

Update: Al Narath Gives His Views After Six Months on the Job

Al Narath will complete his first six months as Sandia President on Oct. 1. Al returned to Sandia after serving five years as Vice-President for Government Systems at AT&T Bell Labs. Al first joined Sandia in 1959 as a staff member. He was Executive Vice-President when he left for his AT&T assignment in 1984.

Al took time recently for a LAB NEWS interview to explain some of his ideas and to elaborate on some new Sandia initiatives and directions. Many of his comments center around the Sandia "vision statement" that was issued in June and around his letter to employees (LAB NEWS, April 21, 1989). The vision statement is reprinted in this issue (see page four). Excerpts from the interview follow:

LN: What was the impetus for developing the vision statement? Was it something you wanted when you returned to the Labs?

AN: It was well under way when I returned. I just helped in the fine-tuning. But I attach a lot of importance to it because I see the '90s as a decade in which we're going to be under increasing pressure to accomplish more, possibly with less. Sandians can be proud of their past accomplishments, which have earned the Labs a well-deserved reputation for outstanding performance. But I see our work environment changing. Competition for Federal R&D support is increasing rapidly; our customers and sponsors are consequently becoming more demanding; and public awareness and scrutiny of all government activities — especially those related to national defense — have become acute. I believe it's timely to reassess our policies, practices, and procedures, and to aim at improving our performance. The vision statement is a first step. It is intended to articulate a set of guiding principles and to explain what we're really all about. I see it as a living document — as a first step towards implementing needed changes in the way we operate, changes which will make us more productive, and therefore, more competitive.

LN: How would you describe Sandia today? What are we really about?

AN: The vision statement refers to Sandia as an engineering lab. It's very important to Sandia's

future that we maintain a clear understanding of what that means. It means, in simple terms, that we are mission-oriented. It does not imply a narrow scope of effort or limited objectives. On the contrary — we focus our attention on innovative, challenging work that leads to tangible, immedi-

ately useful results. In the process, we create new knowledge — scientific and technological — relevant to Sandia's missions. Since the early 1960s, we have modeled ourselves successfully after another world-class engineering laboratory — AT&T

(Continued on Page Four)



"I see us evolving in our approach to managing the Laboratories — quicker on our feet, more flexible, and less dogmatic," says President Al Narath. "We need to use sound business principles for managing the significant sums of tax dollars that are entrusted to us. We must be good stewards of those dollars. We owe it to ourselves and the public to enhance our nation's rate of return on the Sandia investment."



LAB NEWS

VOL. 41, NO. 19 SANDIA NATIONAL LABORATORIES SEPTEMBER 22, 1989

Real-Time Imaging and Ranging

Laser Radar May Guide 'Smart' Weapons

Normally, radar reveals distance but can't show what a target looks like. Video cameras show the shape of an object but can't measure its distance. Now, if you could just combine the two . . .

That's what Sandians in Exploratory Systems Development 9100 and Components 2500 have done by taking advantage of recent developments in solid-state lasers and fast gallium-arsenide integrated circuits. The result is a laser radar that can "see" for about 50 metres. As later generations of the system become more compact and powerful, it could let a "smart" weapon automatically recognize a target.

There are further possibilities. "Although the original idea was intended for attacking high-value military targets," says Mark Grohman (9127), project leader for development of the laser radar, "we're finding more and more potential applications in other areas." As examples, Mark mentions intrusion detection, robotic vision, collision avoidance, and autonomous vehicle control.

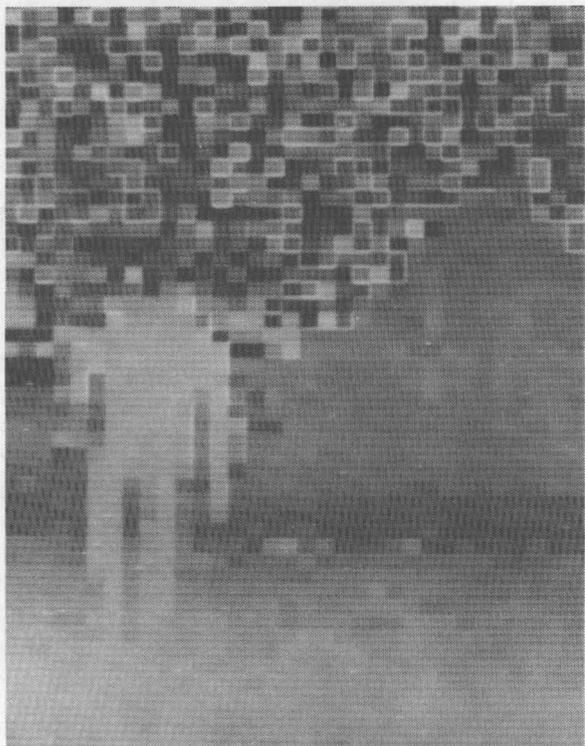
The system uses a small gallium-arsenide semiconductor laser diode that emits near-infrared light, just beyond the wavelengths detectable by the

human eye. The continuous beam of light from the laser is amplitude-modulated at a rate of four megahertz — four million cycles per second. A mechanical scanner sweeps the beam through the field of view, both back-and-forth and up-and-down. When the light bounces off something in the field of view and returns to a detector, the difference in phase between the emitted signal and the return signal is used to calculate the distance to the object and produce an image on a video screen.

Data, Raw and Processed

The 2500 part of the team was responsible for the laser, the optics, and the detector for the returning optical signal. They were led by David Williams until he was promoted to supervisor of Optoelectronic Components Development Div. 2531. David worked on the lab-test version, he says, and Marion Scott (2531) then took over and has been responsible for the field-test version. Kurt Wessendorf (2534) had the difficult task of designing and building a phase detector to handle a wide range of reflected signals without changing their

(Continued on Page Seven)



LASER-RADAR IMAGE of a possible intruder stands out crudely, but clearly, regardless of camouflage that might defeat conventional detection means. The background sky is randomly colored because it does not produce a return signal.

This & That

Recommended Reading — I don't often come right out and recommend that you read a particular LAB NEWS story, but I hope every Sandian will read the interview with President Al Narath in this issue. Although our basic missions and work haven't changed, there are other significant changes under way and even more planned — some new areas of emphasis and new ways of operating that will affect us all. Al discusses many of these in the interview.

* * *

Former Sandia President Dies — S.P. "Monk" Schwartz died Sept. 12 in Scottsdale, Ariz. He was 83. He joined Western Electric in 1927 and came to Sandia in 1957 as vice president and general manager of Sandia Corporation. He was named President in 1960 and served in that capacity until his retirement in 1966. Survivors include his wife, Elizabeth; a son, Robert; a daughter, Elizabeth Warner; and five grandchildren.

* * *

Geographic Gobbledygook — Several weeks back, LAB NEWS writer Charles Shirley was telling me a tale about his relatives back in northwestern South Carolina. I couldn't resist asking Charles if they lived in eastern, northern, western, or southern northwestern South Carolina. Nope, it was south-central northwestern South Carolina.

* * *

It Never Fails — I mention the need for careful proofreading in this column, and we fail to spot a misspelling in one of our own articles in the same issue. In last issue's story about Alex Maish's (6221) Thailand trip, we had a photo caption that read, "Balustrades of gilded dragons guard a staircase. . . ." Russ Humphreys (1261) sent a note saying the teamsters have their unions, but he wasn't aware that dragons belonged to guilds. Make that "gilded" dragons, please.

* * *

Clone Mr. Wizard? — An article by Carl Sagan in the Sept. 10 issue of the Sunday paper supplement, *Parade Magazine*, contains some mighty sobering information about the poor standing of most US citizens in science and math. According to Sagan, less than half of all Americans know that the Earth moves around the Sun and takes a year to do it. He also says "in tests of 17-year-olds in many world regions, the US ranked dead last in algebra." Also, that 25% of Canadian 18-year-olds knew just as much chemistry as a select 1% of American high school seniors in their second chemistry course, and most of them in "advanced" programs.

The problem and the answers are certainly complex. I don't pretend to have the answers, but one thing seems obvious — we *must* find ways to make science and math appealing to US students and to find, train, and support inspiring teachers in these areas.

* * *

Cheap Thrills — I didn't have to spend money for thrills on midway rides at the State Fair this year. I was in Boulder attending the DOE Communications Conference last week when the early-season snowstorm hit the area. It was at its worst about the time I was due to head back to the Denver airport from Boulder. Several attendees didn't have rental cars, so a nice lady from the GE plant in Largo, Florida, offered us rides. Only after we got on the road — in a near whiteout — did she mention that she hadn't even seen snow in 10 years. But she did a great driving job.

●LP

The Need Grows

United Way Agencies Serving Our Community

The Sandia Employee Contribution Plan (ECP) Campaign United Way is Oct. 9-13. When the ECP program began in 1957, 24 United Fund (Community Chest and Red Cross) agencies and 9 health organizations received contributions. The need grows. United Way now includes 45 agencies. Following is a partial list of United Way agencies and some of the services they provide. A complete list of the agencies will be provided in the ECP literature that will be distributed to employees soon.

Family Services

Albuquerque Family and Child Guidance — Provides mental health services to young children, teenagers, couples, and families.

Family and Children's Services — Provides outpatient mental-health services to individuals and families, and an educational program addressing maternity and adoption services.

Christina Kent Day Nursery — Provides preschool program for children from low-income working families. Services include educational programs, supervised play, and meals.

National Council on Alcoholism, Albuquerque Area, Inc. — Combats alcohol abuse and alcoholism through public education and prevention efforts.

Big Brothers/Big Sisters — Recruits, screens, and trains adult volunteers who are matched to single-parent youngsters ages 6-18 to explore friendship and mutual interests on a one-to-one basis.

Hogares — Provides outpatient counseling and residential treatment services for troubled adolescents and their families. Specialized treatment programs are also available for youth with drug- and alcohol-abuse or mental-health problems.

Albuquerque Hearing & Speech Center — Provides outpatient, therapeutic care for children and adults with communication disorders. These include hearing, language, and speech problems.

Services to Support Independent Living

Transitional Living Services — Maintains long-term residential program for people with chronic mental illness. Offers 24-hour supervision in a group home, help for those living on their own, and vocational training.

Adelante Development Center — Provides vocational and living-skills training to severely handicapped and developmentally disabled adults.

Rehabilitation Center — Programs include vocational training and sheltered employment, a preschool for disabled children, and speech, occupational, and physical therapies.

Crisis and Emergency Services

Albuquerque Bar Association Volunteer Lawyers — Provides services to low-income Bernalillo County residents in civil matters.

Albuquerque Shelter for Victims of Domestic Violence — Provides shelter, food, clothing, and treatment, primarily to women and children in immediate danger of abuse or who have been abused.

UNM Mental Health Center — Services include evaluation, treatment, and preventive programs, including the Albuquerque Rape Crisis Center: Supports rape victims with a 24-hour crisis line and counseling. Also maintains 24-hour suicide/crisis/emergency phone services.

American Red Cross — Provides disaster relief; health, safety, first aid, and CPR training; and emergency assistance, including communications to military families.



LAB NEWS

Published Fortnightly on Fridays

SANDIA NATIONAL LABORATORIES

An Equal Opportunity Employer

ALBUQUERQUE, NEW MEXICO 87185
LIVERMORE, CALIFORNIA 94550
TONOPAH, NEVADA
AMARILLO, TEXAS

Sandia National Laboratories is operated by Sandia Corporation, a subsidiary of AT&T Technologies, Inc., and a prime contractor to the US Department of Energy.

LARRY PERRINE, Editor (505/844-1053)
PHYLLIS WILSON, Assistant Editor (4-7842)
DONNA RIX, Writer (6-6888)
CHARLES SHIRLEY, Writer (6-5542)
RANDY MONTOYA, Photographer (4-5605)
GERSE MARTINEZ, Asst. Photographer (4-5605)
JANET WALEROW, Editorial Assistant (4-7841)
DENISE ARCHULETA, Production Assistant
RUTH GABALDON, Assistant
BARRY SCHRADER, Livermore Reporter
(415/294-2447; FTS 234-2447)

Card of Thanks

My family and I would like to express our deep appreciation to the many current and retired Sandians who made contributions in memory of our daughter, Kaitlyn Arquette. Kaitlyn, apparently the victim of a random drive-by shooting, was murdered the night of July 16, as she drove home from a friend's house. We requested that contributions in Kaitlyn's name be made to the Kaitlyn Arquette Crime Stoppers Fund at Western Bank or to Hospice. Hundreds of people responded, and several thousands of dollars have been contributed to these worthy and needy causes. Thank you, Sandians.

Donald Arquette (2342)

Sympathy

To Steve Montgomery (1533) on the death of his father in West Lafayette, Ind., Sept. 2.

To Peggy Valencia (9212) on the death of her mother in Albuquerque, Sept. 9.



EMERGENCY OPERATIONS CENTER activities focused on making decisions based on information from many field sources. From left: Bill Thompson (8512), Dan Telfair (8531), Jack Hickman (8170), Marlin Pound (8530), Don Charlesworth (8531), EOC Director Ron Detry (8200), and Gene Ives (8100).



RECEIVING FIRST AID is Donna Whitlatch (center, contractor) from Steve Love (left, 8512) and Al DuCharme (8511). Donna was one of seven people with simulated injuries during the exercise, which simulated a site-wide emergency resulting from an airplane crash.

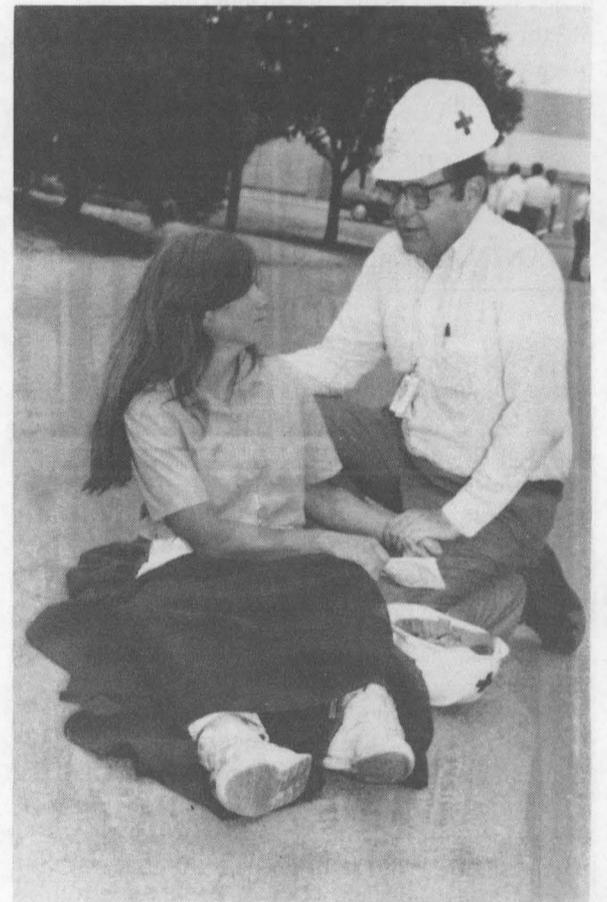
Simulated Crash Tests Emergency Response

Sandia, Livermore, conducted its first full-scale Emergency Preparedness Operations exercise recently, simulating a site-wide emergency involving an airplane crash. The exercise was designed to demonstrate the full range of capabilities of the Sandia Emergency Response Organization.

The Emergency Operations Center was activated and various stages of emergency declared to exercise the participants. The scenario includ-

ed seven minor injuries, seven minor fires, and seven problems in the outside assembly areas. Fast-paced action required decisions on site evacuation as conditions escalated.

Seven building emergency teams were activated and their buildings were evacuated. Response teams had to respond to the fires, building damage, and injuries resulting from the impact of flaming debris from the simulated crash. Annual full-scale exercises are planned.



FIRST-AID team member Jim Bartel (8442) attends to "victim" Kitty Blumberg (8441).



BUILDING EMERGENCY TEAM from MO3 discusses crisis status. Team members, in foreground, are (from left) John Korellis (8243), Andy Cardiel (8284), Bob May, Darrel Buettner, team leader Holly Stryker, and Marlyn Diaz (all 8511).



**SANDIA
LIVERMORE NEWS**

LEAP Kickoff

The 1989 Livermore Employees Assistance Plan (LEAP) campaign kicks off Thursday, Oct. 5, with the traditional noontime faire.

A special feature this year, in addition to the regular contributions, will be a penny collection contest among directorates. For a week before the faire, employees will be asked to bring in their extra pennies, which will be weighed on October 5 to see which directorate produced the greatest number. The pennies will be used to buy toys for underprivileged children at Christmas.

This year, employees will pick up their pledge cards during the LEAP Faire instead of at directorate meetings. The goal is \$152,000. Thirty-two agencies — local and Bay Area — will share in the contributions.



TEAM OF SANDIA GOLFERS captured the Northern California Associate Clubs Championship Aug. 18-19 at Poppy Hills and Spyglass Hill golf courses near Pebble Beach. The Associate Clubs category includes mostly corporate golf groups that play monthly. The team survived qualifying competition among 168 teams to advance to Pebble Beach. Team members (from left) are Bill Hobson (8441), Jim Lucas (8312), Todd Howe (contractor, alternate player), Linn Derickson (8445), and Larry Hoffa (8271).

(Continued from Page One)

Narath Discusses

Bell Laboratories. Like our parent laboratory, we understand the significance of research and exploratory development in an engineering development environment.

LN: Although you've been back at the Labs only six months, you were here for 25 years before. How have we changed — evolved — over the years in terms of our fundamental work and in the diversification of our work?

AN: Sandia started with an engineering-support function back in the late '40s and the '50s during a period of rapid buildup in the nuclear weapon stockpile. In the 1960s, Sandia recognized a need for research and exploratory development in support of its nuclear-weapon mission, and it was during the ensuing decade that we became an R&D lab in the modern sense, an engineering lab very much like Bell Laboratories. But that change created some conflict and much misunderstanding. It was a deeply embedded service-oriented culture that was created in the 1950s, and some of our people thought the introduction of research and exploratory activities conflicted with our traditional commitments.

LN: Did these employees see that as something of a threat?

AN: Well, some were probably fearful that

'Our Vision'

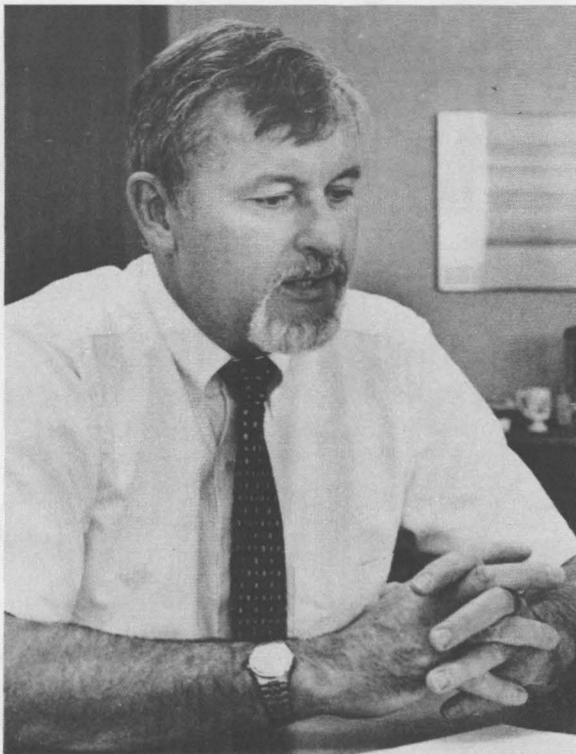
Sandia National Laboratories is challenged by our government to render "exceptional service in the national interest." We serve the nation through the Department of Energy, both in its programs and those of other agencies. We have major research and development responsibilities for nuclear weapons, arms control, energy, environment, and other areas of strategic importance to national security.

Our principal mission is to support national defense policies by ensuring that the nuclear weapon stockpile meets the highest standards of safety, security, control, and military performance. Our commitment to this mission is uncompromising — through it we help to preserve global peace.

We are, and will remain, a multiprogram engineering laboratory applying a broad spectrum of science and technology to diverse tasks requiring an exceptional commitment to insight, objectivity, responsiveness, and quality. Our standard for all our projects is to fully satisfy performance, schedule, and cost commitments. The problems facing the nation — now and in the future — have technical dimensions that are increasingly complex and multidisciplinary, and we are dedicated to applying and adapting our capabilities toward their solution. Through cooperative programs and transfer of technology, we seek to strengthen both the public and private sectors of the national economy.

The nation has placed a profound trust in us. In honoring that trust, we commit ourselves to the highest standards of ethical conduct, to the faithful protection of the environment, and to the safety and health of the public and our fellow employees.

People are Sandia's most important asset. We prize leadership, teamwork, and individual innovation. Each of us contributes to the success of the Laboratories. Together, we create and sustain an environment in which each of us is respected as a person and in which we all can work, grow, achieve, and be recognized for our contributions, both as team members and as individuals.



"Complacency feeds on success. Organizations that are static today probably don't have much of a future, because the world around us is changing rapidly."

concentrating on forward-looking work would shortchange existing commitments. It would have constituted very poor management if that had happened, and it didn't. Our commitments have always been honored to the best of our ability. This important principle has taken on special significance as a consequence of the extensive diversification that began in the 1970s and led to Sandia being designated a multiprogram national laboratory. Sandia's prime mission, and the fundamental reason for its existence, is still the development of safe, secure, and reliable nuclear weapons — a mission that, incidentally, would be difficult to carry out without the support of critical Labs functions provided by other programs. Examples that come to mind immediately include microelectronics, computational mechanics, and weapon-effects test facilities; there are many others. Obviously, in today's environment, it is absolutely essential that we satisfy every customer — and we intend to honor equally all obligations, including all applicable government directives.

LN: There's a key word — quality — mentioned a lot at the Labs these days. It's also the central theme in a broad new curricula that will be offered by INTEC (In-Hours Technical Education Courses) beginning this fall (LAB NEWS, Aug. 25, 1989). Why all this new emphasis on quality? Does it indicate problems?

AN: Sandia has been an outstanding organization for a long time. We've done a lot of things well; we can take great pride in our past achievements. But there's a danger of complacency when you've been in business for as long as we have — 40 years. Complacency feeds on success. Organizations that are static today probably don't have much of a future, because the world around us is changing rapidly. If we don't adapt to those changes, we're going to be left behind. Fundamental to these changes are growing customer demands for quality improvement — in terms of product performance, cost, and timely availability. There's a need to improve everything we do on a continuing basis. The US invented the modern concept of quality in design and manufacturing, but others — primarily the Japanese — picked it up and ran with it. Now our nation has some catching up to do.

LN: So what do we need to do?

AN: The public is increasingly scrutinizing the way public funds are spent. The standards against which we are judged are changing, and we just can't afford to stand still. I see us evolving in our approach to managing the Laboratories —

quicker on our feet, more flexible, and less dogmatic. We need to use sound business principles for managing the significant sums of tax dollars that are entrusted to us. We must be good stewards of those dollars. We owe it to ourselves and the public to enhance our nation's rate of return on the Sandia investment.

LN: What things do we have under way or planned to translate these ideas into action?

AN: We're in the process of launching a major quality campaign that will cover the Lab in its entirety. Glen Cheney [Vice-President of Component Development 2000] has already made significant progress in his organization. We're trying to capture the enthusiasm that's been generated in his organization and spread it throughout the Labs. We need to improve the way we plan and execute our programs and projects — in particular, we need to sharpen up our project management methods. I think in the past there has been too much ambiguity in project managers' responsibilities. We'll be assigning unambiguous responsibilities and accountabilities to project managers throughout the Labs and providing them increasing authority. We've established a committee of department managers, chaired by Herman Mauney [Director of Systems Evaluation 7200], which is examining ways to effectively implement these ideas.

LN: What real benefits do you expect from this program?

AN: Even as a national lab, we live in a competitive environment. We need to do our jobs efficiently. There are ways of accomplishing more with less simply by doing the right things right the first time. It means that we must be more careful in how we influence customer requirements and negotiate commitments, seek ways to do a better job of planning — including full understanding of risk factors, tracking progress, identifying problems as early as possible and taking corrective action, adopting best practices as they evolve, and, in general, paying much greater attention to detail. The result will be a more vital, competitive Laboratory — with increased opportunity to benefit society in innovative ways.

LN: The idea, then, is to get this to be a part of the corporate psyche — a new way of thinking and operating?

AN: Yes. However, I am not proposing a heavy-handed approach — you can't just dictate to people new ways of behaving and expect a positive response. Our approach is to point out the urgent need for this type of change and to provide the mechanisms for accomplishing it. If the time is right, and people see the need for change and the value of new ways of doing business, they will adopt them. I think the time is right. Sandians are perceptive people; they'll adapt quickly.

LN: You and Vice-President Cheney both have recent AT&T experience. Does the emphasis on quality and new project management methods reflect management techniques in place at AT&T?

AN: Yes. I joined AT&T Bell Labs almost immediately after divestiture, early in 1984. Bell Labs at the time was undoubtedly the premier R&D lab in the country, but its environment changed almost overnight. AT&T was forced to change from a regulated monopoly into an organization that had to compete. This transformation forced profound internal changes — changes that are still taking place today. AT&T quickly recognized that it could survive only if it provided products and services that the market wanted and did it in a timely fashion, at a price that the customer was willing to pay. Although there have been some negative effects, I believe, on balance, the

(Continued on Next Page)

(Continued from Preceding Page)

changes have made Bell Labs a more productive institution. Participating in that evolution was often painful, but I found it to be extraordinarily stimulating and exciting at the same time.

LN: And you obviously see some parallels with our situation here today.

AN: Definitely. As I indicated earlier, our environment has also become more demanding — we can't take our current position for granted. I would like to see some of the same excitement at Sandia that I experienced at Bell Labs — a more pragmatic, flexible approach, a dedication to constant improvement. It's needed. After 40 years, it's time to blow the dust off our operating methods, examine them carefully, and update and streamline them so we can better serve our customers. Not to philosophize excessively, but I believe that individuals, as well as human institutions, have to adapt to the ever-changing environment. When we stop adapting, we fail.

LN: How and what are you doing to encourage needed changes?

AN: I don't want to create the impression that the impetus for change had its genesis with me, because much of what I came back wanting to accomplish was already under way when I returned. Several important studies had been directed by [former President] Irwin Welber and others, and the conclusions are entirely consistent with my own ideas — and, generally speaking, consistent with the current trend in Bell Labs. I credit a lot of good people around the Labs who had already anticipated what we needed. That's why I think we will be successful in making needed changes. It's been extremely stimulating and encouraging for me to listen to people at the Labs and to hear that they feel the same urgency. My role is to speed up the process and not let institutional barriers get in the way.

LN: We seem to be increasingly matrix-oriented — using people in several different organizations as part of a team to accomplish specific objectives.

AN: That's part of the new project-management culture that we are developing in connection with our quality improvement plan. We'll be emphasizing more effective execution of projects, rather than organizational survival. Line organizations will have to adapt to the needs of projects, rather than the other way around.

LN: The Labs for many years has prided itself on its "can-do" attitude. I suppose in some instances that could be counterproductive if we rush into a project saying, "Yes, we can do this!", without proper planning or quality control. How does that relate to what you're talking about in terms of the new quality emphasis?

AN: Improvements in strategic planning, project planning, risk management, and so on, are a must. Our customers demand it. However, I don't want this to be accomplished at the expense of spontaneous initiative and creativity. We must strike a balance. Maybe what I'm looking for is disciplined individualism. Can-do is clearly important, and has served Sandia and the nation well over the years — but with government spending outpacing revenues, and with public demands for perfection in government-sponsored activities increasing steadily, it has to be done in a disciplined way. We can't just plan as we go along, expecting additional funding when we encounter technical difficulties. There has to be some structure to the way we operate.

LN: One of your primary concerns that you

expressed in your initial LAB NEWS letter to employees involves the human dimension. If you were personally doing the hiring of Sandia employees, what qualities would you look for?

AN: It may sound trite, but I'd look for people who want to win — energetic people who are highly motivated to pursue a set of objectives and do it aggressively — people who dislike intensely coming in second, but also understand and accept the need for ethical conduct and will never compromise Sandia's integrity. I'd look for people who excel individually, but who also get a thrill out of working and succeeding as part of a team. We have many assignments at Sandia that are highly individualistic in nature but, for the most part, we're mission-oriented, and our success, therefore, depends on people's ability to pull together and make big things happen.

LN: How can we identify people who are motivated in this way — people who are success-oriented and real team players?

AN: Personally, I think the best way is to exhibit a set of institutional characteristics that attract the right people. For example, over the years, Bell Labs has had a reputation for outstanding, highly competitive research and development. It has provided a challenging technical environment that the most competitive scientists and engineers find extremely attractive, and that has become a self-perpetuating process. An organization becomes known for certain qualities, which then attracts the people whose characteristics match those qualities. That's why I think Sandia's image is so very important. If our laboratory projects an energetic, forward-looking, highly motivated, goal-oriented image, it will attract the type of people who will make that image a reality.

LN: The Labs has some employee-recognition programs in place, but it's natural that some people feel lost or unimportant in a large group. How do we guard against that?

AN: We intend to learn how to do a better job of recognizing deserving people across the board in all Sandia activities. For example, we're planning to institute a program beginning next fiscal year [FY '90] in which we will set aside some portion of our IPA [Individual Performance Award] funds to be awarded in the form of "Sandia Awards for Excellence." It will be accompanied by a citation that will be publicized. This type of recognition will apply to all deserving accomplishments, not just technical accomplishments. Perhaps most importantly, all of us can do a better job of ap-



"We can't just plan as we go along, expecting additional funding when we encounter technical difficulties. There has to be some structure to the way we operate."

plauding individual effort. We must never forget that project teams are made up of individuals — and team success ultimately hinges on the collective effect of individual contributions.

LN: New Mexico is a culturally diverse state, and so is our work force. How are we ensuring that every employee gets an equal chance to perform to the best of his/her ability and to be recognized for outstanding work?

AN: We're in constant need of new talent; we must obtain that talent wherever we can find it and not limit our search to any subset of our population. Some people have the perception that Affirmative Action programs exist to provide some groups of people with special considerations. I don't see it that way at all — I see it as a way of broadening the talent base of our staff and ensuring that we get top people wherever we can. Their race, sex, or ethnic background simply should not matter. We are committed to that idea — not only because it's the law, but because it's right.

LN: How about internal mobility? Do you think we need more of that to broaden employee experience and strengthen capabilities?

AN: We must promote greater mobility of our people. I had hoped that job posting would provide all the mobility we need. But that may not be enough to encourage some people to move around and broaden their experience. We probably need to think of new ways to motivate employees to change assignments occasionally.

LN: Back to our AT&T relationship: You are encouraging closer ties and a closer identification with AT&T. Why do we need to do that, and why are you emphasizing it so strongly?

AN: If any relationship is not a close one, the natural tendency will be for the parties to drift apart. That's true for individuals and organizations. In the past, AT&T insisted on an arms-length relationship with Sandia — not because it didn't care, but because, as a regulated monopoly, it wanted to be sure that it couldn't be accused of gaining advantage from the relationship. AT&T has always viewed its Sandia management role as one of public service. There's a lot of history behind this, going back to 1949. Since divestiture, however, that arms-length relationship is one that no longer has any relevance. There's no reason why AT&T should not gain benefits from its Sandia relationship. The important point is that AT&T not gain unfair advantage over other companies, because that's strictly prohibited under the terms of our prime contract.

LN: Something new is the listing of temporary AT&T job assignments in the *Sandia Labs Weekly Bulletin*. Was this your idea?

AN: Yes it was. In fact, I would like to see a greater flow in both directions — visiting AT&T engineers, scientists, and other specialists here — and Sandians broadening their experience by taking assignments at other AT&T entities as part of their career development. We can learn much from one another. It's an opportunity that both organizations can benefit from.

LN: How about the AT&T flags that now fly over Sandia facilities?

AN: It's just one more way of saying we're proud to be associated with our parent company. It's a symbol that we value the relationship.

LN: For the past few years, more and more of our overall budget has come from reimbursable work. That bothers some people, who believe that reimbursable projects tend to destabilize our budget
(Continued on Page Six)

(Continued from Page Five)

Narath Discusses

and that too much reimbursable work can detract from our primary mission. What are your thoughts?

AN: Well, concerning possible destabilizing effects on our budget, let's recognize that we live in uncertain times. No budget line can be taken for granted. I think reimbursable projects are very good for Sandia because they help maintain and build technical strengths — strengths that are very important to our future. It's also important, of course, that reimbursable work maintain close ties to our legitimate technical interests. Making sure that reimbursable projects have a positive, not negative, impact on our principal mission is a management responsibility. It's clear we've done a very good job for reimbursable customers, but we do need to be careful and not compete with industry. It's far easier for other government agencies to contract for work at Sandia than it is for them to award a contract to an industrial enterprise. So there's clearly some temptation for program managers in Washington to use a national lab instead of a commercial source.

LN: What major criterion do we use when we decide whether a reimbursable project is appropriate for us? Do we try to keep it on a "uniquely qualified" basis?

AN: Absolutely. If we don't have some special capabilities, then there's no justification for accepting that work. Another difficulty in this area is that it's often difficult to disengage when the time comes when industry really can and should do the job. The challenge is to transition in such a way that the results of our work ultimately bear fruit in terms of product delivery by American industry. It's a delicate balancing act and requires constant management vigilance.

LN: Speaking of our relationship with American industry, there are obvious changes going on in our technology transfer programs. You recently elevated tech transfer to a directorate-level activity and gave more direct funding to it. The activity is even mentioned by name in the vision statement. Why the increasing emphasis?

AN: Technology transfer is important, and we're going to find ways to become more effective at it. That's the reason we made it a director-level responsibility. Technology transfer comes in two basic forms. A lot of our programs involve what I call natural or directed technology transfer. For example, much of our energy R&D — such as our combustion research — is focused on interactions with industry. The objective here is to develop technology with government funding, and to transfer it into the private sector, often as part of a cooperative effort. There's another form of technology transfer that's far more difficult; it involves seeking opportunities for spin-offs in which technology is applied in ways different from the original intended purpose. I don't think anybody has been very good at that, but we're going to get better.

LN: How?

AN: It's a common misconception that technology transfer involves dusting off things the Labs has already developed and making them available, pretty much ready for market, to the private sector. That's hardly ever the case. What we have instead are some highly specialized skills and technologies and lots of outstanding talent capable of providing good ideas and technical assistance to American industry. The ingredient that's largely missing is an understanding of what industry needs. The first thing we need to do is learn something about the marketplace, and that means strik-

ing up relationships with industry. So a lot of our tech transfer emphasis will involve getting smart about the needs and opportunities. But the most important thing is that we establish and maintain human contact.

LN: Have we already started doing more of that?

AN: Yes. A good example is some detailed discussions we had with Johnson & Johnson. A group of its executives visited New Mexico and spent time here and at Los Alamos National Lab. It gave us a chance to tell them in some detail about our areas of technical expertise and gave them a chance to tell us about their business interests. We are interested in a continuing relationship with Johnson & Johnson — one that could potentially lead to some commercially interesting developments for that company. We are encouraging other US companies to establish such relationships where areas of mutual interest exist.

LN: There seems to be no real firm definition of what tech transfer is or exactly what individual Sandians should be doing. Will our technical people be getting more guidance from the new transfer organization?

AN: Yes. One of the important functions that Gerry Yonas [Director of Technology Transfer 6100] has is to articulate more clearly what technology transfer is and to help define productive approaches. I think we've been quite good at what I referred to earlier as directed tech transfer. For example, much of the work we've done in solar thermal and photovoltaic development involved industrial participation from the beginning and, as a result, we helped develop a solar thermal industry. We've done this in other energy fields as well. But seeking new applications for technology that was developed for different purposes altogether is not easy. It means that we must develop an understanding of industry's needs. Gerry and others in 6100 are working hard to develop that understanding.

LN: Frankly, some Sandians haven't been too enthusiastic about technology transfer because they haven't seen it as an inherent part of their job. What's the solution?

AN: I believe motivating people to excel in technology transfer is no different from motivating people in any other laboratory activity. Tech transfer is an important laboratory responsibility. Once people understand that, we'll have no trouble generating the necessary enthusiasm. Of course, in doing so, we must be careful to avoid interference with other Sandia activities and be absolutely cer-



"We [Sandia and AT&T] can learn much from one another. It's an opportunity that both organizations can benefit from."

tain that we don't create public perceptions of conflict of interest in our dealings with the private sector.

LN: Another subject that's being talked about a lot these days — environmental, safety, and health (ES&H) problems. Our problems don't seem nearly as severe as those at some other DOE facilities, but the problems we do have and the increasing public concern about them are obviously taking more of our time and resources. Is this going to place a significant burden on our ability to get our normal work done?

AN: It will indeed place a burden on us, but it's a burden that we have to shoulder. We have no choice. We can take issue with certain standards as being unnecessarily restrictive, but that's not the point. Once a standard has been established, we're obligated to comply with it fully. The penalties associated with noncompliance are becoming extremely severe. It is very important that all Sandians fully recognize the severity of the consequences of noncompliance. If any of our employees have "looked the other way" in the past when it came to environmental regulations, that's not going to be true in the future. We're going to do a much better job of self-regulation, self-policing. Recent events show that the government is not timid in bringing criminal charges against individuals suspected of noncompliance. It's been made clear that not understanding ES&H requirements — the standards — is not an acceptable defense.

LN: How about the cleanup of existing problems? How big a problem is that for us?

AN: Compared to many other DOE operations, our problems are relatively minor — not because we have always managed better, but because our exposure has been less. Nonetheless, we too have some cleanup to do, and at considerable expense to the taxpayer. Unfortunately, the federal budget is a zero-sum exercise. The money that we must invest in cleanup and restoration is money that will not be available to do other things, and there's no question that these activities will have an impact on our budget. It's important, therefore, that we and others find ways of minimizing the cost by developing more cost-effective approaches to cleanup and restoration. Technology has a very important role to play, and we intend to contribute to the development of relevant technology. But we should not delude ourselves into thinking that the federal budget is capable of supporting an aggressive cleanup and restoration program in addition to business as usual.

LN: So you think money spent on this activity will cut into the Sandia budget in future years?

AN: My crystal ball is not infallible, but funds that are set aside for cleanup and restoration will have to come from somewhere, and that may well involve defense activities. If so, we may feel the pain of that. But there's the flip side of the coin. There will be opportunities for Sandia to make useful contributions in the R&D phase of DOE's waste management program. We intend to develop a productive role for the Labs in this area. We have much applicable expertise — to name just a few, materials and earth sciences, combustion, robotics and, of course, systems integration.

LN: Given everything you've said, how would you sum up Sandia's prospects for the future?

AN: Historically, Sandia has been at its best when challenged to excel. In our 40th year, we are once again being challenged; but, at the same time, the opportunities for significant contributions to our nation's security and economic well-being are numerous. I am optimistic that the direction we have set for ourselves will enable Sandia to compete effectively. ●LP

(Continued from Page One)

Laser Radar

phase — a “nearly impossible” set of specifications, says David, but a necessity because of the way the system determines range.

“You might say we put together the part of the system that gives the raw data,” says Marion. “Mark’s group took care of the signal processing that determines the range.”

Working with Mark were Mike Johnson and Tom Bauman (both of Advanced Projects Div. IV 9127). “Mike designed most of the digital system,” says Mark, “and Tom designed the laser driver, plus put everything together to make it all work.” Mark and Marion acknowledge that dozens of others contributed as well.

The work was funded on the basis of a DoD/DOE memorandum of understanding.

Image Crude but Effective

The first version of the laser radar produces a 64-by-64-pixel image at four frames per second. (Pixels — picture elements — are the one-color or one-shade-of-gray spots with which a picture is built up. Most color computer monitors can display several hundred pixels both across and up-and-down.) The image is not as detailed as, say, that of standard closed-circuit TV. But it proved good enough in field tests to distinguish the type of armored vehicle in view.

The display is pseudocolor, different colors indicating relative ranges. “We were originally using black and white,” says Mark, “but pseudocolor is

Uses Semiconductor Advances

As early as the '60s, researchers were working on laser radars, but most used large, unwieldy carbon-dioxide lasers.

“In the last few years,” says Marion Scott (2531), “semiconductor lasers have become powerful enough that a system like this can have a reasonable range. Their power has been — and still is — increasing very rapidly.” In the past few years, available power has increased from 0.1 watt to almost five watts (the current Sandia laser radar uses a 1/8-watt laser).

Similarly, the necessary speed of signal-processing for a real-time system has been possible only recently. “We couldn’t do this five years ago,” says Mark Grohman (9127). “The gallium-arsenide integrated circuits are what allowed it to happen.”

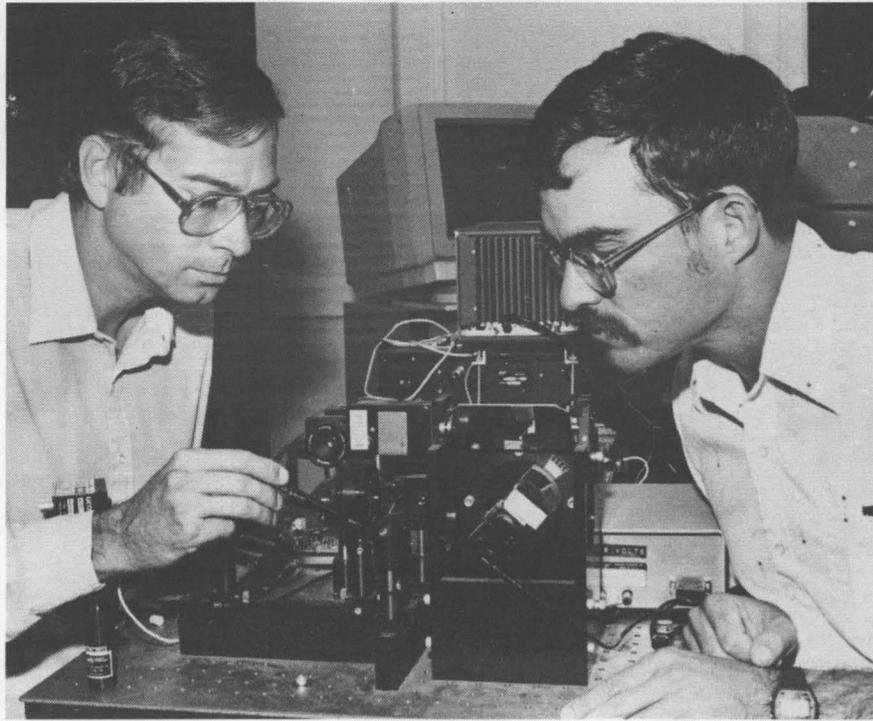
much better because the human eye is better suited to seeing shades of color than shades of gray.”

Human perception is not necessarily the best measure of the laser radar’s performance, David points out: “When you see this low-resolution picture for the first time, you’re likely to be disappointed. It’s just a simplistic cartoon image. But for a computer, 64 by 64 is a lot of data to work with — that’s 4096 bytes, four times a second.”

The system calculates the range for each pixel by measuring it 16 times and taking the average. That’s possible because of the speed of the electronics and the speed of light. Mark explains: “Even though we’re scanning very fast, light travels so fast that, while the mechanical scanner is moving from one pixel to the next, the light goes out and bounces back many times. By taking 16 consecutive measurements and then averaging them together, we improve the signal-to-noise ratio — if the noise is random, it’s reduced by the averaging.

“For strong signals,” says Mark, “we can measure to within six inches. For weak signals, we’re accurate to within several feet. That means that the closer the target, the more accurate the range.”

The laser radar’s developers are planning an all-around upgrade for the second generation. For one thing, they’d like eight frames per second



MARION SCOTT (2531, left) and Mark Grohman (9127) inspect the optics of the Sandia laser radar. Most of the electronic components are hidden behind the optics.

instead of four. That’s not just to make a smoother view for human beings. Most electronic navigation systems, says Mark, update their information eight or ten times a second. So a fresh image is needed about that often for the guidance computer.

They also hope to increase the range from 50 metres (160+ feet) to about 150 metres. Part of the increase will come from a more-powerful laser. Another part should come from averaging more

The image was good enough in field tests to identify an armored vehicle.

than 16 measurements for each pixel — which will further improve the signal-to-noise ratio and thus lengthen the effective range.

Future versions will also include more integrated electronics, making the system more compact and able to operate with less power. “As it sits in the lab now,” says Mark, “it’s surrounded by power supplies. We weren’t interested in power efficiency for this version, just in making it work. But we’re already integrating some of the logic into single chips. I can imagine the system eventually being

small enough to fit into a coffee can — but we’re still a long way from that.”

The system can be tailored, Mark emphasizes: “We can adjust parameters, depending on the application. We’re open to someone saying, ‘I need a range of this much, a field of view of that much, a resolution of this much,’ and so on. So far, we’ve done the best we could in a first-generation system using state-of-the-art hardware. But the state of the art is advancing, and we can also make trade-offs — between image resolution, range, field of view, and range resolution. There’s nothing fixed about our 64-by-64 image at four frames per second.”

Though there’s plenty of work ahead, David points out the importance of what has been accomplished: “A lot of people have been working on laser radars — aerospace companies and university groups, for example. No one has attacked the problem the way Sandia is, with a compact light source and direct, real-time processing. It was a high-risk, high-payoff approach, which is what national labs are about. Marion, Mark, Kurt — and to a lesser extent myself — saw the opportunity and took it on. And it worked out.”

•CS/KFrazier(3161)

Distinguishes Rats From Human Rats

Laser Radar: Both Less and More Than the Sum of Its Parts

The laser radar developed at Sandia emits a near-infrared light close to the frequencies visible to human eyes and uses the reflection to calculate range and to display an image. Although the system combines capabilities of both video and conventional radar, it’s an addition to those technologies, not a replacement for them.

For one thing, the image is not as finely detailed as conventional video. Also, the range is affected by atmospheric conditions. “Our system can’t see very well through dust, smoke, or clouds,” says Mark Grohman (9127). “Conventional radars operate at much lower frequencies, so they can penetrate clouds, dust, or even forests.

“Also, because the system uses an internal light source,” Mark continues, “the range is limited by the power of that source. And the laser light source just isn’t as powerful as the sun.”

But even lacking the range of radar and the detail of normal video images, the laser radar could be invaluable for some purposes.

“Radar normally puts out a large spot and looks for a reflection of some piece of it,” says Mark. “Since the spot size is bigger than the target size — say an aircraft — it normally can’t show features of the target. All you get is yes or no — it’s there or not — and the range.

“In a video image, the pixel size is generally much smaller than the object. That’s how you get resolution — you can see features of a target if the pixels are smaller than the target. But video doesn’t give you range if you’re just seeing reflected sunlight or light from some other outside source.

Range Helps Reveal Size

“In a perimeter-monitoring or intrusion-detection system,” Mark continues, “a person crawling far away and a rat that’s close could conceivably look alike on a conventional video system. But if you know the range, you know the rat is close, and therefore too small to be a person. Or you know that the crawling person is far away, and therefore too big to be a rat.”

The system negates attempts at camouflage, says David Williams (2531): “Since most vision systems view things in reflectance, people can use camouflage to make them reflect like the background. But the laser radar images in range. So no matter how much you look like your background, it can tell — if you’re in front of a tree, for instance — that you’re something different in the scene. Or if you’re moving, it picks that up, because you can’t hide your range.”

Supervisory Appointments



OTTO ERDMAN to supervisor of Facilities Operations Section 7814-2.

Otto has been a mechanical engineer in various Sandia Facilities divisions since he joined the Labs in January 1976. He was the Microelectronics Development Laboratory (Bldg. 870) mechanical engineer when he was promoted.

He has an AST in mechanical engineering from International Correspondence School in Scranton, Pa. Before joining Sandia, Otto worked for the US Army Corps of Engineers. He's a member of the American Society of Plumbing Engineers and the American Society of Heating, Refrigerating, and Air Conditioning Engineers. He was named "Mr. Steam" by the private sector in the steam industry in 1985 for the programs and standards he developed for the Labs.

Otto enjoys bowling, golf, softball, boating, and fishing. He and his wife Maria have four sons and live in the NE Heights.

EDWARD AUSTIN (DMTS) to supervisor of Electro-Mechanical/Structural/TPV Quality Assurance Div. 7253.

Ed has worked in various weapon systems divisions since he joined Sandia in February 1957 as a member of the Manufacturing Development Systems Division C. He was development and production liaison (later project leader) for Permissive Action Link modification of the B43 bomb, conducted project-management activities on the Navy reimbursable SHILLING anti-tamper-device program, and calculated radiation and shock-wave effects on weapon systems.

From 1968 to 1971, Ed was assigned to the



ED AUSTIN (7253)

Safeguard ABM project at Western Electric Co. in Greensboro, N.C. From 1971 to 1980 and from 1987 to 1989, he developed weapon concept proposals, performed feasibility studies, and led preliminary design efforts for weapons in the Phase 1 and 2 Division. From 1980 to 1983, he was lead mechanical engineer for final development, production engineering, and initial production of the W85 warhead and, following that, for advanced development of the Sea Lance nuclear depth bomb from 1983 to 1986.

Ed has bachelor's and master's degrees in mechanical engineering from the Georgia Institute of Technology. He is a North Carolina Registered Professional Engineer and a member of the American Society of Mechanical Engineers. He's been listed in "Who's Who in Frontiers of Science and Technology" and "Who's Who in the West."

Ed enjoys reading, camping, and gardening. He and his wife Elizabeth have three daughters and live in the NE Heights.

LARRY POPE to supervisor of Inorganic Processes Div. 7471.

Larry joined Sandia in June 1970 as a member of the Shock Wave and Explosives Physics Division. He investigated the elastic and inelastic responses of metals, primarily beryllium, under



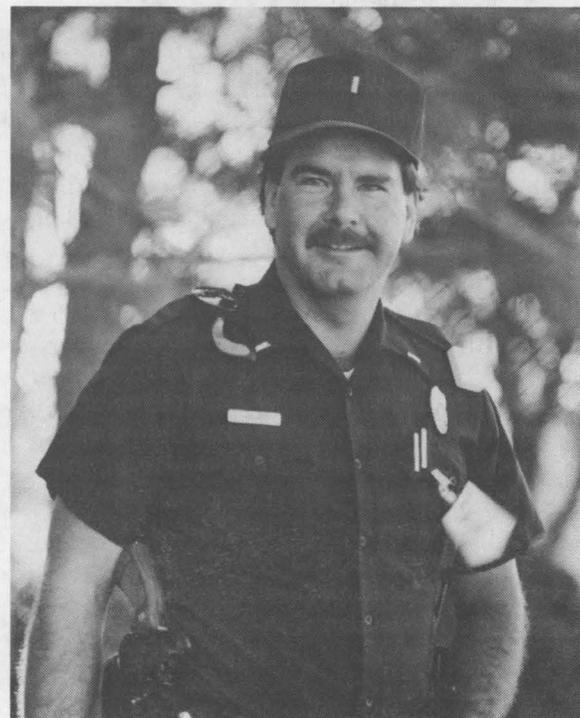
LARRY POPE (7471)

shock-wave loading. He also studied the effects of deformation, hydrostatic pressure, and temperature on phase stability of iron-based alloys.

He joined Fansteel Research Center in Salt Lake City in 1973, managing research projects and graduate research departments. He returned to Sandia in August 1979 as a member of the Process Metallurgy Division. His work since then has been in solid film lubrication of materials for space applications. He has also developed diagnostic equipment and procedures for characterizing laser welding processes. In December 1983, he transferred to the Surface and Interface Technology Division.

Larry has a BA in mathematics and a PhD in metallurgy, both from the University of Utah. Before joining Sandia, he was a visiting assistant professor at the University of Utah. He's a member of the American Society for Metals, the Materials Research Society, and the American Welding Society. Since 1985, he's been a member of the Strategic Defense Initiative Organization's Advisory Panel for Space Tribology, and since 1987, a member of the Panel's Technology Insertion Working Group.

Larry enjoys hiking, fishing, and camping with his family. He also participates in Boy Scouting activities and coaches basketball at the Boys and Girls Clubs. He and his wife Carol have five children and live in the NE Heights.



SHANE MURRAY to security lieutenant in Patrol Div. - North 3434.

Shane joined Sandia's Safeguards and Security Services Department in November 1984 as a member of the Security South Force. He's received Special Response Team Training I, II, and III and has been a member of Sandia's Pistol Team for three years.

Before joining the Labs, Shane worked for Burns Security, Coronado Security, and K-Mart Security, where he was assistant manager and morning crew supervisor.

Shane's spare-time activities include fishing, golf, and camping. He and his wife Glenda have one child and live in NE Albuquerque.

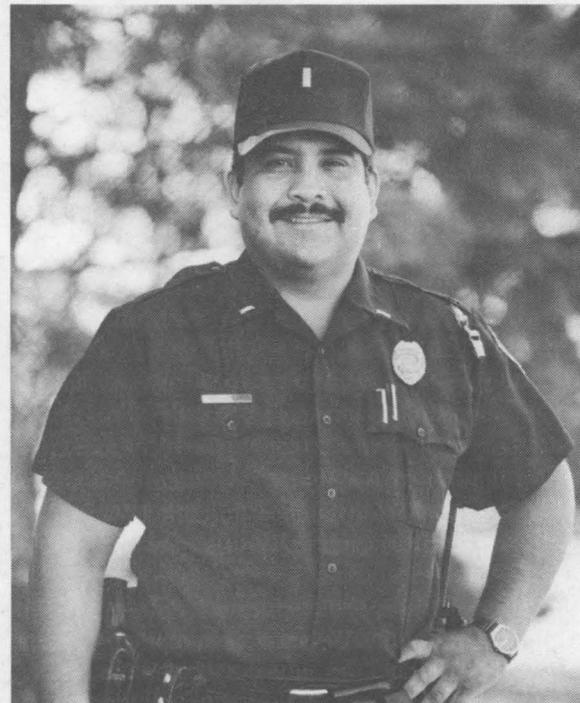
PETER DURAN to security lieutenant in Patrol Div. - North 3434.

Pete joined Sandia's Safeguards and Security Services Department in September 1981. He was a member of Sandia's Special Tactical Operations Personnel team from 1983 to 1986, and was a security escort from 1986 to 1987. He joined the Access Control, Emergency Preparedness, and Operations Training Division in 1987, where he provided administrative support for the South Patrol Division.

He received Special Response Team training from the DOE Central Training Academy in Albuquerque.

Before joining the Labs, Pete worked for the Albuquerque Police Department and the Bernalillo County Detention Center.

Pete enjoys hunting and fishing. He and his wife Carol have three children and live in NW Albuquerque.



PETE DURAN (3434)

Events Calendar

Events Calendar items are gathered from various sources. Readers should confirm times and dates of interest whenever possible.

Sept. 22-23 — Classical Concert One: New Mexico Symphony Orchestra, featuring pianist Christopher O'Riley, works by Dvorak, Rachmaninoff, and Strauss; 8:15 p.m., Popejoy Hall, 842-8565.

Sept. 22-23 — "Dos Mujeres," Danzantes contemporary dance presentation, featuring Debra Knapp and Alicia Perea; 8 p.m., KiMo Theatre, 848-1370.

Sept. 22-23 — "Fallen Angels," Noel Coward comedy, 60th Diamond Anniversary season-opener; 8 p.m. Thurs.-Fri., 6 & 9 p.m. Sat., 2 p.m. Sun.; Albuquerque Little Theatre, 242-4750.

Sept. 22-30 — Exhibit, "Moon, Man, & Mars," commemorates 20th anniversary of man on the moon with video, still photographs, and a moon rock; 9 a.m.-6 p.m., New Mexico Museum of Natural History, 841-8837.

Sept. 22-Oct. 1 — "Cabin Fever," black comedy by Joan Schenkar, for mature audiences; 8 p.m. Fri.-Sat., 6 p.m. Sun.; Vortex Theatre (Central at Buena Vista SE), 247-8600.

Sept. 23-24 — Albuquerque Rose Society Show; 10 a.m.-6 p.m. Sat., 12-6 p.m. Sun.; Coronado Shopping Center, center court; 881-2700.

Sept. 24 — Concert Series: Dave Brubeck Quartet; 4 p.m., First United Methodist Church (4th & Lead SW), 243-5646.

Sept. 24-Jan. 21 — Exhibit, "Albuquerque '50s," 1950s paintings and paper works by 39 Albuquerque artists, UNM Centennial event; 9 a.m.-4 p.m. Tues.-Fri., 5-9 p.m. Tues., 1-4 p.m. Sun.; UNM Art Museum, 277-4001.

Sept. 26-Nov. 3 — Exhibit opening, "Illustrious Alumni," salute to seven UNM alumni who have achieved acclaim in the art world; 9 a.m.-4 p.m. Tues.-Fri., 5-9 p.m. Tues., 1-4 p.m. Sun.; Jonson Gallery, 277-4001.

Sept. 28-30 & Oct. 5-7 — "The Fantasticks," off-Broadway classic musical story of star-as-well-as-double-crossed lovers; 8 p.m., Rodey Theatre, 277-4402.

Sept. 29-Oct. 1 — Oktoberfest: authentic German food, dancers, and music; 6-10 p.m. Fri., 12 noon-12 a.m. Sat., 12-10 p.m. Sun.; Haynes Park in Rio Rancho (Hwy 528), 892-1700.

Sept. 30 — Harvest Festival: garden produce and handmade crafts sale, scarecrow contest, food, artists' displays; 9 a.m.-5 p.m., Albuquerque

Garden Center (10120 Lomas NE), 296-6020.

Sept. 30 — "Joe Goode," performance art; 8 p.m., KiMo Theatre, 848-1374.

Sept. 30 — Keller Hall Series: flutist Frank Bowen, pianist Rita Angel, and mezzo-soprano Donna McRae; 8:15 p.m., Keller Hall, 277-4402.

Sept. 30 — San Geronimo Feast Day: Buffalo, Comanche, and Corn dances, trade fair, ceremonial foot races, and pole-climb; call for time, Taos Pueblo, 843-7270.

Oct. 1 — Chamber Players Series One: All Vivaldi Celebration, the New Mexico Symphony Orchestra, "The Four Seasons" featuring violinist Michael Ma, "Gloria" performed with the NMSO Chorus; 3 p.m., First United Methodist Church (4th & Lead SW), 842-8565.

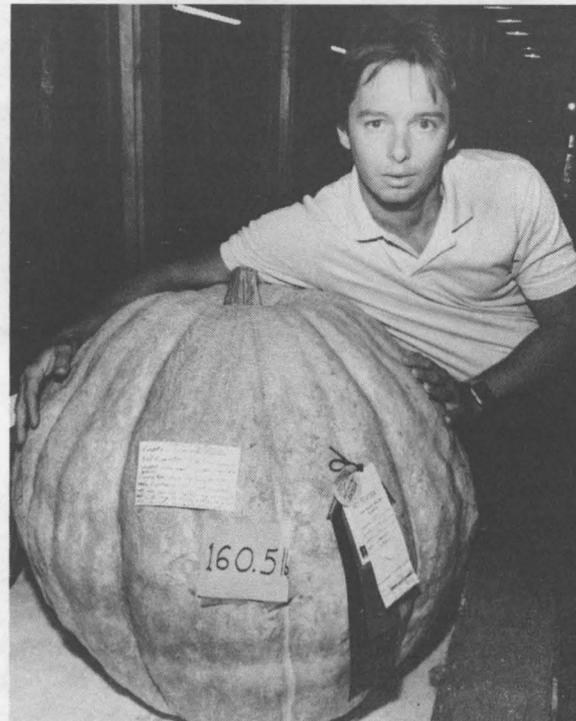
Oct. 1 — "Viva Italia," Musica Antigua de Albuquerque presentation of a concert of medieval and renaissance music from Italy, with authentic period instruments; 4 p.m., Central United Methodist Church (University & Copper NE), 842-9613.

Oct. 1-15 — "Waking Jimmy Rizo," by Frank Adamo, Southwest premiere of dark comedy about everyday life and death in a Brooklyn neighborhood; 8 p.m., Adobe Angels Theatre (3300 Princeton NE), 822-9012.

Oct. 2 — Monthly Monday Lecture Series: "Experiencing Other Cultures," by Robert Chenhall, professor of anthropology, museum director, and foreign-museum consultant; 10 a.m., Indian Pueblo Cultural Center, 247-4907.

Oct. 4 — San Francisco Feast Day: Corn or Elk dance; call for time, Nambe Pueblo, 843-7270.

Oct. 6 — Keller Hall Series: Seraphin Trio, featuring music of Copland, Beethoven, and Mendelssohn; 8:15 p.m., Keller Hall, 277-4402.



GOOD GRIEF, CHARLIE BROWN! It's the "Great Pumpkin." Kevin Fleming (2514) displays his 160.5-lb. pumpkin that won a blue ribbon at the New Mexico State Fair. Kevin says he has an even bigger one that's still growing in his garden. He plans to donate the blue-ribbon-winner to an elementary school for carving into a Halloween jack-o'-lantern.

Take Note

Duke City Business & Professional Women are sponsoring a mayoral-candidate forum Sept. 23 from 1 to 3 p.m. at the Immanuel Presbyterian Church fellowship hall (114 Carlisle SE). For information, contact Duke City BPW President Mary Ann Lindsay (4000) on 4-8032.

The Albuquerque Museum of Natural History is sponsoring an "Explorations!" volcano class on Tuesdays from Oct. 3 to 31 at 7 p.m. The instructor is Jonathan Callender, an authority on New Mexico volcanoes. "Volcanoes: The Living Earth in Action," will introduce characteristics, workings, locations, and hazards of volcanoes — focusing on New Mexico. An all-day field trip is scheduled for Saturday, Oct. 14. The class is in conjunction with a touring Smithsonian Institution exhibit, "Inside Active Volcanoes: Kilauea and Mount Saint Helens." Cost of the course — limited to 40 participants — is \$95 for Museum members and \$110 for nonmembers. For information, call the Museum on 841-8837.

Welcome

New Mexico

Loula Killian (21-1)
Robert Simpson (2175)
Malcolm Stringer (7212)
James Wifall (7261)

New York

Christopher Mullaney (3212)

Pennsylvania

Scott Bieber (2115)

Texas

James Potter (1266)

Deaths



Tom Fox of Design Definition Information Systems Div. 2834 died Aug. 30. He was 55 years old.

He was a member of the technical staff and had been at Sandia since February 1957.

Survivors include two sons.



Alva McGuckin of Benefits Systems and Health Care Planning Div. 3545 died Sept. 9 after a long illness. He was 52 years old.

He was a member of the lab staff and had been at the Labs since August 1964.

He is survived by his wife, two sons, a daughter, and two stepchildren.



VISITORS FROM THE UNITED KINGDOM recently spent a day at Sandia discussing defense matters of US-UK interest. Here, viewing hardware associated with the SRAM T (Short-Range Attack Missile Tactical), are (from left) Don Spiers, Controller Aircraft (Nuclear Weapons); John Maberley, Deputy Controller (Nuclear); K. G. Hambleton, Directorate General of Air Weapons and Electronic Subsystems; and Mike Steeden, Head of British Defence Staff Atomic Coordinating Office (Washington). Dave McVey (5121) explains the display as Ev Beckner (VP-5000) looks on.

MILEPOSTS

LAB NEWS

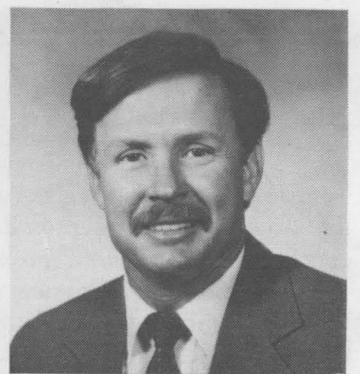
September 1989



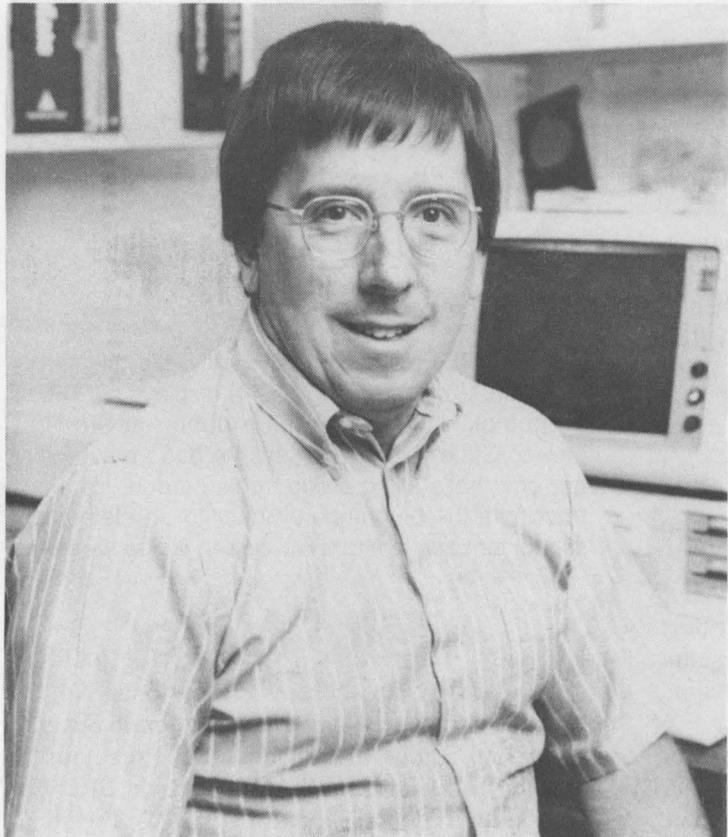
Paul Gabaldon (7471) 25



Wendell Weart (6330) 30



Rich Anderson (2142) 15

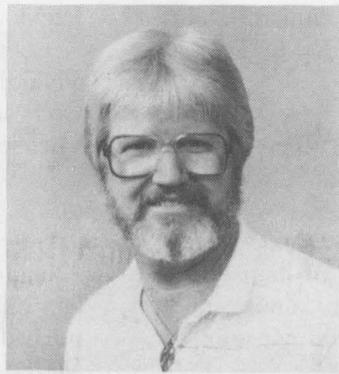


Vince Dandini (6512)

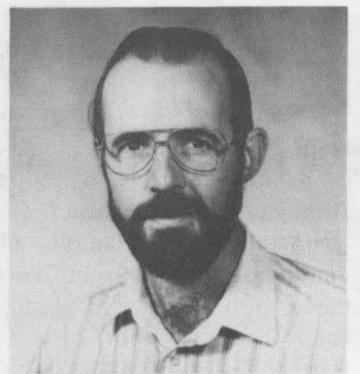
15



Eugene Koenig (7541) 30



Walter Vandevender (2635) 20



Joe Woodworth (1275) 15



Marti Butler (9220) 15



Roger Goode (7545) 20



Bernard Zak (6321) 15



Betty Voss (9224)

15



Joe Saya (5113)

25



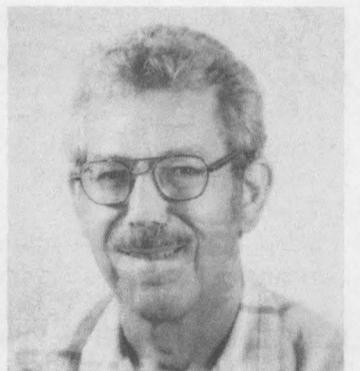
Ann Yates (5173)

15



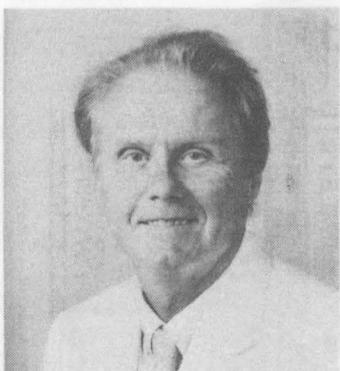
Gene Hammons (1144)

25



Bill Brown (8161)

30



Ron Cheek (7472)

30



Pauline Perry (7531)

15



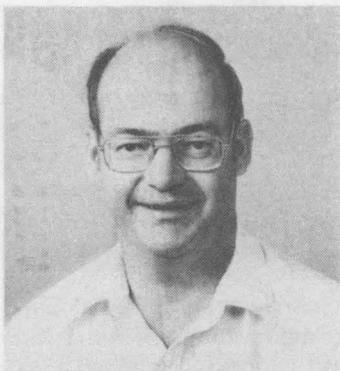
David Emin (DMTS, 1151)

20



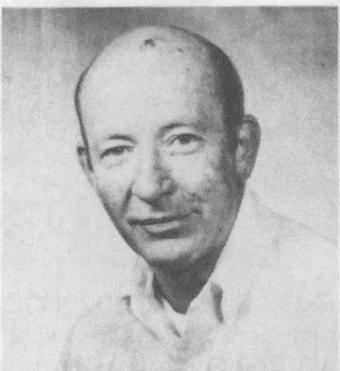
Frank Speakman (7411)

40



John Hohimer (1164)

15



Mike Corcoran (3437)

15



Howard Sanchez (7412)

25

UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

Deadline: Friday noon before week of publication unless changed by holiday. Mail to Div. 3162.

Ad Rules

1. Limit 20 words, including last name and home phone.
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.

MISCELLANEOUS

SANDIA LABS CAPS & T-SHIRTS, \$7; books: *Project W-47* and *Ski Touring Northern New Mexico*, South 14 Village Project, LAB NEWS, Bldg. 814.

DINETTE SET, new, four 20"-wide oak chairs, 42" x 42" table w/two 12" leaves, American Furniture, cost \$800, sell for \$650 or make offer. Long, 294-4591.

PARAFFIN HEAT THERAPY SYSTEM, w/wax, \$100. Smith, 299-7151.

GE REFRIGERATOR, 15.6 cu. ft., no-frost, hinge on right, \$100; rotary lawn mower, Craftsman, 20", \$80. Breeding, 260-0820.

DOGHOUSE, for small/medium dogs, \$15. Marder, 291-8140.

QUEEN-SIZE WAVELESS WATER BED, bookcase headboard, 12-drawer pedestal, heater, padded rails, \$300 OBO. Brandt, 275-1059.

'69 CHEV. 350 ENGINE, 4-bolt main, standard rod, mains, and pistons, high-performance cam, new clutch, 4-spd., 800 Holley, headers. Powell, 877-4939.

MEXICAN HANGING LIGHT FIXTURE, wrought iron and wood, w/4 amber light covers, 15" black chain, \$75. Bland, 265-6286.

TWIN-SIZE MATTRESS, box spring, frame, \$20; queen-size water bed w/heater, \$50. Stirbis, 299-8442.

CHROME & BUTCHER-BLOCK KITCHEN TABLE and 4 chairs, \$100; Vic 20 computer, \$20; Sears blood pressure monitor, \$20. Patrick, 265-4569.

H78-15 TIRE, new, w/6-hole Chev. rim, \$35. Shunny, 265-1620.

CHEST FREEZER, Wards, 18.5 cu. ft.; Sears frostless refrigerator/freezer, 11-cu.-ft. refrigerator w/5-cu.-ft. freezer underneath. Goin, 299-5271.

PING-PONG TABLE, folds, on rollers, accessories, \$50. Johnson, 884-8250.

MAG WHEEL, w/mounted tire, Michelin P165/80-R13, from early '70s Toyota Celica, \$35. Constantineau, 298-6166.

MUSICAL INSTRUMENTS: Roth viola, 15-1/2", w/case, \$450; Yamaha alto saxophone, w/case, \$350. Rentzsch, 281-5017.

OAK DINING TABLE, round, pedestal, \$50. Sims, 299-4418.

GULBRANSEN SPINET PIANO, cherry finish, \$795. Garst, 884-5176.

KENMORE FROSTLESS REFRIGERATOR/FREEZER, white, 15.1 cu. ft., crispers, meat tray, \$250. Myers, 294-7316.

ESTEY ELECTRIC ORGAN, dual manual, \$90 OBO; blue suede jacket, woman's size 18-20, fleece-lined, western yoke, \$50 OBO. Stronach, 298-5289.

SINGER SEWING MACHINE, wooden cabinet, \$100; super-single water bed, headboard, side rails, heater, frame, \$100; AM/FM car radio & speaker, \$50 OBO. Padilla, 831-0330.

NEC PC-8801A COMPUTER, PC-8831A dual-disk drive, JC-1410P2A color monitor, PC-8025A printer, programmed for WordStar and N88 BASIC, \$800. Vinson, 255-6962.

ANTIQUA SOFA, Louis XV style, green, \$850. Rosales, 243-0789 after 6.

MOBILE-HOME STORM DOOR, dark brown. Phillips, 294-7468.

SOLID-OAK DINING TABLE, 42" round, w/matching chairs, \$300; king-size water bed, w/bedding, \$50. Outka, 298-5707.

HIDE-A-BED SOFA, queen-size, green-stripe upholstery, \$250; Armstrong flute, student model, \$300. Anderson, 294-8451.

TWO CHAIN SAWS, Homelite, 10", \$60/ea.; 1 cord pinon and cedar, \$65; baby crib and mattress, \$95; clothing. Hayes, 299-1200.

ELECTRIC PORTABLE TYPEWRITER, power return, \$60; Lutz lettering set, templates 80-500, \$35. Chorley, 296-1454.

CALIFORNIA KING-SIZE WATER-BED FRAME, w/air mattress, \$250 OBO; 4 radial tires, 185/14, \$3/ea. Larsen, 292-1502.

OLYMPUS OM1 CAMERA, w/50mm & 28mm lenses, flash, case, \$120 or sell separately; Jason microscope, 1200x zoom, w/accessories, \$35. Bear, 881-7128.

DALMATION, male, 11 months old, obedience-trained, all shots, needs good home, \$100. Richards, 299-2672.

TI9914A COMPUTER, w/30 cartridges, books, case, \$185; new custom drapes, lined, w/valance, federal blue, for sliding door; exercise, \$50. Castillo, 294-5182.

BICYCLE CARRIER, \$10; motorcycle boots, size 9, \$15; small helmet, \$10; Camaro louvers for '82 up, \$30. Healer, 298-6967.

GRANDFATHER CLOCK, Seth Thomas, walnut, \$499; new Kenmore heavy-duty washer, almond color, \$319. Brooks, 298-8448.

CAMCORDER, compact VHS model, Zenith VM6200, complete outfit, extra battery, 7 cassettes, \$600. Rainhart, 821-3690.

QUEEN-SIZE BEDROOM SET, antique sewing machine, Kimball organ, wood stoves, china, books, miscellaneous items, moving sale. Morris, 865-4262.

CAR STEREO, Denon, AM/FM tape, removable, Alpine amplifier and speakers, used 1 month, cost \$950, sell for \$650. Kjeldgaard, 268-8835.

CAMPER, 8-1/2', 2-way refrigerator, bunk beds, 3-burner stove, closet, porta-potty, new jacks, \$850. Lesperance, 298-5203.

TELESCOPE, 17-1/2" reflector, 2 years old, \$800 in Dobsonian mount or mirror and diagonal, sell for \$500. Bell, 268-2744.

H-P DESKJET PRINTER, new in sealed box, \$530; CTS 1200-baud modem, full Hayes command set, \$40. Bagley, 821-8247.

DYNAFIT SUPER-LITE SKI BOOTS, man's size 10-1/2, used once, \$100. Strip, 292-7490.

FOUR BLACK MODULAR RIMS w/T215/60-14 radials, fit Mustang II and most 4-lug Ford and Mercury, \$325. Bordlemay, 883-4926.

STEREO EQUIPMENT: Carver C4000 pre-amp and M400t amplifier, Akai 1175 integrated receiver/amplifier. Koteris, 281-1631.

COMPUTER DIGITIZER TABLET, Mitsubishi "A" size, .1mm, new, \$220; Xerox LQ printer, 5 print wheels, \$200; printer stand, \$50. Ginn, 883-0004.

SEARS WATER SOFTENER, \$135. Cibicki, 877-7098.

BROWNING SWEET 16 SHOTGUN, Belgium-made 1964, rib barrel, \$650. Smith, 823-9521.

REMINGTON 870 WINGMASTER SHOTGUN, 12-gauge pump, modified choke, \$200; Ruger .22-cal. Mark II target pistol, 5-1/2" bull barrel, \$180. Litts, 884-9010.

ALTO SAX, Conn, used by professional, \$200 OBO; swivel rocking chair, gold, \$50 OBO. Bonahoom, 296-4450.

HIMALAYAN CAT, spayed female, 4 years old, free to good home. Thurston, 291-8050.

SIMMONS BRENDWOOD CRIB, natural light color, mattress included, \$100; Century car seat, 20-40 lbs., \$15. Moore, 268-6834.

BABY ITEMS: portable playpen, diaper bag, safety gates. Jansma, 292-5430.

TWO LOUNGE CHAIRS, Berkline Wallaway, \$300/both; 94" sofa, \$300; maple coffee table, \$100; table lamp, \$40. Krahling, 268-8126.

CAB-OVER CAMPER, 11', self-contained, \$700 OBO. Echert, 291-9513.

AIRLINE TICKETS, round-trip to Boston, leave morning of Oct. 6 and return evening of Oct. 11, \$190. O'Connor, 242-3702.

DINETTE SET: pedestal table, 4 chairs, canary yellow & white, \$40; 8' couch, rocking love seat, chair, 3 end tables, coffee table; \$750/all. Loving, 291-0341.

CEMENT MIXER, wheelbarrow-type, \$100; pinball machine, needs some work, \$90. Wrobel, 293-0283.

HARNESS, black, nylon web, horse-size, \$100. Turpin, 281-5933.

KING-SIZE BED, frame, mattress, walnut headboard. Martin, 299-3004.

IBM-COMPATIBLE SOFTWARE for Score Improvement System for SAT tests, 5 disks, \$20. Hall, 298-8617.

ROUND PEDESTAL TABLE, antique, oak, coffee-table height, \$140; octagon glass-top coffee table, \$70; Sears free-standing fireplace, \$125. Torres, 888-3218.

DINETTE TABLE 48" octagonal, marble-like top, \$65; 4 swivel/roller chairs, free w/table; console humidifier, w/new belt, \$50. Caskey, 298-6428.

TORONADO REAR AXLE and two 10' side rails, \$100. Hawk, 265-2228.

GRACO DISNEY HIGH CHAIR, new, \$35; playhouse, wood, shingle roof, \$75 OBO. Jackson, 836-1013.

TANDY 1000HX 356K COLOR MONITOR, DWP 220 printer, 5-1/2" external floppy disk drive, joystick, games, more. Barkocy, 296-6620.

SOFA SLEEPER, queen-size, earth-tone, \$225; 55-gal. fish tank, w/hoods, \$95. Guillen, 271-2644.

RAYCON MICROWAVE INTRUSION DETECTORS, new, 400-meter range, still in boxes, cost \$1350, sell for \$125/pair. Fleming, 293-9421.

DRESSER, 9-drawer, 66" long, maple, w/mirror and bedside table, \$135; humidifier, floor model, \$30. Schubeck, 821-3133.

GARAGE SALE: drill press, water bed, books, records, clothes, more, Sept. 23-24, 234 Horton Lane NW. Levin, 897-7145.

SELMER USA PROFESSIONAL ALTO SAXOPHONE, 9 months old, \$1500; Selmer Bundy student alto saxophone, \$200. Montano, 891-0921.

TRANSPORTATION

KAYAK, \$50. Shunny, 265-1620.

DUNE BUGGY, Pinto engine, sand tires, street-legal, extras, \$2800 OBO. Castillo, 294-5182.

'86 THUNDERBIRD, PS, PB, PW, AC, cruise, FM tape, extras, 35K miles, \$7200 OBO. Bremer, 291-8297.

'71 KARMANN GHIA, original condition, \$2950; '75 GMC pickup, all power, AT, \$1495. Blaine, 299-1036.

'80 DATSUN S10 HATCHBACK, AM/FM, \$1600. Duffy, 275-2857.

'79 CHEV. MALIBU CLASSIC, 4-dr., 8-cyl., AM/FM, tinted windows, \$1500. Troy, 821-5499.

'78 DATSUN 280Z, 2+2, 4-spd., AC, AM/FM cassette, cruise, new tires, \$2500 OBO. Firstenburg, 255-0268.

'79 YAMAHA 650 SPECIAL, \$500. Marquez, 344-8123 after 5.

'67 FORD CAMPER SPECIAL, 4-spd., one owner, 11' cab-over camper, fully equipped, \$3000 OBO; Ford Willys Jeep, \$1800. Frytz, 296-3813.

'86 TOYOTA CELICA GT LIFTBACK, AM/FM tape, AC, PS, PB, AT, gray, 35K miles, \$8000. Rosales, 243-0789 after 6.

'59 VW BEETLE, restored, canvas sunroof, radio, new paint and glass, \$3000. Outka, 298-5707.

'85 FORD THUNDERBIRD, PS, PB, PW, PL, AC, cruise, tilt, new tires, AM/FM stereo cassette, 75K miles, \$6200 OBO. Eisenberger, 877-7041.

'71 DATSUN 510 SEDAN, 4-dr., 1600cc engine, \$675. Hayes, 299-1200.

'84 BUICK REGAL, V-6, loaded. Sedillo, 255-0669 after 5.

'78 MIDAS MOTORHOME, 24', 460 engine, top and dash AC, awning, 34K miles. Hole, 255-1444.

'79 OLDS. DELTA 88, V-8 engine, loaded, white w/blue interior, 134K miles, \$1500 OBO. Weber, 821-8075.

'79 YAMAHA XS-1100, black, 28K miles, new battery, extras, \$895. Gonzales, 898-8728.

NISHIKI BICYCLE, 21", chrome moly frame, 27" x 1-1/8" alloy rims, \$130. Woods, 884-4224.

WOMAN'S 10-SPD. BICYCLE, bright pink, \$79; rubber raft, 2-person, \$99. Brooks, 298-8448.

'81 CHEV. CITATION, AT, AC, PS, PB, all maintenance receipts, \$1495. Harrison, 897-0658.

'84 CADILLAC SEDAN DE VILLE, gray, 4-dr. Reilly, 822-1350.

'78 YAMAHA 250 DT ENDURO, \$500. Draelos, 296-3078.

'83 CHEV. S-10 BLAZER, 4-WD, 2.8L, V-6, 5-spd., AC, 117K miles, \$4675 firm; '68 VW Baja Bug, \$995 OBO. Kobs, 281-1102.

'79 FORD FAIRMONT, 4-cyl., AT, PS, AC, 4-dr., \$1395. Padilla, 877-2116.

'85 BUICK SKYLARK, 4-dr., AT, AC, radio, one owner, \$4000. Brannon, 296-6674.

'86 DODGE VAN, w/full conversion, 25K miles, \$12,500. Roginski, 296-6494.

'81 CHEV. SILVERADO S-10 PICKUP, AC, rebuilt AT, new tires, \$3450. Cibicki, 877-7098.

'86 THUNDERBIRD, silver gray, AC, PB, PS, PW, AT, \$7500. Novak, 281-3099.

12-SPD. FUJI ROYALLE II BICYCLE, never used, \$200. Rodgers, 299-1505.

BOY'S BMX-TYPE HUFFY BIKE, 1 year old, \$30. Girard, 821-5529.

'86 YAMAHA YFM225 FOUR-WHEELER, electric start, front-rear racks, reverse, hi-low range, \$1600. Cook, 869-6921.

'69 MERCEDES BENZ 280S, 4-dr., \$1100 OBO; '79 Suzuki GS1000, 25K miles, \$1200 OBO. Loving, 291-0341.

'79 PONTIAC GRAND LeMANS, 4-dr., AC, PB, PS, stereo, \$1800. Nagel, 298-2779.

'86 TOYOTA CELICA GT LIFTBACK, red garnet metallic, 36K miles, AC, 5-spd., \$7900. Jordan, 260-1587.

'76 TOYOTA CORONA, 4-dr., AM/FM stereo cassette, AT, AC, \$975. Ney, 298-6329.

'64 ROYAL ENFIELD INTERCEPTOR, 750cc, 20K miles; '56 BSA Gold Star, 500cc. Koetter, 892-8076.

'68 DATSUN 510 SW, 25-mpg, SU carbs available, \$800, make offer. McGovern, 275-3725.

'80 DATSUN 310 HATCHBACK, 78K miles, 5-spd., 4-dr., AC, w/ "passed" emission-test form, \$2000 OBO. Schubeck, 821-3133.

REAL ESTATE

2-BDR. HOME, corner lot, front sprinklers, \$55,000. Washington, 293-4782.

4-BDR. HOME, NE, 1-3/4 baths, 1600 sq. ft., remodeled kitchen, auto sprinklers, fenced yard, cul-de-sac, owner financing, \$71,000 plus closing costs. Grafe, 897-4745.

3-BDR. HOME, 1+ bath, 1/3 acre, orchard, garden, professionally xeriscaped, new carpet, FP, West Mesa area, \$55,000. Cox, 892-2906.

4-BDR. TRI-LEVEL HOME, custom-built, 2784 sq. ft., 2-1/2 baths, den w/FP, Wyoming/Academy area. Randall, 821-0388.

4 ACRES, South 14/Highway 222 area, 6/10-mile from pavement, wooded, no restrictions. Wilde, 281-4511.

5.01 ACRES, approx. 2 miles south of El Morro Monument, pines, pinions, meadows, rock outcroppings, \$6000 OBO. Jones, 881-6006.

2-BDR. MOUNTAIN HOME, 1-1/2 baths, 2-1/2-car garage, fruit trees, 2 acres, fenced, Sandia Park, \$75,000. Nusser, 281-9209 or 277-3222.

4-BDR. HOME, on 2 wooded acres, passive solar, open floorplan, \$138,000. Turpin, 281-5933.

3-BDR. TERRITORIAL HOME, foothills location, family room, country kitchen, landscaping, more. Myers, 294-7316.

2-BDR. MOBILE HOME, 14' x 48', front kitchen, skirting and awning included, \$5500 OBO. Romero, 281-9423 evenings and weekends.

WANTED

SOMEONE TO HELP CARE FOR TRIPLETS, 4 months old, also do light housework, NE area, 3 to 4 times per week, 4 to 5 hours per day. Potter, 299-6053.

COUPLE SEEKING ANOTHER COUPLE interested in on- and off-road bicycling. Bouchard, 293-2618.

INFORMATION from the Sandian who formerly owned a V-6-powered '73 Opel GT. Prevender, 296-8586.

HOUSEMATE, nonsmoker, to share 2-bdr., 2-bath home in NE Heights, washer/dryer, \$300/mo., utilities negotiable. Hesch, 275-7630.

OWNER'S MANUAL for '77 Datsun 280Z, to buy or borrow. van Berkel, 897-2541.

KNITTING MACHINE; 1 to 2-hp oil-less compressor w/tank; both in good working condition. Balk, 281-9083.

CARPOOL, one to two times a week, from 2nd and Rio Bravo area, 8 a.m.-4:30 p.m. shift. Cibicki, 877-7098.

LARGE DOG KENNEL/CRATE, large doghouse, dog-run fence material. Richards, 299-2672.

MOTO-X EQUIPMENT: helmet, size 10-11 boots, pads, clothing, in good condition. Smith, 823-9521.

TELEPHONE ANSWERING MACHINE. Lucero, 296-2473 evenings.

ALTO SAXOPHONE & PICCOLO, to borrow, rent, or buy. Hansen, 823-9515.

WEBELO CUB SCOUT UNIFORM, size 8-10; Brownie uniform, size 7-8. Fjelseth, 296-2257.

DISK DRIVES (5-1/4") for Apple IIe, Disk II, for trouble-shooting. Miyoshi, 821-9118.

AUSTRALIAN SHEPHERD PUPPY, full-blooded but not necessarily registered, prefer male, about 6-8 weeks old. Hernandez, 892-8448.



Medical Corner

Week After Next: Mental Illness Awareness Week

By Arlene Price (3300)



October 1-7, 1989

The week of Oct. 1 through 7 is Mental Illness Awareness Week (MIAW) — an appropriate time to learn more about mental illness and its forms, the people it affects, treatment, costs, and the services it requires.

MIAW is also a time to take stock of how you may be personally affected. Have you — or someone you know or love — experienced anxiety or depression, alcohol or drug dependency, trauma (for example, an auto accident, sudden loss of a loved one, or spouse or child abuse)? Have you suffered serious mental illness, or do you know someone who has?

This special week is a time to listen and learn. This year at Sandia, we'll concentrate on the problem of depression (see box).

Depression Often Ignored, Unnoticed

Depression is common. Yet it's often ignored, or goes unnoticed. A recent article in the *Journal of the American Medical Association* states that depression is often taken too lightly by both the professional and the patients receiving treatment. Further, the article makes the point that depression robs people of the ability to function effectively more often than do arthritis, ulcers, diabetes, or high blood pressure.

Depression's in the same league with emphysema or back problems in limiting people's physical ability to function — or causing them to stay in bed. Only heart pain and advanced coronary artery disease lead depression in limiting activities such as walking, dressing, bathing, climbing stairs, or participating in sports.

The statistics are alarming: Approximately ten million people suffer from major depression sometime during any given year, and millions more may have treatable depression symptoms. Many people experience some form of depression — ranging from mild to severe — during their lifetimes, yet only four percent of depressed people seek treatment.

States the *JAMA* article: "The majority suffer in silence or are misdiagnosed as having such things as tension, anxiety, personality disorder, or weak character." The most common complaints expressed by depressed people are feeling "down-in-the-dumps" or chronically tired.

The following self-test — from the TLC wellness letter — may help you determine whether, in

fact, you suffer from depression. If you answer "yes" to several of these questions, it may be time to seek help. Early treatment can lessen the severity of depression, may reduce the length of time you are depressed, and may prevent future bouts.

- Do you have persistent feelings of sadness, emptiness, pessimism, or anxiety?
- Do you feel helpless, hopeless, guilty, or worthless?
- Is it difficult to make decisions, concentrate, or remember?
- Have you lost interest or pleasure in everyday activities? Have you dropped hobbies or activities?
- Have you lost your drive or energy? Do you seem "slowed down"?
- Do you have sleep problems (insomnia, early-morning waking, oversleeping)?
- Are you losing or gaining weight?
- Do you have headaches, stomachaches, or backaches? Do you have chronic aches and pains in your joints and muscles? (Sometimes, depressive disorders masquerade as chronic physical symptoms that don't respond to treatment.)
- Are you restless or irritable?
- Do you want to be alone most of the time?
- Are you drinking or smoking heavily, or are you taking other drugs?
- Do you think a lot about death, or about suicide?

Sandia to Observe Mental Illness Awareness Week

In recognition of Mental Illness Awareness Week, Oct. 1 through 7, Sandia Medical is sponsoring a Mental Health Roundtable on depression. Guest speakers are Albuquerque psychiatrist Dr. John Graham, who will discuss depression in adults, and Maria Williams, a local clinical psychologist, who will focus on depression in children and adolescents.

The program is from noon to 12:45 p.m. on Oct. 4 in the Technology Transfer Center. For further information, contact Arlene Price (3300), Sandia's clinical psychologist, on 6-0021.

Coronado Club Activities

Family Fare: Sequel to State Fair

SEPTEMBER MAY BE THE FAIREST MONTH of all, given the fact that the State Fair's winding down this weekend — and that the C-Club Family Fare's on tap next Friday night (Sept. 29). Here's a chance to feed the family for less than a fast-food-franchise foray would cost. How about a spaghetti plate or a hamburger plate for just \$1.50? Or chicken and fish for a measly \$4.25? No question about it: Happy days are here again. After feasting on all that good stuff, enjoy a fun-filled hour of engaging entertainment (7-8 p.m.) from Richard the Magician, who specializes in comedy magic for all ages.

ANOTHER WESTERN NIGHT'S ON THE AGENDA tonight (Sept. 22) for all you urban cowboys and cowgirls who didn't quite get your fill earlier this month. Chow down on basic — and bountiful — barbecue fare: ribs and chicken, accompanied by baked beans, German potato salad, and applesauce (\$6.95). Afterward, those good old Isleta Poor Boys return for another stomp session from 8 p.m. to midnight. Dinner reservations recommended (265-6791).

Welcome

- Albuquerque**
 - Martha Epperson (21-1)
 - Deborah Jensen (3543)
 - Martha Kerschen (3745)
 - Kraig Kirby (7810)
 - Laura Lenburg (22-2)
 - Izela Martinez (21-1)
 - Kylene Molley (3202)
 - Lewis Newby (3215)
 - Yvonne Oglesby (22-2)
 - Daniel Stephens (7810)
 - Susan Taylor (21-1)
 - Dorothy Whitehill (22-2)
- California**
 - Michael Wartell (9000)
- Indiana**
 - John Feddema (1411)
 - Joseph Miller (7172)
- New Mexico**
 - Celia Arias (21-1)
 - Maria Armendariz (6524)
 - David Barber (7213)
 - Ralph Chavez (7821)
 - Gordon Kelly (7261)

Take Note

Carrie Tingley Hospital Foundation's Halloween Hollow Committee is looking for volunteers to take part in "Haunted Hollow," a family Halloween event at the State Fairgrounds Saturday, Oct. 28, from 3 to 9 p.m., to benefit the hospital. Volunteers are needed for creating carnival-type game booths and science demonstrations (Frankenstein's laboratory, for example), street people such as magicians, jugglers, clowns, accordion- or flute-players, etc.; whatever you can imagine. For information, contact Beverly Forman on 292-2155.

Albuquerque skies will again be filled with colorful balloons at the 18th Annual Albuquerque International Balloon Fiesta Oct. 7-15. This year's Fiesta brochures will be available in the LAB NEWS office (Bldg. 814) and in Finance (Bldg. T-14). For information about balloon pins, patches, and calendars, contact Ruth Birdseye (ret.) on 255-6328.



CERTIFICATES OF EXCELLENCE for exceptional contributions were recently awarded to (standing, from left) Phyllis Pei (3202), Charlie Ray (3723), Gary Shepherd (DMTS, 2614), Byron Gardner (3432), Harriet Morgan (3000A), and B. J. Jones (3545). VP 3000 Dennis Roth (seated) made the semiannual awards, which recognize excellence in one of five categories: leadership, planning, productivity, expertise, or people.