



JIM NOVAK (1611) adjusts a Sandia-developed sensor system that will speed the brazing of tubes for a rocket engine thrust chamber and save material costs as well. (Photo by Mark Poulsen)

## Robots to Keep Costs Down to Earth

# Production of Rocket Engines Gets 'Boost' from New System

In a rocket booster thrust chamber, hundreds of tubes carry fuel when the engine fires. All those tubes have to be brazed together before the engine leaves the factory. That's a headache for manufacturers, but a new Sandia system promises to make the job easier.

The Labs and Rocketdyne Division of Rockwell International Corp. last year signed a cooperative research and development agreement (CRADA) to develop sensor-based automation systems. Sandia recently delivered Rocketdyne a prototype multi-axis seam tracking (MAST) sensor and control system.

Tests with the prototype have been so successful that Rocketdyne plans to use a version of the MAST system on the production floor by late fall, says Jim Novak of Intelligent System Sensors and Controls Dept. 1611. Jim, who designed and developed the MAST sensor, adds, "Sandia has applied for a patent on the MAST sensor and is seeking a commercial supplier to produce the sensor for Rocketdyne's use."

### Deliberately Drippy Brazing

During the manufacture of a thrust chamber, hundreds of separate tubes are assembled into the final shape needed for the chamber. The seams between the tubes are filled by hand with nickel powder and silver-palladium braze alloy paste. The entire structure is then furnace brazed.

This procedure has several drawbacks, says Rocketdyne robotics engineer John Maslakowski. "The manual application of nickel powder and braze alloy is expensive, time-consuming, and subject to inconsistency. To prevent manual

### Rocketdyne plans to use a version of Sandia's MAST system on the production floor by late fall.

reworking, which would require another 24-hour cycle, the silver-palladium alloy paste is applied generously (to avoid thin regions) with the excess collected on the furnace floor. This excess material results in higher raw material costs as well as recycling costs."

Enter the new Sandia MAST sensor — along with a six-axis robot and precision equipment for dispensing nickel powder and braze paste.

The MAST sensor will, without physically contacting the tubes of the thrust (Continued on Page Seven)

## Take Home the Gold

# New Award Will Help Celebrate Labs' Success

For athletes, a millisecond can spell the difference between winning and losing. To win, individuals and teams must maximize their efforts down to the last step, serve, stroke, or shot. In the same way, corporations have begun re-evaluating the way they do business and looking for ways to gain winning advantages.

Last August, Sandia President Al Narath announced his intent to create an award to recognize Sandians who are achieving such winning advantages, similar to the Malcolm Baldrige National Quality Award instituted by Congress in 1987. The Baldrige award promotes quality as a key element in US competitiveness and focuses on entire companies. The newly established Sandia President's Quality Award will recognize Sandians who have contributed to the success of the Labs, individually or as part of a team, and exhibited Sandia's corporate values in their work.

"Learning from each other's successes is the key to becoming a national leader in quality," says Al. "The President's Quality Award will help celebrate our achievements."

"The Sandia President's Quality Award reinforces the importance of the time Sandians spent last year applying for AT&T's Chairman's Quality Award," says Allison Kane of Quality Tools Dept. 4311. "The award also is intended to encourage Sandians at all levels to participate in the assessment process, which includes customer focus, alignment with the Labs' mission, and customer

(Continued on Page Seven)

**Transition Process Starts — Page Four**



# LAB NEWS

VOL. 45, NO. 16

SANDIA NATIONAL LABORATORIES

AUGUST 6, 1993

## One Hour of Freedom

# Artificial Hearts of the Future Must Have Steady, Reliable Power

An artificial heart with a steady power source could spell the difference between life and death for patients awaiting heart transplants in the future. Temporary artificial hearts and ventricular assist devices are still a few years off, says Jim Freese of Storage Batteries Dept. 2525, but the design and testing of these devices and their potential power supplies is already under way.

"When every heartbeat will depend on power,"

says Jim, "you must be certain you have power you can trust."

Energy-related studies for the project began with a grant from the National Institutes of Health to Wilson Greatbatch Ltd., a lithium battery manufacturer in New York, to help develop a reliable power source for artificial hearts. Questions about potential battery packs for these heart devices

(Continued on Page Eight)



WHEN EVERY HEART-BEAT depends on power, manufacturers of future artificial hearts must be certain they have power they can trust. Jim Freese (2525) examines one of several battery technologies Sandia is testing for use with artificial heart devices. Packs such as these will supply power to heart devices at times when the normal external supply is cut off.



# This & That

**Monday "Wildfire"** - The word spread quickly Monday afternoon, July 26, that Martin Marietta was selected by DOE to manage Sandia for the next five years. Martin Marietta takes over Oct. 1, the day after AT&T "disconnects."

Most Sandia employees got our special four-page LAB NEWS "extra" the next day. That same extra is reprinted in the middle of this paper only for folks who get the LAB NEWS through the US mail (retirees, customers, community leaders, etc.)

We continue our transition coverage in this issue, including an interview with Jim Tegnalia, who heads Martin Marietta's transition team and who will become Sandia's Executive VP Oct. 1 (see page four).

**Thanks to Many Folks** - Since DOE pared the list of prospective Sandia M&O contractors down to the two finalists - Martin Marietta and Battelle - in March, we've had the opportunity to talk with several of their employees and officials who got information to us to pass along to you. Martin Marietta folks who were especially helpful in providing info for the special issue include Jerry Langheim, Doug McCurrach, and Christine Cravens. Thanks also to Battelle's Tom McClain and Bill Knauf for the information they provided for the special issue in case Battelle won. LAB NEWS writers Howard Kercheval and John German did most of the work on this end, with the help of many other Sandians. Our special thanks go to Sandia's mail teams in Departments 7613 and 8533 for getting the issue distributed so quickly.

**Half As Good Would Be Great!** - Right after DOE named Martin Marietta our new contractor, Kenneth Dunbar (5153) called with a little oddity. Ken says he married Marietta Martin nearly 34 years ago, then added that he'll be thrilled if Martin Marietta proves to be half as good to him as Marietta Martin.

**Creative or Just Warped?** - I seem to wonder about things that no one else does. That's either the sign of a creative mind or a warped one; you be the judge. Anyhow, I was wondering the other day who was the first kid to turn his baseball hat around so the bill's in the back, and who was the first kid to tell him it looked cool.

**Gobbledygook Checker Needed, Too** - In the last issue, I said we needed an obscene-spelling checker to ensure that we don't inadvertently publish a word we shouldn't. But I'm not sure that we don't need something else even more - a gobbledygook checker. After trying to read and interpret a few internal communications recently, it's obvious that some folks have a powerful need for one. It would be even better if their printers had a built-in mechanism to prevent them from working if the GI (gobbledygook index) gets too high.

**Ethylwhat?** - One of my secret sources tells me that Sandia's new incident commanders in Emergency Management Dept. 7029 have coined a generic name for suspected nasty (but unknown) chemicals: They call 'em ethylmethylbadstuff. Actually, the ending isn't precisely what they use, but it's as close as I can print and still keep my job. •IP

Sandia Co-sponsors 'Really Big Show'

## Hundreds of National Leaders Expected at Technology Meeting

Sandians will join hundreds of national leaders from government, industry, and other national labs at the first "Coupling Technology to National Need" symposium later this month at the Albuquerque Convention Center.

Organized by the Society of Photo-Optical Instrumentation Engineers (SPIE) and the Center for the New West, the Aug. 23-26 symposium will focus on the technical opportunities and public policy considerations surrounding the use of national technical resources.

Among many other activities, the symposium will offer "technical tracks" to investigate six areas of national need - transportation, visualization and communication, energy and environment, public safety, manufacturing, and health - and to show how technology can be used to address these needs.

### Provides National Exposure

The symposium also is designed to give national exposure to the capabilities and technical resources of six southwestern states: Colorado, Utah, Arizona, New Mexico, Oklahoma, and Texas.

Emerging opportunities for collaboration between the DOE national labs and the private sector also will be explored.

Sandia President Al Narath will chair the "Federal Laboratory and Industry Roundtable" session, and Vice President Dan Hartley (6000) will co-chair the Energy and Environment Session.

Sandia is one of several government and industry sponsors, including Los Alamos National Lab and the New Mexico Governor's Technical Excellence Committee. Symposium co-chair is Art Guenther (4500B), Sandia's Science Advisor for Laboratory Development and Science Advisor to New Mexico Gov. Bruce King.

Art and other symposium leaders expect many key national and state government leaders to participate in the panel discussions and roundtables along with industry and academic leaders and representatives of Sandia and Los Alamos national labs.

Sandians attending the conference qualify for a special group rate of \$250. For more information, contact Louise Chavez (4504) on 845-9549. •

## LAB NEWS

Published Fortnightly on Fridays by  
Employee Communications Department 7162

**SANDIA NATIONAL LABORATORIES**

An Equal Opportunity Employer

ALBUQUERQUE, NEW MEXICO 87185-5800  
LIVERMORE, CALIFORNIA 94550  
TONOPAH, NEVADA  
NEVADA TEST SITE  
AMARILLO, TEXAS

Sandia National Laboratories, a prime contractor to the US Department of Energy, is operated by Sandia Corporation, a subsidiary of American Telephone and Telegraph Co.

LARRY PERRINE, Editor (505/844-1053)  
CHARLES SHIRLEY, Managing Editor (844-6210)  
JOHN GERMAN, Writer (844-5199)  
HOWARD KERCHEVAL, Writer (844-7842)  
RANDY MONTOYA, Head Photographer (844-5605)  
MARK POULSEN, Photographer and  
Production Coordinator (844-0421)  
JANET CARPENTER, Editorial Assistant (844-7841)  
LISA CHAVEZ, Assistant (844-7522)  
DAWN THATCHER, Assistant (844-7522)  
LAB NEWS FAX (505/844-0645)  
BARRY SCHRADER, California Reporter  
(510/294-2447)

## Sympathy

To Mary Ellen Puckett (2486) on the death of her mother-in-law in Albuquerque, July 3.

To Kerry Sturgis (7711) on the death of his mother in Ocala, Fla., July 5.

To Linda Sue Smith (6414) on the death of her mother in Albuquerque, July 8.

To Becky and John (2761) Arnold on the death of her sister and his sister-in-law in Albuquerque, July 14.

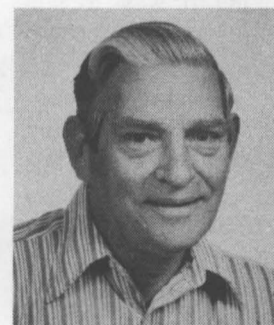
To Del Owyong (1304/1312) on the death of his father in Los Angeles, July 16.

To Jim Swanson (6621) on the death of his mother in Andover, Ohio, July 16.

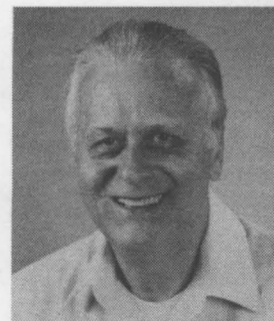
To Berlinda Baca Eras (1671) and Kenneth Eras (2643) on the death of her mother and his mother-in-law in Albuquerque, July 24.

## How to Find Us

Employee Communications Dept. 7162 is located in Mobile Offices 172 and 173, immediately east of our old location in Building 814, but we are now inside Tech Area 1. Call us on 844-7522 or 844-7841 if you can't find us or if you need more information.

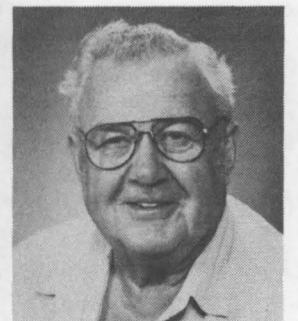


Al Elsea  
8271 37 years



Bruce Worden  
5375 34 years

## Recent Retirees



Ray Gott  
8711 35 years

## Welcome

Albuquerque - Charles Williams (4113).  
Other New Mexico - James Holden-Rhodes (6904).



## New Intersite Data 'Minihighway' Ready for Traffic

# Laborious Weekend Completes Supercomputer Consolidation

In an all-weekend working session in May that came to be known as "Walt's Weekend," Sandia computing staffers added the keystone to a high-capacity data link between the California and New Mexico sites that allows California Sandians to work remotely on Labs supercomputers located in New Mexico.

On May 26, the Cray Y-MP8/264 supercomputer, originally located at Sandia/California, came on line at Sandia/New Mexico, the culmination of a two-year Supercomputer Consolidation Project. The project began in 1991 when Sandia management decided to locate all Labs supercomputers at one site and link them with high-speed data networks rather than continue acquiring new high-performance computers for each site.

The consolidation project involved pioneering new technologies for two high-capacity, private, encrypted networks linking the sites — one for

between the two sites, regardless of distance."

### The Black vs. the Red

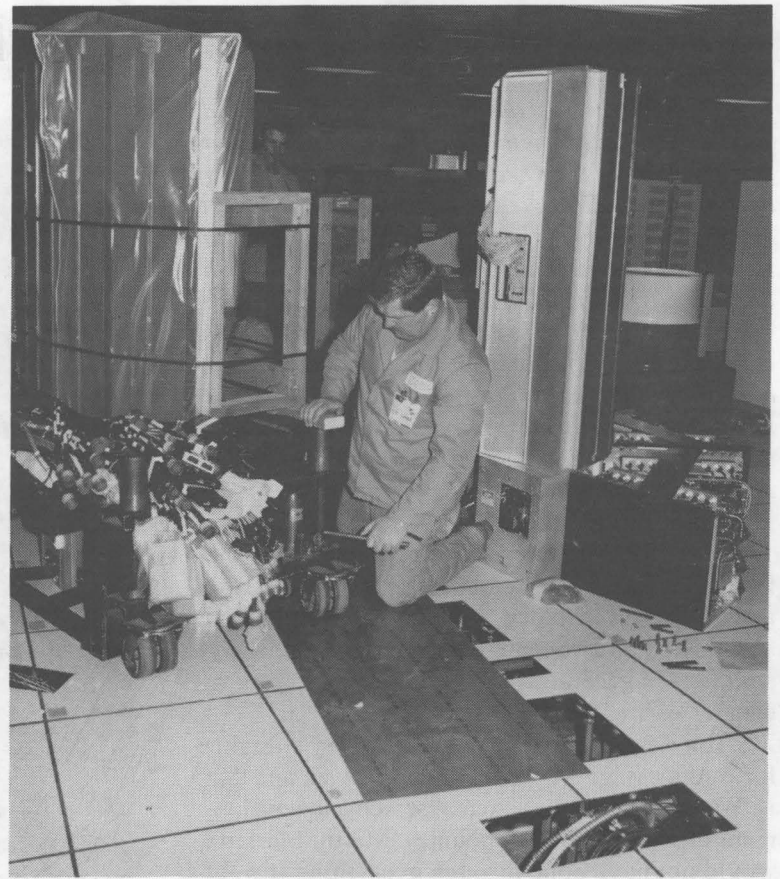
Because Sandia's mission is changing to focus more on collaborations with industrial partners, says Pete, the Labs' computing needs are migrating toward more unclassified computing. One of the goals of the supercomputer consolidation was to allow for the Labs' largest Y-class Cray to handle unclassified work.

Prior to consolidation, the California site had a small Cray in its unclassified (black) Restricted Access Network and a small Cray in its secret (red) network. The New Mexico site did not have a Cray for its unclassified network, called the Internal Restricted Network, but had a large Cray in its secret network.

The consolidation required not only moving the California Y-MP8/264 to New Mexico to handle the secret network, but also transferring the larger New Mexico Y-MP8/864 from the secret network to the unclassified network.

"Both Crays have a heavy work load," Pete says, "so the dilemma of how you share limited computing resources among all users will be part of our evolution."

After the Crays were ready for use in New Mexico, the next step was to shut everything down on Friday (May 21), reconfigure the networks, and bring the consolidated networks back on line by Monday morning (May 24), all with the least pos-



**PLUGGING IN** — Joe Poehls, a Cray employee specializing in moving and installing computers, helps install a piece of the Cray Y-MP8/264 supercomputer at its new home at Sandia/New Mexico. The Cray was moved from Sandia/California to the New Mexico site in May with the help of many Sandians.

sible impact on computer users.

This was accomplished over the weekend — sometimes referred to as "Walt's Weekend" after Walt Vandevender (1957), the project leader for the Cray move.

At various times during the weekend, 30 to 50 staff members were involved, including representatives from both sites and all computing customers' points of contact. Staff members in New Mexico spent a good portion of the weekend cleaning up disks and moving data in order to transfer the Cray from the red to the black network.

"By Monday morning, most of our customers were able to work in either or both of these networks with a minimum of disruption," says Walt. "Quite a number of dedicated Sandians worked to make the weekend very successful."

### One Big Job, Technically Speaking

From a technical standpoint, the consolidation began with the communications aspects of the intersite network. Computer users required multiple high-speed data paths (12 megabits per second) over a 1,100-mile-long encrypted line.

The new Switched Multimegabit Data Service (SMDS) networks use the DS3 (Digital Signal 3) transmission standard and the emerging Asynchronous Transfer Mode (ATM) technology to transmit data over existing fiber-optic land lines at a rate of

**"By Monday morning, most of our customers were able to work in either or both of these networks."**

44.736 megabits (a megabit is one million bits of information) per second — approximately 30 times as fast as the standard technology in use today. (See March 5 LAB NEWS.)

To eliminate bottlenecks in the system, Sandia also had to redesign the classified local area networks (LANs) at both sites to enable them to move data in the 10 megabits per second range. The LANs had not been designed to run that fast.

In addition to the challenges of networking and  
(Continued on Page Nine)



classified data and another for unclassified. Such networks are forerunners to the kind of "information highways" being proposed for the nation's future needs for high-capacity transmission of computer data.

"It is important to understand how difficult it is — even within the same organization — to get both sites technically and culturally compatible," says Peter Dean, Manager of California's Networking and Communications Dept. 1951. "Consolidating the two computing cultures is a much bigger job than just laying down the fiber

## Only 14 Percent of Coverage Is Negative

# Upbeat Articles Are the Rule When Newspapers Cover Sandia/California

Over the past two and a half years, more than 85 percent of articles about Sandia in the two Livermore-area daily newspapers have been either positive or neutral.

That's the conclusion of a recent analysis of Sandia coverage in the *Tri-Valley Herald* and the

*Valley Times* since the beginning of 1991.

The percentage of positive-or-neutral coverage is even greater than appeared during the same period in Albuquerque's dailies, the *Journal* and the *Tribune* (LAB NEWS, May 28).

There is, however, a much different mix of stories covered by the *Herald* and the *Times* than by the Albuquerque papers.

"Only 16 percent of our local coverage," says Barry Schrader (8522), "is of science and engineering subjects and achievements [versus 32 percent for Albuquerque], and that's something we want to improve significantly."

"Instead, more than 60 percent of the stories in our dailies are about policy and administrative matters (32 percent) and miscellaneous subjects (29 percent), particularly features about educational outreach programs and our employees who are deeply involved in a variety of community activities," Barry explains.

"Those features are valuable, though, because our employees' contributions to the community reflect well on Sandia," he adds.

The analysis of Livermore-area print media coverage about Sandia used the same criteria as the recent look at Albuquerque-area coverage. For example, articles that, in some manner, cast a shadow on the integrity, fairness, or efficiency of the Labs or its employees were judged to be "negative" coverage.

The *Valley Times* has a local circulation of 36,000. The *Herald* has a local circulation of 35,000 plus another 74,000 in its sister papers, the *Hayward Daily Review* and the *Fremont Argus*. •

### Coverage in California: A Box Score

Here's a breakdown of coverage about Sandia that has been printed in the *Tri-Valley Herald* and the *Valley Times* since the beginning of 1991:

Good Press-Bad Press Index (percent of stories)

Positive	43
Neutral	43
Negative	14

Subject-Matter Index (percent of stories)\*

Science/Engineering	16
Policy/Administrative	32
Environmental Issues	15
Other	29
Incidental Mentions	13

\*Equals more than 100 percent because individual stories could fit two categories. For example: an article about environmental issues at Lawrence Livermore National Lab that mentioned Sandia in one paragraph would appear in both the "environmental issues" and "incidental mentions" categories.



**Eager to Begin 'Educational Process'****Jim Tegnalia Says Martin Marietta Delighted to Win Sandia Contract, Planning No Major Changes**

*Editor's Note: DOE announced July 26 it had selected Martin Marietta as Sandia's management and operating (M&O) contractor. The following day, the LAB NEWS visited with Martin Marietta's Jim Tegnalia, who is leading the Martin Marietta transition team that is working closely with Sandia's transition team to ensure a smooth changeover on Oct. 1. Jim will become Sandia's executive vice president on Oct. 1. Here are our questions and his responses. The LAB NEWS will be talking with members of both teams throughout the transition period and will report new information as it becomes available.*

**LAB NEWS (LN):** The special issue of the LAB NEWS we published the day after the announcement included a lot of basic information about Martin Marietta, but Sandians are hungry for specifics. In general, what would you like to say to employees?

**Jim Tegnalia (Jim):** There is a very straightforward message we would like to deliver, and that is: We think Sandia is a great research and development institution for this country. Martin Marietta would not have gone through everything it went through to win the contract if we thought Sandia was not the best of the best. Because we believe it is such a good organization, Sandians should not fear vital changes or introduction of all-new management approaches to things.

**LN:** We had some folks rooting for Battelle, some for Martin Marietta, and some who felt either one would be fine. Any message for those who might have been rooting for the opposition?

**Jim:** I don't believe employees who might have supported Battelle should be concerned about the issues some media reports say worry them. For instance, we've heard there is a big concern about conflict of interest, that Battelle would have been better because they wouldn't have had these conflicts of interest.

Martin Marietta is used to working in partnership with people we also compete with. A specific

**"Martin Marietta would not have gone through everything it went through to win the contract if we thought Sandia was not the best of the best."**

example of that is a project I've spent a lot of time on. Martin Marietta competed with Raytheon in the early stages of this competition, but Martin Marietta is Raytheon's primary subcontractor for the Patriot missile. So, we compete with Raytheon on occasion, and we partner with Raytheon on occasion.

I think concerns that Martin Marietta's management of the laboratory will make things like CRADAs [cooperative research and development agreements] more difficult to arrange are misplaced. I believe that when we get a chance to go in and talk with people, those concerns will go away. I don't think there was really any difference between Battelle and Martin Marietta as to how tech transfer was going to go.

Oak Ridge [National Lab] is a very good example of that. When you look at the list of companies that work with Oak Ridge, you'll see a lot of Martin's competitors. We know how to partition those things so there won't be a conflict of interest, and I don't believe you're going to see anybody that will not work with Sandia because the Labs is being managed by Martin Marietta.

The real distinction was the sense of Martin Marietta being a large aerospace firm and Battelle



**CAMERAS RECORD** Jim Tegnalia answering a reporter's question during a press conference at which DOE announced it had selected Martin Marietta to manage and operate Sandia. Martin Marietta will succeed AT&T as Sandia's M&O contractor when the current contract runs out Sept. 30, and Jim will become Sandia's Executive Vice President. Seated behind Jim are (from left): Jim Hoyal (mostly hidden behind the television cameraman) and Denny Krenz, of DOE's Source Evaluation Board; Jim Culpepper, Deputy Manager of DOE/AL; Sandia Executive VP and Transition Executive Lee Bray; and Kathy Carlson, Manager of DOE's Kirtland Area Office.

being a smaller science research and development organization. I think those were the two differences in the two corporations. In the end, DOE had to make the choice on what they thought was the right "marriage" for Sandia.

I believe employees will be satisfied with the answers they're going to get and that whatever feelings they have won't have an impact on how they do their jobs. I think those issues will go away very soon after we start the actual management activity.

**LN:** We've heard that Martin Marietta's portfolio in the "green" world is substantial. Do you know what fraction of Martin Marietta's \$11 billion budget goes into environment and energy?

**Jim:** When you look at the kinds of things that Martin Marietta does at Oak Ridge and other facilities, and some of the GE activities [Martin Marietta acquired GE Aerospace last year], you'll find out that Martin Marietta does quite a bit of environmental-related research, a lot of energy-related research. A fairly large amount of that is at Oak Ridge National Laboratory. Martin Marietta does about \$3.5 billion a year in research and development activities. So out of \$11 billion, \$3.5-4 billion is in research and development activities. We're pretty proud of our science and environmental base.

**LN:** With Sandia's transition team and your transition team working closely together, what do you hope to accomplish during the next two months?

**Jim:** Two things come to mind: an orderly transition process and an educational process that will allow us to learn all we can about Sandia.

Martin Marietta is going to bring into the laboratory nine individuals — four vice-presidents and five directors. [See profiles in next issue.] We need to learn about the Labs' programs and get our people familiar with the kinds of job responsibilities they are going to have.

This may surprise you, but during the year we went through this competition, we were never inside the Labs. We physically were never inside the gates, never even in Building 800. You can understand why, of course. You couldn't have

seven contractors flooding through the Laboratories. Even when it got down to the final two, it would have been so difficult for President Al Narath and Executive VP Lee Bray to host all of these people interested in learning about the Labs for the bid. It would have been too disruptive to operations.

So, first we've got a lot to learn. We shouldn't underestimate just how much of a learning process we have to go through.

The second thing is the transition process itself, which has to be accomplished while we're also working on educating ourselves about the Labs. There's a new savings plan [the Sandia Savings Plans, which succeeded the AT&T Savings Plans]; we have to go through property transfer; we have to go through document transfer; we have to deal with badging — many things have to be done.

**"The organizational things that we have recommended in our proposal can be done without a major restructuring of the Labs."**

We have to get those things done on schedule and have an orderly transfer from AT&T to Martin Marietta.

**LN:** You mentioned that you are bringing in nine executives. Will you bring in other folks for the transition period?

**Jim:** We will be bringing in some specialists to help us on specific activities. For example, I'd like to have our ethics officer, George Salmon, come in and learn about the Laboratories. As you learn about Martin Marietta, you'll find that our ethics program is a very important thing inside the company, and George, in my view, personifies our ethics program.

We expect [Chief Executive Officer] Norm Augustine and [President and Chief Operating Officer] Tom Young to spend time at the Labs during the transition process. We'd like as many people as possible to meet Norm and Tom. We'd like to get them up before as many members of the



laboratory staff as we can during the next two months. I was on the phone this morning [July 27] trying to work their calendars to be consistent with Al's calendar so they can get out here and we can begin the process.

We would also like to have smaller groups of people meet the people who will be coming in from Martin Marietta, so we get to know you and know what some of your concerns are in smaller groups, so people can ask question and bring concerns up and we can try and address them. We'd like to start that immediately.

**LN:** You mentioned specifically someone coming in to work with Lee Bray as sort of his counterpart on transition. Is that one of the nine executives you mentioned, or is that someone else?

**Jim:** First, there's Joel Weiss, who I want to get into Sandia's Transition Program Office [Org. 33]. Lynn Jones [Vice President 7000-designate] is going to help with our transition activities. I'd like her to work with Lee. I want to work with Lee. We want to start the transition process just as soon as we can get that process going.

**LN:** Sandia has been through a lot of reorganizing and restructuring during the past couple of years. Do you anticipate any major restructuring?

**Jim:** Let me say without qualification: We expect no major restructuring as a result of Martin Marietta being chosen as the M&O contractor. There always have to be program changes, reorganization to fit a new budget process, change to accommodate a new DOE program emphasis — those kinds of processes will continue. But other

---

**"We're going to have a board composed of some external directors and some internal directors. Internal directors correspond to your description of AT&T people."**

---

than that, I don't think you're going to see any major reorganization or restructuring. Our goal in the bid process was to make sure that we wouldn't be the cause of anything like that. The organizational things that we have recommended in our proposal can be done without a major restructuring of the Labs. My sense is that in the next three, four, five years, there are going to be more changes brought on by our external environment — things like the DOE budget, changes in national security, and congressional pressures.

**LN:** Currently we have a board of directors, which consists of president, executive VPs, and some AT&T folks. Will there be a similar kind of governing board under Martin Marietta?

**Jim:** Yes. When the new contract takes effect, Sandia Corporation will pass from AT&T to Martin Marietta, and the arrangement will be the same under Martin Marietta as it was under AT&T. It's going to report directly to [President and Chief Operating Officer] Tom Young and [Chief Executive Officer] Norm Augustine. Al will report directly to them. However, our idea of the Sandia Corporation board of directors is a little different from what you're used to seeing.

We're going to have a board composed of some external directors and some internal directors. Internal directors correspond to your description of AT&T people. The board will be headed up by Tom Young, who will be the chairman of the board. Al will be the vice-chairman. We will then have our internal directors: Martin Marietta's chief financial officer, Mark Bennett; chief human resources individual, Bob Leonard; our strategic planner, Dick Adamson; and I will be on the board as executive vice president.

We've invited four external directors, an interesting group of people who will help with strategic planning and adapting to the new environment. They are: Lou Allen, retired Air Force chief of staff, former manager of NASA's Jet Propulsion Laboratory, former manager of the National

### *Martin Marietta, Sandia Values Compared*

## California Sandians Hear from VP-to-Be

California Sandians first got the news that Martin Marietta had been selected as the Labs' new management and operating contractor the same way employees in New Mexico did — from a Transition Council News bulletin via fax and E-mail, by a voice-mail message from President Al Narath, or via "the grapevine."

The next day, July 27, they received the special issue of the LAB NEWS and were invited by VP John Crawford to an outdoor meeting on the computing center patio, where John introduced DOE site manager John Andrews and visiting Martin Marietta executive Charlie Emery, who had flown in the night before from Oak Ridge, Tenn.

Andrews delivered a welcome from DOE to the new contractor and praised AT&T for 44 years of "exceptional service in the national interest" during its stewardship of Sandia.

Charlie, who will be Sandia's Vice President for Human Resources, said Martin Marietta's

intent is "to manage Sandia so that your individuality and uniqueness are preserved, and to maintain the Labs as a national treasure and resource."

### 'Listening, Listening, More Listening'

He added, "It's refreshing to note that we have the same values and operating principles. They are integrity, our people, teamwork, and excellence. It's very important for us to create an environment where we attract and nurture people, and provide that stimulation for them to be able to continue to be creative and do their best. Our commitment to quality is called 'mission success.' These are very similar to the five values Sandia has now."

Charlie said Martin Marietta will be doing three things during the transition period — "listening, listening, and more listening."

John said Sandians are looking forward to forming a new team with Martin Marietta and DOE, calling it "the beginning of a new era for us." ●BLS

Security Agency; George Keyworth, presidential Science Advisor during the Reagan Administration and former Los Alamos National Lab scientist; Diana Natalicio, President of the University of Texas at El Paso; and Donna Fitzpatrick, former Assistant Secretary of Energy and Acting DOE Secretary.

We have commitments from all of them, and we very much want to have them involved so Al can bounce ideas off them and they can give him some ideas back.

**LN:** As you can imagine, everyone is interested in specifics of the benefits package. Realizing that we're still in the transition period, what can you say about benefits and related policies?

**Jim:** As a capsule statement, let me say that anyone interested in details about benefits should read the RFP [DOE's initial request for proposals] because what's in the RFP is basically what's in the contract. I believed that once the RFP was issued, DOE would stick with it for all of the contractors, so, as a source document, there wasn't a lot of variance from what was said in the RFP. So, if you're really interested and you want to understand some of the details, we stuck pretty close to the RFP.

The Martin Marietta representative who negotiated Appendix A [which outlines personnel policies and benefits] with DOE was Charlie Emery, who will be Vice President for Human Resources at Sandia. Charlie also negotiated Appendix A when we bid on the contract at Oak Ridge.

Gary Riser, who is our number-two financial executive at Oak Ridge, also negotiated much of the contract. This is the third time Gary has done

---

**"We've got a lot to learn. We shouldn't underestimate just how much of a learning process we have to go through."**

---

this: from Union Carbide to Martin Marietta at Oak Ridge; GE to Martin Marietta at Pinellas; and now AT&T to Martin Marietta at Sandia. We have what I think is a fairly good understanding of what the general business practice is throughout the DOE complex, and I think Sandians got a pretty good package, relative to what's going on throughout the complex.

We worked really hard with Ralph Bonner [Director, Human Resources Center 7500]. Where

we thought DOE was trying to negotiate with us on a point we had reservations about, based on the data we got from Ralph, we would postpone the negotiation and say, "We'd like to take this on in December, after we're in the Laboratory." There are still some TBDs [to-be-determined] so some matters wouldn't be a subject of a protest, but there was a little bit of "We need to understand this better before we go through it."

We spent a lot of time on Appendix A with DOE. We took every hour the government would make available to negotiate Appendix A because we were concerned about getting that right. We had

---

**"As you learn about Martin Marietta, you'll find that our ethics program is a very important thing inside the company."**

---

a constructive set of negotiations. I think there was a fair arrangement worked out for the Labs.

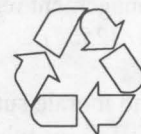
**LN:** So, some benefits programs that will carry over past Oct. 1 could still change later. Is that right?

**Jim:** That's right. But they are not, in my view, cardinal issues in the RFP or they would've been negotiated. My sense is they are minor issues that needed to be worked out.

**LN:** When will we be ready to talk about specific benefit programs?

**Jim:** It's simply a matter of when DOE feels it's appropriate to release the information. I certainly have no objection to having the people who did the negotiating tell you everything we know about that process. That's one of the reasons we want to get into these small groups of people — so they can ask their questions and we can try to have people understand where we are and how we got there, and if there are concerns, what we can do to help with that process.

We all have to remember that Sandia National Laboratories and Sandia Corporation are the responsibilities of the Sandia Board of Directors, and they will be until Oct. 1. That is a distinction that's important from a legal point of view. ●HK/LP



This newspaper can be recycled with Sandia office paper



## What Do You Think?

# Sandians Suggest Ways to Improve Job Satisfaction and Morale

"What Do You Think?" features employee responses to questions posed by the LAB NEWS. The idea is to give Sandians an opportunity to voice their opinions and thoughts about various issues — some serious and some not so serious. Some responses have been lightly edited and condensed to meet our maximum word limit.

The current question: "Some Sandians say their jobs aren't as satisfying as they used to be and that employee morale is low. What one or two things could Sandia management (at any level) do to improve the situation?"

First, management should provide strong leadership with a willingness to make decisions. Next, managers should foster and encourage honest communication. These two steps would allow employees to appreciate and understand the decisions being made for them and feel more a part of them as a result. This also provides open, positive feedback in the upward and downward directions.

Christopher Aas (7052)

Peter Drucker said, "Whom the gods want to destroy they send 40 years of success." It takes us months to process a purchase requisition, which reportedly must be handled 52 times! It takes years to get space modified to accommodate urgent program needs. Internal Sandia groups have a monopoly on these services, and we can't negotiate for improved prices or delivery times. Management should reengineer corporate processes to let us become more productive. That would improve morale.

Name withheld by request

In addition to normal job routines, Sandians are anticipating the new M&O [management and operating] contractor and many possible changes. [Note: written before Martin Marietta was named as new M&O contractor.] This detracts from the job and can lead to less satisfaction. Management can help alleviate this situation by improving communication at all levels. More encouragement and visible recognition for valued work, accomplishments, and consistent contribution would help boost morale. Management can improve job satisfaction by reducing productivity barriers. For example, the ES&H SOP [standard operating procedure] review process is cumbersome and slow.

George Mac Cosbe (2513)

Upper managers have a vision of Sandia becoming a dynamic quality-oriented organization. Some lower level managers see this as yet another fashionable initiative to be tolerated until "normality" can return. Employees are caught in the middle. Any initiative (empowerment) is punished by the old culture — "not a team player." Lack of the appearance of commitment to the new vision results in being labeled old culture. It's like trying to work for two different companies.

Randy Dabbs (326)

Over the past few years, several programmatic initiatives have been emphasized at the Labs: ES&H, Quality, Project Planning. The aggregate effect is overwhelming to staff members who find that 25 to 40 percent of their time is taken up with non-technical work. I suggest that management carefully review requirements to determine that they do not exceed what is absolutely necessary (as in ES&H/Min-Net) and/or that value is added (as in program/project management requirements).

Lana Lachenmeyer (2504)

Job satisfaction and morale suffer when people feel diminished or stifled, or when their professional and personal growth and development are thwarted. At all levels, Sandians must recognize

that it is everyone's responsibility to develop and fully utilize the human resources under their stewardship. Sandia must continue to promote this attitude and correct circumstances counter to it. This will both ensure the future of the laboratory and dramatically improve the level of job satisfaction and morale.

Kevin O'Brien (9241)

Give us a job assignment and then back off and let us do it. Trust us to make our own decisions. Don't interfere when it's not necessary. The best supervisors are the ones who supervise the least.

Name withheld by request

One of the main reasons Sandians are experiencing low morale is because of the uncertainty and stress of the transition. Sandia management can help alleviate this by their positive attitude. We as employees look to management to set the tone with a positive attitude, encouragement, and working diligently in spite of uncertainty. Negative attitudes pull an organization down with low morale, apathy, and job dissatisfaction. We all need to remember and appreciate Sandia's strengths and values.

Pauline Duran (821)

Sandia policy, which I presume is upper management speaking, says one thing and seems to

mean something else by its observable actions. An example is the constant verbiage from above that we need to constantly elevate the level of the staff in these times of tremendous technological progress. However, the removal of the A-290 time charge number [which formerly was used for charging education and training time] and the discontinued policy of providing textbooks for INTEC classes indicates that the words are meaningless and corporate policy is not in support of continued professional development.

Gordon Dodrill (9215)

I think that a recreation hour once a week would help. Last week Org. 7815-2 had a barbecue during lunch break that helped. A barbecue once a month would be nice.

Alfonso Baca (7815)

I believe that employee morale is low because Sandia suffers from a lack of leadership. Leaders value people. They address those they lead by their first names. Leaders are original, inventive, unpredictable, and imaginative. Leaders provide guidance and direction, create vision, and are a resource to those they lead. Rather than providing leadership, Sandia management attempts to manage people like they would any inanimate resource. I challenge Sandia management to lead us — not manage us.

Glenn Rackley (5166)

A major problem contributing to our low morale is our uncertainty and lack of focus. The urgency and crispness of our primary weapons mission has gone away. Top management can help by redefining our mission with our customers and facilitating new plans to accomplish that mission. The mission provides focus while planning provides structure, which positions us for the future and reduces uncertainty.

Name withheld by request

Managers must assess and understand how their work system design affects employee performance, well-being, and job security. What impact do current methods have on the organization? Are individuals treated with respect and are their contributions valued equitably? How can the work be redesigned? Is authority delegated to enhance employee involvement and morale? Is adoption of more modern assumptions needed? One should be able to start working toward improving the situation by finding honest answers to these questions.

Name withheld by request

## The Next Question

### What Do You Think?

Here's the next question:

**Is there a Sandian or Sandia group that you would like to thank publicly for doing a particularly good job for you or your group?**

If so, here's your chance. We'll allow you up to 75 words to say thanks for a good job. (Individual or group responses are OK on this one; all we ask is that the "thanked" individuals or groups be folks outside of your own organization.)

We'll be calling Sandians (at all sites) soon and asking you personally to respond to the question. If you agree, we'll fax you a one-page answer sheet (with guidelines) that you can complete and fax back to us. Other employees are also welcome to respond — not just the folks we call. If you'd like to respond, please call us for an answer sheet on 844-7841 or 844-7522.

## Volunteers Needed for Day of Caring

The second annual United Way of Central New Mexico Day of Caring will be held Wednesday, Sept. 1. Sandians and retirees can join hundreds of other area citizens in performing community service tasks for that one day for non-profit agencies in Bernalillo, Sandoval, Torrance, and Valencia counties. Day of Caring kicks off the 1993 United Way fund-raising campaign.

Teams of employees from organizations throughout Albuquerque and nearby communities are being recruited to participate in volunteer efforts such as children's activities, painting walls and murals, delivering meals to senior citizens, yardwork and gardening, and arts and crafts.

### Choose Your Work

Volunteers may designate particular organizations or types of groups they prefer to work with and the kinds of work they prefer. Day of Caring gives participants a first-hand look at many of the services non-profit agencies provide.

Day of Caring efforts will be celebrated with a night out at the ballpark. Volunteers' Day of Caring buttons will gain them free admission to the Albuquerque Dukes baseball game on Friday, Sept. 3.

If you are interested in volunteering for the Day of Caring, please call Employee Contribution Plan Secretary Juanita Sanchez (7161) on 844-1307.

## Fun & Games

The New Mexico Clogging Association's 8th Annual Convention will be Saturday, Aug. 7, at the New Mexico State Fairgrounds Youth Hall. Admission is free for spectators. A workshop is scheduled for 9 a.m.-4:30 p.m., with exhibitions and dancing 7-10 p.m. Sandia cloggers include Lisa Barham (153), Janey Carroll (7544), Terri Chiarella (7560), Betty Gatto (7544), Dennis Huffman (2314), Larry Lukens (2641), Pam Ramsey (151), and DeBee Risvold (9226). For information, call Janey on 888-2466.



**Testimony to House Science Committee****Paul Robinson, LANL and LLNL Directors Recommend Broadened National Security Mission for DOE Labs**

Last week in Washington, Paul Robinson, VP for Laboratory Development Div. 4000, told members of the House Committee on Science, Space, and Technology that the missions of the DOE national laboratories should be broadened to reflect post-Cold-War national security needs.

His testimony, together with testimony from Energy Secretary Hazel O'Leary and the directors of Los Alamos and Lawrence Livermore national labs, recommended a more comprehensive definition of national security, one that spans military, energy, environmental, and economic concerns.

The July 29 hearing kicked off congressional consideration of legislation aimed at reshaping the DOE labs' missions. As part of her testimony, O'Leary announced that DOE is dramatically changing the way it shares scientific and technical expertise with US companies and small businesses by implementing a streamlined and more aggressive technology transfer initiative.

O'Leary said DOE must learn to move more quickly in approving cooperative research and development agreements (CRADAs) and other technology transfer-related mechanisms aimed at helping private industry. (See "O'Leary's Plans Include CRADA Approval by Top Lab Officials.") But, she said, stewardship of a reduced nuclear weapon stockpile must always remain a central focus of the DOE labs' missions.

**Adapt to National Needs**

Paul's testimony focused on the DOE labs' history of contributing to a wide variety of national security needs beyond the purely military. Citing the establishment of successful new energy programs during the 1970s and environmental restoration programs in the 1980s, he said: "There is a widespread perception that the labs are now just beginning to diversify beyond nuclear weapons activities. The fact is we have always adapted our science and technology capabilities to attack the nation's most important problems.

"Prior to 1970," he said, "our activities were almost exclusively involved in our nuclear weapon mission. However, over the last 20 years, the percent of our activities in support of our nuclear weapon mission has declined dramatically.

"At Sandia," he added, "the nuclear weapon [activity] as a fraction of our total laboratory activities has declined from approximately 90 percent in the early 1970s to approximately 50 percent today. The remaining 50 percent of our activities are in energy, the environment, and work for other federal agencies. Today, Sandia's work in support of economic security permeates all of our programs."

**But Keep Weapons Focus**

Paul's comments emphasized a theme also voiced by Sig Hecker (Los Alamos National Laboratory Director) and John Nuckolls (Lawrence Livermore National Laboratory Director): private sector research and development must not prevent the national labs' from carrying out their nuclear weapons responsibilities. He joined O'Leary, Hecker, and Nuckolls in suggesting that the labs' missions grow to include about 20 percent R&D for the private sector.

He recommended that the labs' new official missions include enduring stewardship of the nation's reduced nuclear stockpile, safe and envi-

ronmentally benign dismantlement of nuclear weapons, increased emphasis on national economic security, a streamlined weapon production complex, expanded contributions in the fields of energy and environment, continued work for other federal agencies, and emphasis on coordinated interagency partnerships.

He also warned that the labs must retain their unique abilities to solve large-scale, complex, multidisciplinary problems. "Reducing the scope of our missions or limiting the growth of other mission areas, as the military security mission decreases, would harm the ability of the labs to simultaneously make contributions in solving diverse problems," he said.

"The mission statement [of the new legislation] should not be constrained to the point that DOE laboratories cannot contribute in areas where their core competencies can uniquely contribute to national needs," said Paul. "The reaffirmation of our national security mission, broadly defined, would best allow the DOE multiprogram national laboratories to serve the nation." ●JG

**O'Leary's Plans Include CRADA Approval by Top Lab Officials**

During her testimony to the House Committee on Science, Space, and Technology July 29, Secretary of Energy Hazel O'Leary announced a package of initiatives aimed at boosting the impact that DOE technologies have on US economic competitiveness.

The plans call for DOE to

- Make private-sector access to DOE resources easier by establishing a streamlined approach to technology transfer by the end of calendar year 1993;
- Within a year, reduce the time it takes to process CRADAs by 50 percent, to 16 weeks from start of negotiations to final approval;
- Allow top officials of the national laboratories to approve some CRADAs without DOE review;

- On a trial basis, provide a block of funding to selected laboratories that allows them to respond immediately to partnership proposals from the private sector;

- Develop plans to coordinate technology transfer efforts among federal agencies; and

- Ensure that small businesses get access to DOE resources, in part by issuing simplified CRADAs that avoid the necessity of extended legal negotiations.

"This plan will serve as a tool for reorienting the department and its laboratories toward the post-Cold-War agenda," said O'Leary.

The new plan, DOE's first-ever Strategic Plan for Technology Partnerships, is contained in a document titled *Partnerships for Global Competitiveness*.

*(Continued from Page One)***Sandia President's Quality Award**

satisfaction measured by results."

Winners will be announced Oct. 28 during National Quality Month. Each will receive an acrylic diamond-shaped trophy topped with a Sandia thunderbird medallion. Gold medallions will be awarded for world-class contributions, silver medallions for exemplary outstanding contributions, and turquoise medallions for outstanding contributions. A team of Sandians from around the Labs who have had Malcolm Baldrige training will

evaluate each nomination according to performance in the areas of customer focus, process management, and results. Winners' names will be engraved on one of two trophies to be displayed at Sandia/California and Sandia/New Mexico.

**A Few Guidelines**

Nominations for the award are due by Sept. 7, and should be based on work done between July 1992 and July 1993. Only Sandians are eligible to win the President's Quality Award, although non-Sandians can be recognized for their work as part of a team.

Briefings will be held to discuss the award and how Sandians can best fill out their applications. Sandia/California will hold a briefing Tuesday, Aug. 10, 8-9:30 a.m. in Bldg. 912, Rm. 121. Sandia/New Mexico briefings are scheduled for Monday, Aug. 9, 1-2:30 p.m. and Wednesday, Aug. 18, 10:30-noon in Bldg. 822/A.

Division and center quality coordinators are available to help Sandians prepare nominations. For more information or copies of the President's Quality Award guidelines and nomination form, contact a quality coordinator, or Mary Nation (4311) on 271-7929. ●DT

*(Continued from Page One)***Building Rockets**

chamber, enable the robot to learn the contour of the chamber and then track the seams between the tubes so that material can be dispensed. The system is "smart" enough to do its work without each rocket chamber having to be placed in a precisely known position.

"Because of the use of sensor feedback," explains Dan Schmitt (1611), who is designing the sensor control system software, "variations in the position of the chamber with respect to the robot will be accommodated with little or no manual teaching of the robot."

The result, according to Maslakowski, is that the automatic positioning and precision dispensing system will save both labor hours and material costs. And that, as the CRADA was intended to do, should help Rocketdyne improve its manufacturing efficiency and maintain its global market share.

●AEtheridge(7161)/CS

**Congratulations**

To Barbara (7042) and Steve Botsford, a son, Peter Todd, June 25.

To Maryann (6623) and Ron (2346) Hospelhorn, a daughter, Blythe Grace, July 2.



The President's Quality Award will be an acrylic diamond-shaped trophy topped with a Sandia thunderbird medallion.



**Year-long Restructuring Study Concludes**

# All Non-Secretarial MAs Become ASAs on Aug. 16

A cumbersome and confusing job structure system for Management Associates (MAs) will be part of history starting Aug. 16, when all non-secretarial MAs become Administrative Staff Associates (ASAs).

The new ASA system was designed by a project team led by Compensation and Job Evaluation Dept. 7550. (See "Who's Who: MA Restructuring Project.") As part of the project, MAs were asked to fill out a questionnaire describing their work at Sandia. Responses were turned over to the Hay Management Group, a private consulting firm specializing in job evaluations.

Hay used the responses, along with existing MA job descriptions, to write a new set of job descriptions based on a revamped MA classification structure developed by Dept. 7550. An advisory committee of 13 Labs managers provided input.

### Generic Set of Job Descriptions

As part of the new system, all non-secretarial employees classified as MAs will become part of the new ASA system on Aug. 16. In addition, the old five-level system of designating MA job levels using Roman numerals (MA I through MA V) will give way to a new tri-level system using letters to denote job levels. Beginning Aug. 16:

- All MA IVs and Vs become Level C ASAs,
- All MA IIIs become Level B ASAs, and
- All MA Is and IIs become Level A ASAs.

Level A denotes jobs that are primarily clerical, while Level C denotes jobs that are paraprofessional in nature. Level B describes jobs that involve a mix of clerical and paraprofessional work.

The plan reduces administrative burdens associated with the five-level MA classification system and provides ASAs with a clearer path for career advancement, says Mark James (7550), MA Restructuring Project leader.

Also as part of the restructuring, the 350 current MA job descriptions — many of which are outdated or written specifically to match the work of individuals and organizations at Sandia — will

### Who's Who: MA Restructuring Project

Members of the MA restructuring team include: Mark James (project leader), Kim Atchison, Armando Castorena, Shirley Emin, Jo Titman Ryan, Ashley McConnell, and Tim Madden (all 7550). Members of the MLS (Member of Labs Staff)/MA advisory committee that provided input include: Shirley Wallace (183), Chuck Wiuff (1201), Ruben Muniz (2000), Lori Parrott (4526), Linda Wilson (5700), Sarah Sharpton (6352), Jerry Esch (7101), Joe Kerr (7214), George Connor (7327), Marv Torneby (7531), Randy Christman (8523), Bob Tucker (8535), and Adele Caldwell (9000). Special advisors include Ed Cassidy, Kim Brown, Margaret Harvey, Deborah Hovland, Ami Peterson, and Pat Standing (all 7550).

be replaced by 47 new, more generic ASA job descriptions that each cover a wider range of job types and duties. Additional job descriptions will be added only in unusual circumstances.

The generic job descriptions should make it easier for ASAs to take on a wider range of job duties, says Mark. Managers should also find it simpler to rotate employees doing similar work within a department, he says.

The 47 new job descriptions will be grouped into nine job families: Administrative Support, Communications, Compliance & Review, Facilities Support, Human Resources, Management Information Systems, Material & Property, Procurement, and Project/Financial. Advancement paths within each ASA job family will be clearly designated.

"Just like any change, people may be uncomfortable with it for a while," Mark says. "But I think the revamped structure will make MAs' career paths more clear."

As part of the new classification system, the Dept. 7550 job evaluation team plans to survey

employees in each job description at least once every three years. If changes in an employee's job warrants, that employee automatically will be upgraded or moved into a more appropriate job description. The three-year cycle will also help keep job descriptions current, says Mark.

"Moving to this new system featuring job families, three job levels, and generic job descriptions makes good business sense," says Ralph Bonner, Director of Human Resources Center 7500. "The project team has provided us with a more consistent and flexible approach that I believe better serves the Labs.

"Advantages, as I see them, include better defined career paths, a clearer differentiation between levels of work, and less unproductive movement of employees," he adds.

### No Salary Decreases

Approximately 400 Sandia/New Mexico employees and 130 Sandia/California employees will be affected in the MA changeover. Secretaries classified as MAs will not be affected; they are the subject of another restructuring project — the Secretarial Audit Project led by Kim Atchison (7550).

For the most part, says Mark, the restructuring plans will have no effect on MAs' existing salaries, eligibility for bidding on MLS (Member of Laboratories Staff) jobs, or participation in Sandia pension and savings plans.

However, a few MAs may see very slight increases in their August paychecks if they fall below the adjusted salary ranges for their new ASA job levels. No employee's salary will decrease as a result of the changeover, assures Mark.

Information packets were sent out last week to all MAs affected by the restructuring, as well as to their managers. The packets contain details about the changeover as well as personalized explanations of each addressee's job classification. If you are a non-secretarial MA and did not receive a packet, or for more information about the MA Restructuring Project, contact Mark James on 845-9243. ●

*(Continued from Page One)*

## Heart Batteries

recently brought part of that work to Sandia. The resulting Work for Others (WFO) project was a good match, though an unexpected one.

Good, says Jim, because Sandia's battery testing experience and technology were just what Wilson Greatbatch needed. Unexpected, he says, because Sandia's main relationship with Wilson Greatbatch in the past was that of a buyer. Sandia's "battery group" (Departments 2522, 2523, and 2525) frequently buys high-reliability battery cells from Wilson Greatbatch for various projects.

### Surprising Switch

"Sandia has known about Wilson Greatbatch for a long time," says Chris Crafts of Exploratory Batteries Dept. 2523. "Most of the time, they've been selling something to us. This is one of the first instances where we're 'selling' something to them."

Sandia's "product" is a combination of battery life-cycle testing, heat generation rate measurements, and thermal modeling of battery packs' effects on human tissue. Wilson Greatbatch hopes to use this information to determine what type of battery would best suit designs for a Left Ventricular Assist Device (LVAD) and Total Artificial Heart (TAH).

Heart devices require a high-capacity battery pack (to be located in a patient's abdomen) capable of providing 30 to 60 minutes of power during periods when the normal electrical supply, carried

around in an external pack, is interrupted. This would provide patients with about an hour of freedom to bathe, shower, or simply relax without carrying around an external power supply. To meet design specifications, the batteries must be able to discharge 10 volts for up to an hour, rest, and repeat this cycle for up to two years — the average amount of time heart patients must wait before donors can be found.

Jim says this is not an easy task for even the best of batteries. In fact, none of the three types of battery technologies tested by Sandia — nickel cadmium, nickel metal hydride, and lithium titanium disulfide — met all of the requirements for heart devices. Despite this, power was only one of the issues at hand. Wilson Greatbatch also needed thermal models of each battery pack to assess the impact of the batteries on human tissue.

### Batteries Face New Challenges

"If it's going into someone's body, it is crucial to know exactly what that object will do and how it will affect surrounding tissue," says Bruce Bainbridge of Thermal and Fluid Engineering Dept. 1513, who worked with Chris and Mark Nissan (2753) to calculate the external temperature of the battery packs and surrounding tissue. This was accomplished by combining calorimetry and measurements of battery temperatures during charge and discharge with a model of the battery pack in surrounding tissue.

According to Bruce, the heat given off by the battery packs tested poses a potential threat to surrounding tissue. Typically, devices like pacemakers only emit microwatts of heat energy, says Bruce.

"We are looking at a one to ten million increase in heat emission with these new devices," says Bruce. "This puts everything in a whole new light."

Although the project was one of Sandia's debuts in thermal modeling of biomedical systems, additional work is already on the way in the form of a cooperative research and development agreement (CRADA) to develop an automated system to remove tissue of burn victims with lasers.

While Wilson Greatbatch and other power source manufacturers face many challenges in the quest to produce a reliable power supply for heart devices, Jim says his group was glad to play a part in helping future heart patients during their long wait for donors. ●DT

## Retiree Deaths

Gene C. Newlin (77) .....	June 2
Myrtle B. Reynolds (75).....	June 3
William E. Reed (80).....	June 4
Alfred G. Bouton (65) .....	June 5
James S. Deakin (79).....	June 17
Donald D. Robie (68) .....	June 19
M. French Stewart (77).....	June 24

## Card of Thanks

We wish to extend our sincere thanks and appreciation for each and everyone's kindness and for the special and thoughtful things done for Pat.

*The Family of Pat Conlon (dec.)*



## Fifteen Experts Grill Labs Scientists

# Major Review Finds Inertial Confinement Fusion on Successful Path at Sandia

A federal advisory committee reports that progress in experiments on Sandia's PBFA II accelerator has produced major progress in the relevance of the Sandia program to inertial confinement fusion (ICF).

PBFA II (Particle Beam Fusion Accelerator II) concentrates and releases intense bursts of electrical energy. It converts the electrical energy to beams of lithium ions that compress and heat fusion targets in the machine's central chamber to pressures and temperatures that will eventually approach those necessary to make the atoms fuse and release energy. Such thermonuclear fusion is the same process that powers the sun.

DOE's ICF Advisory Committee (ICFAC) found that sound progress in Sandia's light-ion program on PBFA II is establishing the basis for ion-driven ICF.

"We are pleased with the progress Sandia has made in the light-ion program," ICFAC chairman Venky Narayanamurti of the University of California at Santa Barbara wrote in a letter report on the committee's review. (Narayanamurti was formerly VP-1000 at Sandia.) The report was directed to Everett Beckner, DOE's acting assistant secretary for defense programs and also a former Labs VP.

"Overall progress since 1990 has been very good," the report says. "The quality of science in the . . . program has improved significantly. . . . Target design and beam-target experimentation have produced a 'sea-change' in the relevance of the Sandia program to ICF, how it is perceived outside of SNL, and how the Sandia researchers view the importance of their own work. . . . We consider light ions as a potential cost-effective route to a

Laboratory Microfusion Facility (LMF) and as a possible backup for ignition." (See "Someday, a Laboratory Microfusion Facility.")

The committee asked Sandia to begin preparing a set of milestones for a three-to-four-year research program to further improve ion-beam divergence and power and, as a second priority, to develop pulsed power technology for a future LMF facility.

### Life or Death

"That's a real vote of confidence," says Don Cook (Acting Director, 1200), light-ion program manager. "Their [the committee members'] findings are encouraging. They see Sandia's pertinence to ICF as being clear now — their 'sea-change' finding. They see that ion beams really can be focused and can heat targets. And they see light-ion beams as a potential low-cost approach to the LMF.

"This was a life or death review," Don continues. "We are very pleased with the outcome."

ICFAC, composed of 15 fusion experts at universities and other facilities, was established by DOE last year to provide advice to DOE and to Congress about the nation's ICF program. Its major technical review of the Sandia ICF program at this time was recommended by a National Academy of Sciences committee in September 1990.

Sandia is DOE's lead laboratory for light-ion fusion. The Sandia program employs about 150 scientists, engineers, and technicians. Cornell University, the Naval Research Laboratory, and the University of Wisconsin are collaborators.

•KFrazier(7161)

## VP Paul Fleury Returns to AT&T

Paul Fleury, VP of Research and Exploratory Technology Div. 1000, announced recently that he will take a management position at AT&T Bell Laboratories when the AT&T management and operating (M&O) contract expires Oct. 1. Paul came to Sandia from AT&T in January 1992.

Labs President Al Narath says, "Even in such a short time, Paul has made his mark on Sandia through his advocacy of the core competency system, his leadership in Sandia's establishing cooperative research and development agreements, and his campaign to devise an appropriate intellectual property strategy for Sandia."

During his time at Sandia, Paul also helped administer a core competency inreach project that sought out the present and future research and technology needs of some 45 Sandia centers.

Paul says being at Sandia has broadened his perspective on research, development, and application (RD&A). "Sandia has taught me that successful RD&A requires a multidisciplinary, multidimensional approach," he says.

### Proud of Sandians' Adaptability

While Sandia is clearly the best of the national labs, according to Paul, he says a few areas need improvement. "We need to get better at building a coherent interface with industry, which is the fastest growing segment of our customer base," he says. "They will have a lot to say about the value of the Labs to the nation in the future."

He also says Sandia must get its internal processes straightened out. "There's too much confusion about responsibilities for all kinds of things — operations, project management, etc. Our people spend too much time getting at cross purposes to each other. Even though we have made progress toward a unified vision, turf struggles are still with us, unfortunately."

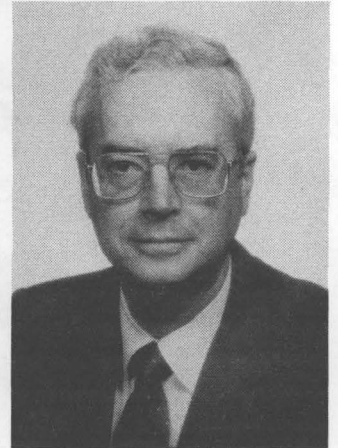
At the same time, says Paul, Sandians should be proud that they've come so far in such a short time. "I think Sandia has a very bright future. No other organization has the combination of talent and technical depth and breadth.

"A properly modified mission remains the major challenge," he adds. "The traditional nuclear weapons mission was a single, well-defined, well-supported mission. Society now demands that it be modified. We should not look back and long for the good old days, because I don't think they're going to return."

Paul says if he could offer a word of advice to the new M&O contractor, it would be to fully understand the scope and quality of Sandia's capabilities, and, in particular, Sandia's unique ability to integrate RD&A in a way that combines the appropriate disciplines to any problem. He also says the new contractor must make sure that the Labs' core competencies are properly nurtured so that Sandia has a long-term future.

"I leave Sandia with decidedly mixed feelings," says Paul. "While I'm looking forward to an exciting time at Bell Labs, I feel privileged to have worked with so many wonderful people at a time when things are changing so fast that you are stimulated in every direction at every second. I'm going to miss Sandia and Sandians a lot."

"We sincerely appreciate Paul's contribution to Sandia and wish him every success in his new position at AT&T," says Al. •JG



PAUL FLEURY

## Someday, a Laboratory Microfusion Facility

The Laboratory Microfusion Facility (LMF) is envisioned by DOE as a large 21st-century machine that would demonstrate high fusion yield for defense and energy applications. It would follow the National Ignition Facility (NIF) now being actively considered. Sandia is among the DOE labs participating in design of the NIF.

The NIF is expected to be driven by a glass laser. If successful, it would lead to achievement of fusion ignition and demonstrate "gain" — an excess of output energy from fusion reactions over the input energy required to create them.

The LMF would be the next machine in

the national inertial confinement fusion (ICF) program. It would go well beyond ignition to high gain and high energy yield. This is an important goal for producing and studying effects of nuclear weapons — a core mission of Sandia — in above-ground laboratory tests.

Sandia has been directing its light-ion ICF program toward the LMF and has prepared pre-conceptual designs for it. These designs are based on a stacked circular array of twenty-four pulsed-power accelerators like Hermes III, a large Sandia accelerator that generates intense bursts of gamma radiation for weapon-effects physics studies.

tomers, he says.

Pete says successfully meeting the target date required a high degree of staff effort and teamwork from everyone involved. "No one could have anticipated all the technical and operations elements that were ultimately affected," he says. "The staff deserves real recognition for overcoming all the problems and still meeting scheduling, budget, and performance requirements." •

### Congratulations

To Karen and Richard (2345) Knudson, a daughter, Aubrey Leigh, May 10.

To Susan and Paul (7042) Romero, a daughter, Caroline Nicole, May 28.

To Kylene (7042) and Perry (1611) Molley, twin sons, Adam David and Brian Christopher, June 12.

To Trish and Pat (1277) Lake, A daughter, Tacarra Cavatina, June 17.

(Continued from Page Three)

## Computer Move

communications, the consolidation required that computing differences between the two sites be melded together into a system that pleased everybody, says Pete.

"We want the California and New Mexico users to feel they are on an equal footing, and we want to come up with the best of both worlds," he says.

### Everyone Deserves Credit

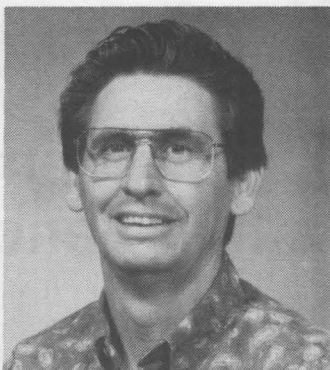
In spite of many unexpected challenges, the project met its scheduled operational date of May 1993 and did not exceed its budget, says Pete. The project also met the network throughput performance requirement of several sessions at 12 megabits per second with a delay of less than 100 milliseconds. The main concern now is to ensure a high degree of network reliability and fine tune the Cray operating system to meet the needs of cus-



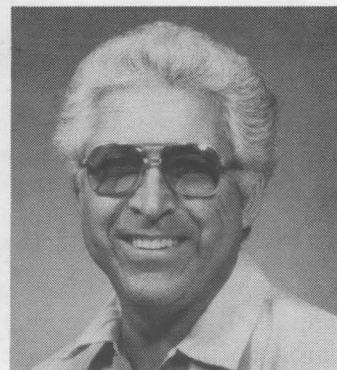
# MILEPOSTS

## LAB NEWS

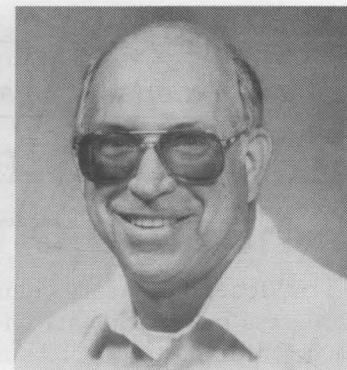
August 1993



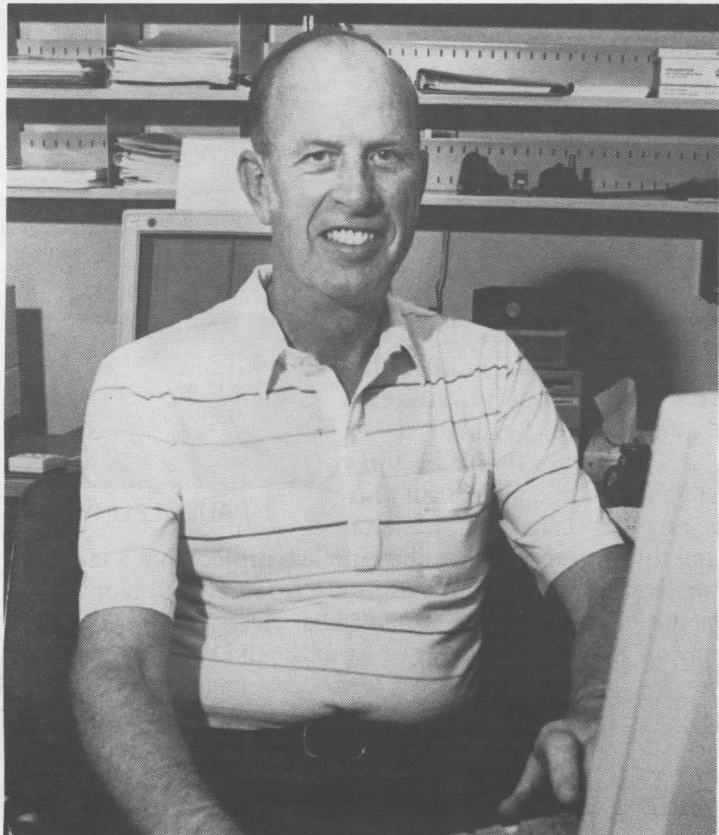
Melquiades Salazar  
4344 25



Noe Lovato  
7614 15



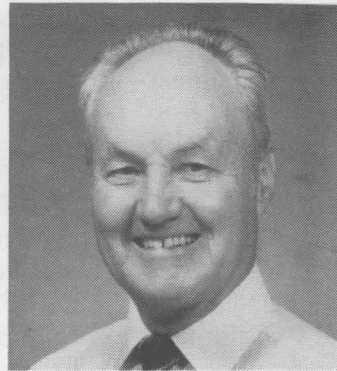
Dale Hill  
5165 35



Carlton Sisson  
1513 35



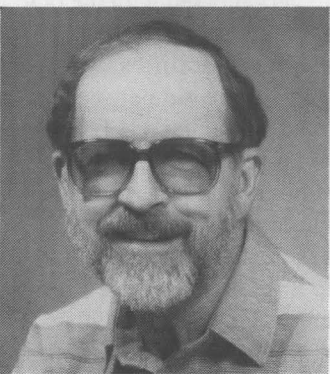
James Mace  
7214 15



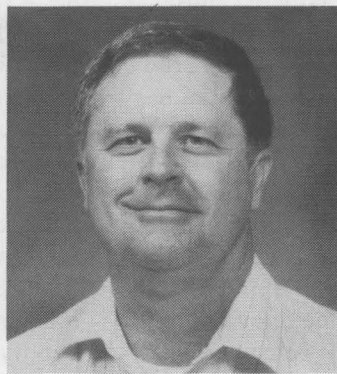
Gordon Hansen  
9322 35



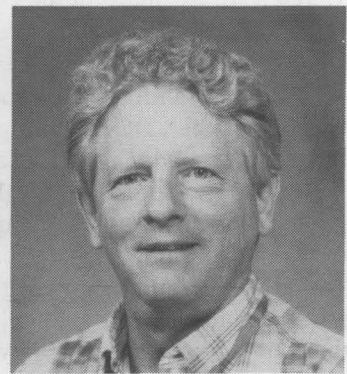
Eunice Becker  
7141 15



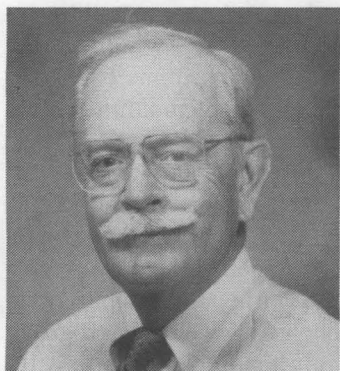
Jim Kaiser  
7442 25



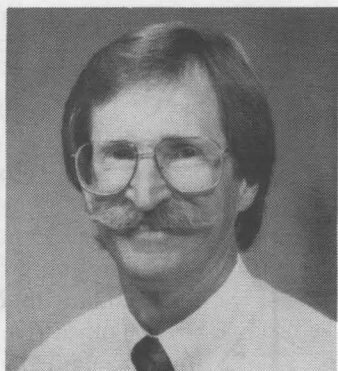
George Staller  
6111 30



James Kish  
9813 15



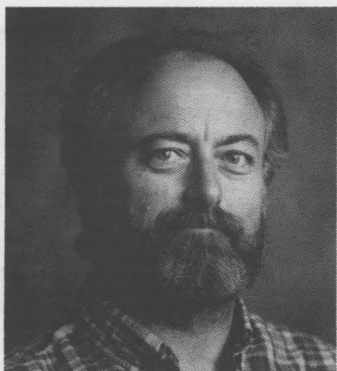
Sig Thunborg  
1661 40



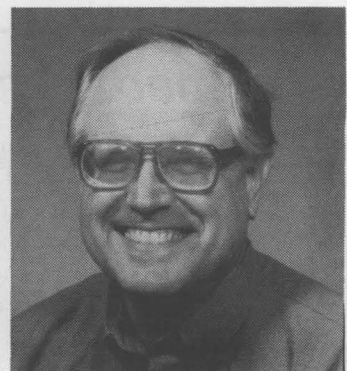
Larry Dalton  
2615 15



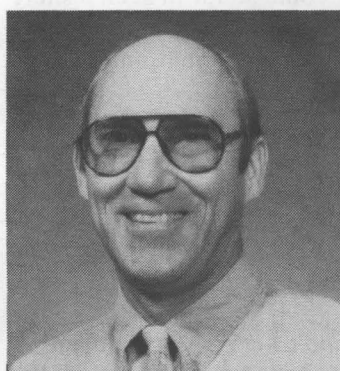
Jose Castillo  
7614 25



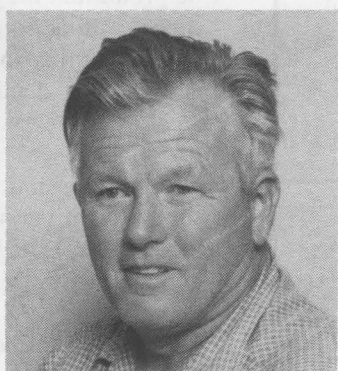
Rob Smith  
2713 25



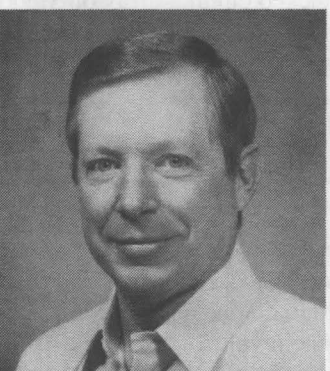
Robert Baron  
2276 30



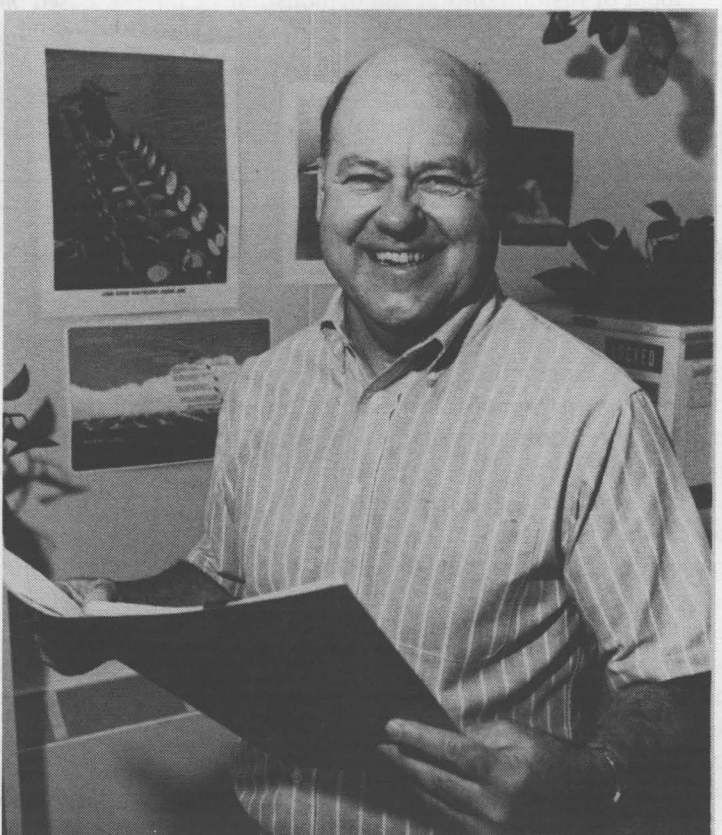
Kent Christensen  
151 15



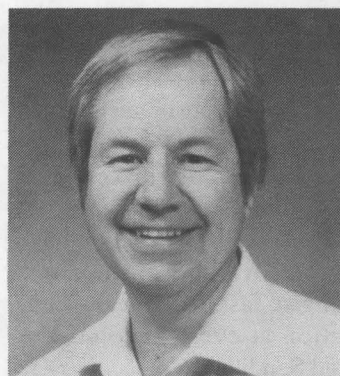
Gary Miller  
9324 30



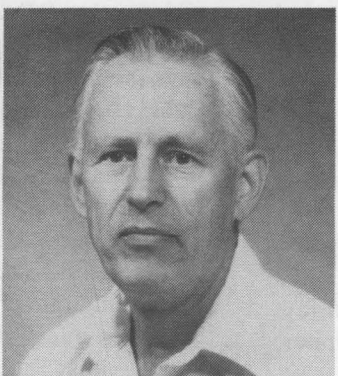
Hovey Corbin  
2723 25



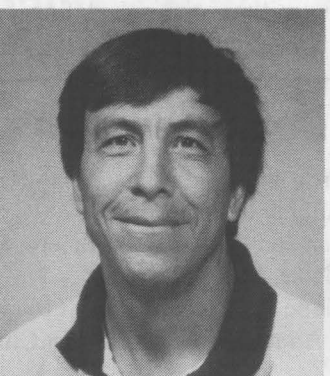
John Middleton  
363 35



Ron Glaser  
5714 25



John James  
2574 35



Herman Vallejos  
7813 15



UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

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

**Ad Rules**

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

**MISCELLANEOUS**

PIANO, Sohmer studio model, w/bench, medium finish, excellent condition. Lange, 292-5648.

COLOR TV, 19-in., cable ready, remote control, \$75 OBO. Koehler, 298-2488.

TRAILER, two-wheel, w/dump pickup bed, \$275; Jeri sickle mower, walk behind for tall weeds. Patterson, 299-1062.

CUSTOM GOLF CLUBS; assorted golf balls, all colors and brands, like new, 5 for \$1. Dwyer, 271-1328.

COMPACT DISC PLAYER, w/remote control, single-disc, \$80. Miles, 296-2169.

MICROWAVE OVEN, Panasonic, turn table, high power, programmable, excellent condition, \$99 OBO. Amir, 271-0724.

BABY BASSINET, \$40; Weber-style grill, \$25; antique golden oak vanity, \$150. Kallio, 237-1344.

MUZZLELOADER, Thompson Center 50-cal. Renegade, w/carrying case & accessories, excellent condition, \$250; LeBra nose cover for '79 Corvette, used for 2 weeks, \$50. Walker, 275-2861.

GIUITAR, Farley, 3/4 size, like new, \$65. Molecke, 296-5850.

COLLIE PUPPIES, AKC-registered, one sable/white female, one tri-colored female, one tri-colored male, excellent markings, \$250 OBO. Benavidez, 294-2721.

MATTRESS & BOX SPRINGS, king-size, Sears' best, good condition, \$99. Tennyson, 292-5844.

BEDROOM SET, solid oak, queen-size, 6 pieces, paid \$3,500, will take \$1,500. Davie, 281-9136.

FREEZER & REFRIGERATOR, Kitchen Aid, 15 cu. ft. each, frostless, ice maker, \$800; daybed & mattress, \$200; Olympia electric typewriter w/stand, office-size, \$50. Cheng, 275-7008.

OAK POOL TABLE, 1-in. slate, tiger claw feet, including accessories, \$1,300. Laguna, 298-1732.

REFRIGERATORS: GE, 17.2 cu. ft., almond, excellent condition, \$350; Frigidaire Queen, 8 cu. ft., new components, \$225. Babcock, 299-3121 leave message.

SEWING MACHINE, Singer, portable, w/carrying case, \$30. Dunlap, 884-0232.

CAR SHOP MANUAL for '75-'76 Ford, 5-volume, \$18; owner's workshop manual for '74-'78 Ford Mustang II, \$10. Wyant, 298-0371.

PLAYER PIANO, 80 yrs. old, good for practice, keys and cabinet in good condition, \$550; Admiral upright freezer, 15.8 cu. ft, frost-free, \$80. Wolf, 298-6430.

CRIB, w/mattress, great condition, \$75; Singer sewing machine w/cabinet, \$50; jointer, 3-blade, w/stand & motor, \$60. Thornberg, 897-3785.

BED, metal bunk bed frame, blue, twin-size and full combo, \$60. Chacon, 891-0842 after 6 p.m.

DOGS: Pekingese puppies, three, purebred, 8 weeks old; Pekingese, male, purebred, 3 yrs. old. Fulmer, 265-9192.

GUNS: M1 Garand, \$600; M1 Carbine, Inland, collector grade., \$450; Ruger M77, .257 Roberts, w/ good Bushnell scope, \$400. Buttz, 822-1448.

STREET LAMP FIXTURES, for 3-in. diameter poles, cast aluminum, w/tinted plastic face plates, 250-volts, 18" x 6" x 6", \$25/ea. Wagner, 823-9323.

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

ONE FULL WEEK, Imperial Hawaii Resort, Honolulu, one block from Waikiki Beach, completely furnished, sleeps four adults, Sept. 8-15, \$420. Stang, 256-7793.

BABY BACKPACK, Gerry Deluxe, w/hip strap, infant insert, and attached pouch, excellent condition, \$30. Meeks, 828-9825.

CORDLESS PHONE, AT&T Nomad 4000, \$55. Kawka, 299-1216.

LAWNMOWER, Black & Decker, w/grass catcher, like new, \$100; bedroom set, mahogany, excellent condition, \$600. Sobel, 275-8487.

TWIN BED, maple, w/Sealy spring and mattress, \$110; queen-size waterbed, \$75; large doghouse, \$50; wingback upholstered chair, \$60. Purcell, 293-5410.

WETSUIT, woman's large, Henderson blue/silver, dive boots, size 6-1/2, like new, \$55; Marcy sit-up board, \$50. Pregent, 281-1414.

NINTENDO, w/two controllers, Zapper, NES Advantage controller, 11 games, \$100. Carroll, 292-5436.

SLEEPER SOFA, queen-size, free; Simmons waterbed, queen-size, waveless, w/top heating element, \$75. Martel, 293-1892.

TABLES, 20 x 60, \$15; book shelves, \$15-\$40; oak table, \$200; bedroom furniture, \$500; computer hutch, \$50; dresser, \$50; twin-size mattress, extra firm, \$100. Vickers, 298-0418.

PERSONAL COMPUTER, Tandy 4016SX, Intel 386, 16-bit, 52MB HD, 3-1/2-in. floppy, 8MB RAM, great intermediate machine, \$800. Nester, 254-0504.

FIREWOOD, newly felled poplar trees, you cut and haul, \$75. White, 275-3880.

AQUARIUM, 3-gal., w/filter system, light, two catfish, one plate, free. Widdows, 298-7153.

RANCH-STYLE SOFA, wood frame, w/two matching chairs; two wooden bar stools; LWB camper shell; two-burner camp stove; Coleman lantern. Austin, 296-5195.

ELECTRIC DRYER, Kenmore, almond, works well, \$60; queen-size waterbed, complete, \$175 OBO. German, 262-1157.

SKI MACHINE/ROWER, \$60; aquarium, 20-gal, complete set-up, \$70; Edelbrock 289 intake manifold, \$60. Schell, 262-1827.

CAMPER SHELL, '84 Gustin, custom made, insulated, long wide bed, lights, \$500 OBO. Jones, 883-1284.

GOLF CLUBS, Haig Ultra, 1,2,3,4 real woods, regular shafts, good condition, \$150 OBO. Zownir, 256-3753.

ELECTRIC MOTOR, 1/3-hp, \$30; horse collar, \$25; trailer hitch for Citation/Phoenix car, \$20; scissors car jacks, \$10/ea. Peterson, 256-7514.

PARAKEETS, Indian Ringneck, breeder pair, \$250; breeder pair cockatiels, \$50; single cockatiels, \$35; standard parakeets, \$5. Gasser, 255-6244.

INK-JET PRINTER, HP Desk Jet 5000, brand new condition, \$300 or make offer. Castillo, 897-4560.

DOG, Shih Tsu/Lhasa Apso-cross, 6 years old, wonderful companion, free to good home. Rexroth, 293-6025.

EVAPORATIVE COOLER, Arvin portable, \$50; Weider band-type exercise machine w/stepper, \$150; Mastercut electric lawnmower, 20-in., \$100. Patrick, 265-4569.

ELECTRICAL ADJUSTABLE BED, queen-size, w/remote control, excellent condition, \$700. Epperson, 298-7229.

MOTORIZED HANG GLIDER, Ultra-light, Eipper-formance Quicksilver M, 13-hp, weight-shift design. Falacy, 293-2517.

ROLAND D-20 SYNTHESIZER, \$600; Futaba 10-channel digital R/C, \$400; standard weights & bench, \$130; Epson daisywheel printer, \$60. Shead, 880-1052.

FIREWOOD, pinon and cedar, make offer. Swahlan, 292-3598.

CRIB TENT, from Steven's, like new, paid \$89, asking \$15. Filter, 823-1232.

SEWING MACHINE, Singer treadle, wood-covered top, works, \$100. Coburn, 268-6844.

STONEWARE, service for 4, \$25; flatware, \$15; B&W TV, 13-in., \$25; woman's boots, size 6, \$75. Quintana, 822-9566.

PRO TOTALGYM, by West Bend, excellent condition, \$650. Baugher, 298-7229.

FIREPLACE GRATE, 24"L x 17"D x 8"H, good condition, \$10. Radloff, 268-2729.

FLEA MARKET, Sunday, Aug. 15, 8 a.m.-5 p.m., SE corner of Indian School and Moon NE, Manzano HS Class of '65. Widman, 293-7279.

LINEAR AMPLIFIER, Heathkit SB200, 80 through 10 meters, 1,200 watts PEP. Erni, 865-8226 after 5:30 p.m.

**Feeling Rejected? Please Follow the Rules**

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

PHOENIX JUICE EXTRACTOR, drink your fruits and vegetables, excellent condition, \$80 OBO. Liguori, 256-3613.

POP-UP CAMPER, Starcraft Starline, 19-ft., sleeps five comfortably, extras include electric water pump, spare tire, gas heater, attached awning, \$2,700. Hansen, 883-7137.

RABBITS, handled often by children, great pets, \$20. Parr, 837-1719.

ROTTWEILER PUPPIES, AKC-registered, bred for superior size, conformation, and temperament, sold w/contracts, fully guaranteed, two females, \$350 and \$450. McClarie, 899-2656.

LA-Z-BOY RECLINER, blue, hardly used, \$150 firm; pillow-back sofa, blue, \$100 OBO. Edwards, 899-8634.

BUILDING MATERIALS, free; five Pella double-pane windows; two skylights; American Standard toilet. Phipps, 299-3151.

WALL-O-WATERS, water walls for placing around garden plants to protect from cold, \$9 new, \$3.50/ea. Buchholtz, 828-9875.

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

WIDE CARRIAGE PRINTER, Epson FX-185, recently rebuilt printhead, w/three cases of paper, excellent condition, \$140 OBO; CGA/Hercules graphics card, \$60. Bennett, 298-1142.

NORDICTRACK EXCEL cross-country machine w/computer. Tyner, 294-5289.

MOTOR, for swamp cooler, 2-spd., 1/3-hp, \$15. Moss, 298-2643.

COMPUTER, 640KB, Packard Bell 80386, IBM compatible, VGA color monitor, w/HP LaserJet JIP printer, rarely used, \$2,000 OBO. Roybal, 865-1090.

CORDLESS TELEPHONE, AT&T Model 5400, 10-channel selection, redial feature, includes extra flexible antenna, \$70 OBO. Lucero, 298-1524 after 5:30 p.m.

DRAPES, Spring Crest, light green, w/hardware, two pair, 8' x 12', and 8' x 11', excellent condition, \$50/ea. Trump, 299-5162.

BOX SPRING, Simmons, twin-size, like new, \$35; twin bed frame, \$10; swing set, \$20; six station sprinkler timer, \$10. Shrouf, 821-0765.

SOFA SLEEPER, queen-size; desk; cedar chest; Magnavox drumtable stereo radio & phonograph; queen-size comforter; woman's clothes, size 8-10; other misc. Sena, 299-1026.

**TRANSPORTATION**

'91 PLYMOUTH COLT, 2-dr. hatchback, low mileage, new tires, AM/FM cassette, excellent condition, \$4,950. Ortiz, 292-5589, leave message.

'81 GLASTRONE, 19-ft., 175 Johnson outboard, metallflake emerald green, tandem axle trailer, excellent condition, \$7,000. Shaw, 292-8771.

TRIATHLON BIKE, Canopus frame, Columbus tubing, Shimano 600, Scott bars w/grip shift, time pedals, excellent condition, \$600. Dwyer, 271-1328.

BOAT, all-purpose, 17-ft., w/175 Johnson outboard, dual 18-gal. gas tanks, removable trolling seat, extras, \$3,950. Broyles, 821-6177.

'80 BUICK SKYLARK LIMITED, standard, 4-cyl, FWD, PS, PB, 124K miles, good condition, \$1,200. Puccini, 255-0568.

WOMAN'S BICYCLE, Nishiki, 26-in., 10-spd., like new, \$60. Dunlap, 884-0232.

'85 LINCOLN TOWNCAR, excellent condition, \$4,750. Hardin, 828-1502.

'89 KAWASAKI 454LTD, street bike, less than 8K miles, always garaged, good gas mileage, excellent condition. Duran, 836-3730.

'92 TOYOTA PASEO, white, AC, tint, cruise, 5-spd., PS, cassette, extended Toyota warranty, \$9,500 OBO. Ghormley, 831-1991.

BMX BICYCLE, Schwinn Thrasher, boy's 20-in., black, good condition, \$40. Molecke, 296-5850.

BOATS: fiberglass, 16-ft., motor, trailer needs work, \$600; plywood, 14-ft., w/fiberglass bottom, needs lots of work, \$50. Barnett, 281-9056.

'90 TOYOTA X-CAB SR-5, V6, 14K miles, AC, PS, cruise, tape, rear anti-lock, camper, \$9,325 OBO. Bernard, 881-0640.

'83 BMW 733i, black w/ivory leather interior, 3.2L, 6-cyl., fast and smooth driving, top quality cruiser, \$7,400 OBO. Gwinn, 281-9897.

'85 HONDA CIVIC, 4-dr., 5-spd., AC, AM/FM, 76K miles, extremely reliable, one owner, excellent condition, \$3,000 firm. Henson, 291-0180.

'66 FORD MUSTANG, rebuilt 289 V8, AT, new red paint, interior, tires, excellent condition, \$5,000; '63 Galaxy, 4-dr., \$4,000. Stang, 256-7793.

'72 DATSUN 240-Z, runs well, needs TLC, \$1,400 OBO. Zownir, 256-3753.

'86 SUBARU GL WAGON, AC, tilt, PW, PL, stereo cassette, AT, 63K miles, \$5,300. Ask for Scott. Serrano, 255-0364 after 7 p.m.

'77 DODGE RAMCHARGER, 360 2-barrel, removable hard-top, new battery and hoses, \$1,800. Peterson, 271-2276.

'46 TAYLORCRAFT, 1/4 share, tied down in Edgewood, 65-hp, no electric system, free transition instruction, \$2,850. Lorenz, 281-9321.

'82 ITASCA, 21-ft., fully equipped, 33K miles, new power levelers, TV, antenna, Michels, excellent condition, \$15,750 OBO. Cianciabella, 268-7150.

'88 FORD F150 PICKUP, EFI V8, 5-spd., long bed, 72K miles, auxiliary tank, camper package, cloth bench, 6-ply Michels, \$5,975. Smith, 265-4080.

'88 PLYMOUTH VOYAGER, V6, 3-liter engine, AC, AT, PS, cruise, AM/FM stereo cassette, 64K miles, excellent condition, \$7,200. Armentrout, 294-4140.

BICYCLE, Ross touring, 21-in. frame, Shimano derailleurs and brakes, pump, handlebar bag, \$200. Lorence, 275-3586.

'90 EURO F3 SKI BOAT, Malibu Sunsetter, 75 hrs., 260-hp, new cover, excellent condition, \$17,000 OBO. Sikora, 296-1762.

'79 DATSUN 280ZX, standard transmission, low miles, clean interior, pull-out stereo, bra, headlight covers, performance tires, \$2,500 OBO. Gallardo, 888-7504.

'88 TOYOTA CAMRY, FWD, 4-cyl, AC, AM/FM cassette, 4-dr., original owner, excellent condition. Lucy, 897-1027.

'81 HONDA PASSPORT, 70cc, 3K miles, good transportation to school or shopping, like new, \$475. Erni, 865-8226 after 5:30 p.m.

'86 FORD RANGER, w/cap, one owner, 98K miles. Kallio, 237-1344.

RALEIGH ROAD BIKE, 10-spd., w/rear carrier and mirror, excellent condition, \$120. Shurtleff, 296-7870.

'81 CHEV. LUV PICKUP, 65K miles, 4-spd., camper shell, runs well, \$1,500. Porter, 821-7813.

'89 CHEV. BLAZER, Tahoe package, V6, AT, w/overdrive, 4x4, cruise, AM/FM, AC, PW, PL, original owner, great condition, \$8,500. Richards, 265-6775.

'76 VOLVO 264GL, 4-dr., AC, AT, AM/FM, sunroof, PS, PW, new tires, good condition, \$500 OBO. Pappas, 268-7020.

'48 CHRYSLER WINDSOR, 8-passenger sedan, great condition, \$5,000 or part trade; '58 Willy's Jeep wagon w/Ford V8 kit, without engine, \$1,500. Lloyd, 889-8934.

BICYCLE, Schwinn Varsity, 10-spd., \$40. Lott, 296-8071.

'77 FORD T-BIRD, PS, PB, AC, AT, PW, cruise, 102K miles, one owner, good condition, \$1,400 OBO. Lucero, 298-1524 after 5:30 p.m.

'67 FORD MUSTANG, 6-cyl., 3-spd., AC, rebuilt engine, new tires, radiator, and brakes, must see, excellent condition, \$3,700. Davis, 294-1048.

'82 PLYMOUTH RELIANT station wagon, 90K miles, rebuilt 4-spd. standard transmission, 4-dr., \$1,100. Gomez, 291-0691.

**REAL ESTATE**

R-1 LOTS, prime, two, in Taylor Ranch, 75' x 100', must sell, \$34,000/ea. Hanes, 292-6512.

3-BDR. HOME, brick, 2,100 sq. ft., 1-3/4 baths, office, RV driveway, cul-de-sac, new carpet, paint, Juan Tabo/Constitution NE, \$128,000. Vickers, 298-0418.

3-BDR. HOME, 1-3/4 baths, 1,352 sq. ft., attached garage, workshop, new stucco cooler, roof, carpet, and paint, \$78,900. Ennis, 298-3631.

**WANTED**

LOVING HOME for Cocker Spaniel, AKC-registered, spayed, black female, shots, loves attention and playing fetch, too many dogs. Hauber, 898-0997.

HOME FOR KITTENS, three, approximately 7 weeks old, all male, adorable. Miller, 296-8724.

HOUSEMATE, to share home, 3-bdr., 2-bath, 1,850 sq. ft., near Moon and Comanche, must be non-smoker, responsible, small indoor pet OK, \$350/mo. + 1/2 utilities. Smith, 271-1959.

'80-'85 FORD or Chevy pickup, w/extra cab, short bed, must be in dependable running condition. Sanchez, 873-2058, leave message.

SOMEONE to take over lease, for a 3-bdr. house, 1-3/4 baths, w/fenced yard, in quiet Livermore neighborhood, available Aug. 22, \$1,050/mo. Weinberg, (510) 447-1636.

COMPUTER, IBM compatible, AT-XT, w/monitor, keyboard, and possibly printer. Jones, 883-1284.

SOFTWARE FOR MAC, 512K file, managers spreadsheets, word processing preferred. McMahon, 898-4135 after 5 p.m.

CAR w/front wheel drive, can pay up to \$2,200. Cropp, 296-1877.

RENTAL HOME, preferably in NE heights, for a Sandia family, for 6 months while building a house. Garcia, 298-2898.

**WORK WANTED**

UNM FRESHMAN looking for yard work in northeast heights. Can also do light hauling. Peterson, 271-2276.

**LOST & FOUND**

LOST: Small golden hoop earring, w/leaf. Crain, 844-2485.



**Coronado Club Activities****Like C&W? You'll Love the 'Boys!**

**ISLETA POORBOYS** — Shake off the trail dust and get ready for a whoopin' good time — the Poorboys are comin'! They'll ride into town before sunset tonight (Aug. 6), and by 7 p.m. they'll be lettin' go with some mighty good country and western sounds. It'll be dancers' heaven! You'll enjoy a heavenly menu, too: T-bone steaks (\$11.95), grilled halibut (\$10.95), or the Club's famous all-you-can-eat buffet (\$6.95). Sounds like a sellout — call 265-6791 now for reservations.

**BRUNCH & DANCE** — Get ready for a great Sunday event. It's brunch and tea dance time again Aug. 8, with a scrumptious selection of food served from 10 a.m. to 2 p.m. At 1 p.m., the Best Shot Band strikes up the tunes you love, and you can dance until 4 p.m. The cost is only \$6.95 for adult members, \$7.95 for guests, \$2.50 for kids 4-12, and free for the 3-and-under set. Reservations are required — call 265-6791.

**SUNDAY CONCERT** — Another great Sunday event. On Aug. 15, the Roland de Rose Orchestra will be at the Club for a concert on the patio, 3-6 p.m. The snack bar will be open. Come join the Club bunch for a relaxing afternoon and some fine big-band-style sounds.

**KIDS' BINGO NEXT FRIDAY** — The young ones will be yelling "Bingo!" next Friday evening, Aug. 13, when they get together for another fun Kids' Bingo night. Every child playing bingo gets a free hot dog and soft drink. Come early and enjoy the buffet and movies starting at 5 p.m. Bingo starts at 7 p.m.

**Take Note**

Fifty former airmen of the 1094th Air Police Squadron of Manzano Base from the 1958-1964 era are holding a 30th anniversary reunion in Albuquerque Aug. 6-8. This group has not been reunited before, and most folks have not seen each other or Manzano Base for 30 years. The reunion begins at 6 p.m. today at the Albuquerque Hilton Hotel in the California/Nevada/Texas rooms. Planned activities include a visit to former duty stations on Manzano Base, a cookout, a banquet, and more. If you are a former airman from this group and have not been contacted, please call Eric Moss on 299-5149.

\*\*\*

DOE/Albuquerque Operations office will host the 1993 DOE Oracle Special Interest Group conference. This year's theme is Client/Server, Distributed Data Bases, and Geographical Information Systems. Sandians are invited, along with DOE employees and other contractors. The conference will be at the Coronado Club, Sept. 2-3. For information, call Dianne Codina on 845-4416.

**Fun & Games**

**Kids Triathlon** — The 1993 IronKids Bread Triathlon for children aged 7-14 will be Aug. 14-15 in Albuquerque. The special individual and relay team race benefits Children's Hospital of New Mexico. Swimming will be at the Rio Grande Pool, biking along Tingley Drive, and the run in Kit Carson Park. Winners can compete in the national event in Nashville Sept. 17-18. Entry forms are available at Albuquerque sports stores. For information, call 843-2656 or 843-2111.

\*\*\*

**Fun Run** — The first Coca-Cola Run for Changing DWI will take place Aug. 14. The run is intended to help maintain public awareness about New Mexico's DWI problem. A 10K run, 5K walk/run, and a one-mile fun-run/walk/roll are planned along with race day festivities. Entry forms are available at Blake's LotaBurgers, Gardenswartz Sportz, and Manufacturers Sports Outlet. Sponsors and volunteers are needed. For more information, call 266-2394.

**Sandia News Briefs****Jones Will Work on New Mexico Health Care Reform**

Barbara Jones of Health Planning and Administration Dept. 7543 will serve on the New Mexico Health Care Reform Task Force recently created by the New Mexico state legislature. Barbara, selected to represent the state's large employers, will be one of four public task force members working to improve New Mexico's health care access and delivery system.

**Larry Teufel Receives Rock Mechanics Research Award**

Larry Teufel of Geomechanics Dept. 6117 and industry colleagues Douglas Rhett and Helen Farrell of Phillips Petroleum Company recently received the 1993 US National Committee for Rock Mechanics Case History Award. Presented at the 34th US Symposium on Rock Mechanics, the award is one of three given annually for outstanding accomplishments in rock mechanics. Larry and his colleagues received the award for their work described in the paper "Effect of Reservoir Depletion and Pore Pressure Drawdown on In Situ Stress and Deformation in the Ekofisk Field, North Sea."

**Tim Stanley Awarded Joint Service Achievement Medal**

Tim Stanley of Sandia Patents & Licensing Office 250 was recently awarded the Department of Defense's Joint Service Achievement Medal for his service in the US Naval Reserve. Tim is a Naval Reservist who has served at the US Pacific Command for the past three years in two-week intervals. The award citation commends Tim for filling a variety of important roles in support of real-world and exercise operations as a member of the Crisis Action Team.

**DOE Announces National Energy Efficiency Awards Program**

DOE recently established the 1994 National Awards Program for Energy Efficiency and Renewable Energy to recognize individuals or groups who've implemented energy efficiency or renewable resource technology measures since Jan. 1, 1989. Applications for the award are available by calling New Mexico's Secretary of Energy, Minerals, and Natural Resources on 827-5950 or the California Energy Commission on 916-654-5000. Completed applications are due by Sept. 30. For more information, contact the National Association of State Energy Officials, Frank Bishop, on 202-546-2200.

**Sandia Helping Renovate State Facilities' Solar Energy Systems**

Sandia's Solar Thermal Design Assistance Center is sponsoring a series of reports on improving the efficiency of solar energy systems at state facilities and establishing an economical approach to renovating the systems. Solar thermal systems under repair at Northern New Mexico Community College in Española are currently being used as a testbed for the project.

**TLC Program Receives Excellent Ratings**

Sandia's Total Life Concept (TLC) health promotion program received excellent ratings in three areas during a recent quality audit by Johnson & Johnson Health Management, Inc. Areas of excellence included responsiveness to customer needs, use of metrics to evaluate program results, and medical referral between Sandia's clinic and the TLC program. In addition, 86 percent of the 465 Sandians who responded to an audit survey gave the TLC program, managed by Dept. 7035, a "good" or "excellent" rating.

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



**SANDIA SINGLES** sail the southern seas (actually Elephant Butte Reservoir) during a July outing. Sailors pictured are (standing, from left) Libby Greene (2274), an unidentified non-Sandian, Jerry Savage (7908), Dick Beegle (2277), Ginny O'Neill (1342), and (kneeling) Sandy Culler (1323). If you're single and would like to go to Summerfest at Civic Plaza on a Saturday night or to a concert at the Rio Grande Zoo, join the Sandia Singles Club. Other upcoming activities include a Dukes game, the Madrid Melodrama, an outing to a local comedy club, and a moonlight hike. A singles-only dance is scheduled for Friday, Aug. 27, at the Coronado Club, 6-11 p.m. Single Sandians are invited to come and bring a single friend if you like (doesn't have to be a Sandian). More than 100 people are now on the club's roster. Call Sandy on 821-4143 for more information.