

## 'Welcome to the Martin Marietta Team,' Say Top Execs

Martin Marietta's two top executives, making separate visits to Sandia/New Mexico last week, met lots of Sandians and saw several Labs facilities. Many Sandians had the chance to become acquainted with these parent-company managers, as well as with other managers who are joining Sandia from Martin Marietta locations.

Though traveling separately, Norm Augustine, Board Chairman and Chief Executive Officer, and Tom Young, President and Chief Operating Officer, saw some of the same Sandia research sites and made many of the same points about Martin Marietta when speaking to Sandians and, in Augustine's case, to members of the news media.

In three packed-house employee meetings Aug. 13 at the Tech Transfer Center (with video links to Sandia/California), Augustine gave a whirlwind history of Martin Marietta from its

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**"The number one principle in the corporation is ethics. Ethics is more important than profit."**

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beginnings under aviation pioneer Glen Martin early this century up to the acquisition of GE Aerospace in April and the announcement a few weeks ago that the company had won the competition to be the next management and operating (M&O) contractor at Sandia.

The incoming vice presidents and directors from Martin Marietta were introduced during these sessions (biographical sketches on page eight). At each meeting, Augustine answered questions from the audience. (Videotapes of meetings are available by calling the Protocol Office on 844-3909 at Sandia/New Mexico and from the Tech Library at Sandia/California.)

After the GE Aerospace acquisition, Martin Marietta was  
*(Continued on Page Four)*



HELLO, PBFA II — Martin Marietta Chief Executive Officer Norm Augustine (center), on a visit last week to Particle Beam Fusion Accelerator II, gets a close-up look at one of the big machine's spare cathode cones. With Augustine are (from left) Doug Bloomquist (1236), Don Cook (1200), incoming Executive VP Jim Tegnella, and President Al Narath. Because of high voltages and currents, cathode cones have to be removed and refurbished every 10-12 shots, says Doug — about every four weeks. (Photo by Randy Montoya)

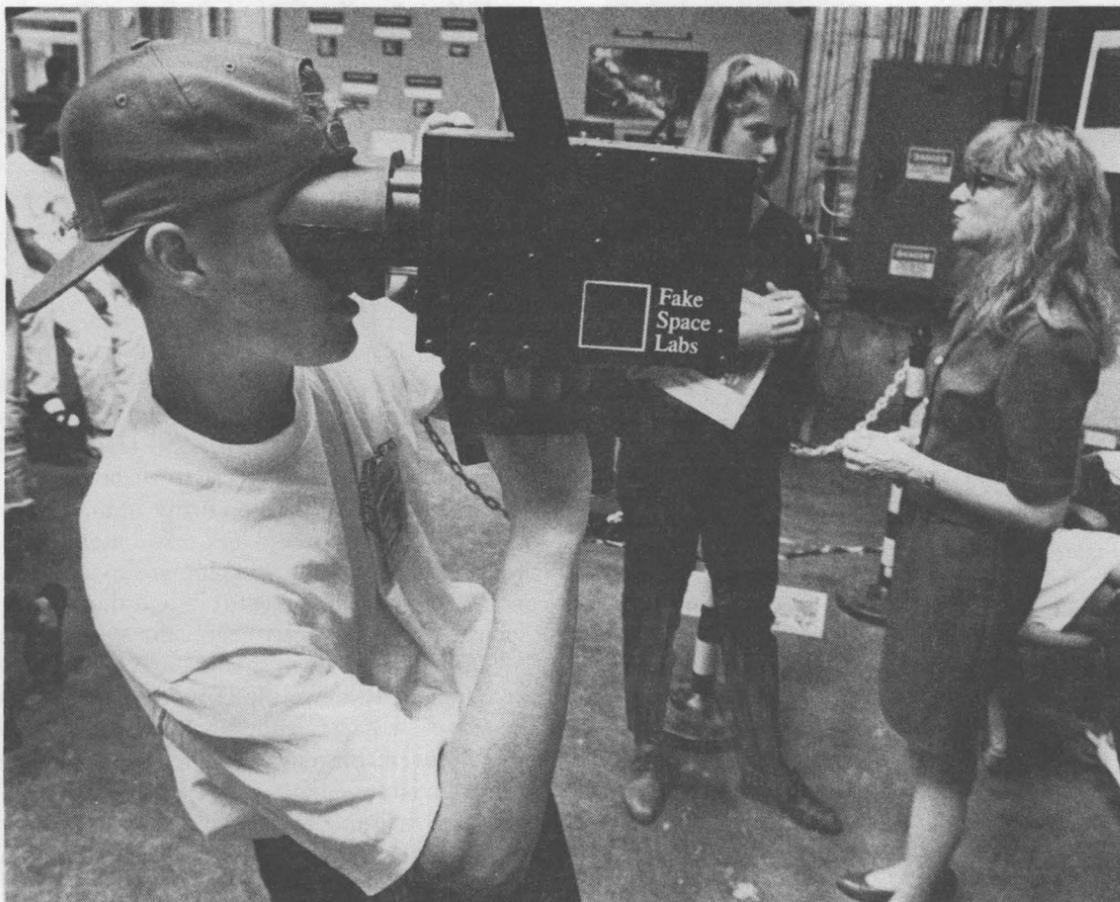


# LAB NEWS

VOL. 45, NO. 17

SANDIA NATIONAL LABORATORIES

AUGUST 20, 1993



VIRTUAL REALITY — Jim Dalton, a high school honors student from Idaho, peers into a Fake Space Labs Inc. "Boom Viewer" during a tour of Sandia's Virtual Reality Lab. The viewer allows Jim to tour an imaginary three-dimensional room. Sharon Stansfield (right) of Intelligent Systems Principles Dept. 1621 answers a student's questions about the lab as part of a two-week High School Science Student Honors Research Program held at Sandia last month. Students from 50 states and seven foreign countries participated in the program, designed to introduce students to the applications of science and technology.

### A Better Metal-trap

## Get That Copper Outta My Wafers

What do you use to keep metallic impurities from hindering the performance of a microelectronic chip? Sandia's new answer is — nothing.

It's not a trick answer. Industry already has a way to rid silicon wafers of impurities, but a Sandia team has come up with a potentially better method: Create microscopic cavities — tiny bubbles of nothingness — within the silicon. Recent research with copper shows that the metal migrates to the cavities and sticks to their walls, staying away from the region of the chip that contains electronic devices. The principle should apply to other metals as well.

The usual method, used widely in industry, is to select an unimportant region of the wafer, usually on the back side, and deliberately damage it. The resulting defects in this "sacrificial"

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**Copper sticks to the walls of the cavities, away from the region of the chip that contains electronic devices.**

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area provide a place for metal to cluster. Unfortunately, this doesn't bring impurity levels elsewhere in the silicon to as low a level as needed for the ever-smaller microelectronics that industry is now producing.

Experiments by Sam Myers, Dawn Bishop, and David Follstaedt of Semiconductor Physics Dept. 1112, however, have shown that tiny cavities beneath the surface of the silicon reduce copper

*(Continued on Page Ten)*

**Two, Four, Six, Eight,  
Who Do We Appreciate?  
— See Page Eleven**

# This & That

**Great Beginning** - I believe the Martin Marietta folks deserve a tremendous amount of credit for getting lots of information to us quickly. Following the announcement on July 26 and our special issue on July 27, Executive VP-to-be Jim Tegnalia gave us an immediate interview that we published in the Aug. 6 issue. Then the Martin Marietta transition team worked with Sandia management and our transition group to quickly produce an informative mailing for employees. Much of that Aug. 10 mailing is reprinted in this issue for retirees and other folks outside the Labs - see page six.

And we have much more in this issue, including biographical sketches of the new VPs and directors coming in from Martin Marietta, plus reports about the visits last week by their top officials - President and Chief Operating Officer Tom Young Aug. 11, and Chairman of the Board and Chief Executive Officer Norm Augustine Aug. 13.

\* \* \*

**Dracula Was a Real Stakeholder!** - My continuing battle against bureaucratic language and buzzwords is sometimes a lonely one, but I do get occasional encouragement from readers, so I'll carry on. Maybe your dictionary says something different, but my dictionary (*Websters Ninth New Collegiate*) says a stakeholder is "a person entrusted with the stakes of bettors." If anyone has a dictionary that supports the DOE and Sandia buzzword version of stakeholder - someone who has a stake in our work or future - I just may become a convert; send a copy of any such dictionary entry to Employee Communications Dept. 7162.

\* \* \*

**Virtual Reality** - has become one of the new "darlings" of the scientific world. And after giving it a little thought, I've decided that on most days I definitely prefer virtual reality to "real reality."

\* \* \*

**Ah, Fresh Air!** - Several months ago, we moved into our semi-lovely mobile offices just east of old Building 814, which is getting studied to death before it's demolished. I can see the old building from my new office window and have noticed the busy workers coming and going in their protective garb, including "gas masks" to prevent them from inhaling nasty things such as asbestos fibers that might be in the air. I couldn't help noticing the irony the other day when one worker took his mask off and immediately fired up a smoke.

\* \* \*

**Make Sure They'll Fit in My Car, Please** - I just knew you would appreciate this early notice that September is "Be Kind to Editors and Writers Month." With this much notice, you'll have time to budget for those expensive gifts!

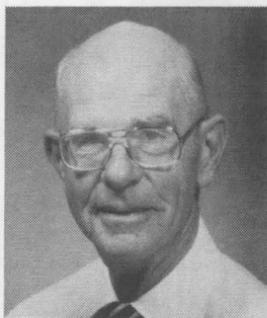
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## Sandians' Recent Patents

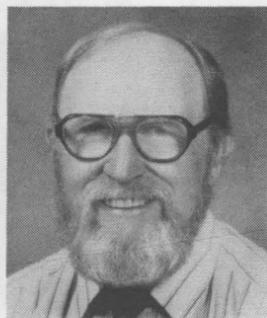
Frank Delnick (2523): Chloromethyl Chlorosulfate as a Voltage Delay Inhibitor in Lithium Cells.

Victoria Granstaff (1824) and Stephen Martin (1315): Method for Simultaneous Measurement of Mass Loading and Fluid Property Changes Using a Quartz Crystal Microbalance.

## Recent Retirees



Paul Kirby  
7142



Larry O'Connor  
5153 28

## Fun & Games

**Golf** - The Sandia Golf Association Cup was held June 5-6 at Los Altos and Arroyo Del Oso golf courses. Tournament winners include: A Flight - Mike Gray (9135), first place; Phil Federico (5911), second; Dan Williams (7905), third; Gil Lovato (2412), fourth; and Charlie Adams (1562), fifth; B Flight - Carl Leishman (2412), first; Charles Salazar (2482), second; Lew Bartel (6114), third; and Andy Wilken (9811) and Louis Flores (ret.), tied for fourth; C Flight - Gary Holmes (7328), first; Robert Walsh (2482), second; Jake Romero (7328) and Marv Daniel (5931), tied for third; and Duane DeWerff (5901) and Dorsey Bishop (5147), tied for fourth.

\* \* \*

**Fun Bun Run** - The annual Bun Run to benefit Carrie Tingley Hospital will be held Sunday, Aug. 22, at the hospital (University Blvd. and Tucker NE). The event includes a 10K run, 5K run, and 5K competitive walk, all beginning at 7:30 a.m. A celebrity fun walk begins at 9 a.m. "Centipede" teams can enter the 5K run, 5K walk, or Celebrity Walk. Entry forms are available at Schlotzky's Sandwich Shops and local sports shops. Entry fees are \$12 for adults and \$10 for children under 14.

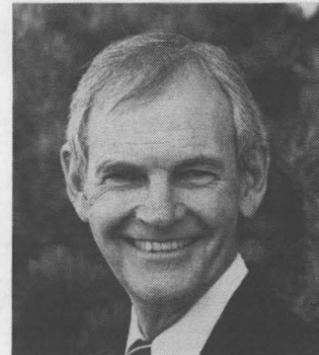
## Dick Brodie Receives DOE's Distinguished Associate Award

Dick Brodie, Sandia's Special Assistant for Weapons, has received DOE's prestigious Distinguished Associate Award. Rear Admiral Jerry Ellis, Deputy Assistant Secretary for Military Application, presented the award to Dick in a special ceremony at the Labs on Tuesday, Aug. 17.

Dick is well known and respected throughout the nuclear weapons complex and associated defense agencies for his insight and articulation of weapon safety and use-control issues.

The award citation reads:

*For his distinguished and unique contributions to the surety of nuclear weapons and nuclear weapon systems, and for his outstanding leadership in an area of utmost importance to the security of the United States.*



DICK BRODIE

Dick has been at Sandia since 1976 and has been Special Assistant for Weapons since 1983, except for a two-year period of service in Washington beginning in 1986 as Scientific Advisor to DOE's Deputy Assistant Secretary for Military Application.

He reports directly to Sandia Executive VP Orval Jones. Orval describes Dick as one of the most knowledgeable individuals in the country regarding nuclear weapons.

"His influence extends beyond Sandia and the Department of Energy," says Orval. "Dick's breadth and depth of nuclear weapon understanding and his ability to identify issues and then to find and propose system solutions have made him a national resource."

Dick was nominated for the award by Richard Schwoebel (300), Stan Spray (331), and Clyde Lane (4102). In the nomination, they say that Dick "has consistently exhibited a unique ability to look ahead and perceive important issues, and to then generate innovative solutions that address both practical and politically possible imperatives.

"Dick's perceptions have repeatedly been on the mark and underscored his important contribution to safety and use-control issues over a period of decades. He has been a key leader in the advancement of nuclear surety and has influenced thought on safety and use control to an extent that is unique in the nuclear weapons complex."

### His Second Career

He began his Sandia career after retiring from the Air Force as a colonel in 1976. He was a fighter pilot and became a special assistant for weapons development, arms control, and testing to the Assistant Secretary of Defense for Atomic Energy. Among many other noteworthy achievements while in the Air Force, Dick was a member of a multi-agency test ban working group that influenced the Threshold Test Ban and the Peaceful Nuclear Explosive Treaty negotiations.

During his first two years at Sandia, as the technical assistant to the Director for Weapons Development, he wrote the Nuclear Weapon Stockpile Improvement study, which led to the Stockpile Improvement Program.

Since returning to Sandia in 1988, he has continued his service as a key resource and principal advisor to top management and staff on all matters related to weapon safety and use control.

Dick received a DOE Award of Excellence in 1982 and was named a Sandia Distinguished Member of Technical Staff in 1983. He was honored last year for teaching more than 1,000 Sandians in his in-hours course titled "Survey of Weapons Development and Technology." •KFrazier(7161)/LP

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**Getting a Higher Student Interest Rate****Sandia Hosts Summer Science Teacher Institute**

It's difficult teaching 7th graders math and science. Most of them perceive science as complex and unrelated to their lives. They'd rather watch TV than do their homework.

Not so, say some 50 middle school science teachers and administrators who recently put teaching-by-textbooks behind them. The 50 attended Sandia/California's first SUPER! (Science Understanding Promotes Environmental Responsibility) workshop July 7-30 at Sandia/California.

The 3½-week workshop shows teachers how to present science in a way that is immediately relevant to their students' lives and the society around them, says Beth Fuchs (8746), the workshop's director. With environmental issues as its central theme — issues many young people today are acutely aware of — the hands-on teaching methods are sure to provide a higher student interest rate and a bigger return on teachers' investments.

"Teachers are eager to present science in ways that will intensely involve their students, but many feel insecure about teaching science," says



**SANDIA  
CALIFORNIA NEWS**

Beth. "Many others majored in the life sciences and feel confident about teaching in those areas but feel shaky in the physical sciences, physics, and chemistry.

"We developed SUPER! to raise the level of teachers' scientific background, increase their confidence level, and provide support for them to assume an environmental leadership role in their communities," she says. (See "Teachers Say SUPER! Is, Well, Super.")

**Contemporary Themes Help**

Focusing on work being done at Sandia and other agencies, SUPER! provided an in-depth look at the scientific principles behind such current issues as plastics disposal, household chemicals, toxic wastes and other hazardous substances, groundwater cleanup, recycling, and risk assessment and management.

The activity-packed sessions included discussions and presentations by Sandia researchers, field trips and tours, basic lab work, training in teaching methods, and investigations of tools for bringing issue-oriented science into classrooms.

During the workshop, teachers also had a chance to work with some hands-on environmental science modules developed by the Science Education for Public Understanding Program (SEPUP), an educational program sponsored by the Lawrence Hall of Science (the University of California, Berkeley's science museum). The integration of Sandia science with SEPUP materials gave teachers a more comprehensive understanding of scientific principles as well as some additional activities to take back to the classroom.

So that teachers and administrators could work together to improve schools' science programs, a number of school administrators joined in the final week for presentations on new directions in science education and a seminar on how to manage change.

**SUPER! Goes Nationwide**

SUPER! was funded as part of a national strategy to revitalize and reform math and science education. That initiative is coordinated by the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) Committee on Education and Human Resources.

The funding proposal for SUPER!, written by Beth and Karen Scott (8526), survived a stiff competition that resulted in 15 SUPER!-style teachers'



GIVING A CHEMISTRY lesson to workshop participants is Sue Stanton of Chabot College (second from left) during a SEPUP session. (Photo by Lynda Hadley, 8275)

institutes at various locations within DOE, National Aeronautics and Space Administration, and Environmental Protection Agency facilities and museums across the country.

The idea of bringing the work of Sandia together with the educational materials of SEPUP originated from Beth's work with the Livermore Valley School District during the past two years, says Karen, manager of Sandia/California's Education Outreach program. "People seldom stop to think that the ninth grade students of today will vote in the next presidential election, and their knowledge — or lack of it — will guide public policy in this country for years to come," she says.

"Beth was really able to carve out and develop an excellent niche for Sandia," she adds. "We blended our science with the outstanding education materials of SEPUP to provide teachers with a complete package. In doing so, we were able to transfer what's happening in science today to the

middle school classroom."

SUPER!'s contributors include Sandia, SEPUP, the Livermore Valley Joint Unified School District, the California Department of Toxic Substance Control, the California Department of Education, Lawrence Livermore National Laboratory (LLNL), and the Math/Science Division at Chabot-Las Positas Community Colleges.

Sandians assisting with the institute included program manager Karen Lee (8713), Wenda Friesner (8526), Shelley Smurthwaite (8746), Grace Petines (8523), Lynda Hadley (8275), and the Sandia/California Badge Office staff (8531-1).

Some of the Sandians sharing their expertise included Nina Bergan French (8113) talking on incineration, Richard Wheeler (8112) on risk assessment and management, Leroy Whinnery (8716) on recycling propellants, Bob Bradshaw (8716) on electroforming, and Bill Even (8716), Tim Shepodd (8711), and Linda Domeier (8711) on plastics, batteries, and materials science. Speakers from LLNL, Tamco, the California Department of Toxic Substances Control, the Livermore schools, and Chabot College also participated.

**Teachers Teaching Teachers**

SUPER! activities will continue through the new school year, says Beth. Besides involving students in innovative environmental science projects, the teachers will be conducting in-service workshops for fellow faculty members so they too can use the SUPER! materials in their classrooms, even in other subject areas such as math, language, and social studies.

As part of the continued effort, Sandia will be offering a number of ongoing support services. A newsletter will provide a forum for sharing classroom successes and new ideas. A "hot line" will give teachers a chance to ask Sandia scientists questions and get leads on new information.

As many SUPER! participants as possible will return to Sandia twice during the school year to discuss their progress and learn more about current environmental science issues. In addition, Sandia will make available books, equipment, and other resources to help SUPER! teachers offer experiments and demonstrations that would otherwise be unavailable to most schools. ●BLS

**Teachers Say SUPER!  
Is, Well, Super**

Here's what some teachers had to say about their SUPER! experience:

- "SUPER! exceeded my expectations. This is what I should have had when I started teaching, instead of 15 years later. I have written down hundreds of ideas in my daily journal to take back to my classroom, not just to take back and try out, but to make actual changes this coming year. Also I have dozens of ideas I can use to improve the way science is taught in my district. The issue-oriented approach that SEPUP takes is really what is needed to get kids involved in their own science education." — *Ed Newburg, 8th grade science and math teacher, Golden West School, Manteca, Calif.*

- "When I came here I thought I was in over my head — I didn't know a lot about environmental issues. SUPER! has given me the classroom activities and the background information, and now I can go back to my classes and say, 'Here it is — let's do it and learn about it and see what's going on in our area.'" — *Mindy Heriman, 7th grade life sciences teacher, El Monte School, Orosi, Calif.*

- "SUPER! has given me a sense of hope. Instead of telling my students, 'The environment is ruined, life is over, and the planet is dying,' I can tell them, 'There are all kinds of possibilities — science and technology are going to hold many of the solutions to our problems. But it will also take our personal commitment to the environment.'" — *Charlotte Meade, 6th grade math and science teacher, Soulsbyville Elementary School, Soulsbyville, Calif.*

**Congratulations**

To John Chavarria (8453) and Shantel Magsalay, married July 17 at Monterey.

**Correction**

Circulation figures for the *Tri-Valley Herald* and the *Valley Times* published in the Aug. 6 LAB NEWS were incorrect. The article stated that the *Herald's* local circulation is 35,000 and the *Times'* circulation is 36,000. Current circulation figures provided by the Audit Bureau of Circulation are 35,100 for the *Tri-Valley Herald* and 33,265 for the *Valley Times*.

## Interview with the New 'Chief'

## Augustine Discusses Sandia-Martin Marietta Relationship

During a tightly scheduled visit to the Labs last week, Martin Marietta Chief Executive Officer and Board Chairman Norm Augustine took time to talk with the LAB NEWS. Here's what we asked him, and his answers.

**LAB NEWS:** Will the fact that we're a national laboratory affect how much Sandia Corporation and Sandia Labs will be integrated into other Martin Marietta organizations?

**Norm Augustine:** There are unique aspects of Sandia that do make the relationship different. But at Oak Ridge [National Lab] and other organizations that we're affiliated with, we do have a moderate amount of movement back and forth. I think we can continue to do that.

**LN:** Is movement of employees a widespread practice in the company, and do you foresee it as common at Sandia?

**Augustine:** It's done with some frequency. It helps to give people experience in other areas, as you can see by the team we've brought here. We have found it really pays off to move people around, because they take on new responsibilities and have a more global viewpoint. So it's an important part of our development programs. We would like to do some of that in both directions. It obviously would be done with the approval of DOE.

**LN:** Having recently acquired GE Aerospace and now Sandia, is Martin Marietta experiencing any growing pains?

**Augustine:** Martin Marietta was already a

very healthy aerospace-electronics company. General Electric Aerospace was very healthy. Sandia is very healthy. So we've taken three well-managed, healthy organizations and put them together. While that's not a trivial undertaking, it really doesn't produce great growing pains. Where you get the growing pains is if you try to take over something

**"I believe Sandia can be made largely immune to the enormous cuts taking place elsewhere in the defense sector."**

that's poorly managed and in bad shape, and try to absorb that. Fortunately, that's not the case. We got strong management with the new organizations that joined us.

**LN:** The local media continue to ask about possible layoffs, even though Sandia senior management has made many statements that none are planned. Most Sandians are realists and understand that employment depends on DOE and other funding, and upon our success generally. But will Martin Marietta form any contingency plans for layoffs that might come?

**Augustine:** If we continue to perform the kind of quality work that Sandia has performed — and I think we will — I believe Sandia can be made largely immune to the enormous cuts taking place elsewhere in the defense sector.

**LN:** Is there any difference in management style between AT&T and Martin Marietta that we might notice?

**Augustine:** Both are large, high-quality, high-tech companies. The CEO [chief executive officer] of AT&T is a friend of mine, and I have great respect for the company's management style. The principal difference you might find is that our basic business is national defense. As a result, I think you'll find greater interest in day-to-day issues by the corporation, and, I hope, the opportunity to make a value-added contribution. It's certainly not our intent to be intrusive. I believe in delegation. Al [Narath] runs Sandia National Laboratories — I don't. My philosophy of management is to pick good people, tell them what their goals are, and get out of the way. That's the way we intend to operate. But I do think that, given our commitment to national defense, there might be more opportunity for synergism with Martin Marietta.

**LN:** How will you avoid the fact or appearance of Martin Marietta getting any unfair benefit through its management of Sandia?

**Augustine:** That's crucial. At Oak Ridge and elsewhere, we've actually penalized ourselves. We've set up barriers that are stronger than other companies might take on, just because we can't afford even the perception of a problem in that area. So if there's the slightest doubt, we'll bend over backwards, even penalizing ourselves, to be sure that we don't have a problem. ●CS/LP

(Continued from Page One)

## New Execs

restructured into six groups: Electronics, Information, Space, Energy, Materials, and Services. Energy Systems operates Oak Ridge National Laboratory. Sandia will become a seventh group.

Asked earlier at a news conference why Martin Marietta wanted to manage Sandia, Augustine said that although the fee for doing so was a consideration, "the most significant reason is that we're a high-tech organization committed to national defense. Sandia is [also] a high-tech organization committed to national defense. We have a lot in common."

## Choosing to Compete for Contract

During his Aug. 11 visit, Young commented to a group of Labs managers that the choice to compete for the Sandia M&O contract required some serious corporate thought,

## About Last Week's Visitors

**Norm Augustine** has worked in defense since 1958, starting at the Douglas Aircraft Company and serving as a vice president of LTV Missiles and Space and in several Defense Department positions in the 1960s and '70s. He joined Martin Marietta in 1977.

Augustine has served on many national boards and committees, ranging from chairmanship of the Defense Science Board to university trusteeships to the executive vice presidency of the Boy Scouts of America. He is the author of *Augustine's Laws* and co-author of *The Defense Revolution*.

**Tom Young** spent 21 years with the National Aeronautics and Space Administration before joining Martin Marietta in 1982. Among other assignments at NASA, he was mission director for the Viking Mars-lander project. His last position at NASA was as Director of the Goddard Space Flight Center.

Young is a member of the boards of several industrial and academic organizations.

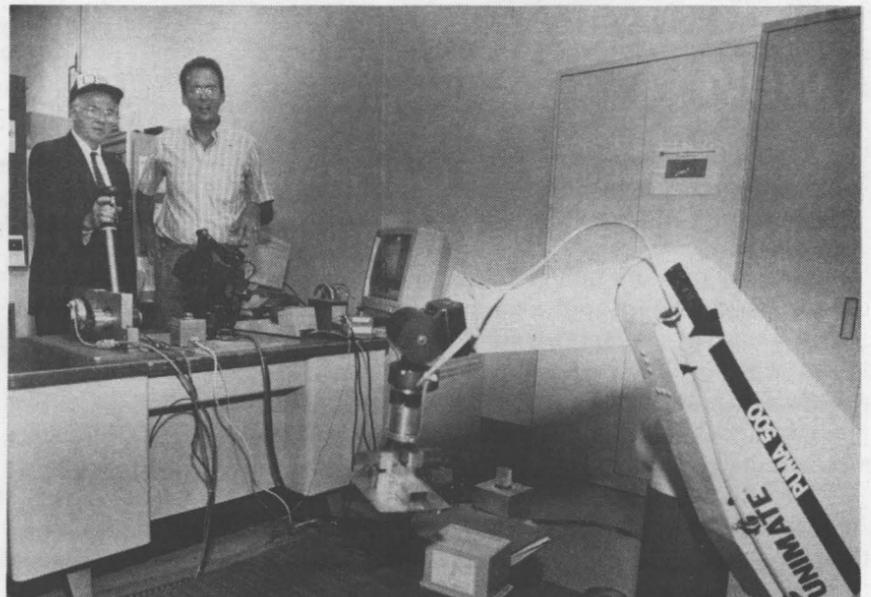
but that the Sandia-Martin Marietta match was a good fit. "Our decision-making process was pretty straightforward," Young said. "Our view of Sandia is that it is a world-class center of technology and systems engineering — and I could go on and on from there. And we view Martin Marietta as an organization that's heavily involved in technology and systems engineering. So our view was that the partnership would be a natural. In addition, we thought that Sandia being viewed as part of Martin Marietta would be an enormous attribute to the corporation."

Young also observed that adding Sandia's 8,600 employees would be nearly a 10-percent increase — a sizable change for a corporation, he said, and an important addition.

Sandia President Al Narath, introducing the visitors to several Sandia audiences, acknowledged how promptly they had visited the Labs after DOE announced that Martin Marietta would be Sandia's next M&O contractor. "This shows how much Martin Marietta values the relationship with Sandia," Al said. "Just a few weeks into this transition process, the two top executives have found time in their busy schedules to meet with us." Al also said, as did Young and Augustine, that they would soon make trips to Sandia/California.

## More Info Promised

Although the employee briefings with Augustine were able to reach only the Sandians who could be accommodated in the three Tech Transfer Center sessions, more detailed discussions about the transition — including specifics about benefits — will begin Tuesday, Aug. 24. Schedules have



GETTING THE FEEL of a telerobotic system, Martin Marietta President and Chief Operating Officer Tom Young (left) visits a lab in Intelligent Systems and Robotics Center 1600. Bob Anderson (1661) shows Young how systems like this could combine the reasoning and task-planning ability of a human with the finely controlled movement and ability to repeat tasks that are a robot's strengths. This system lets the operator feel what the robot is "feeling."

been sent to center directors, who are to relay them to employees.

More information about Martin Marietta will be coming to Sandians in the near future, said Augustine — "probably more than you'll want," he joked while apologizing for the need to cover so much corporate information in a short presentation.

Augustine and Young both emphasized the preeminence of ethics and "mission success" in Martin Marietta's corporate culture. "The number one principle in the corporation is ethics," Young said. "Ethics is more important than profit. Ethics to us means not only doing what is legal, but also doing what is right. The second principle is something we call mission success, or quality. That means, fundamentally, that whatever you work on — it works, it does what it's supposed to."

Commenting about the principle of mission success, Augustine said, "I suspect we can learn a lot from each other. It's not a block on the organization chart, because in our company, quality is

(Continued on Page Five)

**Augustine Gives Answers****Employees Pose Questions to New Chief Executive Officer**

During three employee meetings at the Technology Transfer Center last week, Martin Marietta Chief Executive Officer Norm Augustine received dozens of questions from the audience, which included employees video-linked from Sandia/California. Here are several questions and answers selected from those sessions. Similar ones have been combined; all are edited for brevity.

Questions were written on cards by audience members, and the one-hour meeting time left some unanswered. Answers to remaining questions are to be distributed to Sandians through other channels, including the LAB NEWS and Sandia Line. Briefings about the transition to Martin Marietta management will begin Aug. 24 and will include discussions of employee benefits.

**Q:** Staff and managers at Oak Ridge National Laboratory commonly give their affiliation as Martin Marietta Energy Systems. Will Sandia employees change their affiliation?

**Augustine:** You'll be part of Sandia National Laboratories, and you'll be Martin Marietta employees. State your affiliation however is comfortable and appropriate. Nobody is told how they have to give their affiliation.

**Q:** Doesn't a salary freeze plus an expected charge for medical benefits equal a cut in salary? How will management restore Sandia employees to a level consistent with other labs?

**Augustine:** Yes, it does translate to a pay cut — there's no other way to present it. For whatever it's worth, you're not alone. Things are really tough right now, and things like this are happening in every company I know of. In the commercial world, people are losing their jobs. In the defense industry, somebody loses a job every 30 seconds. And that job takes another two and a half people

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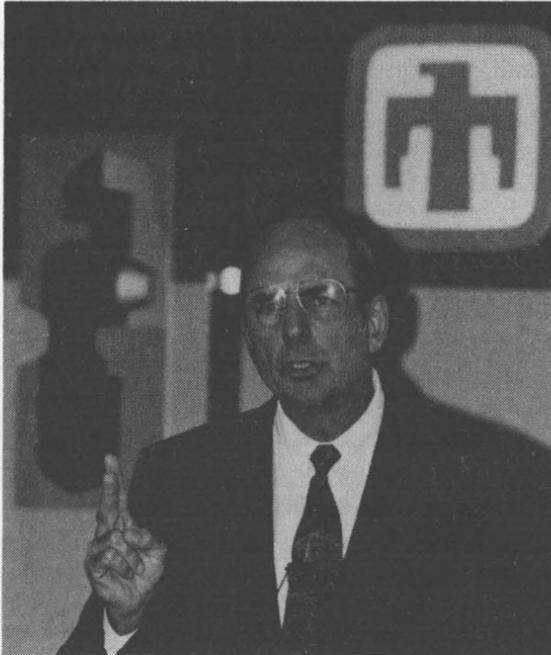
**"There should be no fundamental change in the relationship between Oak Ridge and Sandia."**

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with it outside defense. The best thing we can do in this situation, I think, is try to bear with it, do our jobs well, and do all we can to get this country's economy back where we can get these things turned around.

**Q:** How will we work with Oak Ridge National Lab in the future?

**Augustine:** There should be no fundamental change in the relationship between Oak Ridge and



**NORM AUGUSTINE**, Martin Marietta's Board Chairman and Chief Executive Officer, at a press conference in Albuquerque last week.

Sandia. If anything, we should have an even easier avenue of communication — we'd like to open communication to the extent it would be helpful. But we will continue to abide by the interfaces that DOE establishes. Allocation of work between the two labs is done basically by DOE. So really DOE will be calling the shots in this area.

**Q:** Will there be Martin Marietta assignments for Sandians? Can Martin Marietta legally transfer staff to other subsidiaries?

**Augustine:** Yes, transfers are legal in both directions. My hope is that we will do some of this, but it will almost always be because of the desire of the employee, or certainly with the employee's willingness. It will always have to be done with the approval of DOE. Of course, it's expensive to move employees, and I wouldn't look for people to move in great numbers, but there should be opportunities for a modest amount of movement back and forth.

**Q:** The perception is that our benefits are being downgraded. Please comment on Sandia vs. other Martin Marietta benefits.

**Augustine:** My observation, having worked in several companies and being familiar with a lot of companies' benefits, is that they all have to be in the same general range. Some may be very generous in one area — for example, your 24 days a year vacation is way off the map, compared with any-

thing else at Martin Marietta. On the other hand, you've got things that are not as good as some other parts of Martin Marietta. But if you add them all up, they tend to be in the same general range. There's a reason it's that way. If a company is too generous with its benefits plan, it can't compete for business, and it goes out of business. If it's too

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**"My goal doesn't matter that much — what matters is our goal, 'our' being you, DOE, and me together."**

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stingy with its benefits plan, it can't keep qualified employees, and it goes out of business. Any company that's been around for a long time is, in the aggregate, going to have a benefits package that's similar to others.

**Q:** Will Martin Marietta try to diversify into non-military government business, with or without Sandia and Oak Ridge?

**Augustine:** Yes, we indeed will try to do that. In fact, our principal focus in the first phase of diversifying is into government business other than DOE and the Department of Defense. We're now working with a lot of organizations. With or without Sandia and Oak Ridge? Definitely with.

**Q:** What achievement at Sandia do you hope will be, in retrospect, your best contribution?

**Augustine:** My goal doesn't matter that much — what matters is our goal, 'our' being you, DOE, and me together. But let me tell you where I would start. I would like to see Sandia in a position to make major contributions to solving important, diverse national problems that have a high-technology component. I hope we can make a difference in important national problems, just as you have made a difference in national security. I hope we can continue to make a difference in national security, but add other areas where we can profoundly affect a national concern. The possibilities might include energy independence, the environment, health care, telecommunications, the infrastructure, education. When we meet here 10 years from now, I'd love to be able to say that in at least one other area, Sandia has the kind of reputation it has in defense.

**Q:** We've heard that the standard at Martin Marietta is 25 people per manager. Will that be used at Sandia?

**Augustine:** We don't have a standard; it depends on what you're doing. For some things, the right number might be two or three, or it might  
(Continued on Page Ten)

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**(Continued from Preceding Page)**

everybody's business."

Augustine explained that among the broad implications of ethics is that Martin Marietta is committed to creating a working environment that's ethical "in the sense that we treat each other fairly, our communities, our suppliers, our customers, our shareholders."

Several questioners asked about the ethics position shown on the proposed organizational chart distributed to employees last week. Executive VP-designate Jim Tegnalia explained that because the position will report directly to the Office of the President and Executive VP, it is important both that the person filling the position come from among present Sandians and that Al Narath be involved in the choice of the person — thus, unlike other senior positions, came the decision to leave that item blank in the proposal.

**Diversification Plus Consolidation**

Martin Marietta's corporate strategy in a time of declining defense budgets — which are not in "free fall" but a "power dive," said Augustine —

has been to both consolidate and diversify. He described consolidation as bringing together large organizations that already have talented employees and strong management, something that he said was the case with GE Aerospace — calling it a "merger of equals" rather than just an acquisition

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**Martin Marietta is not abandoning defense, but diversifying by adding non-defense business.**

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— and now with Sandia. "We want to take the best ideas and practices from each," he said.

Unlike many defense-oriented companies, said Augustine, Martin Marietta is not diversifying in order to abandon defense. The goal instead is to add commercial and non-defense government business, and to diversify only into closely related lines of work that the company understands well.

Augustine highlighted several of Martin Marietta's areas of interest and concern. Speaking of technology transfer, he said he looked forward to the chance to "share successes" in getting research

developments to marketable applications — noting at the same time that there must be strict safeguards against conflict of interest and the fact or appearance of Martin Marietta benefiting unfairly from its management of the Labs.

He described education as a major Martin Marietta area of community activity, including kindergarten through high school as well as college. Besides noting Martin Marietta activities in education, he pointed out the new programs of scholarships and matching gifts that will be available to Sandians (see page seven).

Cultural diversity is another Martin Marietta focus, said Augustine, adding that it's an area that will require continuing effort.

Having told Sandians about Martin Marietta, Augustine concluded, "I've been familiar with Sandia throughout my career. Our paths have crossed from time to time over the years. I know what a quality operation you are. I feel it's a great responsibility to be entrusted with an organization that has your kind of record. We'll be very mindful of that. We also, though, want to welcome you as full-fledged members of Martin Marietta. I'm proud to count you as colleagues." ●CS

Info from Al Narath, Jim Tegnella

# New Managers, Benefits Changes Announced for Sandia

*Editor's Note: The following information was recently distributed to all employees. It is reprinted here for the benefit of retirees and other interested LAB NEWS readers outside Sandia. Some original information has been condensed.*

## From Sandia President Al Narath:

Fellow Sandian:

As you know, the months of August and September mark an important period in the history of Sandia National Laboratories. During this period, we will prepare to transition the managing and operating (M&O) responsibility for the Laboratories from a Sandia Corporation owned by AT&T to one that will become a Group of Martin Marietta on Oct. 1. At the same time, the prime contract under which Sandia is managed for the Department of Energy will change in some important details, a few of which are still under negotiation between DOE and Martin Marietta.

All parties concerned are deeply committed to make the transition as smooth and transparent as possible. Timely communications of changes associated with the new M&O arrangement are a key element of that commitment. In this spirit, Jim Tegnella [Martin Marietta's transition team leader who becomes Sandia's Executive VP Oct. 1] intends to issue statements from time to time clarifying the various transition issues on behalf of Martin Marietta. The first of such communications follows.

Since I remain an AT&T employee through Sept. 30, I cannot personally speak for Martin Marietta until after Oct. 1. However, please be assured that I will work closely in the interim with

Jim Tegnella and the other members of the Martin Marietta team, as well as with Lee Bray (the Sandia Transition Executive), and that all pronouncements will have my full support.

Sincerely,  
Al Narath

## From Jim Tegnella (Executive VP-to-be):

Dear Sandian:

We are pleased and honored to have been selected as the contractor to manage Sandia National Laboratories and to be your partner. I am writing to begin the Martin Marietta communication process with you. In this letter, I will highlight Sandia's reporting relationship to Martin Marietta, Sandia's senior management and benefits changes, and the series of meetings that we are scheduling to explain these changes in detail and to answer any questions that you may have. We believe that it is important to maintain open and straightforward communications with our colleagues and, as you will see, this letter is but a beginning.

Starting on Aug. 1, we began the contract transition process, which will be completed by Oct. 1. During the transition period, we will be learning about you and the Laboratories, and you will be interested in learning more about us. As you are probably aware, the contract with the DOE under which Martin Marietta will manage Sandia is very different from the AT&T management contract. We are going to do our best to make the transition from AT&T to Martin Marietta as smooth as possible, changing only those operational aspects specified by the Request for Proposal and the contract to be signed on Oct. 1, 1993. We have found DOE's representatives to be understanding of employees'

concerns and willing to work with us to minimize the impact of change on the Sandia work force.

Enclosed with this letter is information on the Sandia reporting relationship to Martin Marietta, administrative and personnel changes, and benefit plan changes. We will be discussing the contents of this letter during face-to-face information briefings beginning the week of Aug. 23 and continuing through Sept. 24. Again, let me welcome you to the Martin Marietta family.

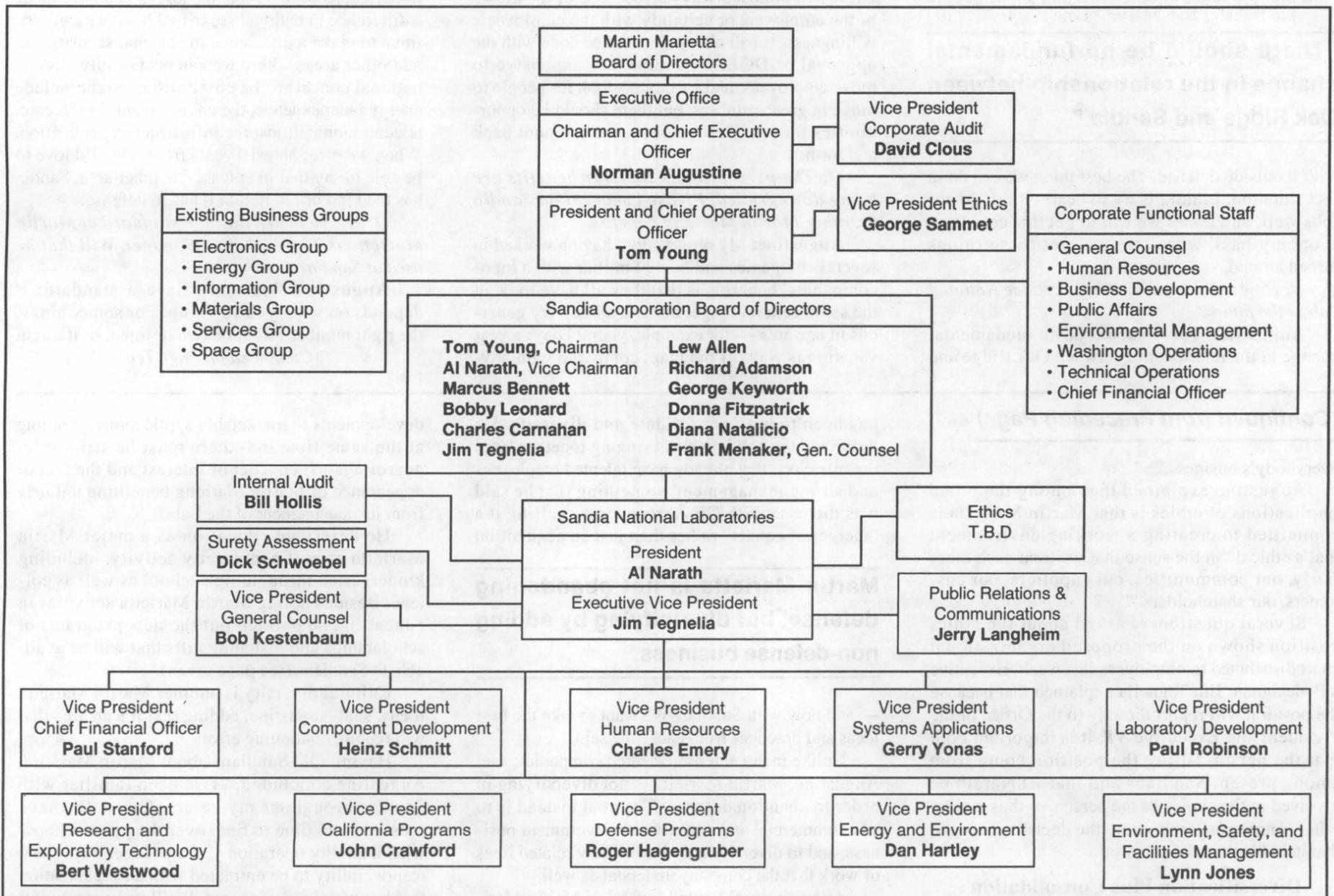
Sincerely,  
Jim Tegnella

## Sandia Reporting Relationship To Martin Marietta

Subsequent to its merger with General Electric Aerospace, Martin Marietta Corporation's [MMC] operational elements were organized, on May 1, into six operating groups. Sandia Corporation will constitute a seventh operating group, effective Oct. 1. The President of Sandia Corporation, Al Narath, will report directly to the President and Chief Operating Officer of Martin Marietta, Tom Young; the same reporting relationship given to the corporation's other six major groups.

The Sandia Corporation will be guided by a Board of Directors composed of senior Martin Marietta executives and nationally known leaders outside of Martin Marietta. We have chosen the membership of the Board to ensure that Sandia stays connected with issues of major national interest, especially those related to defense, energy, environment, and technology commercialization.

The members of the Sandia Corporation Board  
(Continued on Next Page)



CHANGE-WEARY SANDIANS will welcome the news that no major restructuring is planned when Martin Marietta takes over as management and operating contractor. Barring changes between now and Oct. 1, here is the Sandia organi-

zation that goes into effect then, along with names of the corporate officers, and the Labs' reporting relationship to our new parent company. A detailed organization chart encompassing Sandia Centers should be released soon.

**Continued from Preceding Page)**

of Directors will be:

**Martin Marietta Board Members** — Thomas Young, Chairman; Al Narath, Vice Chairman and President, SNL; James Tegnalia, Executive VP, SNL; Richard Adamson, MMC VP, Strategic Planning; Charles Carnahan, MMC VP, Environmental Management; Bobby Leonard, MMC VP, Human Resources. **Outside Board Members** — Donna Fitzpatrick, former Assistant Secretary of DOE; Diana Natalicio, President, University of Texas at El Paso; George Keyworth, former Science Advisor to President Reagan; Lew Allen, General USAF (ret.), former Chief of Staff of the Air Force, and former Director, National Security Agency and Jet Propulsion Laboratory.

**Sandia Vice President Changes**

Martin Marietta has endeavored to maintain continuity of operations in critical program areas. Therefore, we have limited changes, wherever possible, to those made necessary by retirements or resignations. In addition to the decision to have a single Executive Vice President, Jim Tegnalia, reporting to Al Narath, we have chosen an internationally recognized Martin Marietta research scientist and manager, Bert Westwood, to take over the leadership of Organization 1000 from Paul Fleury, who will be returning to AT&T. We have also divided the responsibilities of Organization 7000 between two new Vice President positions, the VP of Human Resources, Charlie Emery, and the VP of Environment, Safety, and Facilities Management, Lynn Jones. [Editor's Note: Current information is that some Div. 7000 functions will also move to the Chief Financial Officer organization. See page eight for more information about new VPs and the new directors named below.]

**New Martin Marietta SNL Directors**

The Martin Marietta Corporation has also elected to transfer five Martin Marietta directors to Sandia to provide expertise in the areas in which we believe the parent corporation can make positive contributions to the Laboratories' well-being:

To handle the details of the new DOE contract, we are appointing a Director of Contracts, Ken Haug, to be our principal interface with the DOE.

We are appointing an experienced Director of Procurement, Donna Martin, to manage Sandia's subcontracts and purchasing.

To enhance our communications with employees and the community, we are establishing the position of Director, Public Relations and Communications. This position will be staffed by Jerry Langheim, reporting directly to the Office of the President.

Our Director of SNL's Technology Transfer and Commercialization, Warren Siemens, will manage Sandia's technology transfer program and bring to it his extensive Oak Ridge experience with licensing, small business development, and patents.

In addition, we are establishing the position of Director, Strategic and Operational Planning. In this position, Joel Weiss will focus on new directions and opportunities for Sandia, and will help to translate strategic plans into operational road maps.

**Benefit Plan Changes**

As you may be aware, the DOE's Request for Proposals (RFP) mandated changes to vacation accrual, termination pay accrual rates, and employee and retiree contributions to health and medical benefits. The accrual schedules for vacation and pay accrual rates for termination have been determined. The employee and retiree contribution to medical benefits will be finalized and submitted to the DOE on 1/1/94. [Editor's Note: Information currently available is that employees and retirees will not begin paying part of the cost of their medical benefits until some yet undetermined date after Jan. 1. Medical benefits will continue to include an option for membership in a health maintenance organization. Also, some benefits may vary for Sandians represented by unions; union contracts will be renegotiated this fall.] The following summarizes the key benefits and administrative changes.

[Current practices are labeled "old"; the practice beginning Oct. 1 is labeled "new."]

**Vacation** — Old: 24 days per year. New:

Regular employees on roll as of Sept. 30, 1993, no change. New hires and transfers [by years of service and annual accrual]: less than 10 years of service, 15 days; 10 to 15 years, 18 days; 15 to 20 years, 21 days; 20 years or more, 24 days.

**Termination Pay, Accrual Rate and Maximum** — Old: Non-represented employees, 5 percent per year to a maximum of 1 year's annual salary. New: Eligible non-represented employees on roll 9/30/93: For service prior to 9/30/93, 5 percent per year. For service after 9/30/93, 1.92 percent (1 week) per year of service. Total not to exceed 100 percent of annual pay. New hires after 10/1/93 are eligible for 1 week per year of service with a maximum of 26 weeks.

**Health Care Contribution to Premium** — Old: None. New: Yes. Employee and retiree contributions to medical benefits will be finalized and a plan submitted to DOE by 1/1/94.

**Workers' Compensation** — Old: 100 percent of pay. New: 80 percent of regular income.

**Personal Absence** — Old: Death in immediate family, marriage in immediate family, sickness in immediate family (arrange care), doctor or dental appointment, personal family issues — up to 30 days. New: No more than 7 working days per year to cover unusual circumstances such as death or serious illness in the immediate family.

**Community Service Leave** — Old: Elected/appointed officials, public officer in federal, state, city, county, or pueblo government. New: Reasonable period of working time with pay for community service and civic responsibilities.

**College Scholarships** to graduating high school seniors whose parent is a full-time employee — Old: None. New: Five scholarships of \$3,000 per year for 4 years to be awarded annually to children of Sandia employees. [On-roll employees only; not available to retirees.]

**Matching Gifts to colleges and universities** — Old: None. New: Martin Marietta will match dollar for dollar up to \$10,000 per year per employee. [On-roll employees only; not available to retirees.]

Note: People on approved leaves of absence will be treated as on-roll for benefits purposes. •

**What's Due by Oct. 1?****'First Things First' Could Be Transition Council Motto**

Like gears of machinery beginning to mesh, the transition efforts of Sandia, Martin Marietta, and DOE are joining forces to make sure that items on the transition "to do" list are checked off in the proper order.

So says Transition Executive Lee Bray (30), who told the LAB NEWS recently that Martin Marietta and DOE representatives have begun working directly with Sandia's Transition Council. "We're working together to plan and carry out jobs that must be finished by the time AT&T relinquishes management of the Labs on Oct. 1," says Lee.

Helping keep first things first are the new Transition Council members from Martin Marietta: future Executive VP Jim Tegnalia, future VP for Environment, Safety, and Facilities Management Lynn Jones, and future Director of Strategic and Operational Planning Joel Weiss. DOE representatives are Jerry Grayson, assigned from Albuquerque Operations to Kirtland Area Office (KAO) for the transition, and Brenda Harneson of KAO.

In addition, Weiss and Grayson are working with Sandia's Transition Program Management Office, the group that makes sure transition plans are communicated and carried out.

**'Must Do' vs. 'Nice to Do'**

"We're looking at three levels or categories of transition activities," says Lee. "First, Martin Marietta committed itself to DOE to do certain things during the transition period of August and September. Those are highest priority." Among those dozen or so commitments are, for example, a

plan for dealing with potential conflicts of interest and a cultural diversity plan.

"Then," Lee continues, "Martin Marietta has certain corporate concerns that need to be taken care of by Oct. 1 — such as validating our inventory of materials and equipment, getting signature authority at the financial institutions Sandia deals with, and taking care of legal issues related to transferring Sandia Corporation from

AT&T to Martin Marietta.

"The third category includes all the things that everybody would really like to get to — but they have to be lower in priority for now. As you can imagine, Sandians and Martin Marietta people alike are eager to begin finding out just what each others' jobs and plans are. For Sandians especially, there's a feeling among all of us that we'd like to bring in our Martin Marietta counterparts and share with them what we do and why it's important."

But, says Lee, now isn't the time to concentrate on activities like that. The two higher-priority groups of activities have an Oct. 1 deadline, so they take top billing.

"Very early after the announcement of who would be the new management and operating contractor," says Lee, "we gave Martin Marietta a copy of our transition plan, and we received a copy of theirs." The groups responsible for transition activities are working together to ensure that objectives of both the plans are met, he says. •CS

**No Contract Yet — But Don't Worry, It's Coming**

In what may seem a legal oddity, Lee Bray (30) points out that there's as yet no contract between DOE and Sandia's next management and operating contractor. That fact affects the release of information related to the transition from AT&T to Martin Marietta.

"The contract will be between Sandia Corporation and DOE," Lee explains, "and Martin Marietta won't own Sandia Corporation until midnight Sept. 30. Only then can the new contract be signed — on Oct. 1."

Now, a letter of intent signed by DOE and Martin Marietta specifies an agreement similar to DOE's request for proposals for managing the Labs. Though the precise details of the letter of intent have not been made public, the eventual contract will be a public document.

**Congratulations**

To Gwen (6352) and George Pullen, a son, Matthew Tyler, June 10.

To Gina (6515) and Mike (6515) Rightley, a daughter, Madison Elizabeth, July 10.

To Donna and Patrick (2346) Muyschondt, a son, Alexander Diego, July 21.

To Kristin and Edward Hanson (2346), twin daughters, Ashley Grace and Megan Eileen, July 26.

## Martin Marietta Bringing Ten New Executives To Sandia Management Team

Four new vice presidents, five new directors, and a new deputy chief financial officer will take up duties when Martin Marietta takes over the management of Sandia on Oct. 1. Following are brief biographical sketches of these Sandians-to-be. Their new Sandia titles immediately follow their names.

**JAMES TEGNELIA**, Executive Vice President.

Jim previously served as Vice President of Business Development, Martin Marietta Corp., and he now heads the Martin Marietta transition team working with Sandia's transition team to effect a smooth transfer of responsibility for the Labs.

He earned a BS in physics from Georgetown University, a PhD in physics from The Catholic University of America, and an MS in engineering administration from George Washington University.



JIM TEGNELIA

His 1968-71 Army service included a tour in Vietnam in which he evaluated prototype equipment such as unattended ground sensors developed by the Army and Sandia. From 1971 to 1976, he worked for the US Army

Night Vision Laboratory, laying the engineering foundation for four types of night-vision devices deployed in the Persian Gulf War.

Jim served the Defense Advanced Research Projects Agency twice — from 1976 to 1982, as Program Manager then Office Director, and from 1985 to 1987, as Deputy Director then Acting Director. Projects there included smart weapons, radar sensors, and stealth technology programs that led to development of the F-117 fighter and the B-2 bomber.

From 1982 to 1985, he served as Assistant Undersecretary of Defense and Acting Deputy Undersecretary of Defense.

He joined Martin Marietta in 1987, serving as Vice President of Engineering before becoming Vice President of Business Development.

**CHARLES EMERY**, Vice President, Human Resources.

Charlie, who previously served as Director of Training and Development for Martin Marietta Energy Systems at Oak Ridge National Laboratory, started his career as a football coach.

After earning his BS in history and physical education at West Virginia Wesleyan College in 1963, he coached football at Western Michigan University, Augustana College, and North Park College. He earned his MA in administration and physical education from Western Michigan.



CHARLIE EMERY

He left coaching in 1970 to become Dean of Students at West Virginia Wesleyan, a position he held until 1978. During that time, he earned an EdD from West Virginia University in personnel and higher education administration.

From 1978 to 1980, Charlie was Vice President, Employee Relations for LaRosa Fuel Company in Clarksburg, W.Va., a surface mining and land development organization.

He joined Martin Marietta in 1980, and has served since then in company human resources positions in Kentucky, California, and Tennessee.

**MILDRED (LYNN) JONES**, Vice President, Environment, Safety, and Facility Management.

Lynn was previously Deputy Site Manager, K-25 Site, the Oak Ridge Gaseous Diffusion Plant (ORGDP), which is part of the Oak Ridge



LYNN JONES

National Lab complex managed by Martin Marietta Energy Systems.

She has a BS in chemistry and an MS in industrial engineering, both from the University of Tennessee.

Lynn began her career at the Oak Ridge complex after earning her BS in 1969, working for then-manager Union Carbide Corporation. Her move to Sandia will be her first position away from the East Tennessee complex.

From 1969 to 1972, she worked in the Y-12 Development Division, and from 1972 to 1976 for the ORGDP's Separation Systems Division, then the Chemistry and Metallurgy Section.

Beginning in 1976, she moved to Union Carbide's Nuclear Division and filled a number of positions there, remaining after Martin Marietta assumed the Oak Ridge management and operating contract in 1984.

She played a key role in the preparation for Oak Ridge's 1991 Tiger Team audit.

**ALBERT WESTWOOD**, Vice President, Research and Development.

Bert has been with Martin Marietta for most of his professional career, and served most recently as Vice President, Research and Technology, a post he assumed in 1990.



BERT WESTWOOD

He was educated at the University of Birmingham, England, earning a BSc in physical and theoretical metallurgy in 1953 and a PhD in physical metallurgy in 1956.

Upon graduation, he went to work for Imperial Chemical Industries in Birmingham, serving as Technical Officer. While there, he developed novel casting procedures for titanium and produced the first cast shapes in Europe, including the first hip prosthesis.

From 1958 to 1969, Bert served as Scientist, Senior Scientist, and Associate Director for Martin Marietta Laboratories, earning his DSc in physical metallurgy and materials science from the University of Birmingham in 1968.

From 1969 to 1990, he was Deputy Director, Corporate Director, and Vice President of Martin Marietta Laboratories, directing research varying from cement, chemicals, and dyestuffs to gallium-arsenide amplifiers, space-communication laser arrays, and robotics.

He also undertakes special assignments from Chief Executive Officer Norm Augustine, including work with the Committee on the Future of the US Space Program and the National Advisory Committee on Semiconductors.

**KEN HAUG**, Director, Contracts.

Ken joined Martin Marietta in 1983, after retiring from a 23-year Air Force career with the rank



KEN HAUG

of colonel. His immediate previous position with Martin Marietta was Corporate Contracts Manager, a position he held since 1990.

He earned a BS in geology from Denison University and an MA in public administration from Auburn University. His education

also includes the Air Force Air Command and Staff College and the Industrial College of the Air Force.

From 1983 to 1985, Ken was Contracts Manager of the Federal Aviation Administration Systems Engineering and Integration contract for Martin Marietta. He served as Subcontracts and Procurement Manager, FTS 2000, from 1986 to 1988, and from 1989 to 1990 was on special assignment as Director of Martin Marietta's Small Business/Small Disadvantaged Business program.

In his last assignment, he also was responsible for corporate training associated with multiple contract compliance efforts, including DOE Foreign Ownership Control and Interest projects, procurement integrity, and organizational conflict of interest.

**GERALD LANGHEIM**, Director, Public Relations and Communications.

Jerry joined Martin Marietta in 1987 and served since 1989 as Director of Public Relations of the



JERRY LANGHEIM

Martin Marietta Electronics, Information, & Missiles Group, managing public and media relations planning and implementation for five companies and operating units in six states.

He earned a BA in speech/radio-television-film from the University of Iowa and an MA in organization communications from the University of

Colorado.

From 1973 to 1979, he served as the University of Colorado spokesman and public information broadcast supervisor, and taught in the university's Department of Communications.

In 1979 Jerry went to work for Rockwell International's North American Space Operations, serving as manager of external communications for Rocky Flats. From 1983 to 1986, he was Director of Communications for Rocky Flats.

From 1987 to 1989, he was Director of Public Relations for Martin Marietta Energy Systems.

**DONNA MARTIN**, Director, Procurement.

Donna previously served as Director, Material Management for Martin Marietta Aero & Naval Systems in Baltimore, beginning those duties in 1990. Her responsibilities included establishing policy and practices for procurement and asset management processes, and maintaining procurement systems integrity and approval.

She received a BS in psychology from Loma Linda University, a BS in advanced education from Weber State College, and an MBA from Rollins College.

Donna was a special education instructor before leaving education for business. Before joining Martin Marietta in 1986, she held positions in marketing, finance, and contracts administration at Hercules Aerospace, and from 1984 to 1986 was General Manager of Hercules' Clearfield Plant in Utah.



DONNA MARTIN

In 1986, she became Director of Subcontracts Management for Martin Marietta Electronics Systems, and moved up through other assignments in that organization.

**WARREN SIEMENS**, Director, Technology Commercialization.

Warren previously served since 1985 as Deputy to the Vice President, Office of Technology Transfer, Martin Marietta Energy Systems, at Oak Ridge. There, he identified technologies with commercial potential and managed intellectual property so as to acquire commercial clients and industrial contracts.



WARREN SIEMENS

He was educated at the Massachusetts Institute of Technology, earning a BS in physics and a PhD in philosophy of science.

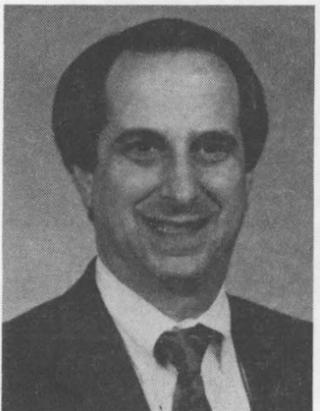
His career began as a researcher at Avgonne Cancer Research Hospital. From there, he moved to Raytheon, 1963-65, and to Abt Associates, where he served from 1965 to 1971 as Manager, Technology Management Group.

Warren served as Vice President, Public Technology Inc., a not-for-profit company established to transfer technology to state and local governments, from 1971 to 1976. From 1976 to 1977, he was Director of Information Programs Division, Informatics Inc.

He joined Martin Marietta Laboratories as Manager, Market and Program Development, in 1977; was Associate Director, Biotechnology, from 1982 to 1984; and was Associate Director, Technology Applications, from 1984 to 1985, when he moved to Oak Ridge.

**JOEL WEISS**, Director, Strategic and Operational Planning.

Joel joined Martin Marietta in 1987 as Manager, Research and Technology Business Development, Martin Marietta Aero and Naval Systems. He served there until moving in 1990 to the position he held before coming to Sandia — Vice President, Engineering Services, Martin Marietta Technical Services.



JOEL WEISS

He earned a BES in engineering physics from Johns Hopkins University, an AM in physics from Harvard, and a PhD in physics from Harvard.

Joel served as Research Physicist at the Naval Research Laboratory from 1966 to 1975.

He joined DOE in 1975, serving until 1978 as Program Manager, Office of Laser Fusion. From 1978 to 1980, he served as Executive Assistant,

Office of Solar Energy.

In 1980 he moved to Acurex Corporation, where he was Manager of Washington Operations until 1984.

From 1984 to 1986, he was Manager, Washington Operations, for the Gould Advanced Technology Center, and from 1986 to 1987, Director, Tactical Warfare Programs, Gould's Ocean Systems Division.

**GARY RISER**, Deputy Chief Financial Officer.

Gary was formerly Director of the Office of the Treasurer reporting to the Chief Financial Officer at Martin Marietta Energy Systems, acting as the Chief Financial Officer in his absence. He was responsible for all treasury activities at Energy Systems, administering the budget and overseeing five departments.



GARY RISER

He earned a BS in industrial engineering from Penn State in 1964 and an MBA from Ohio State University in 1967. He became a Certified Public Accountant in 1972 in Tennessee and a Certified Employee Benefits Specialist in 1991.

Gary has spent most of his career with Martin Marietta or its associated facilities. He began as a marketing representative for International Business Machines, then moved to the Atomic Energy Commission (AEC), where he worked from 1967 to 1971 as a development engineer helping coordinate planning of the AEC's operations concerning projected military and commercial requirements for plutonium and enriched uranium.

From 1971 to 1975, he was Internal Audit Manager at Union Carbide Corporation's Nuclear Division (Oak Ridge, Tenn.). From 1975 to 1977, he was Manager of Budgeting and Accounting at Oak Ridge National Laboratory, responsible for preparing the Lab's formal budget.

From 1977 to 1984, Gary was Manager of Accounting at Union Carbide's Nuclear Division, handling most administrative changes associated with the transition of that facility to Martin Marietta Energy Systems. ●

## ***EVPs Orval Jones And Lee Bray Announce Plans***

The organization charts that have been distributed to Sandians and published in this LAB NEWS (page six) show that on Oct. 1, the Labs will have a single Executive Vice President, Jim Tegnalia. The current Executive VPs, Orval Jones (20) and Lee Bray (30), have plans of their own, which they recently announced.

Orval, who began his Sandia career more than 32 years ago, plans to retire from the Labs. He has been a Sandia VP since 1982 and was promoted to his current position in 1986. "My future plans are presently fluid, pending the exploration of some academic and consulting opportunities," Orval says.

Lee, an AT&T employee on loan to Sandia since 1984, will remain at the Labs for six months to a year, representing AT&T in the transition from AT&T to Martin Marietta management. "I'll be supporting both DOE and Martin Marietta," he says, "dealing with any open issues that might come up." After that, Lee will decide whether to transfer to an AT&T location or do consulting work locally. "I've got a couple of consulting options that look like they'll wait until I make the decision," he says. ●

## **Sherman McCorkle To Head Technology Venture Corporation**

Technology Venture Corporation, a new organization created to increase small business participation in Sandia technology transfer, will



SHERMAN McCORKLE

begin operations after Martin Marietta takes over management of Sandia. Sherman McCorkle will serve as president of the new company, which will be a wholly owned subsidiary of Martin Marietta.

McCorkle has served during the past several months as a consultant to

Martin Marietta, providing information about New Mexico and liaison between company representatives and state and community leaders.

He was educated at the University of New Mexico and the University of Colorado Graduate School of Banking, and is an originating member of Plus System Inc., the world's largest electronic banking system, which specializes in electronic funds transfer.

McCorkle has served as President of Sunwest Credit Services Corp. and Senior Vice President and Director of Electronic Banking for Sunwest Bank in Albuquerque, responsible for all aspects of the credit card, electronic banking, and automated teller machine (ATM) shared network facilities. During that tenure, he was instrumental in the creation of the Lynx shared ATM network.

McCorkle also has served as Vice President and Director of Mesa Grande Bankcards, which included more than 100 agent financial institutions in a multistate area. ●

### **Transition Hotline Now in Business**

For employees with questions or concerns about the transition to Martin Marietta's management of the Labs, a hotline is now in operation. New Mexico Sandians can dial 845-7425 between 8 a.m. and 4 p.m. (Albuquerque time) to speak to someone staffing the hotline. (From other locations, use the same number with a 505 area code.)

Outside those hours, dialing that number will connect you with voice mail, and you can leave a message.

If the person answering the hotline doesn't have an immediate answer to your question, he or she will work to find the answer for you.

In addition, Sandia Line has an updated transition section where callers can get information or leave questions and concerns — dial 845-6789, then enter 17 to reach the transition area.

If you have a transition-related issue that you would like to see covered in the LAB NEWS, please call Employee Communications Dept. 7162 on 844-7841 or 844-7522.

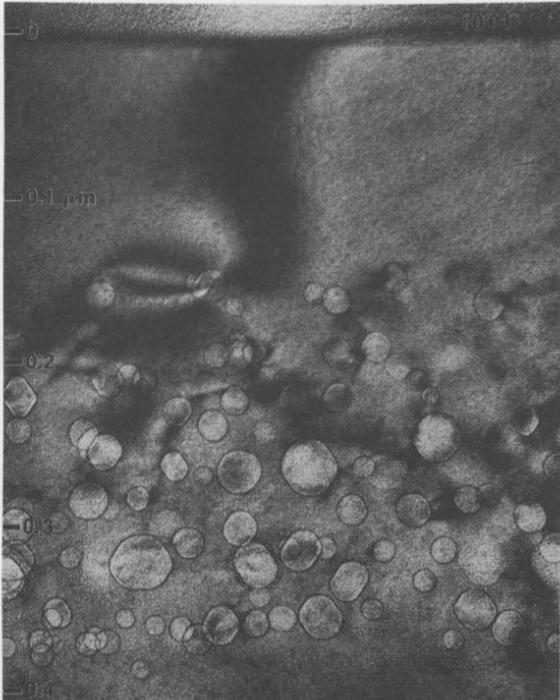
### ***Fun & Games***

**Golf** — A golf tournament to benefit Big Brothers/Big Sisters of Albuquerque (a United Way agency) will be held Saturday, Aug. 28, at the Los Altos Golf Course. The \$45 entry fee includes green fees, lunch, and prizes. For more information, contact Nancy Barnes-Smith on 265-3599.

(Continued from Page One)

## Silicon Impurities

impurities much more than the conventional method. The copper atoms bind strongly to silicon atoms at the edge of the microscopic voids and



**MICROSCOPIC CAVITIES** in silicon are revealed in this transmission electron micrograph. (Note scale at left, in increments of one-tenth micrometer.) The cavities, implanted beneath the silicon surface by a Labs team, act as traps for removing copper, an impurity that degrades the performance of electronic devices.

thus don't cause trouble elsewhere.

"We've found that the copper is trapped until the walls of the voids are completely covered," says Sam.

In research funded initially by the Basic Energy Sciences Office of DOE's Materials Science Division, the Sandia team formed cavities in silicon by ion implantation of helium. Heating the silicon drives off the helium and leaves nanometer-size voids. (A nanometer is a billionth of a meter.) Because the voids are stable to at least 1,100 degrees Celsius, the technique is compatible with most semiconductor processing. The team uses transmission electron microscopy to observe the voids and ion-beam analysis to detect the buildup of copper on them.

Research now under way should show whether metallic impurities other than copper can be removed this way.

### Radically Different, Probably Better

Sam, Dawn, and David also plan to work with colleagues in Microelectronics and Photonics Center 1300 to study the same effect in prototype semiconductor wafers that contain electronic device



**TRAPPING IMPURITIES** — Sam Myers (left), David Follstaedt, and Dawn Bishop (all 1112) discuss the progress of their research into trapping copper impurities with tiny voids in silicon wafers. Dawn displays a sample holder containing a specimen of silicon to be ion-implanted with helium and then heated to drive off the helium and create the voids. In the background is the ion implanter used for this research.

structures. Coordinating the effort by Sandians in Org. 1300 is John Medernach of Films and Operations Dept. 1323.

The new method could, in many microelectronics applications, replace current techniques for confining impurities. "It seems exciting to us," says Sam. "It's radically different. We think it's better. If it pans out, as we think it will, it should make its way into the microelectronics processing community." ●KFrazier(7161)/CS

(Continued from Page One)

## CEO Q's & A's

be 25. We average around a dozen throughout the corporation.

**Q:** What can you say about layoffs or early retirement incentives?

**Augustine:** If we do the kind of job we've been doing, the chance of layoffs is minimal. If I'm right about that, the possibility of early retirement incentives is even more remote.

Several questions relating to benefits were referred to Charlie Emery, who will be VP for Human Resources. Here are two of them:

**Q:** Materials we've received imply that we

won't be able to use personal absence to go to doctors' appointments. Will we have to use vacation?

**Emery:** You will still have the opportunity to use two hours in a day that's unrecorded for doctors' and dental appointments and that sort of thing. If you go beyond that, you have to record it on the time card as personal time. So there's no change in that regard.

**Q:** Why is Martin Marietta announcing changes in benefits? Benefits are an item for bargaining, and the bargaining units [unions] haven't been consulted.

**Emery:** We aren't announcing changes to benefits that affect anyone within a bargaining unit. Most of our employees are not in bargaining units, and the benefits that we announced in the Aug. 10

letter [see page seven of this issue] apply to non-union-represented employees. Any benefit changes in the union contracts will have to be negotiated.

**Note:** Several other questions were asked about specific aspects of employee benefits, with the answers being essentially "no change foreseen." Those questions were about education assistance to employees, holidays, the savings plans, and the Total Life Concept (TLC) "wellness" program. ●CS

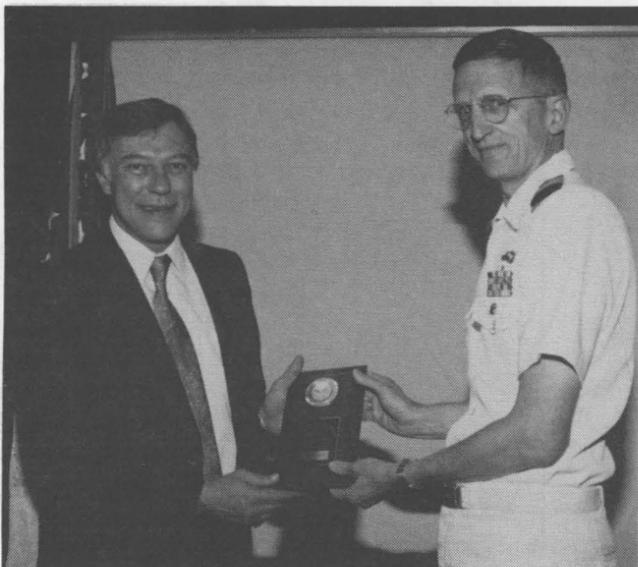
## Take Note

Upcoming New Mexico Volunteers for the Outdoors (NMVO) opportunities:

**The Ojo del Espiritu Fence Project** in the Ojo del Espiritu Santo Grant area near San Ysidro on Saturday, Aug. 28, includes fence modifications to help protect pronghorn antelope. Transportation will be provided for all volunteers. Bring a sack lunch, energy snacks, water, sunscreen, work gloves, boots, rain gear, and enthusiasm. Contact Pete Barbatsuly on 293-3908 for more information and to sign up.

**Apache Kid Backpacking Project** is scheduled for Aug. 28-29 at San Mateo Lookout in the San Mateo Mountains in the Magdalena Ranger District southwest of Socorro. Scheduled work includes carpentry, roofing, and general maintenance for the lookout station. Participants need to be in good physical condition for the hike up the mountain. Anyone interested in seeing the "Apache Kid Gravesite" can join the project leader, who will be hiking up to the gravesite on Aug. 27 (from San Mateo Cabin). The hike is approximately eight miles round trip. The Apache Kid was a bandit who lived in the area in the late 1800s. For more information, contact Jan Underwood on 271-1889.

The next general NMVFO meeting will be Sept. 1, 7 p.m., at the Home Office Plaza Clubhouse (2403 San Mateo NE). Guest speaker Jane Cropp of the Sandia Ranger District will talk about "Changes in the Wilderness." For more information about NMVO, call 884-1991.



**THREE SANDIANS** received Secretary of Defense Awards recently for contributions to the Secretary of Defense's Federal Advisory Committee on Nuclear Failsafe and Risk Reduction (FARR). Left to right: Mark Dickinson (5600) received an Award for Excellence for contributions to FARR's Positive Control Materials and Devices Study Group. (Mark's award was presented by Navy Capt. O.D. Scarborough, at Mark's right.) Bob Bradley (5702) received the Award for Excellence for his efforts on FARR's Remote Destruct Study Group. Heinz Schmitt, VP-2000, received the Medal for Outstanding Public Service for serving as Chairman of FARR's Technology Working Group from May 1991 through October 1992.

**What Do You Think?**

# Sandians Say Thanks for the Help

"What Do You Think?" features employee responses to questions posed by the LAB NEWS. Some responses have been lightly edited and condensed to meet our maximum word limit.

The current 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?"

I would like to thank Electronics Prototype Lab Team 8453-1 for their outstanding work involving the fabrication of electronic hardware for our department [Electronic Subsystems Dept. 8476]. Their training and experience are reflected in the excellent quality and workmanship of everything from the printed wiring boards to the fully assembled electronic hardware they produce. Thanks again for a job well done.

*Jim Van De Vreugde (8476)*

Thanks to the staff in Procurement Dept. 7218 who, while being understaffed, underexperienced, and overloaded beyond all reasonable expectations, are still making a valiant effort. Management should recognize their woeful plight. My SCR [Sandia Contracting Representative] is Lynne Starkweather [7218]. Thanks, Lynne.

*Ned Underhill (7301)*

I would like to thank Nicole Andrews (9232), Lorraine Baca (2615), Frank Cupps (8117), Paul Flores (2863), Gregg Giesler (contractor), Pam Harris (9545), Lanie Kidd (2337), Howard Kimberly (1672), Larry Lane (326), Charleene Lennox (1672), Richard Mackoy (365), Len Malczynski (6904), Larry McCartney (9221), Margaret Olson (2861), Lynn Ritchie (4313), Joe

Schofield (7327), Fred Trussell (334), Patty Trelue (2615), and Brad Woodworth (contractor) for their efforts in developing the Sandia Software Development Process Methodology.

*Vickie Hamilton (9249)*

I would like to thank Betty Lord (7613) for the excellent service she provided to Assessment Technologies Dept. 333 when she handled the delivery of our supplies. She no longer works in Bldg. 836, but I am sure that others are now enjoying the courtesy, friendliness, and quality that Betty provided to her customers.

*Sheryl Vahle (333)*

I would like to publicly thank the employees in Payroll Services Dept. 152 for consistently doing a great job. Their job is one that must be 100 percent accurate to assure customer satisfaction. We could all learn a lesson from them — 99 percent is not good enough. We must strive at the 100 percent level to satisfy our customers!

*Archie Lackey (9215)*

I would like to thank the Service Center Information System Development Team of Ramona Gauna (155), Ann Harper (7325), Jim House (7325), Tracy Jones (155), and Ron Schiller (7325). They delivered a superior product on a very short schedule, while meeting the very diverse needs of their customers: the 40 different service centers.

*Pete Chauvet (2802)*

Gary Shepherd (7326) deserves many thanks for spearheading the voice information system. His patience and persistence in coaxing and training all

of the (sometimes reluctant) users has already increased productivity, and not all of us even have a voice mail account yet!

*Renae Perrine (6200)*

The LAB NEWS staff says a tremendous thank-you to Mike Heiser (7327), who has helped us many times when we have experienced problems with our desktop publishing system. We always get quick, expert help from Mike, combined with a wonderful attitude. Thanks, Mike.

*Everyone in Dept. 7162*

**The Next Question**

## What Do You Think?

When the LAB NEWS reintroduced this feature several weeks ago, we said we would ask some serious questions and some fun ones. Here's a fun one:

**What is the strangest phone call, letter, or request that you have received at work — at Sandia or at a previous job?**

We'll be calling some Sandians 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 a form on 844-7841 or 844-7522.

## Take Note

University Hospital will present its fifth annual "HealthSmart" Health Fair Saturday, Aug. 21, 10 a.m.-6 p.m., at Winrock Shopping Center. The free health fair features more than 30 exhibits providing health information and medical screenings, including cholesterol screening, blood pressure and pulmonary function checks, women's health services, geriatric issues, and sleep disorder screenings. University Hospital pharmacists will discuss drug interactions, and University Hospital emergency services will be explained. For more information, call 843-2656.

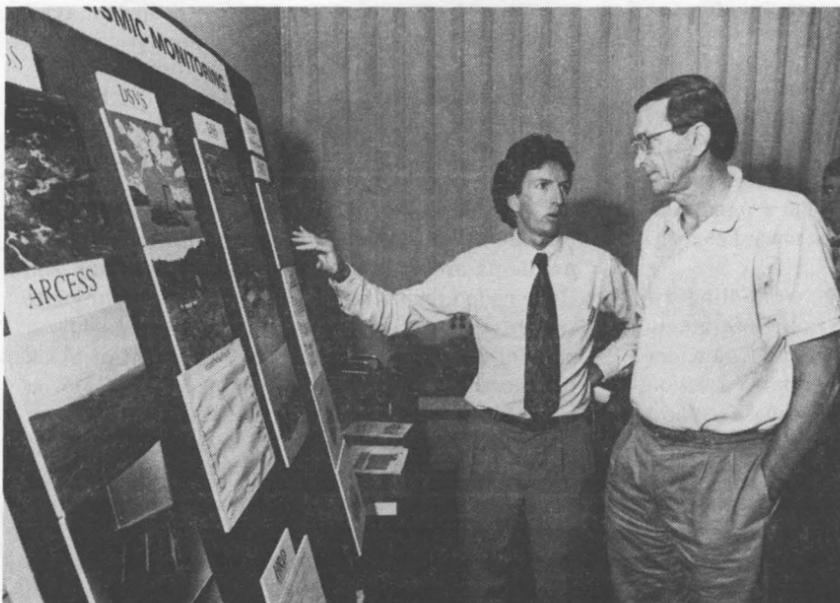
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"Ring of Fire" opens Saturday, Aug. 21, in the Dynamax Theater at the New Mexico Museum of Natural History and Science. The movie brings viewers heartstoppingly close to the action and the people and cultures that coexist with the great circle of volcanoes and seismic activity that ring the Pacific Ocean. "Ring of Fire" explores the great boundary in the earth's crust where more than 300 of the world's 400 active volcanoes are located. Movies begin every hour on the hour between 10 a.m. and 5 p.m. For information, call the Museum on 841-8837.

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"Hidden Business Opportunities in New Mexico from Los Alamos to La Montanita," sponsored by the Association of Collegiate Entrepreneurs, UNM, and the Anderson Schools of Management, will be held at UNM on Monday, Sept. 13. The conference will offer practical guidance for discovering untapped markets, finding organizations that want small-business partners, and learning about support services and about doing business with government and local corporations. Cost is \$8 (\$4 for students with a valid college ID). Tickets must be purchased in advance. For more information, call 277-3020.

Artifacts dating from the American Civil War to the Gulf War of 1990-1991 are housed in more than 5,000 square feet of exhibition space at the New Mexico Museum of Military History, located across from Old Town in the Sheraton Hotel. Displays include uniforms, weapons, personal effects, and field equipment from Europe, America, and Asia. Although the period of 1931-1935 is emphasized, the museum contains displays about most of America's major armed conflicts. The not-for-profit museum is open 10 a.m.-5 p.m. Monday-Saturday (closed Tuesday) and noon-5 p.m. Sunday. Admission is \$2.50 for adults and \$1.50 for children under 12. For information, contact museum curator Dominic Jelso on 243-2238.



**MONITORING THE EARTH** — John Keliher (right), who recently became director of the US Office of Intelligence and National Security, discusses Sandia's seismic monitoring technology with Larry Walker of Civil Space and Seismic Verification Dept. 9204 during a recent tour of the Labs. As director of this newly established office, Keliher is responsible for US intelligence, arms control and non-proliferation, security affairs, and emergency response operations.

## Retiree Deaths

Kelly T. Fosmo (86) .....4614 .....July 15  
 Donald G. Lewis (70) .....3441 .....July 17  
 James R. Coleman (67) .....155 .....July 19  
 Irma N. Buffett (95) .....5413 .....July 30

Organization numbers indicate retirees' positions at the time of retirement and may not correspond to present-day organizations.

## Sympathy

To Patty Srader (21) on the death of her father in Socorro, July 14.

To Michael Butteri (7221) and Robert Silva (1955), on the death of their mother, Margaret Silva, in Albuquerque, July 17.

To Carolyn Quinn (21) on the death of her father in Dallas, July 24.

**Center of Controversy in Field of Strong Opinions****'Perspectives on Education in America'  
Reached Unexpected Conclusions**

By Bob Huelskamp, New Initiatives Dept. 4112

Editor's Note: In the spring of 1991, word began to spread that a team of Sandia systems analysts had assessed the state of American education and reached some unconventional conclusions. The Sandians — Bob Huelskamp, Chuck Carson (both 4112), and Tom Woodall (now with Bell Labs) — found, not imminent collapse, but "steady or slightly improving trends," in the words of Bob's summary article reprinted below. The draft Sandia report became a center of controversy in a field where nearly everyone already held strong opinions.

The draft report, *Perspectives on Education in America*, underwent a long series of peer reviews in DOE and elsewhere. A report was published as an issue of *The Journal of Educational Research* (May/June 1993). Employees may see a copy at the Technical Library's information desk at Sandia/New Mexico or the Tech Library at Sandia/California.

Despite their positive findings in many areas, Bob, Chuck, and Tom stress that they weren't saying all is well with American education. Rather, they tried to achieve a finer focus on the subject and locate some of the true problem areas. They also point out that even if education is as good as it ever was, that may not be good enough for the needs of the future.

Bob summarized the study for the May 1993 issue of the education journal *Phi Delta Kappan*. Bob's article, an adaptation of his and Mike Wartell's (5906) testimony to a congressional subcommittee, is reprinted below, courtesy of *Kappan* Editor Pauline Gough. (Mike was formerly Manager of Education Outreach Dept. 35, which originally sponsored the study.)

Gough quotes President Harry Truman's 1949 request that AT&T take the opportunity to "render an exceptional service in the national interest" by managing Sandia, going on to say, "The 1991 Sandia report on education, in my view, turned that opportunity into a reality." Gough also notes that a balanced view of US schools' strengths and weaknesses "allows the critics and proponents to join forces and to focus on the all-too-real problems that plague many school systems. If we manage that task successfully, Huelskamp and his Sandia colleagues will rate prominent mention in the history of education in the 20th century."

Here is the reprinted *Phi Delta Kappan* article:

When the governors and President George Bush set forth national education goals in the wake of the September 1989 education summit in Charlottesville, Virginia, we at Sandia National Laboratories took note. We also listened to a challenge from the then-secretary of energy, Adm. James Watkins, who charged the national laboratories to become more involved in education.

Because Sandia conducts scientific research for the US government, we have a keen interest in the education system that develops future scientists, engineers, and mathematicians. Therefore, we initiated several new programs. Much of our past effort was directed toward education at the postsecondary level, but a significant portion of the new emphasis is directed toward elementary and secondary education.

In support of these new efforts, we in the New Initiatives Department [4112] of Sandia's Strategic Studies Center [4100] were asked to conduct a wide-ranging analysis of local, state, and national education systems to determine where Sandia could make its most effective contribution. The study that Charles Carson [Manager of Dept. 4112], Thomas Woodall [now with Bell Labs], and I conducted produced some interesting results. It greatly changed our initial perceptions in several areas and reinforced our perceptions in others. Overall, it sought to provide an objective, "outsider's"

look at the status of education in the US.

Whenever feasible, we looked at the data over time to put the performance of the current system in proper perspective. To our surprise, on nearly every measure we found steady or slightly improving trends. Does this mean that we are adamant defenders of the status quo, as has been suggested? The answer is no for three reasons. First, it is not clear to us that all the measures analyzed by us and others are appropriate barometers of performance for the education system. Thus the trend data on some of these measures, positive or negative, may be irrelevant. Second, even if a particular measure is appropriate, steady or slightly improving performance may not be adequate to meet future societal requirements in an increasingly competitive world. Finally, on some appropriate measures, the performance of the US education system is clearly deficient.

As our work unfolded in the spring of 1991, we subjected a draft to peer review with the US Department of Education, the National Science Foundation, and other researchers (most notably [education researcher] Gerald Bracey). Within weeks we found ourselves swept

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**"Within weeks we found ourselves swept up in the national debate on the status of education."**

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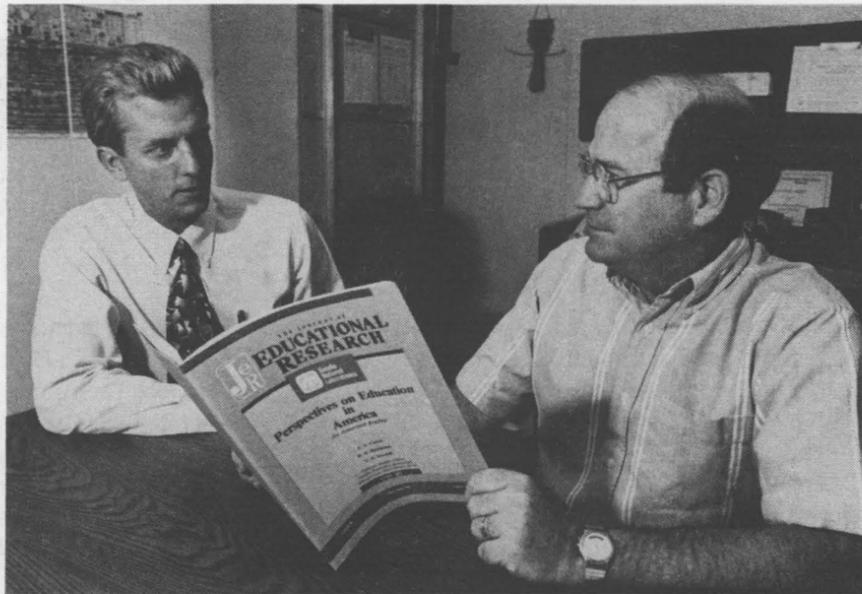
up in the national debate on the status of education. The draft report has been the subject of congressional testimony, editorials in the media, an audit by the General Accounting Office, and additional peer reviews. To date we have received nearly 1,000 requests for the final report and have been cited by authors in several publications, including the *Kappan*. The attention we have received seems to validate one of our five key findings—the need to upgrade the quality of data regarding education. The following is a brief summary of our major findings. The full report will be published in the May/June issue of the *Journal of Educational Research*. [That publication, referred to in the Editor's Note above, has now appeared.]

**Dropout and Retention Rates**

America's on-time high school graduation rate has remained steady for more than 20 years, hovering somewhere between 75 percent and 80 percent. However, some students require more than four years to complete high school, and many dropouts avail themselves of opportunities to reenter the system (night school, the General Education Development testing program, and so on), resulting in an overall high school completion rate for young adults of better than 85 percent. This rate, which is still improving, is among the best in the world.

However, gross national data can mask underlying problems. For example, the most significant dropout problems are evident among minority youths and students in urban schools. Nearly 80 percent of white students complete high school on time, and roughly 88 percent do so by age 25. Only 70 percent of black students and 50 percent of Hispanic students graduate on time. By age 25, roughly 82 percent of blacks have completed high school, but only 60 percent of Hispanics have done so. Finally, dropout reports indicate that urban students, regardless of race, drop out at very high rates.

Our report shows that recent immigration of undereducated young adults who are beyond high school



UNCOMMON PERSPECTIVE — Bob Huelskamp (left) and Chuck Carson (both 4112) look at a copy of the *Journal of Educational Research* devoted entirely to a Sandia study of "Perspectives on Education in America." The study appeared in the May/June 1993 issue of the journal.

age is significantly inflating dropout figures for the overall Hispanic population. Further analysis of this phenomenon is essential to a proper understanding of the educational needs of this growing segment of our population.

**Standardized Tests**

We evaluated student performance on both the National Assessment of Educational Progress (NAEP) and the Scholastic Aptitude Test (SAT). We found that performance has been steady or improving on the NAEP, with the greatest gains in basic skills. Furthermore, these gains have not been at the expense of advanced skills.

We also discovered that the much-publicized "decline" in average SAT scores misrepresents the true story about student SAT performance. Although it is true that the average SAT score has declined since the 1960s, the reason for the decline is *not* decreasing student performance. We found that the decline arises from the fact that more students in the bottom half of the class are taking the SAT today than in years past. Since 1971 the median test-taker has dropped from the 79th percentile in class rank to the 73rd percentile. Because more Americans are aspiring to achieve a college education today than ever before, the national average SAT score is lowered by the larger numbers of students in lower quartiles who take the test.

When we break down the data as we did for dropouts, we find that minority youths continue to lag behind their white peers on standardized tests (even though

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**"The much-publicized 'decline' in average SAT scores misrepresents the true story."**

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every minority ethnic group taking the test is performing better today than 15 years ago). For example, in spite of a 50-point improvement over the past decade in their average SAT score, black students still average nearly 200 points lower than whites. Similarly, the scores of Hispanic and Native American students trail the scores of whites by more than 100 points.

**Higher Education**

Nearly 60 percent of today's young people pursue postsecondary studies at accredited institutions, and two-thirds of those students enroll in four-year institutions. Eventually, one-fourth of today's young people will obtain at least a bachelor's degree. These rates are the highest in the world.

The changing population on today's college campuses is significant as well. The number of women

(Continued on Next Page)

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enrolled in college has been increasing for 30 years, while male enrollment has remained steady. Female enrollment surpassed male enrollment in the mid-1970s. College populations are also aging as more people enroll in postsecondary studies later in life. Moreover, four out of five college students nationwide are commuters, and more than 25 percent hold full-time jobs while in school.

As part of the Department of Energy laboratory complex, Sandia is particularly interested in the attainment of technical degrees. We found that roughly 200,000 US students earn bachelor's degrees in the natural sciences and engineering each year — up significantly from 20 years ago but representing a fairly steady rate of 4 percent to 5 percent of US youths. Meanwhile, the US grants a large number of advanced technical degrees to non-US citizens. Each year, nearly 50 percent of doctorates in engineering and 25 percent of doctorates in science are awarded to non-US citizens. However, more than half of these degree recipients remain in the US. It is important to note that, despite improvements in the past two decades, female and minority students continue to lag far behind their white male peers in the attainment of technical degrees.

**Spending for Education**

In investigating expenditures for education, we learned that, during the past 15 years, spending on K-12 education rose roughly 30 percent per pupil in constant dollars. However, disaggregating the available data showed that little of this increase went to "regular" education. Much of the increase went to "special" education and fixed costs such as insurance and retirement funds. Compared to 16 other industrialized nations, we found that US spending for "regular" education is about average, when adjusted for purchasing power parity, though how it stacks up against any specific country is heavily dependent on the method of accounting used.

**International Comparisons**

We found little credible data regarding international comparisons. The most complete data are found in the reports of the International Assessment of Educational Progress (IAEP). The results of the IAEP and other international studies indicate that average US student performance in both math and science continues to be low compared to that of other participating nations. However, we discovered that many factors influence these rankings. Quite often the major differences in education systems across countries greatly weaken the value of such single-point comparisons. In addition, reporting only the average performance of a large and

**"Average US student performance in both math and science continues to be low compared to that of other participating nations."**

heterogeneous population provides little insight into the quality of educational services provided to various subpopulations (urban students, various ethnic groups, and so on).

Other international indicators of the performance of education systems reflect well on the US. Only Belgium and Finland exceed the US in the percentage of 17-year-olds enrolled in school. The US continues to lead the world in the percentage of young people who earn bachelor's degrees and in the percentage of degrees obtained by women and minorities. This is true for both technical and nontechnical degrees.

Our research on the technical work forces of various nations also reflected well on the US education system. Although the US lags behind other countries in certain specialties (e.g., industrial engineering), the overall technical degree attainment by the work force is unparalleled in the world.

**Status of Educators**

Direct quantitative measures of the status of teachers are very difficult to obtain. Indirect measures (e.g., interviews, opinion polls, and so on) indicate that the status of educators in the US is low both within and outside the profession. From our interviews of nearly 400 educators, low self-esteem emerged as a common theme. We believe that the low opinion educators hold of themselves and the poor public perception of teachers are based on misinterpretations of simplistic data, such

as average SAT scores and international comparisons. This unfortunate cycle of low self-esteem, followed by unfounded criticism from the public, raises the specter of a downward spiral in future educational quality.

**Skills of the Work Force**

Of late, much debate in education has focused on the system's inability to produce students with adequate "skills" for the work force. According to many, this deficiency is a primary cause for a decline in US international economic competitiveness.

However, our review of the limited research on the education and training practices of business found that very few companies offer training that is intended to compensate for inadequate academic preparation of new employees. Rather, the training focuses on such social "skills" as punctuality and personal appearance. Much of the negative data circulating in our home state of New Mexico is anecdotal, and we suspect that the same is true on the national level. Nationally, nearly 90 percent of business training dollars go to college-educated employees (e.g., managers, professional salespeople) and to skilled laborers. Business dedicates very few of its training dollars to academic remediation. Moreover, much of the current "basic skills" training that does take place is directed at older workers and immigrants—not at recent graduates. Finally, our major economic competitors, Japan and Germany, far outspend the US in workplace training—in spite of the fact that many view the education systems in these countries as superior to our own.

**Changing Demographics**

Perhaps more than any other factor, the changing demographic makeup of the student body will have a profound effect on future education requirements. Immigration was higher in the 1980s than in any other decade in this century except the first, and projections for the 1990s are even higher. Coupled with low native-born birthrates, this phenomenon is creating significant changes in the demographic makeup of today's classroom. It is estimated that as many as five million children of immigrants will be entering the K-12 education system in the 1990s. More than 150 languages are represented in schools nationwide, and figures nearing this number occur in single large districts.

The American family structure is changing, and teachers are encountering more children from single-parent homes and from homes in which both parents work. These demographic changes are real, persistent, and accelerating. They will drive changes in the schools, especially since we continue to accept the challenge to educate all of our young people. According to many educators we interviewed, society is asking the schools to be engineers of social change by becoming increasingly involved in meeting students' nonacademic needs.

**National Education Goals**

With respect to leadership in educational improvement, we found that the call for education reform is truly widespread and includes many new voices. However, we believe that some suggested initiatives to achieve the national goals for education for the year 2000 may be in conflict. The implementation of a number of programs without proper coordination or a clear understanding of desired outcomes could result in little or no gain.

American society has not clearly articulated the changes required to meet its future goals. In fact, we assert that forming a consensus on required changes may be the greatest challenge facing education today. However, the concept of a national consensus is itself debatable. The US education system was built on the foundation of a combination of local control, state influence, and federal interest. The existence of more than 15,000 independent school districts nationwide attests to this concept.

**Summary of the Issues**

We believe that our research points to several issues that will pose the greatest challenges to the US education system in the 1990s. First, the nation must clarify and agree on the changes that are needed and must find strong leadership for the improvement efforts. Our schools must improve the performance of disadvantaged minority and urban students and adjust to immigration and other demographic changes. The status in our society of elementary and secondary educators must be heightened. Finally, in order to make the soundest decisions possible about all these issues, we need to upgrade the quality of the available data regarding education. ●

**feed nback**

*Q: The Association for the Blind has had the contract to operate the snack bar at Sandia/New Mexico for the past several years. The prices are astronomical and selection is not great. Why don't other vendors bid for this contract every couple of years? I would guess another vendor could offer lower prices and a wider selection of goods.*

*A: Most employees do not understand that Sandia does not control the contract with the vending organizations (which include the snack bar in Building 800A). All federal and state, and some city and county agencies fall under the 1974 Randolph-Shepard Act, which dictates that all vending and snack food services for government facilities will provide profits to the Commission for the Blind. The contract for our vending services and our snack shop is between the New Mexico Commission for the Blind and the current vendors. Sandia has no direct involvement in the contract placement process or in monitoring the performance of the contractors.*

*If you would like to call the New Mexico Commission for the Blind, the telephone number is 505-827-4479. Ask to speak to Christina Nieto or Fred Schroeder.*

*Ralph Bonner (7500)*

*Q: I recently took my car registration to Building 801 to pick up a base decal. I understand that to meet the Air Force requirements for driving a vehicle on base, proof that the vehicle meets air quality regulations is necessary, and the only way we have of doing this is to show our registration. Unfortunately, we are temporarily out of decals, so it appears that I will need to bring my registration in a second time to get one. The car is normally driven by my wife, so it is quite inconvenient to bring in the registration. I understand that these things happen, by my concern is the lack of customer focus demonstrated by the problem.*

*First, no attempt was made by Org. 7437 to create a list of those people who were turned away for decals. How do we know when they will be available? The clerk had no idea.*

*Second, I appeared in person once with my registration. A customer attitude would have allowed 7437 to make arrangements to send me a decal through the mail when they become available. [I have written a memo to Ray Chavez (7437-1) requesting this.] The clerk said that no decals could be sent through company mail—I suppose because the car registration could also have to be mailed and therefore not be in the vehicle for some time. I would hope that the reason is not that decals are likely to become lost or stolen in the company mail.*

*From my limited knowledge about our rules, it seems either of the above solutions to minimize customer inconvenience is possible. I would like to see organizations that work with the public, such as 7437, receive training that might prompt them, when future problems occur, to anticipate customer needs and minimize inconvenience.*

*A: The issuance of motor vehicle base decals for Sandia/New Mexico employees and contractors is delegated by the Air Force to Sandia/New Mexico, as long as all base regulations are met. A recent regulation was the certification of emission testing for most motor vehicles entering the base. This must be done in person prior to the issuance of a decal. For motor vehicles registered in Bernalillo County, the registration certificate must be presented, and for motor vehicles registered elsewhere, an emission certificate must also be presented.*

*Just about the time you tried to register your vehicle, the Badge Office ran out of decals and the supplier was late in delivering new ones. In the interim, we obtained Air Force decals and issued them on a temporary basis. That should have occurred in your case, and upon arrival of the Sandia decals, one would have been mailed to you.*

*Thanks for your concern, and we apologize for any inconvenience.*

*Jim Martin (7400)*

**Sympathy**

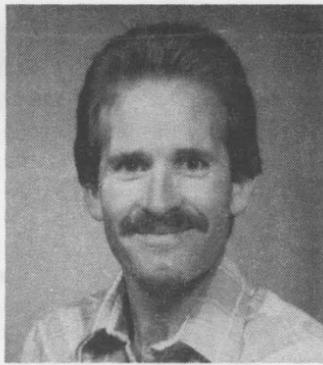
*To Anne Giganti (21) on the death of her father, Curtis Edwards, in Albuquerque, June 5.*

*To Linda Sickels (4301) on the death of her mother, Johnnie Barnes, in Arkansas, June 9.*

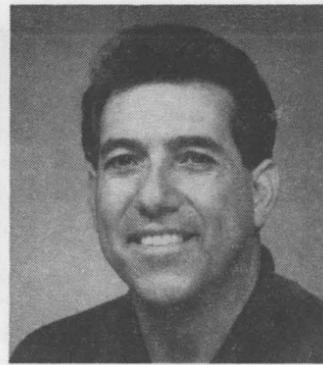
# MILEPOSTS

## LAB NEWS

August 1993



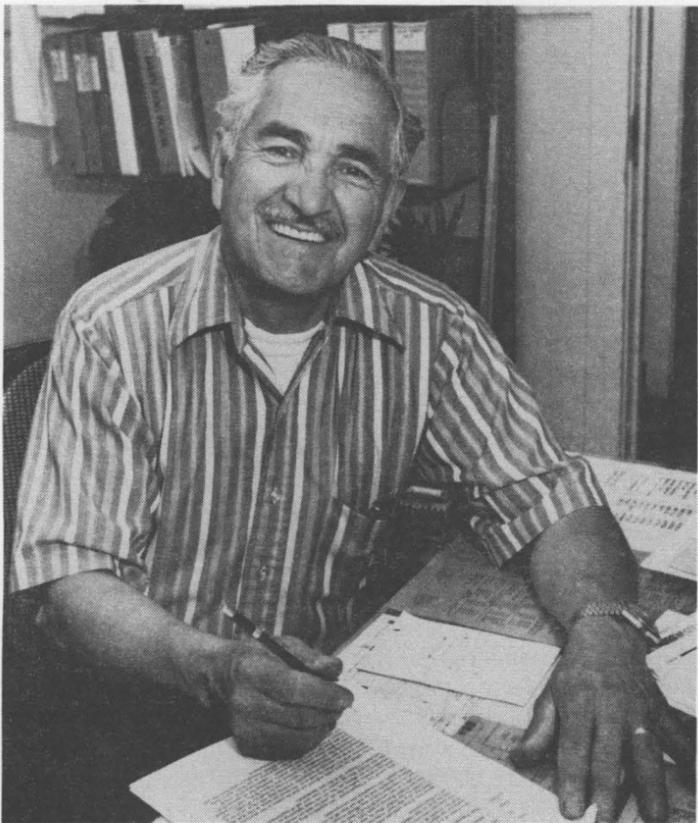
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2481 15



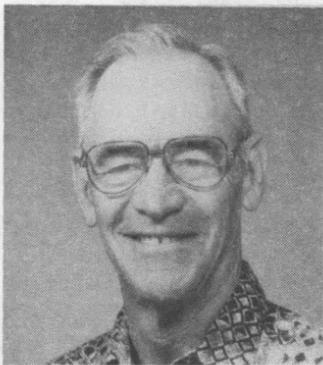
James Landavazo  
9621 25



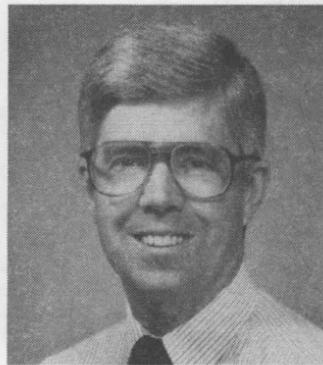
Joyce Van Berkel  
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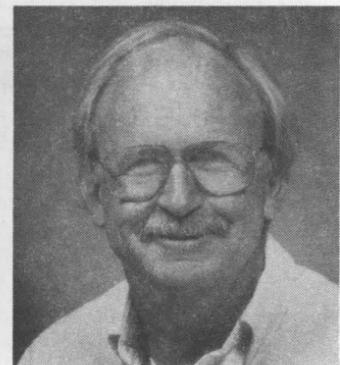
Joe Lucero  
9813 30



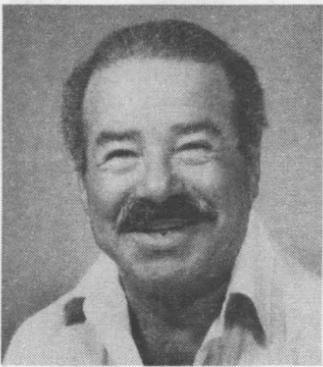
Merrill Robinson  
2561 40



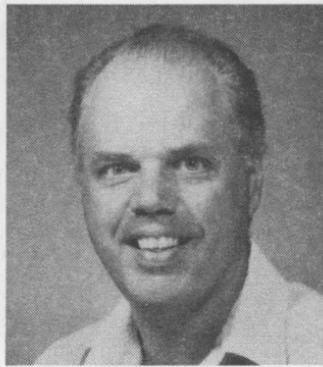
Bruce Davis  
184 15



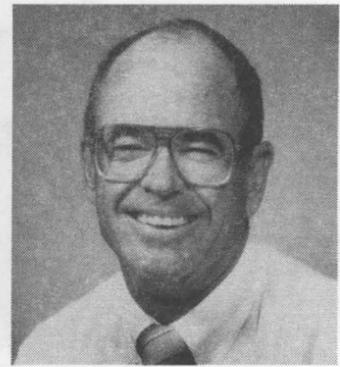
Conrad Stayner  
5513 30



Pat Sanchez  
7328 35



Mark Bleck  
5713 15



Michael Heck  
2334 30



Lloyd Bonzon  
2514 25



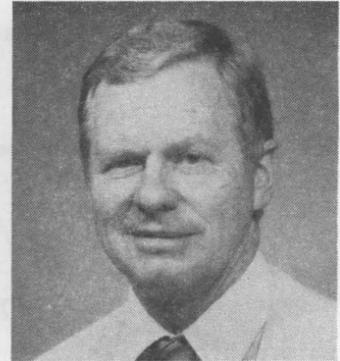
Joanne Pendall  
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Charles Mika  
7542 25



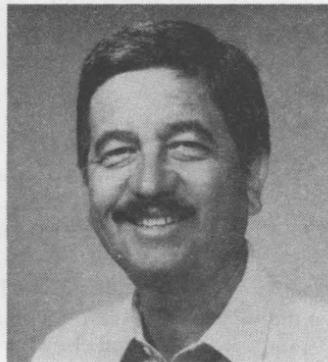
Patricio Abeita  
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Arlin Cooper  
331 30



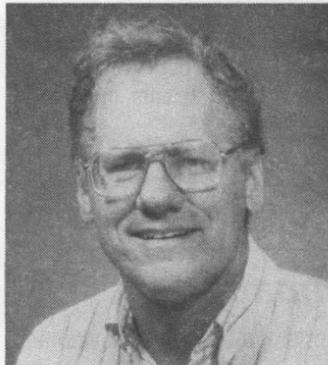
Chris Tolentino  
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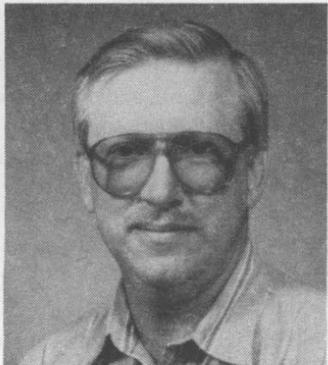
Eli Perea  
2643 25



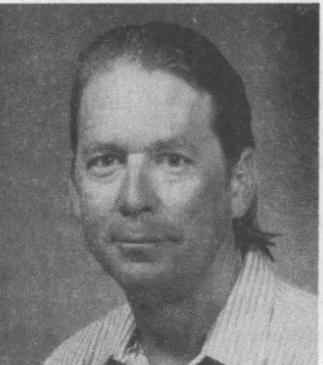
Marybelle Tabet  
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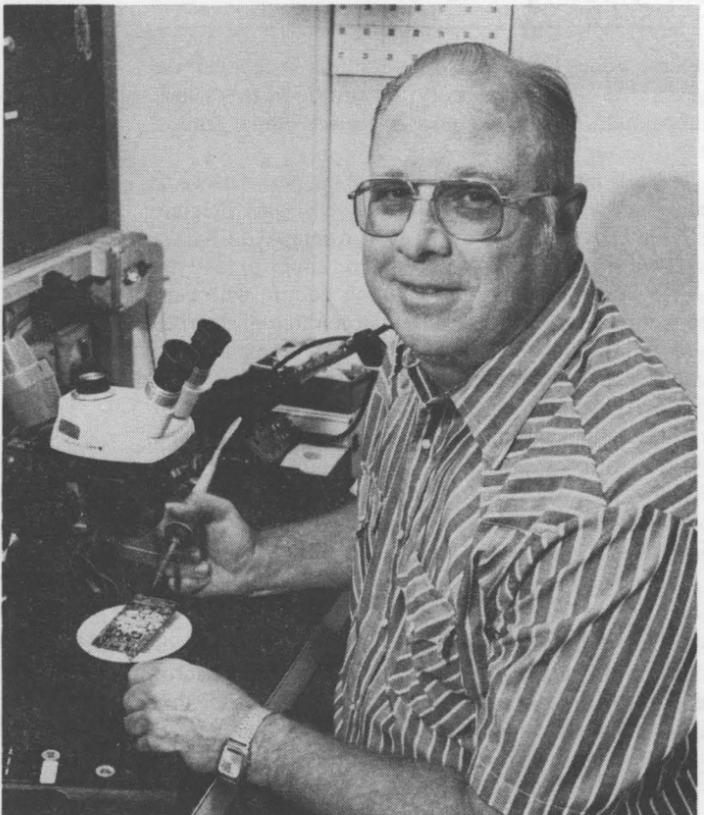
Floyd Spencer  
323 15



Robert Parks  
2861 25



Robert Elder  
2631 15



John Erni  
7617 30

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**

REEL-TO-REEL TAPE DECK, Akai 747, DBX noise reduction unit, more than a dozen tapes, hardly used, \$325 OBO. Peery, 271-9683.

BUILT-IN STORAGE UNIT, for bathroom, three 1/4" x 16" mirrored hinged doors, storage shelves, 48"W x 36"H x 4"D, solid wood frame, \$100 OBO. Stang, 256-7793.

ROLL BAR, for pickup, \$200 OBO. Gasser, 255-6244.

STUNT KITE, 8-1/2-ft. wingspan, dual-line control, rip-stop nylon, professional graphite frame, \$150 new, asking \$80. Montoya, 296-4268.

BRASS PIANO LAMP, 15"H x 10"W, \$15; Kodak Instamatic camera, w/General Electric flash cubes; stuffed elephant, 21"L x 13"W, by Alesford. Wagner, 823-9323.

LAPTOP COMPUTER, Toshiba T1000, 256KB ROM, 512KB CMOS/RAM, w/ink jet printer, \$350 OBO. Roybal, 865-1090.

NINTENDO GAMES: *Mission Impossible, Jordan vs. Bird*, \$10/ea.; *Peter Pan, Tetris, Star Voyager*, \$15/ea.; *Battletoads*, \$20; *Laser Invasion* w/scope, \$25. Sturgeon, 281-9035.

TREADMILL MONITORS, nine functions, speed starts at zero, excellent condition, \$350; stereo console-style radio phonograph records, \$120. Smith, 299-7151.

AKITA, 1-1/2 yrs. old, full bred, brown w/black snout, very loving, \$300. Smith, 296-1898.

WINDSURFER, O'Brien Sensation, stable beginner to intermediate board, complete w/mast, clamp-on boom, and sail, \$215. Horton, 883-7504.

DINING ROOM SET, includes table, chairs, and china cabinet, must sell soon, entire set for \$350 OBO. Waggoner, 293-4755.

INCA BANDSAW, cherry stand, mitre guide, rip fence, cool blocks, and two blades, \$375. Hotchkiss, 268-0266.

TRAILER HITCH, receiver class III, for '78-'88 Chev. pickup or van, \$65; chrome roll bar, for '73-'93 Chev. pickup, \$95. Breckenridge, 1-832-4215.

GUITAR AMPLIFIER, Peavy Bandit Solid-State, 80-watt, 12-in. "Scorpion" speaker, lead and rhythm channels, plus reverb, \$200. Barker, 899-2018.

SHELTIE PUPPIES, mini-collies, AKC-registered, 14 weeks old, two males, mahogany sables, great bloodlines, great pets, have shots, \$150/ea. OBO. Davalos, 293-7980.

COMPUTER, 386SX, co-processor, 4MB RAM, 130MB HD, two floppy drives, modem DOS, Windows, mouse, joystick, games, \$850 OBO. Campbell, 296-8304.

BABY ACCESSORIES: Graco Brougham stroller, \$50; umbrella, \$10; Fisher Price bedrail, \$12; diaper pail, \$10; changing table, \$60; gate, 96-in., \$20. Dobranich, 298-4547.

ALUMINUM SLIDING DOOR, 6-ft., complete frame and all, make offer, Carter, 294-3267.

RUGER MINI-30, w/scope; socket set, 1-in. drive. Senglaub, 281-8002.

RIMS, \$10/ea.; rear window, \$35. Both for Nissan Pickup. Howard, 839-9203.

LOBO BASKETBALL TICKETS, two adjacent seats, section 16, row 5, all or part season, \$300 for full season. Hadley, 821-7324.

VOIT DYNAFLEX WORKOUT STATION, over 30 exercises, plus stair stepper, white w/blue bench, new condition, \$200. Myers, 271-1525.

GUITAR, Kay, 3/4-student-size, never used, brand new condition, \$65. Molecke, 296-5850.

STORM DOOR, 32-in. sliding glass panels and screens, excellent condition, \$90. Ostensen, 296-4227.

COCKER SPANIEL, female, 11 months old., affectionate and friendly, has all shots, \$125. Chadwick, 298-4524.

WATERBED, king-size, w/three sets of sheets, 12 drawers, headboard w/mirror and shelves, \$200. Ortiz, 831-0274.

GAS DRYER, Sears Kenmore, Heavy Duty Plus, almond, great condition, \$150; 7-piece dining set, casual, \$125. Jaramillo, 275-3532.

WHEEL RIMS, w/rings, 15 x 6, almost new, 5 for \$175; automobile sound system. Ortiz, 292-5589, leave message.

BED, queen-size, 4-post Rice, Kincaid, \$300, w/mattress, \$600. Smith, 275-8185.

WOOD-BURNING STOVE, black, pot-bellied, Majestic, 42-in. tall, 20-in. across front. Shepherd, 828-9743.

WASHER & DRYER, Hotpoint, white, 3 yrs. old, 2-yr. warranty on washer, excellent condition, \$400 for both; sofa sleeper, \$80. Tweet, 275-9257.

STUDENT DESK, French provincial, w/hutch, \$95. Mahn, 823-4796.

HIGH CHAIRS, two, Century, \$35/ea. Kimberly, 293-5835.

MATTRESS & BOX SPRING, king-size, \$100; teak and leather reclining chair & ottoman, \$150. Class, 822-8101.

CEMETERY LOTS, Sandia Memorial Gardens, two spaces, two vaults, double marker, prime location, current value \$3,765, sell for \$2,700. Haycraft, 299-3220.

PRINTER, Star Micronics Gemini-10X, 9-pin, w/IBM parallel cable, \$30. Coon, 884-4416.

RABBIT CAGES, self-cleaning, w/"poop chutes," \$25; rabbits, \$5/ea. Castillo, 836-4213.

RAILROAD TIES, 9-ft., from disassembled retaining wall, good condition, will help load, \$6/ea. Haschke, 299-0348.

SNARE DRUMS, two. Douglas, 281-9843.

ICE CREAM FREEZER, handcrank, \$15; branding irons, \$12/ea.; car jack, \$10; printer's trays, \$18/ea. Peterson, 256-7514.

S&W REVOLVER, 357 Magnum, Model 687, 4-in. bar, stainless steel, \$235. Parks, 884-7475.

GE REFRIGERATOR/FREEZER, side-by-side, 23.6 cu. ft., water & ice dispenser in door, harvest gold, excellent condition, \$350. Liguori, 256-3613.

COMPUTER, Macintosh SE, 3MB RAM, 40MB file, added 19-in. B/W monitor, 2-pg. layout desktop publishing, Adobe fonts, \$1,000. Hogan, 296-8846.

BIKE RACK, \$20. Garrett, 294-4970.

CAROUSEL SLIDE PROJECTOR, Kodak 760H-K, \$50; case for Kodak slide projector, leather, \$10; Singer Pioneer beaded 40 x 40 screen, \$7. Klecotka, 821-1466.

BOXER PUPPIES, male and female, AKC-registered, beautiful markings, excellent pedigree, available Aug. 22, \$350/ea. Lucas, 255-1401.

BEDROOM SET, Mediterranean, queen-size mattress, 3-drawer dresser, armoire, 2 nightstands, \$700; Eureka vacuum cleaner, \$50; Oster kitchen center, \$50. Sieradzki, 292-5049.

GUN, Ruger M77 220 Swift, w/6-18X scope, reloading dies, brass and extra custom stock, \$425. Black, 292-3564.

HEADBOARD, king-size, Drexel Heritage Chinese style, \$1,400 new, sacrifice for \$700. Lloyd, 822-8567.

WHITE WINE GRAPES, Villard Blanc, Vidal Blanc, mid to late Aug., my vines were prolific, have extras, 25c/lb. Smith, 892-8633.

ALTO SAXOPHONE, for student, like new, \$375; Bundy clarinet, \$125. Aragon, 888-3473.

WASHING MACHINE, needs repair, part costs approximately \$40, free. Anderson, 883-2647.

JR. FORMAL DRESSES: metallic pink/black velvet, long; green velvet/taffeta, short; violet taffeta, new. All size 11, free alterations. Thompson, 292-2877.

COLOR TV, portable, RCA, 13-in. screen, color TV antenna, \$55 for both. Sheldon, 888-5971.

CAMPER, 10.5-ft., over-the-cab, self-contained, \$1,000. Desjardins, 821-2744.

WATERBED, king-size, complete, waveless mattress, bookcase headboard, storage under pedestal, new heater, \$150. Brown, 268-9314.

PLANER/JOINER, 6-in., \$225; steam cleaner, propane heated, \$175; hydraulic bumper jack, \$80. Pritchard, 293-5297.

ASH LOFT BED, \$150; dual-action exercise bike, \$150; flute, \$125; wet-suit, \$50. Feibelman, 242-1946.

WASHING MACHINE, Frigidaire vertical action, white, runs but is noisy, \$40; Cairn terrier, AKC-registered, male, 3 yrs. old, \$80. Shaut, 299-8569.

EPSON PRINTER, FX286NLQ, \$95; Epson FX-100, \$80; cable, \$10; see it work. Dietzel, 294-4702.

COMPUTER, IBM AT 286, dual floppies, monitor, 20MB HD, \$375; IBM printer, \$75; IBM printer, 24-pin, \$125. Dean, 299-3281.

WINDSURFER, Hi-Per Tech, 9' 4", w/pads, straps, and blade fins, fiberglass and aluminum masts. Ritchey, 298-4311.

AREA RUG, approximately 6' x 10', Navajo pattern in earth tones, essentially unused, \$100 OBO. Curtis, 883-7670.

GUITAR, '69 Martin D-18, w/professional case, \$900 OBO; Hondo bass, student must sell, \$100 OBO. Cooper, 888-0967.

CEDAR SHAKES, used, ideal for mountain cabin roof, \$30/ea. square. Carter, 877-1485.

**TRANSPORTATION**

'72 JEEP CJ5, 6-cyl., canvas top, tow bar w/manual winch, roll bars, new tires, clean, good condition, must see, \$2,500 firm. Chavez, 299-3839.

'87 TOYOTA MR2, 5-spd., AC, great gas mileage, clean, excellent condition, must sell, \$6,995 OBO. Sanchez, 836-2782, leave message.

'87 DODGE RAM CONVERSION VAN, all options plus extras, one owner, low mileage, prime condition, \$7,500. Stocks, 344-7755.

'84 HONDA INTERCEPTOR, 13K miles, excellent condition, \$1,950 OBO. Howard, 839-9203.

'88 KAWASAKI KX-80, new plastic, very fast, \$900; bike, 10-spd., \$60; BMX Diamondback bike, C/B Viper, \$50. Lloyd, 889-8934.

'77 MOBILE TRAVELER RV, cab overhead, Dodge 440, 26-ft., self-contained, awning, AC, \$4,000. Ruttle, 883-5547.

'69 DODGE CHARGER, restored to factory new, 440, AT, PS, PDB, AC, RT/SE equipped, 2nd place muscle car nationals, \$11,000 OBO. Pantuso, 892-3641.

'86 FORD XL F350, crew cab, 6.9 diesel w/turbo 4-spd. transmission, has 9-ft. Shadow Cruise camper, self-contained. Tyree, 296-3365.

'91 MAZDA MIATA, blue w/hard top, AC, 27K miles, under warranty, must sell, having twins, \$13,500 OBO. Jackson, 291-0584.

BIKE, Dyno Detour w/mags, pegs, etc., excellent condition, cost \$250, sell for \$75 OBO. Dunivan, 296-3937.

'83 NISSAN MAXIMA, brown/beige, all options, exceptionally clean, like new, high quality for used price, \$4,200. Myers, 271-1525.

'78 DODGE PICKUP, 6-cyl., runs well, needs body work, \$300. Babcock, 881-3563, leave message.

'85 FORD F150 PICKUP, 4WD, 300-cu-in. 16, 4-spd., 133K miles, AC, PS, long bed, camper shell, new paint, good condition, \$4,500. Conway, 281-8650.

BICYCLE BUILT FOR TWO, Schwinn Twinn, 5-spd., touring style, like new condition, \$250 OBO. Grieco, 271-9020.

'78 MERCURY MONARCH, 250 6-cyl., AC, PS, PB, cruise, AT, 2-dr., 85K miles, excellent condition, \$1,600. Showalter, 1-832-0514.

BICYCLE, Religh Technium Pro, aluminum, Shimano 105, 52-54cm, 3 yrs. old, very clean, \$300. Potter, 869-4716.

BICYCLE, Bianchi Pro frame, 58cm, Columbus SP/SL tubes, chromed campy dropouts, DuraAce braze-on front derailleur, \$275. Hotchkiss, 268-0266.

'39 OLDS. L-80, flathead 8, 4-dr., rebuilt engine, clutch, transmission, needs interior, excellent body, \$3,600. Wood, 293-0449.

'88 MUSTANG GT 5.0, 5-spd., PL, PW, AC, tilt, cruise, cassette, tint, red/gray, 28K miles, perfect condition, \$8,900. Baca, 271-2962.

'92 HONDA ACCORD, 4-dr., AT, AC, PS, PB, dark gray, all maintenance records, excellent condition, \$12,500 OBO. Smith, 275-8185.

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

WOMAN'S MOUNTAIN BIKE, Schwinn, excellent condition, \$120; man's touring bike, Centurion, almost new, \$100. Garrett, 294-4970.

'76 MG MIDGET, good condition, \$1,500. Chow, 281-9235.

'87 PORSCHE 944 TURBO, red, 5-spd., AC, sunroof, ABS brakes, PW, service records, recently serviced, excellent condition, 39K miles, \$14,600. Sparks, 898-1252.

'90 ACURA INTEGRA LS, 4-dr., 5-spd., AC, AM/FM cassette, cruise, full power, privacy glass, low mileage, clean, excellent condition, \$11,500. Owyong, 294-1884.

'88 GLASTRON SPORT CRUISER, 23-ft., 350 magnum, 270-hp, 55 prop, 227 hrs., loaded, \$12,000. Showalter, 889-7627 days, 1-832-0514 evenings.

'82 FORD LTD CROWN VICTORIA, one owner, PW, cruise, AM/FM stereo, black/red, meticulously maintained, detailed records, \$2,995 OBO. Harrison, 897-0658.

'83 CHEV. SUBURBAN SILVERADO, 5.7L, AT, AC, PS, PB, stereo cassette, cruise, Michelin tires, 51K miles, \$5,000 firm. Robinson, 865-7787.

'90 OLDS. CSS, white, 4-dr., loaded, in storage since '91, like new. Rael, 884-4778.

'83 CHEV. BLAZER SILVERADO, 4WD, 305 V8, AT w/overdrive, PS, PB, AC, folding rear seat, towing package, \$3,750. Souther, 254-9361.

'81 EAGLE WAGON LIMITED, 107K miles, PS, PB, AC, brown, 4WD, \$2,500; '84 Rabbit GTI, AC, new tires, struts, sporty, good condition, \$2,700. Pritchard, 293-5297.

MOUNTAIN BIKE, Nishiki Alien, Shimano Deore XT, excellent condition, \$1,150 new, asking \$850. Hughes, 271-9768.

'88 FORD AEROSTAR, AT, PS, PB, AC, hitch, AM/FM cassette, tinted windows, good condition, \$6,000 firm. Thomas, 281-1581.

BICYCLE, Mongoose, 20-in., \$150. Feibelman, 242-1946.

'89 TOYOTA CELICA GT, 66K miles, AC, NADA \$9,450, asking \$8,750 OBO; '84 Toyota Supra, fully loaded, sunroof, \$4,500 OBO. Both excellent condition. Cantu, 899-2103.

'79 DODGE 024, 2-dr., fastback, 4-spd., one owner, 116K miles, \$1,000 OBO. Byers, 298-5189.

'90 EAGLE TALON Tsi, turbo, all-wheel drive, 47K miles, white/black, extras, extended warranty, immaculate, \$11,700. Adelmann, 899-8699.

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

MOUNTAIN BIKE, Raleigh w/Shimano hardware, includes helmet, luggage rack, pump, and water bottle w/mount, \$200 OBO. Curtis, 883-7670.

'83 BMW 733i, black w/ivory leather, PW, sunroof, very strong and smooth, top quality sedan, \$6,750 OBO. Gwinn, 281-9897.

FREESTYLE BIKE, Hutch Trickstar, student must sell, \$100 OBO. Cooper, 888-0967.

'87 PLYMOUTH VOYAGER, V6, AC, AT, PS, cruise, AM/FM stereo cassette, 76K miles, new transmission, brakes, and shocks, \$7,000. Cabe, 857-0639.

SAILBOAT, '84 Catalina, 22-ft., w/trailer, outboard motor, two jibs, loaded w/extras. Asselmeier, 298-0460.

'77 MGB SPORTS CONVERTIBLE, blue w/black rag top, four-on-the-floor, radio, heater, new tires, priced right. Gallegos, 841-6405.

BICYCLE, 16" Huffy, excellent "starter" for kid, good condition, \$25. Shirley, 883-3210.

3-BDR. MOUNTAIN HOME, Cedar Crest, one acre, 1,100 sq. ft. hardwood floors, garage, dog run, appliances included, 20 minutes to Sandia, charming, \$86,000. Watson, 281-2691.

2-BDR. TOWNHOUSE, 2 baths, Four Hills, additional room for office, 2-car garage w/opener, built-in storage, beautiful, best value, \$139,000. Hogan, 296-8846.

4-BDR. HOME, 1,977 sq. ft., split level, 1-3/4 baths, single-car garage, large backyard, NE heights, by owner, \$96,500. Warner, 294-2639.

3-BDR. MOBILE HOME, 14 x 80, 2 baths, Four Hills Mobile Home Park, \$15,000, ask for Rosie. Huff, 296-3349.

3-BDR. HOME, w/auto sprinklers, nice landscaping, close to KAFB in Four Hills addition: 12516 Yorba Linda SE. Ballweg, 293-3487.

R-1 LOTS, two, prime, in Taylor Ranch, 75' x 100', must sell, \$32,000/ea. Hanes, 292-6512.

RANCH, 265 acres deeded land, 640 acres state lease, 3 miles southeast of Mountainair, flexible terms. Baca, 864-1402.

**WANTED**

MOVING BOXES. O'Keefe, 843-7501.

HARDY BOYS BOOKS, by Franklin Dixon; Happy Hollister books, by Jerry West; Lincoln Logs. Torczynski, 292-7191.

MARBLES, will buy or trade; cinderblocks; '86 Ford Escort body. Brooks, 255-7551.

CAGE, for two guinea pigs, wire or aquarium type, good condition, water bottle, etc. Sanchez, 823-2520.

HOUSEMATE, female or male, 3-bdr. home, separate baths, 2 car garage, fenced yard, small pet OK, \$300/mo. + 1/2 utilities. Ewen, 836-3563.

SOMEONE to tutor for ham radio license, Morse code, and rules/technical section. Riley, 869-2119.

CLAY FLOOR TILES, square, 8-in., variegated cinnamon/chocolate color. Ortiz, 292-5589, leave message.

SINGER, for non-profit "rock-n-roll" group, just for fun. Douglas, 281-9843.

CHEST FREEZER, bigger and cheaper the better, looks don't matter. Kargel, 294-9025.

NORDICTRACK cross-country machine, prefer Pro model. Rodacy, 293-2668.

OAK BOOKCASE, large, sold at Price Club in '91, measures 48" x 60", and has cupboard doors across bottom portion. Beasley, 298-3398.

DRUM SET, or individual drums, for very enthusiastic 9-yr.-old beginner. Field, 828-8577 (pager) or 268-0025.

HOUSEMATE, to share 3-bdr. 2-bath house, near Montgomery and Wyoming, prefer responsible, quiet, non-smoker, \$300/mo. + 1/2 utilities. Wise, 294-0396.

BABY STROLLER in good condition. Kruse, 881-4169.

TOM LEHRER RECORDS to borrow or buy. Roeschke, 266-8988.

FURNITURE: 6-drawer dresser, bureau, student desk, queen-size captain's bed, all wood, no veneer. Glass, 268-5391.

HOUSE TO RENT, in NE heights, for 2-3 months while building new home, non-smoker, non-drinker, no pets/children. Levan, 293-0079.

**WORK WANTED**

HIGH-SCHOOL STUDENT looking for light hauling work; call for estimates. Kulju, 299-8182.

RESPONSIBLE TEEN would like to babysit evenings, weekends, prefer area east of Louisiana. Rodacy, 293-2668.

**LOST & FOUND**

LOST: Gold chain with Saint Mary and Jesus medal, between cafeteria and Bldg. 891, Thursday, July 29, \$20 reward. Lake, 888-4581.

LOST: Bicycle chain, w/red rubber cover and lock, fell from bike between Bldgs. 800 and 880. Jennings, 845-8554.

**REAL ESTATE**

3-BDR. BRICK HOME, 1-3/4 baths, Bellhaven, skylights, 2-car garage, fireplace, 2-year-old roof, large covered patio, \$117,000. Fjelseth, 296-2257.

2-1/2 ACRES, Edgewood, next to BLM land, all utilities available, double-wide mobile acceptable, 20% down, \$25,000. Huppertz, 281-3207.

4-BDR. HOME, 2-1/2 baths, 1,662 sq. ft., Laurelwood, fireplace, 2-car garage, dog run, 6 years old, excellent condition, \$99,900. Skroch, 839-0408.



**Coronado Club Activities**

## Get Caught in the Crossfire

**CROSSFIRE TONIGHT** — On the Club stage tonight will be Crossfire, a six-piece group that plays fine country/western and variety music. You'll like 'em — we guarantee it! And you can bet you'll like the kitchen crew's creations, too. Tonight it's filet mignon or fried shrimp, each two-for-one priced at \$14.95. Or join the crowds at the fabulous all-you-can-eat buffet for just \$6.95. Here's a tip: Call 265-6791 and make your reservation now.

**CLUB GOES KOUNTRY 2-MORROW** — It's gonna be good, so first make your reservation (265-6791). Got the reservation made? OK, here's what you'll be enjoying: It's the Kountry Fest tomorrow evening, Aug. 21. "Fiddlin' Doc" Gonzales and the Orange Blossom Express will play the best in Western swing from 7 to 11 p.m. As a special treat, the Coyote Canyon Cloggers will perform at 8 p.m. A little uneasy about this C&W dancing? Come early and learn — from 6 to

7 p.m., there'll be lessons to teach you the best way to scoot your boots. Of course there'll be some great vittles. For just \$7.95, you get barbecue beef, baked chicken, ribs, and all the trimmings. Just one catch: Those reservations we were talking about are really, truly required.

**BRUNCH ALERT** — The Club's tea dance favorites, Bob Weiler and Los Gatos, will be playing on Aug. 22. As usual, the dance starts at 1 p.m. and continues until 4 p.m. You can start your Sunday relaxation with the Club's scrumptious brunch, served from 10 a.m. to 2 p.m. Reservations required (265-6791).

**BINGO GOES ON** — Every Thursday evening, bingo starts with the Early Bird game at 6:45. You know what they're saying: You could be the one to win as much as \$2,000. Buffet and card sales start at 5:30 p.m.

**Floating Rings and Human Batteries**

## Explora Science Center Will Open Next Week

Passing through Bldg. 802 in recent weeks, many Sandians might have felt they were being watched. No matter where you stood in the first-floor lobby, a concave mask appeared to be staring right at you.

The mask, an example of a negative relief, was one of several Explora exhibits, including floating rings and a human battery experiment, on display at Sandia before their removal last week to a new home. Next week, these and some 40 similar hands-on science exhibits will make their debut at the Explora Science Center's grand opening in the First Plaza Galeria Aug. 27-29.

"The Explora Science Center will increase public awareness and understanding of science and technology," says Marvin Moss of Intellectual Property Development Dept. 251, who serves on the center's board of directors. "The core of the Center will be a science learning facility, or museum, to convey basic concepts of science and explain advances in technology through hands-on exhibits and demonstrations."

The Explora Science Center, one of several City of Albuquerque quality-of-life projects, has received a total of \$4.1 million in city, state, and private funds. New Mexico's universities and the national labs will also participate, says Marvin.

"New Mexico has a wealth of people with experience in science and technology," says Marvin. "The Explora Science Center will assist in utilizing this important resource for advancing the understanding of science."

New exhibits at the Explora Science Center range from an air cannon that demonstrates the existence of invisible forces by blasting a puff of air at a target, to a laser spirograph that visitors can use to create their own laser show.

The center's ribbon cutting ceremony will be held Aug. 27 at 10:30 a.m. That evening, the Explora Foundation will hold a fund-raising event in the Galeria. Tickets for the event are \$25 and include a sneak preview of museum exhibits, music by the Albuquerque Youth Symphony, and refreshments.

The new center will be open to the public Aug. 28-29 from 9 a.m. to 6 p.m. Free grand opening admission tickets are available at all Albuquerque Sunwest Banks. All visitors must have the tickets to get in during the grand opening. For more information about tickets, call 842-6188. ●DT

## CRADA Customers Express Their Satisfaction with Labs Partnerships

Sandia has been getting some rave reviews lately from companies working with the Labs on cooperative research and development agreements (CRADAs).

Technology Transfer Center 4200 started sending out "CRADA Partner Surveys" about a year ago to see what the Labs' industry partners had to say about their associations with Sandia. "The surveys provide subjective feedback and make us aware of any problems our customers are having working with us," says Susan Brown (4200).

Surveys are sent to an industry partner three months after the start of a CRADA with that company, and then one year later, she says. If appropriate, responses are forwarded to the line organizations responsible for the CRADA. Most of the information useful to Sandia comes in the form of open-ended written comments, she says.

During his recent testimony to the House Committee on Science, Space, and Technology, VP for Laboratory Development Paul Robinson (4000) relayed some of those customer responses to Congressional leaders. Here are several:

"I would like to express my appreciation for the interaction of Sandia National Laboratories' Combustion Research Facility. . . . Due in large part to Sandia's input, we are continuing to make progress in solving combustion-related problems. The primary improvements are in improved efficiency and reduced waste [which] could total approximately \$1 million annually." — *L.E. Nemecek, Northern Indiana Public Service Company, Gary, Ind.*

"I am sending this letter to express my deep gratitude for the assistance you rendered for our company. . . . As of the end of April, we completely eliminated the use of Freon in our facility. As you suggested, we are using solvent turpene, followed with a plasma clean. Your suggestions were a great help to our manufacturing process [and] reduced the cost of solvent to \$12 per gallon (from \$62 per gallon)." — *Yuni Corcoran, RSM Electron Power, Inc., Deer Park, NY.*

"We would like to bring to your attention an example of an outstanding technology transfer effort conducted by the Sandia National Laboratories. As a result of implementing Sandia's recommendations, we have witnessed a dramatic improvement in the performance of the solar [power] system, along with significant electrical energy cost savings. For the year 1991, equipment availability increased from 53 percent to 82 percent and our net electrical energy cost savings

exceeded \$60,000. The complete refurbishment will cover a two-year period, or until the system is 100 percent operational. At that time, we expect net annual energy savings of \$100,000." — *D.C. Knipfer, D. L. Simmons, and R. H. Combs, Gould, Inc., Chandler, Ariz.*

"Vindicator Corporation wishes to extend our thanks to Sandia National Laboratories for the outstanding cooperation and assistance we received. . . . This was a highly leveraged CRADA: only \$20K of DOE funds were utilized to help create a product that will have several [million dollars worth] of sales over its lifetime. The Return-on-Investment should exceed 100-to-1." — *J. A. Summerlin and R. M. Allen, Vindicator Corporation, Austin, Tex.* ●JG

## Welcome

*Albuquerque* — Dennis Johnson (7001); *Other New Mexico* — Melinda Horton (154), Paul Kuehne (6624).

*Elsewhere: California* — Mary Pickens (6121), Kenneth Shea (1812); *Texas* — Deborah Koeck (4112); *North Carolina* — Sarah Bigger (6306); *Utah* — Kirsten Randolph (7550).



**SUPERCOMPUTERS** — Mary Weisenhaus (left), a teacher at Albuquerque's Cibola High School, and Sharon Carruth (right) of Alabama show Cassandra Shaw of Applied and Numerical Mathematics Dept. 1422 some of the things they learned as part of the Advances in Supercomputing program workshop held earlier this summer. The AIS program provides computational science and high-performance computing education, training, and curriculum materials to teachers and helps set up classroom environments to support education for these teachers and students at their schools.