sizes, \$20/\$30. Lunsford, 299-5187.

OUTBOARD MOTOR, 15-hp, Sea King, w/6-gallon tank & hose, \$525. Luikens, 881-1382.

KING-SIZE WATERBED, 6-drawer under-dresser, waveless mattress, mirrored headboard, heater, \$225. Martinez, 899-4635, leave message.

LAWN MOWER, Sears Craftsman, gas 4.0-hp, self-propelled, electric start, 22 in., excellent for kids, \$35. Kerschen, 821-2848.

TRAILER, lightweight, 2-wheel, hardshell, \$200; loveseat, black vinyl, \$150; oak-finish TV stand, \$50. Lawrence, 296-3058.

DEADLINE: Friday noon before week of publication unless changed by holiday. MAIL to Dept. 12622, MS 0413, or FAX to 844-0645. You may also send ads by e-mail to Janet Carpenter (jacarpe@sandia.gov). Questions? Call Janet on 844-7841.

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

Ad Rules

1. Limit 18 words, including last name and home phone (the Lab News will edit longer ads).
2. Include organization and full name with the ad submission.
3. Submit the ad in writing. No phone-ins.
4. Use 8 1/2-by 11-inch paper.
5. Type or print ad legibly; use accepted abbreviations.
6. One ad per issue.
7. We will not run the same for sale or wanted ad more than twice.
8. No "for rent" ads except for employees on temporary assignment.
9. No commercial ads.
10. For active and retired Sandians and DOE employees.
11. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.
12. "Work Wanted" ads limited to student-aged children of employees.

QUEEN-SIZE WATERBED, complete, used less than 6 months, \$125 OBO. Chavez, 864-7034.

WOMAN'S GOLF CLUBS, irons & woods, \$150 OBO; weight machine, 140 lbs., bench, arm cruncher, leg flexer, \$400. Steel, 298-3815.

FILL DIRT, approx. 1-1/2 cu. yds., loose-packed, free if you haul it. Armstrong, 271-8302.

COLLAPSIBLE PLAYPEN, \$15; 286 Texas Instruments notebook computer, w/20MB HD, weighs 4 lbs., \$250 OBO. Forster, 293-7231.

TRAILER, 4' x 5' x 2', metal body (red), single axle, harness for rear lights, wooden bolt-down cover, licensed, \$500 OBO. McConnell, 299-0061.

COLEMAN CAMP STOVE, 2-burner, liquid fuel, \$20. Van Den Avyle, 898-6474.

TRANSPORTATION

'82 HONDA ACCORD, 2-dr. hatchback, runs well, great gas mileage, 3 new tires & brakes within last 12 months, must sell, \$500 OBO. Clavey, 898-8484, after 6 p.m.

'94 FORD BRONCO XLT, 12K miles, loaded, power shift, extended warranty, tow pkg., oversize tires, \$19,995. Wiernicke, 298-4819.

'74 CJ5 JEEP, 3-spd., new posi rear, steering box, distributor & starter carb, needs some work, \$2,000. Crain, 265-7322.

'95 GMC JIMMY, 4-dr., red, \$22,500. Johnson, 865-9247, ask for Jim.

'87 CHEV. NOVA, 4-dr., AC, 4-cyl., AT, navy-blue interior & exterior, clean, runs well, \$2,500. Higgins, 299-4302.

'89 MAZDA MX-6 LX, 2-dr., red exterior, gray interior, tinted windows, AT, AC, AM/FM cassette, new tires, \$5,400. Zarella, 831-1981.

'85 CHEV. S10 BLAZER, 4x4, V6, 4-spd., 20-mpg, original adult owner, \$4,450. Mason, 883-6430.

'70 GMC PICKUP, 1/2-ton, heavy-duty springs, \$1,695 OBO. Romero, 864-0407.

'72 FORD COURIER, lowered, runs well, looks good, \$1,200 OBO. Tripp, 831-4973.

'94 GMC SUBURBAN, 4x4, SLE, loaded, 9K miles, \$27,000; '85 Corvette, red, 4+3, \$10,000. Shippers, 275-0264.

'86 PONTIAC FIERO SE, AT, 6-cyl., 57K miles, AM/FM cassette, \$4,000. Evans, 821-1168.

'93 TOYOTA COROLLA, AT, OD, AC, cruise, JVC, AM/FM cassette, 30/40-mpg, 22K miles, \$11,777. Shay, 294-7624.

'88 CHEV. SPECTRUM, white, new clutch/brakes, 30+ mpg, front-wheel drive, 106K miles, 1 owner, \$1,500. Jewell, 892-6373.

'93 MAZDA MIATA, convertible, blue, very cute, like new, 23K miles, AC, cruise, AM/FM cassette, \$14,800. Neumann, 858-0944.

'87 CHEV. SPRINT, turbo, AC, 5-spd., 77K miles, 45+ mpg, \$1,200 OBO. Hultine, 821-7165.

'93 JEEP GRAND CHEROKEE LIMITED, white/tan leather, loaded, CD, V8, 19K miles, transferable factory warranty, immaculate, \$25,900. Crenshaw, 293-2847.

'76 CORVETTE, 8K miles on rebuilt engine, transmission, differential, suspension, brake system, new interior, paint, windshield, tires, \$6,900. Wenger, 822-1487.

'80 FORD GRANADA, 140K miles, \$1,000. Gardner, 296-0274, evenings.

'89 MERCURY TOPAZ, 4-cyl., AT, AC, AM/FM cassette, one owner, sharp car, \$3,195. Box, 897-9376.

'89 TOYOTA CELICA GT, loaded, AT, AC, AM/FM tape, 34K miles, \$9,500 OBO. Ahr, 883-0459.

'85 OLDS DELTA-88 LS BROUGHAM, 4-dr., all power options, 42K miles on dealer-installed 307 engine, must see, \$4,500. Tapia, 294-4139.

'94 DODGE RAM 1500 SLT, Laramie, 2WD, 16-in. tires, loaded, insulated fiberglass topper & carpet inserts. Woodward, 293-4369.

'94 GEO PRIZM, 4-dr., 5-spd., AC, 7K miles, below SRP at \$11,000. Owen, 275-5949, ask for Richard or 281-2156, ask for Mike, after 5 p.m.

'87 ACURA INTEGRA LS, silver, 3-dr. hatchback, AT, +snow tires, original owner, highway driving, \$4,900. Mora, 281-9815.

'83 VOLVO 760 GLE, sedan, AC, AT, 147K miles, \$2,400. Phillips, 281-0628.

'94 HONDA PRELUDE V-TECH, blue/green, tinted windows, CD changer, gold kit, 11K miles, \$23,000. Robertson, 828-1278.

'85 CHEV. CELEBRITY, V6, AT, PS, 4-dr., clean, runs well, one owner, 114K miles, \$1,800. Cox, 292-5997.

'93 GMC YUKON, 4WD, V8, 30K miles, all power, cruise, premium sound system, hitch, loaded, \$22,500. Kominek, 828-9875.

'86 FORD RANGER, 4-cyl., 2WD, new clutch, 96.6K miles, \$3,950. Brimble, 296-4130.

'91 CHEV. CAVALIER, 5-spd., approx. 84,284 miles, bids taken through 6/7/95, reserve right to refuse all bids, subject to prior sale, sold as is. Sandia Lab FCU, 237-7384.

'85 NISSAN KING CAB, camper shell, 4WD, 57K miles, \$3,400.6082.

'87 TOYOTA CAMRY, stationwagon, low mileage, AC, AT, super sound system, one owner, \$6,000 OBO. Laval, 898-9112.

RECREATIONAL

GRAND CANYON RIVER RAFT TRIP, Sept. 2-9, Lee's Ferry to Lake Mead, \$1,400 covers all, several seats open. Barr, 856-1767.

ROAD BIKE, Diamondback Master, 24 in., Shimano 600 components, Look pedals, good condition, \$200 OBO. Ford, 256-4787.

'83 SAILBOAT & TRAILER, Hobie Cat, ready to go, \$1,150 OBO. Hoover, 281-8644.

'95 POWER SCOOTER, 2-cyl., 15-mpg., 1.45 hr-per pint, \$395 OBO. Babcock, 299-3121, leave message & phone number.

'88 BASS-TRACKER, TXS-17, 45-hp, w/tilt & trim, trailer w/spare, flasher & depth-finder, 28-lb. trolling motor, \$3,500. Duggan, 299-1241.

SAILBOARD, beginner/intermediate, 12-ft. Sprout, w/5-meter Mistral sail, Thule cartop carrying rack, \$310. Green, 281-4533.

WOMAN'S 3-SPD. BICYCLE, 26-in., AMF Roadmaster, like new, \$50 OBO. Kellogg, 299-3737.

FUJI ROAD BIKE, like new, \$150 OBO; Trek DS2 air/oil shock fork, \$75 OBO. Johnson, 899-8410.

'88 MOUNTAIN BIKE, KHS Montana XT, 19-in., XT components, \$250. Tyner, 294-5289.

'85 KAWASAKI, KDX200, off-road motorcycle, riding equipment, \$800; '86 Yamaha IT200, off-road motorcycle, riding equipment, \$1,000. Martin, 271-4992.

'86 MICRO-MINI MOTORHOME, Sunland Express, 52K miles, sleeps 4, 17-mpg., \$8,500 OBO. Mowry, 299-2526.

COACHMAN CABOVER CAMPER, 9-1/2 ft., fully self-contained, \$1,050. Brown, 873-0402.

FLORIDA TIMESHARE CONDO, 2-BDR., 2 baths, third week January, Gulf front, on Astero Island, RCI member, magnificent Gulf view. Watkins, 884-7015.

'75 YAMAHA MOTO CROSS, 250cc, dirt bike, strong-running engine, well maintained, \$625. Hesch, 298-4902.

'80 LUND ALUMINUM BOAT, 14-ft., w/two swivel seats, '86 Johnson motor, 15-hp, '80 tilt trailer, w/bearing buddies, \$2,200. Radigan, 883-0218.

SKI BOAT, Glassmaster, 16-ft., 115-hp outboard, access, new interior, \$3,500. Urioste, 298-6454.

MISTRAL MAUI SAILBOARD, \$250; two 10-spd. road bikes, \$25 ea. Sjaardema, 299-8042.

'83 WELLCRAFT NOVA XL, 23-ft. caddy, candy apple red/white, 260 I/O, AC, VHF radio, \$12,500. Garcia, 293-2810.

REAL ESTATE

3-BDR. HOME, 2-story, 2-1/2 baths, 1,500+ sq. ft., solar heat/air, sprinklers, needs minor fixup, \$120,000. Barnette, 292-5186 by appointment.

3-BDR. QUALITY-BUILT HOME, den, 1,850 sq. ft., upgrades, beautifully decorated, NE Heights, excellent schools. Moore, 293-6273.

3-BDR. TAYLOR RANCH HOME, beautiful, 2 baths, 1,600 sq. ft., full brick, 5+ yrs. old, vaulted ceiling, landscaped yards, \$124,500. Goel, 897-3880.

4-5 BDR. BRICK HOME, 3-1/2 baths, 2,850 sq. ft., 1-yr. old, Opper-Jenkins, 2 miles from Sandia, Willow Wood neighborhood. Goldberg, 291-9756.

3-BDR. HOME, Los Chavez/Belen, 2,400 sq. ft., 2-story, 2-1/2 baths, 2 acres, fenced, large well, nice lake. Lake, 864-1671.

20.5 ACRES, east of Sandia mountains, heavily wooded, w/beautiful vistas all directions, excellent for spec home. Farmer, 848-0458, ask for Lon or Ron.

4-BDR. FOOTHILLS HOME, 2,250 sq. ft., immaculate, views, convenient freeway access, walking distance to open space, many upgrades. Elson, 298-4216.

3-BDR. MOUNTAIN HOME, 5 acres, 1-3/4+1/2 baths, 1,600 sq. ft., excellent water (new well), horse facilities, \$132,000. Grandjean, 858-0659.

3-BDR. HOME, Rio Rancho, 1,378 sq. ft., 1-3/4 baths, 1-car garage, fireplace, large lot, nice neighborhood, \$94,500. Brusseau, 891-2841.

3-BDR. HOME, on cul-de-sac, 2 baths, Jacuzzi, 1,400 sq. ft., completely remodeled, 1/2 mile north downtown, must see, \$105,000. Harrison, 833-1161.

3-BDR. HOME, Tijeras, 2 acres, wooded, 1,568 sq. ft., cathedral ceilings, island kitchen, 720 sq. ft., 2-car garage, red-wood deck, shed, \$92,000. Carrillo, 281-7059.

WANTED

VAN OR SMALL MOTOR HOME, for two weeks, end of June-beginning of July, responsible, able driver. Lenfest, 292-5780, ask for David.

FREE LABRADOR, spayed or neutered, 2 yrs. or older, loving care. Matlack, 256-7371.

TEMPORARY SUMMER HOUSING, for Tulane professor, late June to late August, CMU student May 29 to July 29, rooms, apartment, house. Krumm, 856-1221.

HOUSEMATE, female or male, 3-bdr. house, separate baths, washer/dryer, large walk-in closets, fenced-in yard, pets okay, \$300/mo., 1/2 utilities. Ewen, 836-3563.

SUMMER HOUSESITTING, responsible newlyweds, mid-June to mid-August, details negotiable. Waddoups, 865-7952.

POTTERY EQUIPMENT, wheel, kiln, slab roller, etc. Green, 281-4533.

SAXOPHONISTS, to form a quartet, intermediate level, just for fun. Slutz, 299-3683.

VGA OR SUPER VGA MONITOR. Crosby, 858-3128.

BICYCLE TRAILER, that can seat 2 children; Microsoft Office software for IBM PC. Sanchez, 873-2058.

TRAVEL TRAILER, 18-21 ft., mid-80's model or later, reasonable priced. Green, 898-3791.

DOGSITTER, for miniature Schnauzer. Lachenmeyer, 268-7818.

SLIDE RULES, good-to-pristine condition, must have logarithmic scales. Spichal, 256-4996.

WORK WANTED

HOUSE WATCHING, animal care, yard work, references, own transportation, available summers & weekends. Mundt, 291-9453, ask for Aaron.

LOST & FOUND

LOST: red and clear -stones bracelet, great sentimental value, lost April 18, en route Bldg. 836, 802, Area IV (Bldg. 962). Haas, 296-8509.

FOUND: ring, parking lot north of Bldg. 858, on May 12. Scouten, 844-8318.

Sandia News Briefs

Sandia, Wilson Greatbatch team up on revolutionary glass technology

A license agreement for Sandia-developed glasses used in titanium-glass hermetic seals was signed this week by officials from Sandia and Wilson Greatbatch, Ltd., a New York-based company that makes medical devices. According to the agreement, Wilson Greatbatch will have the right to market the technology exclusively for a period of two years, with the option to renew if successful. Dick Brow of Glass and Electronic Ceramics Dept. 1845 says the titanium sealing technology is unique because it employs aluminoborate glasses, which do not react with titanium when sealed, as do conventional silicate-based glasses. Hermetic titanium seals are desirable for a variety of components, including pacemakers built by Wilson Greatbatch. Wilson Greatbatch President and CEO Edward Voboril and Vice President of Technology Curtis Holmes attended the license signing ceremony at Sandia May 22. The company is also collaborating with Sandia on several other biomedical technologies.

Sandians receive Outstanding Paper Award at microelectronics conference

Eric Snyder, Donald Pierce, and Scot Swanson, all from Reliability Physics Dept. 2276, and David Campbell of Analog ASICs and IC Simulation Modeling Dept. 2272 received the Outstanding Paper Award at the 1995 IEEE International Conference on Microelectronic Test Structures in Nara, Japan in March. The award winners, all part of Sandia's Electronics Quality/Reliability Center, were recognized for their paper "Self-Stressing Structures for Electromigration Testing to 500 MHz."

Rich Hunt receives UNM graduate outstanding student award

Rich Hunt of Testers and Experimental Ground Stations Dept. 9215 was presented the 1995 Outstanding Electrical Engineering/Computer Engineering Graduate Student Award from the University of New Mexico during graduation ceremonies Saturday, May 13, as he received his master's degree in computer engineering. Rich, network administrator for the Global Positioning System (GPS) development network, is currently developing code to display GPS accelerometer data, and is developing ground station displays for laser threat warning data for the Defense Meteorological Satellite Program.

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

! Take Note

The City of Albuquerque will host a ceremony to honor veterans of the Korean War on Sunday, June 25, the 45th anniversary of the start of the Korean War. The ceremony will be held at 1 p.m. at Loma del Norte Park. Anyone who served in Korea is encouraged to contact Tod Cornell on 255-4967.

The American Cancer Society needs volunteers in income development, resource information and guidance, school health education, tobacco control, and breast cancer detection. To volunteer or for more information, call Amy Gillespie on 262-2333.

Catholic Social Services of Albuquerque, Inc., a United Way agency that provides resettlement services to political refugees, urgently needs used pots and pans. Donations can be arranged by calling Francie Hill, resource coordinator, on 247-9521.

New Mexico Volunteers for the Outdoors, which coordinates trail maintenance and other outdoor improvement projects on New Mexico public lands, announces upcoming volunteer opportunities: El Malpais project, Saturday-Monday, May 27-29, at El Malpais National Monument, southeast of Grants, for construction of four-strand wire fences; National Trails Day projects, Saturday, June 3, at the Elena Gallegos Open Space Area in Albuquerque's Far Northeast Heights for trail maintenance; Canones Creek project, Saturday-Sunday, June 10-11, along Canones Creek near Youngsville, for trail relocation and maintenance. For more information, call Sandy Baggenstos on 897-0051.

The City of Albuquerque and University Hospital have expanded the "Safe Ride Home" program, which provides free taxi rides for persons who have had too much to drink. The program now operates every night of the year from 7 p.m.-3 a.m. Callers (whose numbers exceed 9,000 since the program began in May 1991) are taken from bars to homes (both within Bernalillo County) when they dial 242-RIDE (242-7433).

Fun & Games

Golf—A tournament to benefit the American Lung Association will be held Monday, June 5, starting at 1 p.m. at Tanoan Country Club. Half of the \$100 fee is tax deductible and will be used to fight lung disease. For more information, call Billie Dytzel on 265-0732 or on 1-800-221-LUNG outside the Albuquerque area.

Coronado Club

May 26 (tonight), June 2, 16 — Friday night buffet/dance. \$7.95 buffet, 6-9 p.m. Music by Isleta Poorboys, 7-11 p.m.

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

June 1, 8, 15, 22 — Thursday bingo nights. Card sales and buffet start at 5 p.m., early birds' bingo at 6:45 p.m.

June 11 — Sunday brunch buffet, 10 a.m.-2 p.m. \$7.95 adult members, \$8.95 guests, \$2.95 for children 4 to 12, free for children 3 and under. Music for buffet by Best Shot, 1-4 p.m.

June 18 (Sunday) — Father's Day Brunch. Baked ham, turkey, baron of beef, breakfast items. Adults \$8.95, children 4-12 \$4.95, children 3 and under free. Reservations are required and will be taken for 10 a.m., 12 p.m., and 2 p.m. only.

Recent Patents

Daniel Summers (12332): Paracentesis Valve.

James Jellison (1803), Janda Panitz (1841), and David Staley (2471): Dry Soldering with Hot Filament Produced Atomic Hydrogen.

Janda Panitz (1841): Dissipation Factor Measurements as a Predictor of Anodic Coating Performance.

Thomas Plut and Joel Wendt (both 1322), and Jon Martens: Josephson Junction.



SMALL BUSINESS AWARD — James Ortega of Economic Impact and Supplier Relations Dept. 10203 observes a hazardous waste safety exercise being performed by Brian Barreras (center) and Chuck Atwood at ADC, Ltd., a small, minority-owned business with which Sandia subcontracts. ADC provides a variety of administrative, environmental, technical, clerical, and security-related services to federal agencies, Native American tribes, and private sector firms. For its emphasis on subcontracting with small businesses like ADC, Sandia has been awarded the Small Business Administration's (SBA) Award of Distinction. The award is presented to firms that receive a rating of "excellent," SBA's highest rating, for their overall Small Business and Small Disadvantaged Business Subcontracting Program performance. The award was presented in part for Procurement Center 10200's emphasis on subcontracting with small minority-owned businesses. This is the third year in a row Sandia has received the award. Sandia also received the DOE M&O Contractor of the Year Award for Small Business, the highest award given by the DOE for achievement under the M&O Subcontracting Plan.