

# Sandia Helps Phillips Lab Build Powerful New Rocket Engine

Building more powerful and efficient rockets for launching satellites, sending a crew on a mission to Mars, and someday exploring the frontiers of space: These are just a few of the possibilities offered by nuclear technology officially declassified recently by the Air Force Phillips Laboratory.

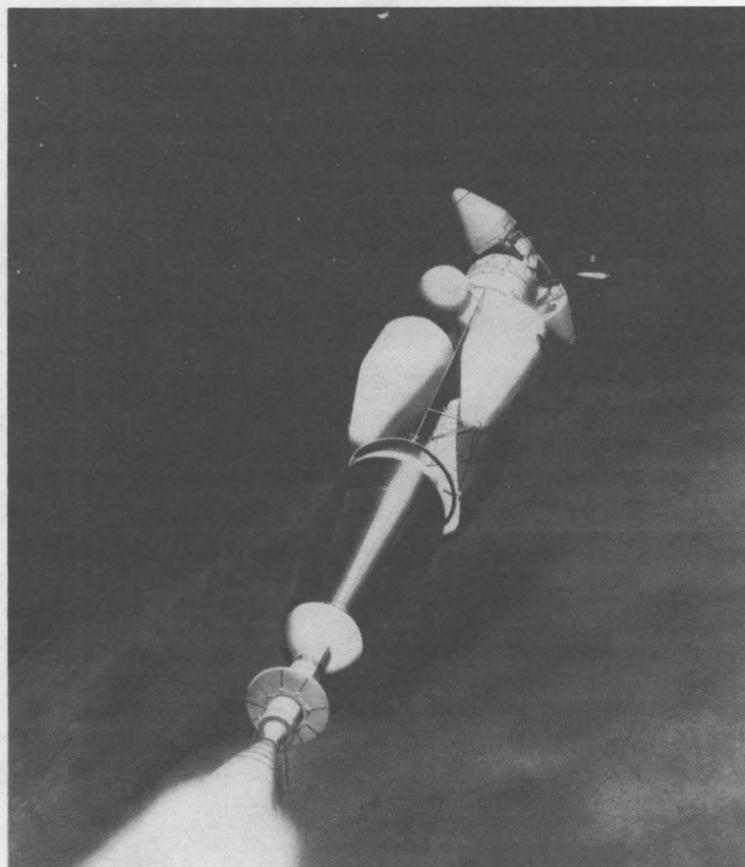
In a Jan. 13 press conference, the Phillips Lab announced it will embark on a long-term development mission, called the Space Nuclear Thermal Propulsion (SNTTP) program, aimed at building a rocket powered by a fission reactor. If the program is successful, such a rocket could carry up to three times the payload of a conventional, chemically propelled rocket at two to three times

to heat up a rocket propellant (hydrogen gas in this case) to very high temperatures. The nuclear reactor, called a particle bed reactor, is made up of thousands of tiny uranium-carbide pellets packed into porous metallic cylinders. As hydrogen is passed through the cylinders and over the hot fuel pellets, the gas heats up and expands, rushing out of the rocket nozzle and providing thrust. In its current design, the reactor itself is no larger than a 55-gallon drum.

The goal, says George, is to develop a safe nuclear rocket engine that produces 75,000 pounds of thrust with a specific impulse — essentially the "gas mileage" of a rocket engine — of 1,000 seconds, about two times the efficiency of conventional hydrogen-oxygen rockets. This will make heavier payloads and greater speeds possible. Phillips Lab officials say the nuclear propulsion system would not be activated until the spacecraft is carried outside the earth's atmosphere by conventional rocketry.

### Lead Lab for Safety

As part of the SNTTP program, Sandia researchers will perform nuclear fuel and fuel-element tests as well as reactor physics experiments at the Labs' Annular Core Research Reactor and Sandia Pulsed Reactor. The Labs will also design, assemble, and operate a new test reactor to be built outside of New Mexico;



ARTIST'S RENDITION of what a space nuclear thermal propulsion rocket might look like orbiting Mars. The nuclear fission reactor rests just forward of the craft's nozzle where very hot, expanding hydrogen gas provides thrust. Most of the rest of the craft is made up of hydrogen-containing fuel tanks, with the crew habitat near the front. (Artwork courtesy of NASA)

### The nuclear propulsion system might make lengthy manned space voyages feasible in the not-too-distant future.

the speed. That might make lengthy manned space voyages — such as a mission to Mars — and large-payload military missions economical and feasible in the not-too-distant future, though not before the year 2000.

Phillips Lab, the Air Force's primary space technology laboratory located in Albuquerque, says the program is an offshoot of earlier classified work for military space programs, and some aspects of the program will remain classified.

Sandia will provide expertise for the program on several fronts, says George Allen, Supervisor of Nuclear Technology Div. 6461; the Labs' main concern will be nuclear testing and nuclear safety.

### Hot, Expanding Gas

A thermal propulsion engine — essentially a powerful heater — uses a fission nuclear reaction

develop and operate a new ground test facility also to be built in another state; and ensure that all nuclear tests and experiments are conducted (Continued on Page Five)

**Crash Testing the Safe Secure Transports for DOE — See Page Six**



# LAB NEWS

VOL. 44, NO. 2 SANDIA NATIONAL LABORATORIES JANUARY 24, 1992



MEALS ON WHEELS — An avid railroad historian, Jim Mischke (5513, seen here) recognized this "surplus" railroad car at Sandia's Technical On-Site Inspection (TOSI) facility as an authentic hospital "kitchen car" built shortly after the Korean War. In its day, the car was used to prepare meals aboard a train shuttling wounded servicemen between hospitals in the US. Sandia used it to test detection systems for treaty-limited items. Jim contacted officials at the California State Railroad Museum in Sacramento, who in turn contacted Louise Bland of Property Reapplication Div. 3422. The car will be railed to the Museum as soon as paperwork is complete.

(Photo by Randy Montoya, 3162)

### Termed a 'Management Redeployment'

## Restructuring Plans Announced by SMC

The Sandia management restructuring plan will be translated into action quickly following its approval by the Sandia Management Council (SMC) on Monday, Jan. 20. Implementation activities are already under way, and the target date for the Labs-wide changeover to the new structure is April 1.

As explained in the LAB NEWS (Oct. 18, 1991) soon after President Al Narath announced his decision to restructure Sandia, the intent is to tailor the Labs' management team to changing times — making it more customer oriented, better positioned to support DOE's changing agenda, and focused on continuous improvement and effective program/project management — all important aspects of the Sandia Strategic Plan. Primary objectives include the redeployment of management talent to better serve the Labs' needs and to shorten the chain of command by one level.

This will be accomplished by removing most current department managers from the reporting chain and having many Sandia divisions (under current system) report to a higher management level — center directors. (In a few cases, divisions will be consolidated.) Most current department managers will be reassigned (see "Where Goest DMs? Their Support Staffs?" on page five).

### Centers and Directorates: What's the Difference?

Centers will replace today's directorates. The main difference is that there will be more centers under the new system than there are directorates today (see new organization chart on page four).

"We thought it was wise," explains Al, "to increase the number of centers over the current number of directorates because it will keep direct reports to

(Continued on Page Four)

## This & That

**Three R's Redefined** — Just about everyone has heard the "old" three R's — reading, 'riting, and 'rithmetic, but some wag has suggested that the three R's at Sandia now stand for reorganizing, restructuring, and reconfiguring. Speaking of restructuring, the basic plan is announced in this issue, beginning on page one. We should be hearing more soon from our individual VPs, and President Al Narath plans to talk about restructuring and answer questions about it during his quarterly employee dialogue sessions early next month (see announcement at right).

\* \* \*

**More "20/20 Club" Members** — Two more employees have contacted us to say they have accumulated at least 20 years of Sandia service after a parent had done the same: Pat Chisholm (3144) is into her 27th year at the Labs; her mom, Wynne Cox (deceased), retired in 1973 with 25 years of service. Ted Montoya (2476) is not only a 20/20 member with 24 years of service, but has hopes to start a 30/30 club in six years; Ted's dad, Vivian, retired in '82 after putting in 30 years.

\* \* \*

**Not Just Secret Messages** — After an IEEE journal issue was devoted to cryptology in 1988, the demand for copies quickly exhausted the stock. That issue — guest-edited by Gus Simmons (700) — became the basis of a recently published book, also edited (and partly written) by Gus, *Contemporary Cryptology: The Science of Information Integrity*. The book is more than three times as long as the original articles. Cryptology today goes beyond keeping secrets — for instance, it seeks ways to authenticate information that's transmitted electronically (can you sign a computer disk?). "How to prove you're who you say you are without giving up information an eavesdropper might use to impersonate you — that's a question of information integrity," Gus says. "Information integrity is a broad science, and cryptology is just one of its tools." We who never mastered a cereal-box Superspy Code Ring and occasionally forget the number that persuades a machine to give us money can be glad that folks like Gus are thinking hard about the cryptology needed for tomorrow's world.

\* \* \*

**Private Thoughts** — A LAB NEWS writer who prefers to remain anonymous reports the following thoughts (in italics) while scanning the Foreword of a new book: "Once in a while a topic comes along that has universal appeal [*it's going to be about sex, right?*]. It is both understandable to the undergraduate and challenging to the most sophisticated researcher, no matter what language he or she speaks [*or maybe it's about money*]. Such is the field of quantum semiconductor structures."

\* \* \*

**What Keeps Editors Awake?** — Besides gallons and gallons of coffee, that is? Well, for one, the fear of missing something like this when you edit copy: One editor wasn't fully awake when editing a story by a young reporter who wrote that someone's favorite book was *Lame Is Rob* by Victor Hugo. And I personally spotted this fascinating lead not long ago in a news release from a state wildlife agency: "Hunters anxiously anticipate bagging their query." Gaffes like these may not stop the world from turning, but they sure make editors' heads spin. ●LP

## Narath Schedules Employee Dialogue Sessions

President Al Narath will hold dialogue sessions with all interested employees in Livermore on Feb. 4 (1:15 and 3 p.m.) and in Albuquerque on Feb. 6 (8:30 and 10:30 a.m., 1:15 and 3:15 p.m.) and Feb. 7 (1:30 p.m.).

Each session will last approximately an hour. Al will present introductory information and then answer questions from the audience.

In Livermore, employees with last names beginning M-Z should attend the 1:15 session. Employees with last names beginning A-L should attend the 3:00 session.

In Albuquerque, employees who wish to attend should request a ticket (see Jan. 20 *Weekly Bulletin* for form). Tickets may also be requested by calling 4-3863. Ticket requests made after Jan. 28 will be accommodated on a space-available basis.

## Recent Patents To Sandians

Tom Brennan, Gene Hammons (both 1311), Dave Myers (1352), and Allen Vawter (1321): Ion-Implanted Planar-Buried-Heterostructure Diode Laser.

Dick Brow (1845) and Delbert Day (Univ. of Missouri, Rolla): Ammonia-Treated Phosphate Glasses Useful for Sealing to Metals.

Peter Esherick and T.D. Raymond (both 1124): Feedback Stabilization System for Pulsed Single Longitudinal Mode Tunable Lasers.

Ralph Dawson (1154), Gordon Osbourn (1155), Paul Percy (1300), Harry Weaver (1320), and Tom Zipperian (1322): Nonvolatile Semiconductor Memory Having Three Dimension Charge Confinement.

Perry Molley (1411): Optical Pattern Recognition Architecture Implementing the Mean-Square Error Correlation Algorithm.

Barney Doyle and Jim Knapp (both 1111): Backscattering Spectrometry Device for Identifying Unknown Elements Present in a Workpiece.

## Welcome

**Albuquerque** — Nenita Estes (7843), Curtis Fox (7811), Dwight Stockham (7721), David Wisler (7823), Steven Yesner (7853). **Other New Mexico** — Sandra Begay-Campbell (7842).

**Elsewhere: California** — Mark Rashid (1514).

## LAB NEWS

Published Fortnightly on Fridays

SANDIA NATIONAL LABORATORIES

An Equal Opportunity Employer

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

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

LARRY PERRINE, Editor (505/844-1053)  
CHARLES SHIRLEY, Assistant Editor (844-5199)  
LINDA DORAN, Writer (844-6210)  
JOHN GERMAN, Writer (844-7842)  
RANDY MONTOYA, Head Photographer (844-5605)  
MARK POULSEN, Photographer and  
Production Coordinator (844-0421)  
JANET CARPENTER, Editorial Assistant (844-7841)  
JUANITA MARTINEZ, Assistant (844-7841)  
LAB NEWS FAX, (505/844-0645)  
BARRY SCHRADER, Livermore Reporter  
(510/294-2447; FTS 234-2447)



JOHN MAYO (right), who became President of AT&T Bell Laboratories last year and is a member of the Sandia Corp. Board of Directors, visited Sandia last week to become better acquainted with the Labs. Here, he and President Al Narath take a short break during a day-long series of briefings about Sandia programs.

**World War II Vintage**

# Sandian Restores Old Twin-Engine Lockheed

A 50-year-old twin-engine Lockheed 12A like the one that flies into the sunset at the end of the film classic *Casablanca* may fly the Livermore skies in a few years.

The 1940 eight-passenger Lockheed is the third aircraft Yon Perras (8441) and his brother, Uwanna, have found in various stages of disrepair. They have already brought the other two back to life through meticulous, part-by-part restoration.

In fact, Yon has spent his spare time for the last 15 years buying and restoring classic airplanes dating from the 1930s and '40s.

"We do 100 percent restoration, meaning we take apart every piece, replace any worn or damaged parts, and put it all back together," Yon explains. "Often, we have to machine parts that are no longer available on the market."

Their hobby is indeed a labor of love, as evidenced by the mint condition of the two airplanes they have restored. One of them, a Beechcraft Staggerwing single-engine biplane, already has 400 hours of flying time after being fully restored between 1982 and 1986.

**Found in Open Field**

The brothers found the Lockheed 12A in an open field near Brennan, Tex., in 1988, where it had been parked for eight years. The 12A is indeed a rare bird, says Yon. Only 130 were built before World War II broke out in 1941; this one bears Serial No. 81. "There are only 14 left in the US today, and probably only five of those are flyable."

Considered the hot rod of its day, the 12A had 450-horsepower Pratt & Whitney engines that could maintain a cruising speed of 190 to 200 mph.

Because the cabin of the 12A is not pressurized, it usually is flown at altitudes of between



STANDING NEXT to the partially finished body of his Lockheed 12A is Yon Perras (8441). The plane when fully restored will be 36 feet, 4 inches long from nose to tail, with a wingspan of 49 feet, 6 inches. Overall weight of the eight-passenger aircraft is 8,750 pounds, lighter than normal due to its all-aluminum construction.

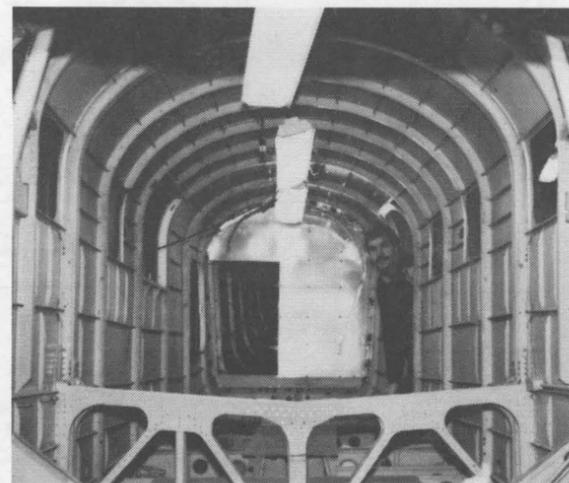
9,000 and 14,000 feet. The Perras brothers plan to equip it with oxygen equipment in order to fly it at higher altitudes.

The two men have spent the last four years stripping the plane down to its framework at a rate of about 2,000 man-hours per year. Yon estimates it will take another four years of night and weekend work to finish the job.

"This plane was totally constructed of aluminum, meaning no steel was used for the structure, except for the steel motor mounts," notes

Yon has yet to earn his multi-engine rating in order to pilot the craft. However, his brother, who works for the California Air National Guard, is also a flight instructor and will be able to certify him.

Yon looks forward to the day when the plane rolls out of the hanger onto the Hayward Airport runway. Meanwhile, Sandians can look forward to seeing it at a future Livermore air show. ●BLS



A LOOK at the interior of the Lockheed 12A.

**"Often, we machine parts that are no longer available on the market."**

Yon. "We had to replace the entire shell as well as machine numerous other parts."

The plane was first owned by a large oil company, then sold to the government of Venezuela, where it was used primarily as an aerial mapping plane until being sold to a Texan in the '60s.

When WWII broke out, Lockheed abandoned the expensive 12A, a civilian plane that sold for \$75,000 in 1940 as a commuter plane between small airports and major cities, and began building aircraft such as the P-38 fighter and B-17 bomber.



SHOWN IN FLIGHT is another Perras brothers' restoration, a 1943 Beechcraft Staggerwing biplane. Yon and Uwanna have logged 400 hours in this aircraft since rebuilding it. The plane can carry five people and cruises at a snappy 200 miles per hour.

**SANDIA LIVERMORE NEWS**

**Congratulations**

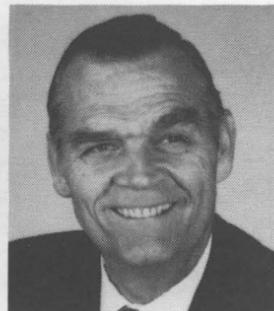
To Sandy and Ken (8454) Condreva, a daughter, Joanne Elizabeth, Dec. 17.

To Karinne (8535) and Michael Gordon, a son, Jonathan Michael, Dec. 11.

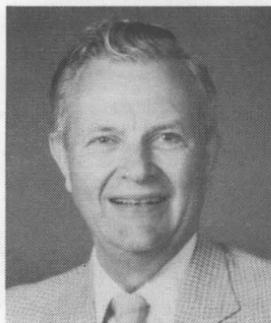
**Recent Retirees**



Jim Barham  
8010 31



Bob Facer  
5366 31



Bob Johnsen  
8510 33



Juavana Stark  
8010 25

(Continued from Page One)

# Restructuring

center directors down to a reasonable level. That's needed to give center directors the best opportunity to excel at their increased responsibilities in the areas of effective communications, being responsive to customer needs, and acting quickly and decisively.

"By comparing the new organization chart with the existing one, people could incorrectly conclude that we're adding management positions, but that's not the case," continues Al. "While about 30 more management positions show up on the new chart because we have more centers than directorates, we have simultaneously removed about 110 managers [which don't show on the org. chart] from the functional reporting chain, for a net reduction of about 80 positions in the chain.

"In effect, we are flattening the management structure by redeploying many of these 80 or so folks to program/project management positions," explains Al. "Most current directors will become center directors under the new system, and some current department managers and division supervisors will be chosen to fill center director vacancies."

The post-and-bid method will be used to the

# Another Look at the New Terminology

The new Sandia structure will also include some new designations for groups and managers, as announced last fall (see "Transition to Restructure" chart on page five).

The functional organizations managed by VPs will collectively be called divisions to better match what other firms call their large groups that encompass a number of smaller units. Three Sandia VPs will also be responsible for managing programmatic sectors established last August; the three sectors and responsible VPs are Defense Programs, Roger Hagengruber, 5000; Energy and Environment, Dan Hartley, 6000; and Work for Other Federal Agencies, Gerry Yonas, 9000.

Directorates will be replaced by centers and managed by center directors.

Although Sandia will still have depart-

ments and department managers under the new system, the definitions, responsibilities, and reporting schemes will change. Many of today's department managers will retain the title of manager but will get new assignments and duties (see "Transition to Restructure" chart and "Where Goest DMs? Their Support Staffs?" on page five).

Divisions will become departments under the new system (in a few cases, in combination with other divisions), and most of today's division supervisors will be designated department managers. In most cases, these organizations and people will report directly to center directors.

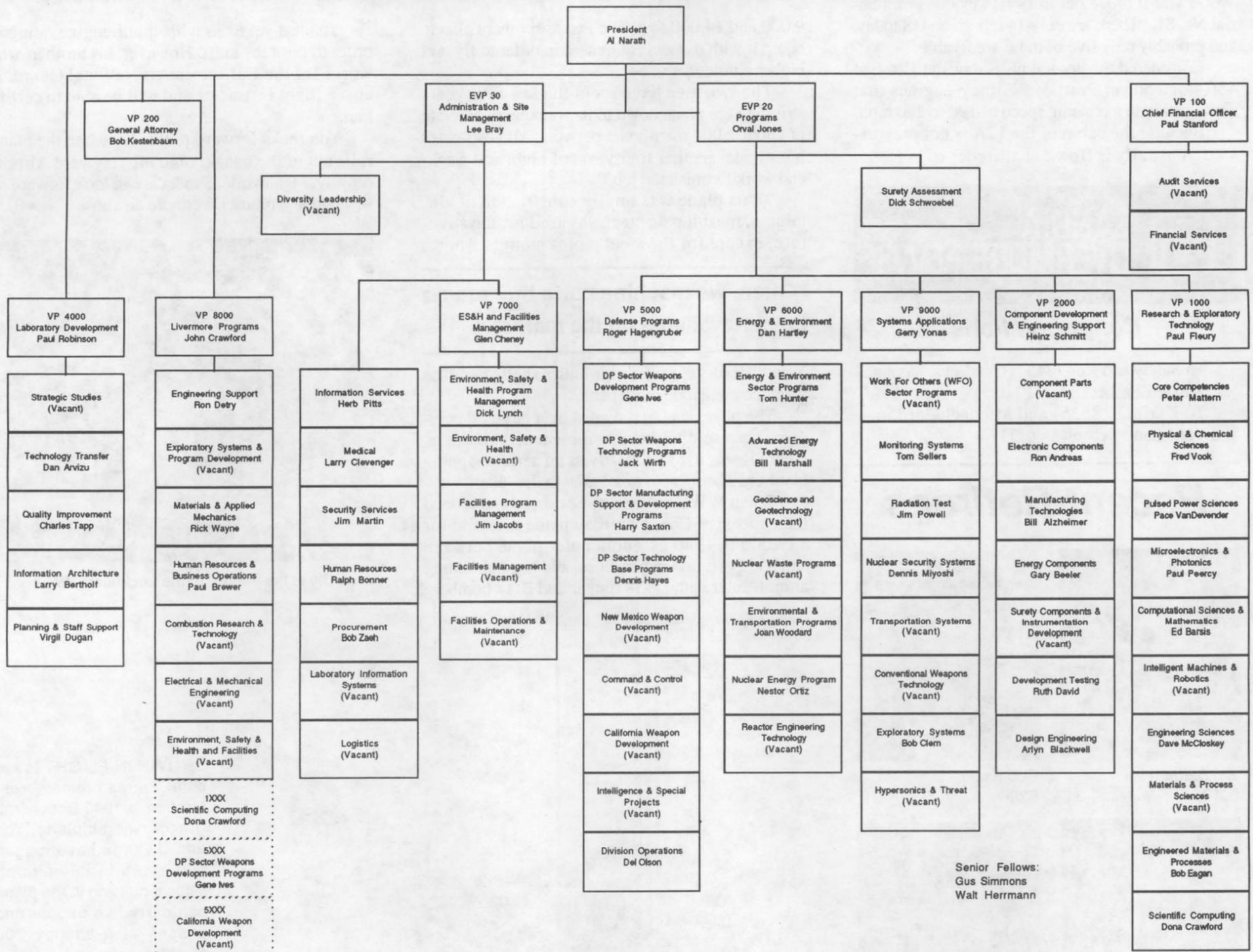
Today's section supervisors will become team supervisors in most cases, and, in some departments, non-supervisory team leaders will be appointed to lead specific tasks.

maximum extent possible to fill promotional opportunities that result from the restructuring. Vacancies for management positions will be posted as soon as possible, and candidates can be nominated for any and all jobs that they are qualified to hold.

A *Special Bulletin* that contains postings for open director positions is scheduled for distribution to management next week.

In line with the increasingly participatory  
(Continued on Next Page)

## Post-Restructuring Organization Chart



**SANDIA AFTER RESTRUCTURING** — The Sandia management structure will look very much like this from the president down through the center level once restructuring is accomplished. This organization chart is subject to further revisions, but was current as of Monday, Jan. 20, when the Sandia Management Council approved the restructuring plan. Many former directorates (to be called centers under the new system) will retain their former names, organization numbers, and leaders, but some organizations could be moved, renamed, or renu-

bered, so no effort has been made to include org. numbers on this chart below the VP level; partial org. numbers are shown for the centers seen with broken lines around them at the bottom of Org. 8000 to indicate that they are based in Livermore but report programmatically to other VPs based in Albuquerque. Employees will note that some directors under the old system have moved to new centers under the new system. Details about which departments report to which centers will come to employees from the VPs. See story for more details.

(Continued from Page One)

## Nuclear Rocket

safely and within federal guidelines.

Sandia already finished testing several of the system's components and has completed the safety analyses necessary to begin the initial phases of the ground test program. In addition, Sandia has an important role in developing the instrumentation and control systems for the space reactor system. In all, approximately 100 Sandians and contractors are expected to contribute to the SNTF program.

Sandia has conducted tests on nuclear propulsion systems since the early 1960s, when the Labs began conducting safety tests on ROVER/NERVA rocket propulsion systems at Sandia's sled track in Albuquerque. (The ROVER/NERVA systems were the first nuclear thermal propulsion rocket engines.) These systems, however, never got beyond ground testing.



Besides providing nuclear propulsion for a variety of military and civilian space missions, say Phillips officials, the SNTF program will also support President Bush's Space Exploration Initiative (SEI). In addition, the nuclear technology could eventually be used to generate power as well as transmute long-term radioactive waste into short-term waste. The SEI and commercial applications, however, are not the primary focus of the Air Force program.

ALBUQUERQUE Convention Center was the site of the 9th Symposium on Space Nuclear Power Systems last week, where Sandia displayed its capabilities in space nuclear technologies. Gary Polansky (6461), Sara Lancaster (6462), and Tim Lee (6460B, not seen) assembled the Sandia exhibit, but contributions for the display were made by organizations Labs-wide.

George cautions that a considerable amount of work is needed before a particle bed reactor will be ready for space flight. Phillips Lab estimates that ground testing of a rocket engine will not begin for a number of years, and that flight tests will probably not take place until the turn of the century.

"This technology could significantly reduce the cost of space transportation," he says. "It will likely permit many missions that are not possible now because their payloads would be too heavy or because the durations of manned space flights would be too long."

●JG



## Labs' Space Nuclear Technology Program Grows

Because of increasing national interest in space nuclear energy and nuclear propulsion systems, says Jack Walker (6460), program manager of Sandia's Space Nuclear Technology Program, the Labs is involved in a number of initiatives in nuclear thermal propulsion in addition to the SNTF program.

Sandia recently entered into an agreement with United Technologies Corp. to help develop a uranium plasma core nuclear rocket engine. The Labs is also a member of an alliance with the Air Force Phillips Lab, UNM, and Los Alamos National Laboratory to conduct non-nuclear testing on the Soviet Topaz II space

nuclear reactor.

Other initiatives include further developing Sandia's nuclear-driven FALCON laser technology, which could be used to beam power to space stations and propulsion systems and to help remove debris from space; helping industry develop power systems for use in space and on the moon; and supporting NASA and DOE in space nuclear safety issues.

Exhibits representing several of these initiatives were on display at the 9th Symposium on Space Nuclear Power Systems, held at the Albuquerque Convention Center last week.

(Continued from Preceding Page)

## Restructuring

climate at the Labs, the Sandia Management Council decided that the selection process for promotions to center directors will involve a diverse group of employees. These employees will interview candidates and provide input to the Sandia VPs who will make the selections.

"When the restructure is complete," Al says, "we not only will have decreased the number of managers in the reporting chain, we also expect to decrease the number of Sandia managers in general. For example, some consolidation of divisions under the old system into departments in the new system will de-

crease the number of department managers needed."

"The transition from the current management structure to the new one has already begun," says Executive VP Lee Bray (30), "and our vice presidents will soon communicate the details of restructuring to folks in their groups."

### Detailed Info Coming from VPs

VPs will communicate this information to their employees as soon as possible, Lee says, but the exact methods will be left up to each VP. Some may choose to have all-employee meetings and some may choose to have a series of smaller meetings or convey restructuring information through their managers. Employees can expect related announcements soon from their VPs.

Other methods will also be used to inform employees about restructuring and how it will affect them and the Labs. Al Narath will answer questions about restructuring (along with discussing other issues) at employee meetings in Tonopah and at NTS on Jan. 28 and 29 and at his next quarterly dialogue sessions with employees in Livermore on Feb. 4 and Albuquerque on Feb. 6 and 7 (see announcement on page two of this issue). Radio Sandia is expected to broadcast restructuring information, and the VPs are considering other ways to communicate Labs-wide restructuring details and rationale.

●LP

## Where Goest DMs? Their Support Staffs?

Most department managers will either remain in charge of a department under the new structure (today's divisions will be renamed departments under the new structure), be promoted to center directors, or be assigned duties outside the reporting chain. Such duties could include program/project management and development, customer interfacing, and strategic planning in association with center directors and VPs.

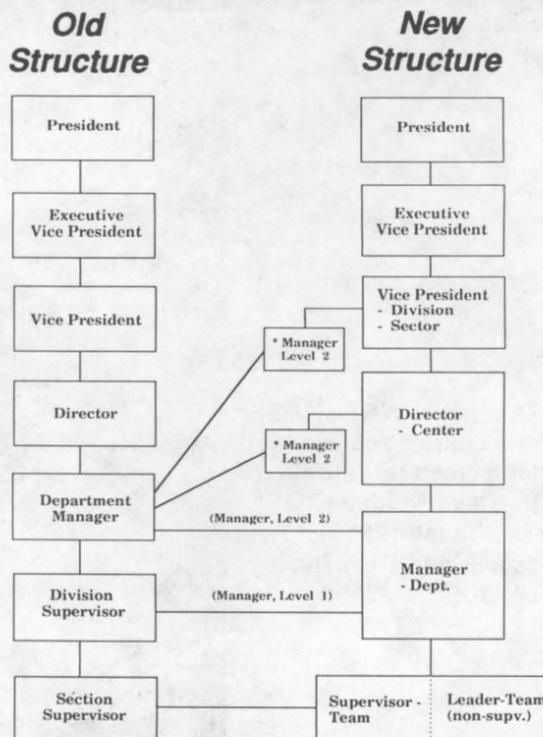
Current department secretaries and other department support staff could have several options under restructuring. According to Dick Shepardson (3550), who's coordinating the restructuring implementation, department support staff could in some cases go along with their DM to his or her new assignment, bid on new

support positions that become available at the center level, or in some cases stay with their DM who may remain in charge of a department under the new system.

"I realize that it can be disconcerting when you don't know exactly what your job will be in a few months," says Dick, "but we are moving as quickly as we can to get our new management system in place and our managers re-deployed. Once we know what these folks will be doing, we'll soon learn where the support positions are most needed."

Sandians who have specific questions about restructuring are encouraged to talk with their immediate supervisor or the restructuring coordinator for their vice presidency (VP administrative assistant).

## Transition to Restructure



\* Program/project management  
\* Support functions

**Measuring Performance in Accident Situations**

**Researchers Wreck Models to Test Weapon Transports for Safety**

As a small group of scientists and engineers peer through binoculars from a safe distance, a tractor-trailer of vivid orange speeds down a track toward a stationary truck.

The two vehicles collide. In less time than it takes to blink, the cab of the moving vehicle is crushed into pieces as it smashes into the trailer of the parked vehicle, while the cab of the parked vehicle is separated from its trailer.

Following the impact, researchers move in to inspect the wreckage of the one-quarter size rigs. They scrutinize bent metal, scattered panels of siding, and a sheared kingpin that once anchored the disconnected cab and trailer.

The impact, which took place on Sandia's 10,000-foot sled track, is one of many tests that have been conducted by the Labs to characterize the safety features of Safe Secure Trailers (SSTs), tractor-trailers used by DOE to ship nuclear weapon systems and components.

**Tests Help DOE Assess Safety**

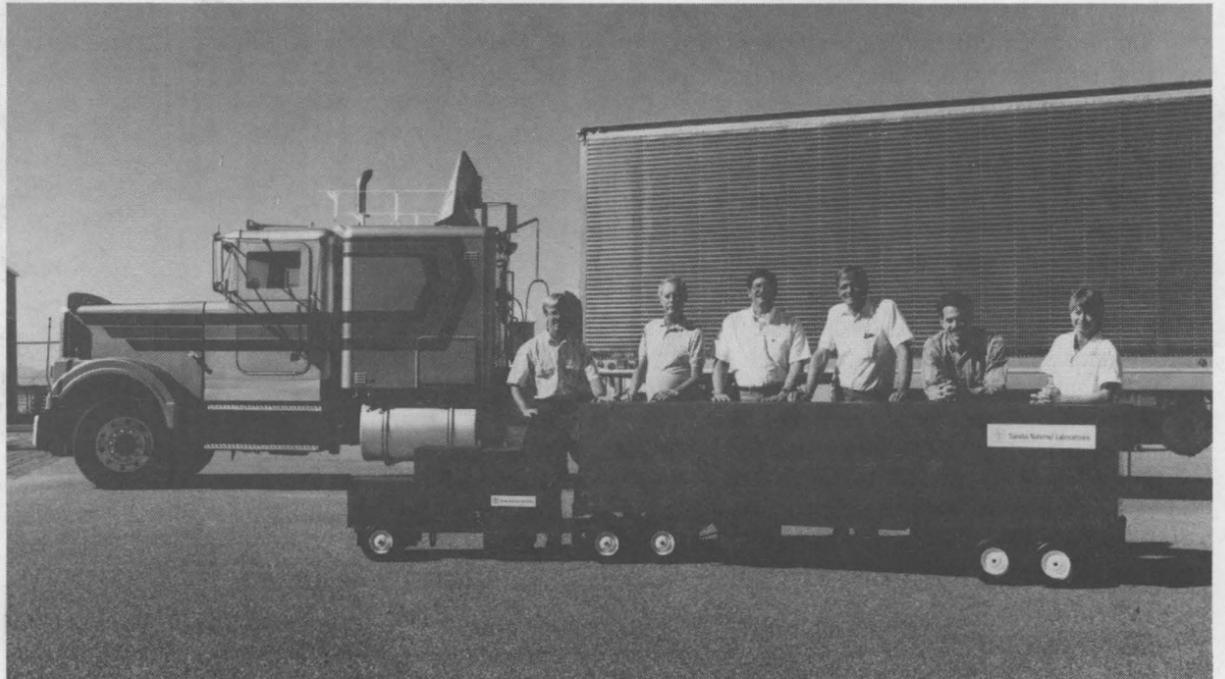
Developed by Sandia in the 1970s, the SSTs are being tested as part of an overall DOE program to do a detailed assessment of the safety features and risks involved in transporting nuclear

**Sandia is conducting fire, impact, cargo-to-wall impact, and tiedown performance testing.**

materials. "The trucks are all owned by DOE and operated by federal officers who protect the cargo," says DOE Albuquerque's Tim Driscoll, who often observes the tests and works with Sandia on the project. The project engineer at DOE Albuquerque is Ray Baca.

Altogether, Sandia is conducting four categories of tests for DOE — fire testing, impact testing, cargo-to-wall impact testing, and tiedown performance testing.

"What we're doing now is quantifying the safety aspects of the SST," says Jerry Crowder of



THE SST TEST MODEL is one-fourth the size of an actual tractor-trailer. Team members include (from left) Barry Boughton, Karlin Boultinghouse, Jerry Crowder (all 9513), Bill Sullivan (9122), Jake Deuel, and Linda Branstetter (both 9513).

Transportation Div. 9513, project leader for the SST Safety Evaluation Program. "The questions we want to answer are: If we have an accident out on the highway, how safe is the SST? Does it provide containment of the cargo? Does it protect the cargo from fire?"

Impact tests use models that are one-fourth the size of a real SST. The smaller size significantly cuts costs, and the results can be extrapolated to predict the performance of a full-sized truck in an actual collision.

"We chose one-quarter scale because models of this size would be the easiest to test and build," says project engineer Jake Deuel (9513). "Had we chosen a smaller scale, we would have increased the model costs because of manufacturing difficulties such as welding and material availability."

In the fire testing, a cutout of a trailer wall (ac-

tual size) is exposed to burning jet fuel for 30 minutes. During this time, temperatures on the outer face of the panel exceed 1,850 degrees F. "Temperature measurements obtained using the wall section are indicative of the trailer response under severe accident conditions," says Barry Boughton (9513), project engineer.

**Crash Tests at Varying Speeds**

Crash tests are conducted in different orientations and at varying speeds from 30 mph to 65 mph. For example, trailers are crashed both separately and while attached to tractors to account for the effect of potential jackknifing if a driver happens to see an accident coming and swerves out of the way at the last moment. Some collisions are head-on, others occur at varying angles.

After an impact test, the wreckage is taken to a Sandia lab and dissected for detailed inspection. This is where researchers get a close-up look at the extent of damage both inside and outside the vehicle.

Cargo-to-wall testing assesses what happens if the tiedowns fail, causing the cargo to come loose and ram into an inside wall. One such cargo-

**"We chose one-quarter scale because models of this size would be the easiest to test and build."**

to-wall test is being conducted this month with an actual shipping container.

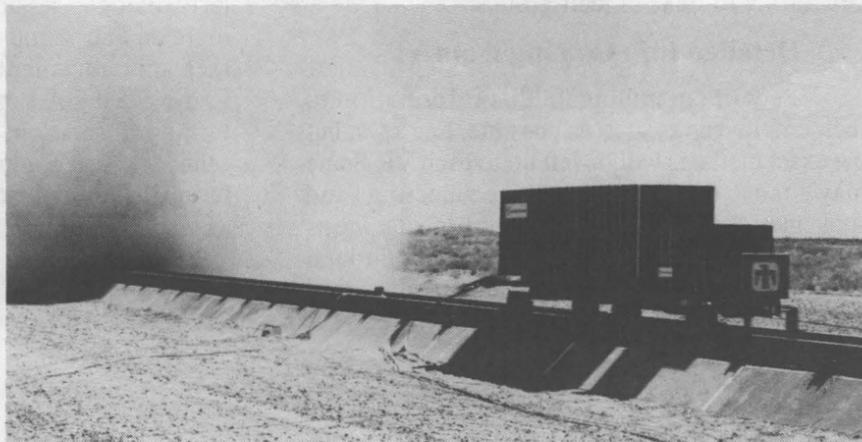
Tiedown testing evaluates the effectiveness of the containment system that holds the cargo in place. Several tiedown systems have been subjected to both vibration and static testing. Notes project engineer Linda Branstetter (9513), "The development of accurate mathematical models of the cargo and tiedown systems' behavior depends on knowledge of their ultimate strength, physical characteristics, and the dynamic interaction between the systems and the trailer."

Other Sandians working on the tests include Karlan Boultinghouse (9513), and Pete Stirbis and Frank Mello of Applied Mechanics Div. 1544. Test engineers include Bill Kampfe (2735), Jim Nakos (2737), Terry Ernest and Bob Reese (both 2742), and Jon Rogers (2744).

Sandia's final report to DOE, called the Highway Transportation Safety Analysis Report (HITSAR), is due in May, at the completion of the two-year effort. The report will become part of DOE's Defense Programs Transportation Safety Report.

•LD

QUARTER-SCALE model of SST speeds down Sandia's sled track. The 950-pound transport model moves down the track aided by a High Velocity Aircraft Rocket.



EXAMINING WRECKAGE of the quarter-scale model after a crash test are (from left) Steve Nunley (DOE), Jake Deuel (9513), Tim Driscoll, and Rich Richey (both DOE).



# feed **li**back

*Q: The maps in the Sandia phone book used to show Area I split into two pages. The left-hand page was replaced with a sector map that does not include a lot of useful information on the old map. Street names, tech area fences, and parking lots are missing. I thought it was just a quick fix or a mistake when it first appeared, but it has been perpetuated in the new phone book. Sandia Bulletins announcing street closings and parking lot changes are worthless without an adequate map. Can we please get the old map updated and reinstated in the phone book?*

*A: Thank you for your feedback. In our effort to make new telephone and organization numbers available in a timely manner, we knew that some information in the directory would be inadequate. Unfortunately, the maps fell into this category. We are pursuing this problem and are taking the necessary steps to correct the maps for the next edition.*

Herb Pitts (3100)

*Q: Would it be possible to televise news of great importance and interest to all Sandians — restructuring, for example — from the Technology Transfer Center to other locations, such as buildings 815, 632, and conference rooms equipped with television sets? In addition to several other employees, I was unable to gain access to the TTC to listen to Al Narath; instead, we had to get our information second-hand.*

*A: For some time, Sandians have expressed interest in a Management Information Video System, but as with many worthwhile projects these days, no one has come forward with funding. Al Narath has requested estimates and schedules for extending communications to Bldg. 815, which would require trenching to the nearest manhole, and to the Bldg. 962 Auditorium in Area IV, which would require pulling new fiber cables. The cost for each project could exceed \$30,000. Once funding becomes available, video could be provided in six to nine months.*

Herb Pitts (3100)

*Q: I am pleased that Sandia has implemented a new policy to allow TAs and STAs with engineering degrees to bid on MTS positions. It clearly demonstrates Sandia's commitment to an advancement path for highly qualified technicians. I do have one concern, however, about this policy. Many TAs and STAs earn considerably less than their MTS counterparts. Though I*

*would never expect a technician's salary to be raised to that of an experienced MTS, I would hope that a newly promoted MTS would earn at least as much as a newly hired college graduate with the same degree. For many technicians, especially those earning master's degrees, the wage disparity between their current TA/STA salary and the entry-level salary of an MTS with a master's degree is considerably more than the \$1,800 salary compensation awarded to a new MTS upon promotion. Will a technician's salary (or lack thereof) reduce the probability of a promotion to MTS, and if not, will the promotion to MTS be accompanied by an equitable salary adjustment, as opposed to just \$1,800?*

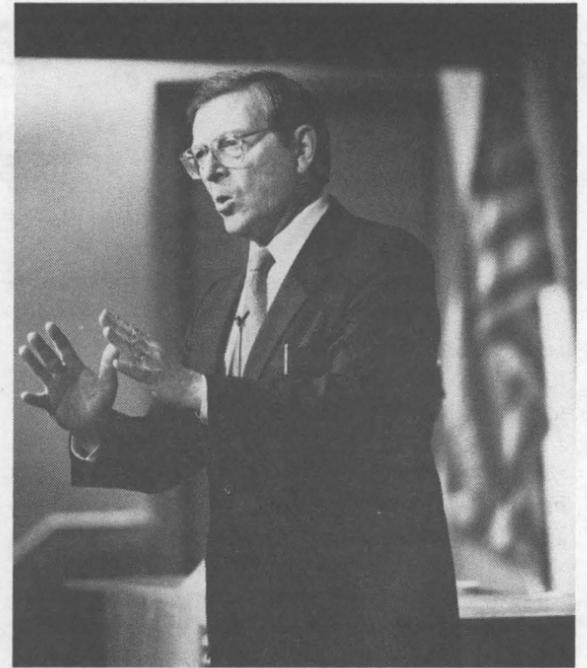
*A: As you indicated, employees reclassified as MTSs receive a \$1,800 advancement award (base increase). If the new salary is lower than the start rate for the level and specialty of the degree held by the individual, an adjustment is made to bring the salary to the appropriate start rate. This is routinely checked when anyone is reclassified to an MTS position.*

Ralph Bonner (3500)

*Q: The Oct. 18 LAB NEWS features articles about aging aircraft. One of the sidebars describes the human rivet checker, who uses an eddy current device. The article indicates a rate of 100 rivets per hour — a glacial pace for a tedious job.*

*What Sandia should do, rather than look at reliability factors, is develop a robo-bug — a robotic sensing bug that would crawl around the surface of the aircraft, find rivets, and inspect them with an eddy current device. Questionable rivets would be marked with a pen and a center tester would be alerted, perhaps via a telemetry link. All of this is well within the state of the art for robotics, sensors, bugs, telemetry, and computer programs. Let's solve the real problem rather than the perceived problem.*

*A: Thank you for your comment. We are working with Bill Drotning (1414) on proposals to incorporate robotics into aircraft structural inspections. It should be noted that aircraft operators are regulated, and are therefore not free to arbitrarily implement high-tech solutions for perceived problems without FAA and manufacturer concurrence. In addition, manufacturers shoulder liability and must recommend maintenance programs that can be implemented in countries all over the world. Thus, changes in inspection procedures must be demonstrated to be reliable, cost-*



SEN. PETE DOMENICI spoke to Albuquerque Sandians Jan. 9 in the Technology Transfer Center about using the talents of the national laboratories to pursue solutions to urgent national problems. Some of the biggest challenges facing the nation today, he said, are sparking economic growth, controlling health care costs, and improving the quality of education.

## Take Note

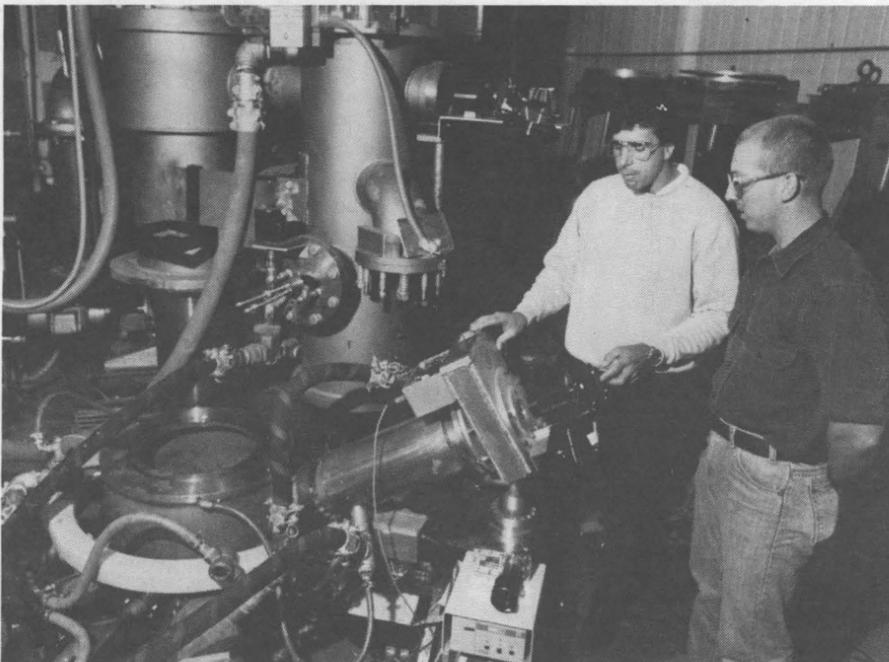
The DOE Office of Technology Development and the DOE Office of Energy Research will present the Second Engineering and Technology Conference on Waste Management and Environmental Restoration April 9 to 11 in San Juan, Puerto Rico. Papers for the 1992 Conference are being solicited. Topics include waste management technologies related to waste minimization, chemical substitution, robotics applications, environmental restoration, and solar detoxification. Technology transfer, training, and legislative issues will also be discussed. Deadline for abstracts is Jan. 30. For information and abstract and paper submission requirements, contact Evaristo Bonano (6301) on 4-5305 or Fred Norwood (3511) on 4-3306.

\*\*\*

Retiring and not shown in LAB NEWS photos: Wallis Cramond (6412).

effective, and inspector-friendly in order to be implemented through regulatory action. In time, Sandia hopes to contribute to these changes.

Ruth David (2700)



BRIAN DAMKROGER (1833, left) talks with Jim Heilman (Carpenter Technology) about operation of Sandia's vacuum arc remelt furnace in the photo above. In the photo at right, Jim takes the temperature of metal inside Sandia's electro slag remelt furnace. Both furnaces are used for purifying metals. Jim is an industrial intern assigned temporarily to Sandia to conduct research supported by the Spe-



cialty Metals Processing Consortium (SMPC), a partnership of 13 US manufacturers of specialty metals. SMPC was established three years ago, in part by Sandia, to encourage technical collaboration between domestic producers and users of specialty metals and to increase the US technical base in specialty metals processing.

# feed **back**

*Q: I recently attended a workshop in Chicago with a Sandia contract employee. We were both traveling on Sandia business and booked similar seat assignments on the same airlines. The cost of my ticket was \$218 round trip; the cost of the round-trip ticket for the contractor was \$895 — a difference of \$677. I have been told this difference is due to Sandia's government rate vs. the contractor's rate. If this situation is true for all contractors who travel on Sandia business, a substantial savings could be realized by providing a process through which contractors traveling on Sandia business could obtain government rates. Please explain contractor travel regulations.*

*A: Many Sandians who travel with contractors on business ask if the contractor may also obtain the lower Sandia rate for air travel. Unfortunately, this is not available to our contractors for two reasons: A non-Sandia employee is not eligible for Sandia benefits, and the negotiated rates with airlines are only for Sandians on business travel; and if we were to extend our negotiated rates to contractors, we would be violating our agreement with the airlines and could jeopardize the low rates for Sandia.*

*Sandia is eligible for government rates only on those airlines that have chosen to extend them to government contractors. These currently include Southwest, America West, Midway, and Hawaiian Air. Any other discounts we have with airlines are done through contract negotiations. Should an airline we negotiate with allow our contractors to use the discounted air fare, we would certainly advertise it and make it available to them.*

Bob Zaeh (3700)

*Q: I first would like to say that I applaud the efforts of the Change Ambassador Program as an excellent way to help spread information about what is going on at Sandia. However, as a division supervisor, I have a problem with one aspect of the program. I often find that people in my division come to me asking about something that was shared with Change Ambassadors but not division supervisors. For example, the Change Ambassadors received an early briefing on the Sandians' Perspective survey, yet a week later, division supervisors still had not received any information about it. I realize that supervisors have not been as effective as they could be in passing on information and that this is where the Change Ambassadors have been of great help. However, it would seem that if we really want to disseminate information as effectively as possible, supervisors should be given the same information. That way, both management and implementers would be working to the same sheet of music.*

*A: Thank you for the good words on the Ambassador Program. The intent of this effort is to provide an informal communications network. Any success of the program has been predicated on the willingness of upper management to provide useful, relevant information. One of the Ambassadors' major responsibilities is to take this information back to their organizations to catalyze discussion between themselves and management, thus creating a more open environment. What we've learned is that the need for information grows during times of significant change, and that as change evolves, it becomes extremely difficult to keep up with the facts, because they change on a daily basis. What we have attempted to avoid is formality, because it tends to cause delay. The Ambassador Program continues to encourage broad participation, and we have a reasonable representation of managers. If you are so inclined, we continue to offer open enrollment and invite you to attend any of the meetings held at the TTC. Otherwise, we encourage you to use the Ambassador(s) in your department as an in-*

formation source.

*In the instance you site, the Ambassadors received an overview of the results of the Sandians' Perspective survey. Specific organizational results were soon provided to VPs, directors, and department managers. Each of these groups was asked to share this specific information with their employees and to develop action plans to address the most critical items.*

Charles Tapp (4300)

*Q: A colleague and I were discussing the depth, breadth, and attractiveness of the many Family Day activities and demonstrations. Why not videotape the more popular ones and show the film in local schools to generate interest in science? This could also be used effectively for Sandia public relations and recruiting.*

*A: Your idea is a good one and is actually often done. Video Production Div. 3153 has produced an extensive library of such tapes, most of which are available for checkout from Technical Library Div. 3141. Producing a quality tape is usually more time-consuming and disruptive than is practical in a Family Day situation, although some of these exhibits may lend themselves to taping after the event. If you have specific suggestions for exhibits covering subjects not already available, I will be glad to look into the feasibility of having them recorded. Thank you for your suggestion.*

Herb Pitts (3100)

*Q: I am happy to contribute to charity and to United Way. A couple of years ago, I specified that I wanted my contribution sent to Planned Parenthood. Last year, I checked the box for "no change," thinking this arrangement would remain the same. But no, that box was for Sandia's accountants. I find that I have to fill out another donor option form every year to be able to give to the charity of my choice. Why has this been made so inconvenient? Can't we donors be viewed as customers, for whom giving should be convenient?*

*Also, United Way takes 13 percent of our donations for overhead. In contrast, many of the big mutual funds charge less than 1 percent (some as little as 0.2 percent). Could someone explain this large "load," particularly when Sandia volunteers do much of the footwork?*

*A: Your suggestion that United Way donors be treated as customers got us right where it hurts. Our Quality wasn't showing, so we looked into the idea. Turns out that most of the barriers to be busted were at the Labs, not at United Way. A couple of key problems: The present system doesn't allow us to know who is using the donor option, and even when our customer checks "no change," there usually is a change when salaries change at the beginning of the fiscal year. If you allocate a percentage deduction, as many Sandians do, accounting will have to recalculate how much money will go to your designated charities each year. The United Way folks are most willing to go along with us if we can change the procedure. We're working out the details now.*

*As to the second part of your question, we'd like to start by noting that the correct figure for administrative costs at Albuquerque United Way is 12 percent. This may seem like a big bite, but the axiom that it takes money to make money applies to fund-raising as to most other things. We wonder a little at your mutual fund comparison, since money in those funds has little relevance that we can see to helping the community. Unlike mutual funds, where people are eager to put their money to work for them, fund-raising for community human services takes more up-front expenses. Our local United Way is consistently low compared to the 25-percent maximum suggested by the national*

*United Way board for administrative costs. A local board monitors these costs to make sure this trend continues. United Way uses these costs for community planning, problem solving, fund-raising, and resource distribution. You've noted a key reason for keeping these costs down — an active volunteer base. As you can imagine, it is not unusual for paid fund-raisers using phone banks, direct mail, or other techniques to absorb 50 percent or more of the contributions they collect.*

Herb Pitts (3100)

*Q: Recently, I got a call from the controller's office telling me that my credit card expense for single periodicals, technical publications, or books were not permitted. The rationale is that the library gets a discount. This is sheer nonsense, because the net effect is that it takes more of my time, someone else's time, and Sandia's money to accomplish what I have been doing for years. After reviewing the new guidelines for small-value purchases, it appears Sandia has created a major barrier rather than removed one. Things I have routinely done in accordance with Sandia policy for years are now not allowed, or the new policy is so vaguely worded as to enable those who seek to impede progress to do so. For example, I am told that the purchase of a single periodical, costing perhaps \$3 to \$5, must go through the library. The same is true of a book costing only \$1.*

*A: Since at least 1985, Sandia policy has placed responsibility for purchasing books, reports, maps, videotapes, and other library materials with the Technical Library. This is because the library enjoys professional relationships, including discounts, with major publishers and suppliers around the world. The Technical Library has a well-established history of expertise in ordering these materials and tracking the orders. The procedure is simple for you, requiring only Library Request Form SF-1075-A with a case number and your signature. Though there is somewhat more overhead with this approach, in the long run it costs Sandia less.*

*In our changing environment, however, we agree that when you have a book or magazine in hand, it is timelier and more cost-effective for you to purchase the item. The new Individual Small Value Purchase (ISVP) program provides a possible alternative. With this in mind, we have been working with Corporate Policies Div. 113 to revise Sandia Laboratories Instructions 6610 and 6610-1 to allow such purchases. We hope to announce implementation soon.*

Herb Pitts (3100)

## Fun & Games

*Clogging* — The Sandia Mountain Cloggers are offering beginning clogging classes starting Jan. 30. No partner is necessary. Lessons are from 6:30 to 7:30 p.m. Thursday nights at the Progress Women's Club (3305 Alta Monte NE). Cost is \$30 for 10 weeks. For more information, call Mary Linhart on 299-2633, Margaret Hutton on 268-0275, or Emily Briner on 881-6752.

\*\*\*

*Square Dancing* — Ponderosa Promenaders Square Dance Club is offering three free weekly square dance lessons beginning tonight from 7 to 8:30 p.m. at St. Luke's Lutheran Church (9100 Menaul NE). Babysitting is available. For more information, call Tom Glauner (2341) on 299-0277.

\*\*\*

*Bowling* — SANDOE Bowling Association 1990/1991 Bowlers-of-the-Year include: Scratch — Gary Cochrell (5024), 594; and Cheryl Barton, 515; Handicap — Jerry Long (ret.), 587 and 662; and Trinie Chavez, 502 and 610.

November Bowlers-of-the-Month include: Scratch — Bob Barton (3721), 700; and Dora Gunckel (6400), 525; Handicap — Fidel Perez (2481), 658 and 718; and Sally Frew (3524), 465 and 633.

## Sandia News Briefs

### CRADA Will Investigate Silicone Manufacturing

Sandia's Organic and Electronic Materials Dept. 1810 has entered into a cooperative research and development agreement (CRADA) with Dow Corning Corp. to investigate new ways to manufacture silicones. Dow Corning is a leading US producer of silicone elastomers — materials made of synthetic rubber or plastic that can stretch and return to their original shapes.

Currently, US companies supply approximately half the annual world production of silicone elastomers. The new CRADA seeks to preserve the US market share by utilizing Sandia's special expertise in silica chemistry, mixing of organic and inorganic substances, and scattering techniques to develop better new materials. Silicone filler content, material structure, and interface mixing will also be studied. UNM and the University of Cincinnati will contribute to the project.

### Traeger Named Secretary of Chemical Engineering Society

Dick Traeger, Manager of Earth and Environmental Dynamics Dept. 6230, was recently elected secretary of the American Institute of Chemical Engineers (AIChE). He will serve a three-year term on the board responsible for directing the 50,000-member group.

Dick was director of the Institute from 1987 to 1990 and has served on the Institute's National Research Council Board for Continental Scientific Drilling. He is also a member of the Institute of Electronics and Electrical Engineers' Energy Committee; the Society of Petroleum Engineers; the American Society of Engineering Educators; and the Geologic Society of America.

### Mayer Elected to American Vacuum Society Board of Directors

Tom Mayer of Surface and Interface Science Div. 1114 has been elected to the American Vacuum Society's (AVS) Board of Directors. He will serve a two-year term. The AVS is an international society with approximately 5,500 members. Tom is also a member of the Materials Research Society and Sigma Xi.

### Jacobs Appointed Chairman of Army Science Board

Facilities Director James Jacobs (7800) was recently appointed chairman of the Army Science Board (ASB). The ASB is the Army's senior scientific advisory group for the Secretary of the Army and the Army's Chief of Staff concerning R&D programs and other science and engineering issues.

The Board's missions include providing technical review and management support to Army programs, quickly responding to technical reviews and assessments of major program initiatives, and keeping the Army alert to useful new industry developments. The ASB comprises representatives from industry, universities, and research and government agencies affiliated with organizations such as the National Academy of Sciences, National Academy of Engineering, and the National Research Council.

### Testing Device Mimics Electrostatic Discharge from Humans

Researchers in Non-Destructive Testing, Electromagnetics, and Optics Dept. 2750 have modeled and replicated the electrostatic discharge (ESD) that can occur when a human body comes in contact with a grounded object. The information is being used to assess the vulnerability of explosive devices and electronics to human ESD.

A person can accumulate electrical charge walking, getting out of a car, or standing in the wind. Under certain conditions, a human body can sustain voltages of 25 kilovolts or more. If precautions are not taken, this charge can cause unintentional detonation of explosives or damage to electronics. In the electronics industry alone, annual losses from human ESD are estimated to be in the billions of dollars.

To assess the threat to electronic and explosive devices, Dick Fisher (2753) developed an electrical model, called the Severe Human Body Model, that accounts for parameters influencing human body charging, such as maximum sustainable voltage, humidity, and individual height. To simulate the discharge, John Barnum (2754) developed a pulse generator, called the Electrostatic Discharge Simulator. Copies of the simulator are currently being used by Sandia and EG&G Mound researchers.

### Labs Participates in Renewable Energy Program for Rural Mexico

Sandia is participating in a US-sponsored program of cooperation with Mexico — called Programa de Cooperación en Energía Renovable — that will help the Mexican government expand its use of renewable energy in impoverished and developing parts of rural Mexico. Energy Conversion and Application Dept. 6220 is providing the technical management expertise to help implement the program.

Access to renewable energy in some areas of rural Mexico could bring economic, social, and environmental benefits. Among these are availability of basic social services, improved living conditions, increased productivity, and a reduction of the migration rate from rural areas in Mexico to already overcrowded cities.

As part of the program, the US will provide technical resources, expertise, and specific technical assistance to support current Mexican renewable energy programs. The program, which could be used later as a model for rural development and renewable energy use in other countries, is being sponsored jointly by DOE and the US Committee on Renewable Energy Commerce and Trade. Sandia is helping implement the program along with a team of public and private organizations in the US and Mexico.

### Credit Union Declares Special Dividend

Sandia Lab Federal Credit Union (SLFCU) members probably noticed some extra bucks in their account balances this month, says Ellen Evans (1200) of the SLFCU Board of Directors. Those dollars added to every regular share savings account are the result of a special dividend returned to credit union members early in January.

At a time when many financial institutions experienced difficulties, says Ellen, SLFCU grew during 1991. She attributes this growth to sound business practices, careful control of expenses, successful loan promotions, and a substantial monetary reserve put aside at the beginning of the year as a safeguard against tough times. As a result, the Board of Directors voted to return \$150,000 to members in the form of a special dividend.

The total dividend was divided among the credit union's 27,000 members based on the amount of interest earned in each member's regular shares savings account during 1991. As an example, Ellen says a member with an average savings account balance of \$3,000 earned about \$162 in interest during 1991 and received a special dividend of about \$5.

Send potential Sandia News Briefs to LAB NEWS, Div. 3162.

## Recent Retirees



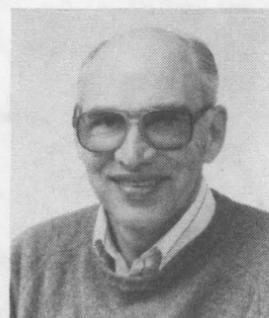
Ken Harper  
7800 30



Don Johnson  
1552 34



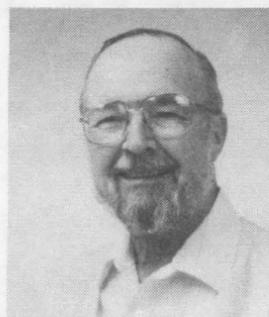
Ed Vulgan  
5175 41



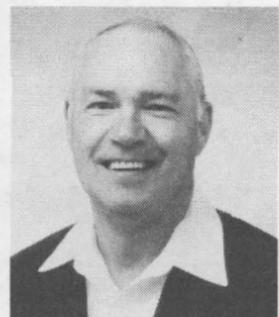
Art Key  
6454 28



Rex Myers  
2726 34



Al Asselmier  
2371 32



Kal Palmer  
121 24

## Sympathy

To Nora Tankersley (7821) on the death of her father in Michigan, Dec. 12, and on the death of her mother in Michigan, Jan. 1.

To Mike DeWitte (7850) on the death of his mother in Albuquerque, Dec. 23.

To Felipe (2481) and Mary (6464) Campos on the death of his father and her father-in-law in Ojo Caliente, N.M., Dec. 25.

To John Garcia (2482) on the death of his brother in Oceanside, Calif., Jan. 2.

To Linda Sparling (21-1) on the death of her father in Albuquerque, Jan. 3.

To Bruce Levin (7843) on the death of his father in California, Jan. 4.

To Larry Perrine (3162) on the death of his mother in Pawnee, Okla., Jan. 14.

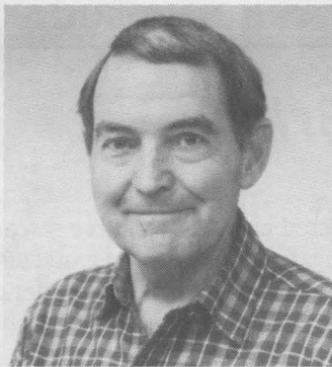
## Retiree Deaths

- M. L. Heisler (62).....Dec. 2
- Audrey Kroesche (75) .....Dec. 3
- Raymond Wilkinson (66) .....Dec. 6
- Lucy Hegwer (87).....Dec. 7
- Ruth Schooley (77).....Dec. 7
- Donovan Dawson (75).....Dec. 12
- Carl Csinnjinni (69).....Dec. 16
- Virginia Hamblett (79).....Dec. 18
- Jack Rich (84).....Dec. 21
- Robert Hauff (75) .....Dec. 26
- Walter Young (74) .....Dec. 28
- Robert Williams (69).....Dec. 31

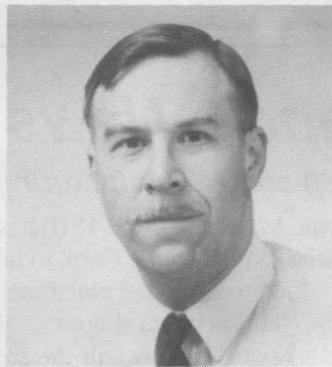
# MILEPOSTS

## LAB NEWS

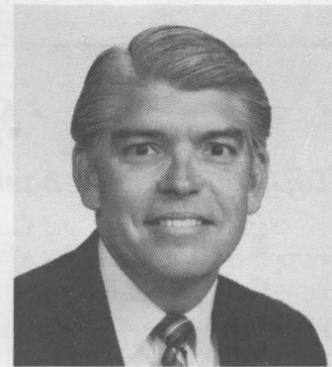
January 1992



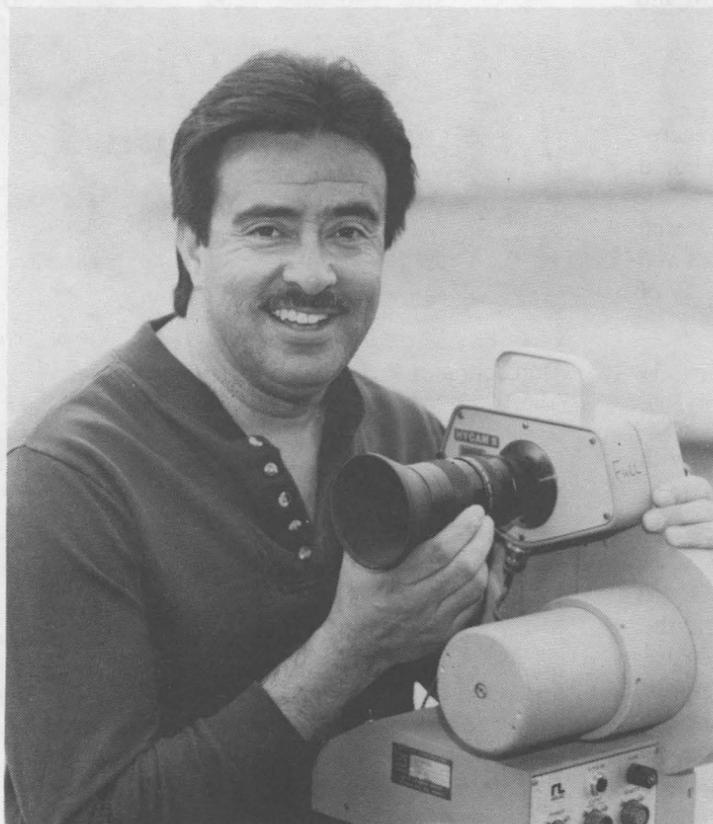
Richard Baughman  
1154 30



Stephen Kuehn  
2542 15



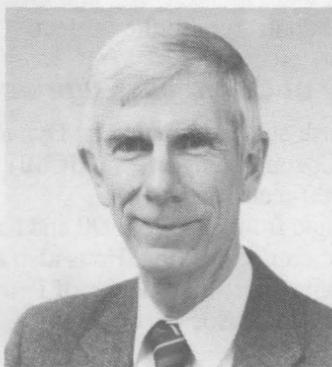
Dave Havlik  
5500 25



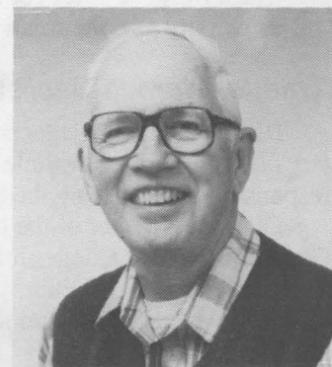
LeRoy Perea  
2756 20



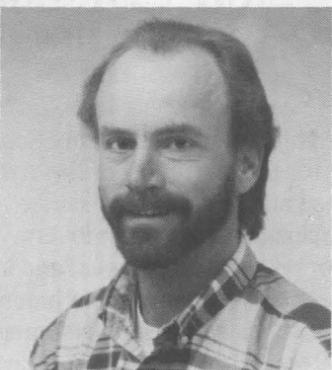
Ray Reed  
9313 30



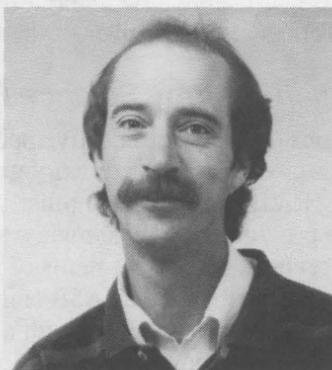
James Henderson  
3538 15



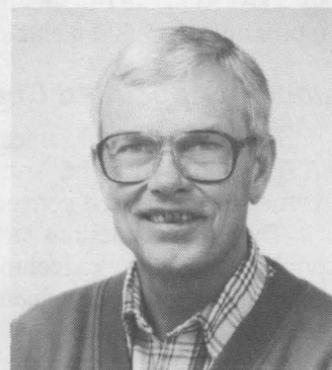
Glenn Riggins  
2722 35



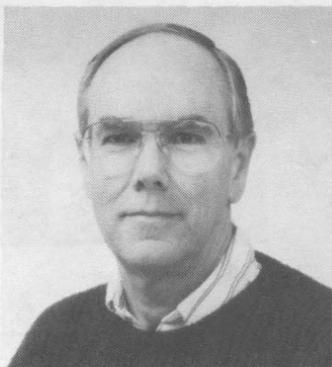
Barry Schoeneman  
9561 15



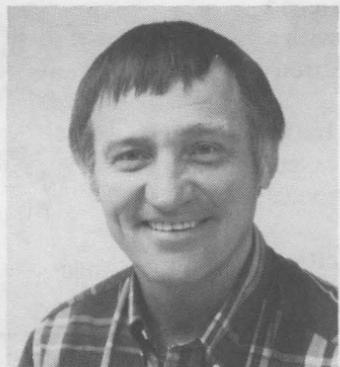
Lee Schoeneman  
9247 15



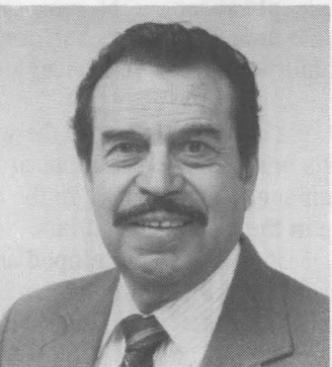
Wayne Vine  
2473 25



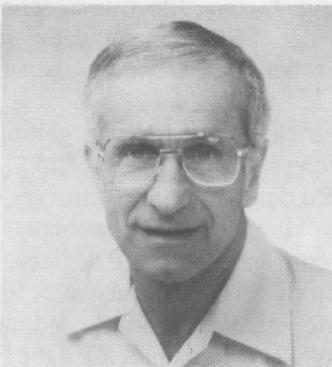
Bob Clark  
2522 30



Ed Scussel  
5033 20



Vic Lopez  
3443 40



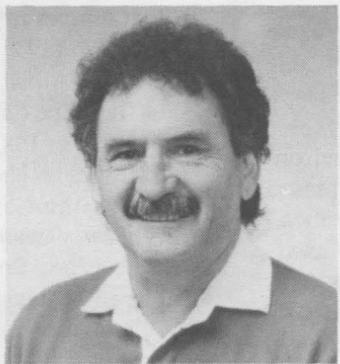
Samuel Levy  
2523 30



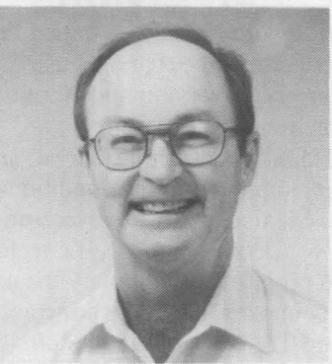
Constance Souza  
3144 25



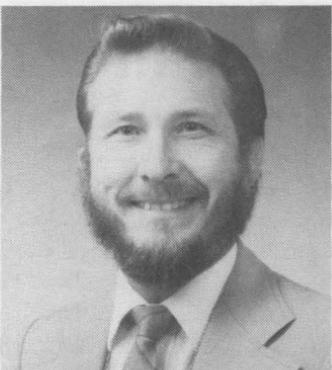
Stan Roeske  
9352 30



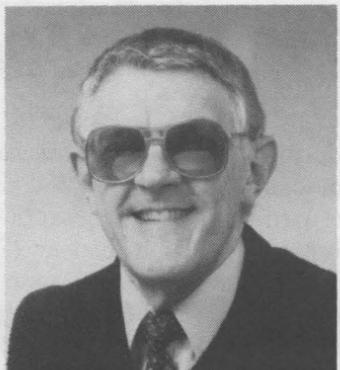
Richard Brazfield  
1552 15



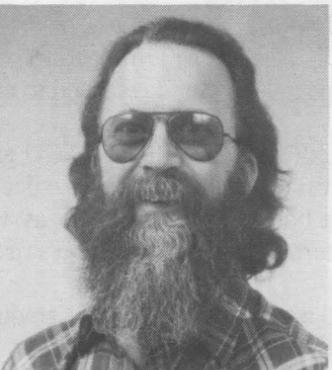
Ray Decker  
4341 20



Randall King  
9127 25



Marvin Coon  
3544 35



James Dawson  
7842 15



Ronald Brooks  
2565 35

## Take Note

A call for papers is out for the Nuclear and Hazardous Waste Management International Topical Meeting, "Spectrum '92," scheduled for Aug. 23 to 27 at the Boise Centre Convention Center in Boise, Idaho. Sponsors include DOE, the American Nuclear Society Fuel Cycle and Waste Management Division and Idaho Section, and the Atomic Energy Society of Japan. Technical papers are solicited in every aspect of nuclear and hazardous waste management and environ-

mental restoration. Contributors are asked to submit 1,000- to 1,500-word summaries to Dieter Knecht, Technical Program Chairman, Spectrum '92, P.O. Box 50458, Idaho Falls, Idaho 83405-0458. Address written inquiries to the above address or call Robert Stiger on 208-526-8505 (FTS 583-8505). Meeting plans include optional tours of waste operations and remediation activities at the Idaho National Engineering Laboratory and Hanford Site.

## Congratulations

To Charlotte Welty and Tim O'Hern (1512), a son, Patrick Jesse, Nov. 10.

To Joy and Dan (9324) Nelson, a son, Brandon Scott, Nov. 23.

To Debbie and Tom (2315) Kabe, a son, Thomas Chester III, Dec. 13.

To Gale (6418) and Mario (1511) Martinez, a son, Nicholas Alexander, Dec. 27.

To Dora Lovato (3010) and Tony Teague (3435), married in Albuquerque, Dec. 28.

To Kris and Jim (9324) Jones, a son, Jerad Griffith, Jan. 3.

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

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

### MISCELLANEOUS

**BARBIE DOLLS AND CLOTHES**, w/accessories, in top condition, sold by the piece, reasonable prices; Babysitter Club books. Wagner, 823-9323.

**MINOLTA X-700 SLR**, 1 yr. old, w/50mm f1.7, 135mm f2.8, 28mm f2.8 (Prolens), filters (polarizing, UV), case, \$320. Limm, 275-9664.

**AMPEX 934 STEREO TAPE PLAYER**, w/Shure M64 stereo preamplifier, \$125; Technics RS-B11W stereo dubbing tape deck, \$50. Harrison, 884-4994.

**BABY CRIB**, white Sears Lynwood; 360-coil mattress; white 3-drawer chest w/changing-table top, \$250. Coleman, 883-7498.

**KENMORE GAS GRILL**, 2-burner, w/electronic ignition, 20-lb. gas bottle on wheels, \$125; electric ice cream freezer, \$15. Brandon, 299-3993.

**KING-SIZE WATERBED**, very nice, must see, paid \$700 new, only \$450; papasan chair, \$60; table w/chairs, \$30. Howard, 839-9203.

**OAK WINE RACK**, 91" x 60", diagonal bins w/storage for 30 cases maximum. Gwinn, 281-9897.

**KELVINATOR REFRIGERATOR**, no-frost, 21 cu. ft., white, \$125 OBO. Mills, 344-6380.

**TIRE CHAINS**, fit 155R-12 to 165R-13, never used, \$20. Stirbis, 299-8442.

**KING-SIZE WATERBED**, 6-drawer pedestal, bookcase headboard, matching nightstand, \$150 OBO. Wiley, 883-7280.

**FORMAL DINING ROOM FURNITURE**, Early American, table, chairs, serving table (washstand), china cabinet w/buffet, \$1,900. Uhl, 298-6391.

**ROLAND DIGITAL RECORDER**, for Juno 60, Juno 1, or Jupiter 8 Roland keyboard, \$50. Gonzales, 344-4933.

**STEEL FILE**, \$35; extension ladder, \$20; engine analyzer, \$40; fire extinguisher, \$15; car vacuum, \$15. Hof, 299-0926.

**DINETTE SET**, 42-in. round white Formica top, 4 vinyl chairs, \$75. Roberts, 255-9527.

**ROCK SHOX BICYCLE FORK**, over-size steerer tube, \$200. Doerfler, 823-9787.

**MICROWAVE OVEN**; 4-piece solid-ash contemporary bedroom set. Lucas, 268-6108.

**MICROWAVE OVEN**, 1200W Magic Chef, w/turntable, like new, \$100; Smith-Corona portable electric typewriter, \$50; clean Southwestern couch, \$100. Lehrer, 898-2581.

**MUSEATEX SPEAKERS**, Melior One planar design, 7 mos. old, mint condition, \$1,500. Grasser, 291-0947.

**STROLLERS**: Graco Brougham stroller, \$50; umbrella stroller, \$10. Reuss, 889-3641.

**ROLLTOP DESK**, \$300; transcriber & dictaphone, \$125; couch, \$400; easy chairs, \$50 & \$100. Hernandez, 268-5000.

**REMOTE CONTROL BOATS**: gas Hydro w/accessories, \$150; Bud Lite tunnel hull, \$80; skateboards & accessories; Freestyle scooter. Skogmo, 292-9773.

**SNOW TIRES**: 13-in. radial, studded, \$40/pr.; rowing machine, \$40. Roeschke, 266-8988.

**EXERCISE BICYCLE**, ergometer, \$100; backcountry cross-country ski boots, 3-pin, size 43, \$30; role-playing computer games (DOS). Kaye, 292-4242.

**CONN ORGAN**, w/bench, excellent condition, walnut finish, \$600. Haynes, 293-9208.

**RANGE HOOD**, almond, \$30; rowing machine, \$30. Skinner, 299-2889.

**PIANO**, good condition, \$250; guitar amplifier, 100W, good condition, \$50. Wilcoxon, 296-8295.

**NIKKOR LENS**, 16mm, full-frame fish-eye, w/filters, box, papers, excellent condition, \$300. Smith, 243-0714.

**BOOK SHELVES**, hide-a-bed, student desk, chair, pruning tool, fertilizer spreader, portable electronic typewriter, stereo player, Yamaha guitar, case. Mills, 299-2130.

**VIDEOCASSETTE STORAGE CASES**, walnut-grain vinyl over wood, w/2 plastic drawers, 24-tape capacity, cost \$10-\$12 new, \$6/ea. Schkade, 292-5126.

**FLEXSTEEL SOFA**, full-size, \$75. Landa, 821-4374.

**KITCHEN CABINET DOORS**, hinges & hardware, good bargain for do-it-yourselfer, \$50. Ruby, 299-0767.

**ZENITH COLOR TV**, 19-in., works but needs help, \$30 OBO. Williams, 296-2785.

**CHIHUAHUA**, 3-1/4-lb. female, 2 yrs. old, long coat, housebroken, shots, champion parents, perfect lapdog, not breedable, \$150. Sargent, 865-3227.

**PULL-OUT FUTON COUCH**, queen-size, dark-stained pine frame, apricot-colored mattress cover, \$175. O'Brien, 281-4775.

**KING-SIZE BED**, w/mattress, wooden frame/headboard, \$200; storm/screen doors, \$50/\$15; dark-brown rug, 12' x 12', \$25; edger; 6-piece stereo, much more. Trump, 831-5621 or 298-9558.

**35mm CAMERA**, Yashica TL-Electro X, 35mm f/2.8, 50mm f/1.7, 200mm f/3.5 lenses, 2x focal doubler, cases for all, owner's manual, \$150 OBO. Dreike, 299-6670.

**TIMESHARE**, Fairfield Pagosa Resort, doubleshare week, accommodates 8, fully equipped, whirlpool, bath, close to Wolfcreek/Purgatory, \$8,900 OBO. Cocain, 275-9505.

**COMMODORE 64**, w/Dataset printer interface & manuals, \$50. Rudolph, 298-0941.

**ZOOM LENS**, 80-200mm, 55mm skylight filter, carrying case, Olympia or Pentax mount, \$40 OBO. Mesibov, 898-3725.

**ANTIQUÉ UPRIGHT PLAYER PIANO**, w/100 rolls. Jennings, 281-4507.

**SULLIVAN COMPUTER TABLE**, w/upper shelves, like new, \$175. Jogi, 275-0610.

**ETHAN ALLEN TRIPLE DRESSER**, w/mirror, king-size headboard, \$550; oak bookcase, \$25; fruitwood buffet, \$265; misc. Ramel, 821-0475.

**NURSES UNIFORM TOPS**, colored, sizes 8, 10, & 12, also white pants & skirts, most new or hardly used, \$5-\$15. Siegrist, 293-4148.

**SEARS GARBAGE DISPOSAL**, new; double stainless steel sink. Graff, 268-5291.

**BUNK BED**, \$75; AIWA stereo, 2 speakers, \$75; leather chair, matching footrest, \$75. Olbin, 275-2681.

**DOGHOUSE**, custom-made, for up to 3 dogs, insulated, \$150 OBO. Esch, 298-8914.

**EPSON COMPUTER**, 80286, 40MB hard drive, 5.25-in. floppy drive, Magnavox monochrome monitor, boxes, manuals, lots of software, \$700 OBO. Lium, 299-4287.

**BARREL RACING BUCKLES**, 1989 Special Edition NFR, limited edition. Girven, 899-1503.

**GRAMMATIK IV**, Version 2.0, new, never opened, for IBM-PC & compatible computers, \$45; 2-piece brown Escort luggage, \$30. Webb, 828-2271.

**SIBERIAN HUSKY PUPPIES**, AKC-registered, born Dec. 11, 3 males, 2 females, parents on premises, first shots, \$250/ea. Bast, 299-6373.

**ARCHERY EQUIPMENT**: longbow 62-lbs., recurve 60 lbs., aluminum arrows. Anderson, 298-1635.

**HEATILATOR FIREPLACE**, w/glass doors, grate, heat-circulating fan, 12-ft. chimney, tool set, \$375. Biffle, 293-7043.

**LOBO TICKETS (2)**, BYU/Lobo game Feb. 22, chairbacks, \$25. Vock, 299-1702.

**RCA COLOR TV**, 25-in., console model, not cable-ready, but working, \$50 OBO. Borgman, 299-6010.

**WALNUT DINING ROOM SET**, 40" x 58" table, w/two 18-in. leaves, six chairs, buffet. Linnerooth, 299-6558.

**CAT**, spayed, very affectionate, needs a 1-cat home, free to good home; twin stroller, \$30. Zirzow, 281-9896.

**MOVING BOXES**, many sizes, including 3 wardrobes, yours for the taking. Hovorka, 294-6981.

**WHEELCHAIR**, "Breezy," 1 mo. old, \$1,200 new, asking \$650; storm door for 6-ft. sliding glass door, \$20. Garcia, 293-3937.

**UPRIGHT FREEZER**, Montgomery Ward, 19.3 cu. ft., white, \$300; Magnavox 19-in. TV, \$175. Archuleta, 899-8912.

**OAK KITCHEN CABINETS**, from large U-shaped kitchen, some finished side & back, w/lazy susan, \$600 OBO. McKay, 294-2935.

**WATERBED**, super single, w/bookcase headboard & storage drawers under bed, \$100. Prew, 296-3815.

**CROSS-COUNTRY SKIS**, 2 sets, 180cm & 190cm, boots size 40, suitable for 100-120-lb. skiers, \$50/each outfit. Knapp, 294-6359.

**NORITAKE PROGRESSION CHINA**, Blue Haven, service for 6, extra sauce dishes, cream/sugar, large platter & serving bowl, \$50. Bear, 881-7128.

**FULL-SIZE MATTRESS** and box spring. Rogers, 256-0066.

**DOGS**: spayed yellow Lab, neutered German shorthaired pointer, obedience & house-trained, less than 2 yrs. old, \$100/ea. Davis, 294-1048.

**YAMAHA PSR-47 KEYBOARD**, w/MIDI, stand, case, \$250; dot-matrix printer, make offer. Hueller, 296-0976.

### TRANSPORTATION

'86 TOYOTA CELICA ST, 2-dr. coupe, 5-spd., 80K miles, excellent condition, \$4,900. Beer, 828-2755.

'82 BMW 320i, runs great, interior like new, must sell, \$3,200 OBO. Howard, 839-9203.

10-SPD. BIKE, good condition, new tubes & tires, \$60 OBO. Zownir, 256-3753.

'89 NISSAN PATHFINDER, 4x4, all power, cruise, AM/FM cassette, 24K miles w/12K miles remaining on warranty, \$15,200 OBO. Lopez, 293-2508 or 292-4455.

'85 BUICK SKYLARK, V-6, 4-dr., excellent condition, good gas mileage, very dependable, \$2,000. Koepf, 294-7136.

'81 HONDA ACCORD, 2-dr., 5-spd., AC, \$2,000. Appel, 292-0463.

'89 THUNDERBIRD, excellent condition, low miles, call for details. Sikora, 294-3538.

'88 MAZDA 626LX, 5-dr. hatchback, silver, AT, loaded, prime condition, fully maintained, \$5,900. Wilcoxon, 296-8295.

'84 CHEVETTE, 66K miles, 2-dr., 4-spd., new tires, brakes, battery, tuneup, runs great, good mpg, \$1,200. Wavrik, 298-4094.

'87 DODGE CARAVAN, new tires & battery, 4-cyl., 5-spd., tinted windows, AC, \$6,000 OBO. Garcia, 821-4747.

'83 PLYMOUTH RELIANT, 4-dr., runs well, good condition, AM/FM radio, PS, PB, AT, AC, \$1,100. Nelson, 255-4370.

**RALEIGH 23-IN. BICYCLE**, 12-spd. indexing, recent overhaul, \$200. Doerfler, 823-9787.

**BICYCLE**, Sears 3-spd., \$40. Skinner, 299-2889.

'69 VOLKSWAGEN BEETLE, "Cal." style, new interior, paint, tires, clutch, \$2,000 OBO; '72 Ford Exp, new head, \$750. Reber, 898-0076.

'87 HYUNDAI EXCEL SE, 5-spd., 3-dr., AC, stereo, 64K miles, \$2,600, might take trade. Roeschke, 266-8988.

'90 VOLVO 740 GL, AT, AC, sunroof, heated seats, charcoal-gray interior & exterior, \$17,000. German, 281-1719.

10-SPD. BICYCLE, Raleigh Grand Prix, 27-in., includes child carrier, great condition, \$100. Hesch, 292-1202.

'84 FORD BRONCO II, 4-WD, 4-spd., AC, AM/FM cassette, very good condition, \$3,900. Morrison, 298-0347.

'70 MGB, many new parts, 2 tops, new tires, excellent shape. Anderson, 298-1635.

'69 MUSTANG FASTBACK, one owner, 6/250, 3-spd., autumn red, new clutch, brakes, carburetor, mechanically sound, immaculate, \$3,900. Snyder, 296-5771.

'86 PONTIAC 6000, V-6, 2.8 EFI, AC, AT, 4-dr., clean, very good condition, wholesale plus \$200, asking \$3,525. Garcia, 293-3937.

'88 CHEV. BLAZER, 4x4, w/Tahoe package. Spinello, 292-5681.

'78 HONDA EXPRESS MOTORCYCLE, 50cc, 1,400 miles, street-legal, \$100. Olbin, 275-2681.

### REAL ESTATE

3-BDR. HOME, 1 bath, on 3/4 irrigated acre, Los Padillas near I-25 & the Rio Grande. Patterson, 299-1062.

4-BDR. HOME, mountain living, 2,200 sq. ft., 2 baths, on 1.2 acre, large decks, views, 15 minutes east of Albuquerque, \$152,000. Lyons, 281-9283.

2-BDR. TOWNHOUSE, 1-1/2 baths, 1-car garage, sprinklers, alarm system, upgraded carpet, new kitchen floor, approx. 1,000 sq. ft., Juan Tabo/Lomas area, \$67,500. Gregory, 275-3855.

3-BDR. HOME, pitched roof, Eldorado district, landscaped front & back, updated w/amenities, open house noon-5 p.m. every Sat. & Sun., \$72,000. Sikora, 296-1762.

2-BDR. KROFT MOBILE HOME, w/washer & dryer, gas stove, refrigerator, good shape, must see to appreciate, \$4,100. Gamboa, 877-2745 after 5 p.m.

2-BDR. TOWNHOUSE, 2 baths, double garage, fireplace, patio backyard, 1,150 sq. ft., excellent condition, Lomas & Tramway, \$79,000. McAllister, 275-2886.

4-BDR. BRICK CUSTOM HOME, in Cherry Hills, approx. 2,000 sq. ft., large landscaped lot, many extras. Weinbrecht, 821-8892.

### WANTED

PARTNER to share half interest in a 1976 Cardinal C177B, Albuquerque-based since new, NHD. Paul, 296-6500.

PLAYERS for Division 2 men's soccer team, beginning Feb. 26. Cropp, 296-1877.

NORDICTRACK, cross-country skier exercise machine. Reed, 889-9790.

MINIVAN, 1987 or newer, FWD or 4WD, low mileage. Koepf, 294-7136.

SEA KAYAK, also known as expedition or touring kayak, good condition. Glowka, 281-1488.

NORDICTRACK exercise equipment. Ashby, 821-3627, leave message.

NORDICTRACK EXERCISER, prefer "Pro" model, but will consider others. Snelling, 294-5751.

SCHWINN AIR-DYNE EXERCYCLE, in any condition, reasonably priced. Summers, 881-7765.

MOVING BOXES, all sizes. Mills, 299-2130.

WEIGHT-TRAINING BENCH, flat. Moss, 298-2643.

PROJECT CAR for restoration, prefer VW Bug convertible. Newman, 266-6928.

KITCHEN CABINETS for use in laundry; tennis racket, 4-3/8 4L, or trade for 4-3/8 3L (mid-sized racket head). Everts, 822-1767.

'85-'89 TRUCK, w/mid-sized 5th-wheel travel trailer. Davidson, 293-9486.

SMALL OLD PIANO OR KEYBOARD donated to the American Legion Orchestra (non-profit), orchestra members will move it. Zownir, 256-3753.

DRILL PRESS, bench or floor model. Sorensen, 822-1733.

ROOMMATE, non-smoker, to share 3-bdr., 2-bath home in NE Heights, \$300/mo. plus utilities. Hueller, 296-0976.



**Coronado Club Activities****'Dunn's Dancing Machine' Spins the Platters Tonight**

**ROCKIN' AT THE CLUB** — Dance, dance, dance at the Club from 5 to 10 p.m. tonight, Jan. 24, as Dunn's Dancing Machine brings you rock music by the original artists, plus a great sound and laser light show. They'll play what you want to hear. Enjoy a casual buffet from 5 to 7. Ladies, note: You get half price on all drinks. Gents: You can buy a glass of draft for 50¢ or a pitcher for \$2.50.

**WHAT'S IN A SUPER BOWL?** At the C-Club, two things: football and green chile stew. Enjoy both on Super Sunday, Jan. 26. Big-screen TVs, mounds of munchies, great drink specials,

the company of other fans, and a \$100 door prize make a fitting climax to the bash-and-crash of the football season. The Cantina opens at 2 p.m., and you can enjoy Vegas-style games and Bar Bingo until the kickoff. There's a \$2 cover charge.

**LAWYERS, GUNS, AND MONEY** — Put them together and what've you got? No, not a courtroom crisis, but a band that calls its sound Middle Rio Grande Valley Regressive Punk Country Rock. They play country, rock'n'roll, and country rock, and they'll play it for your enjoyment Friday, Jan. 31, from 7 to 11 p.m. The Club's fine kitchen crew offers golden fried

shrimp and roast prime rib (two-for-one priced at \$16.95), salmon steak, filet mignon, and steak neptune. Call 265-6791 for reservations.

**THE BUBBLY FLOWS AT BRUNCH** — On Sunday, Feb. 2, forget the groundhog, and don't even *think* about the possibility of six more weeks of winter. Just bring your shadow over to the Club for an all-you-can-eat champagne brunch from 10 a.m. to 1 p.m. (\$6.95 for members; \$1 off for retirees showing membership cards). After brunch, it's a Tea Dance from 1 to 4 p.m. with the Best Shot Band. Reservations are required.

**Events Calendar**

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

**Jan. 24-25** — Classical Concert: New Mexico Symphony Orchestra conducted by Lawrence Leighton Smith (director of the Louisville Orchestra and artistic director of the Music Academy of the West in Santa Barbara, Calif.), music includes works by Bolcom, Beethoven, and Nielsen, with guest pianist Yefim Bronfman; 8:15 p.m., Popejoy Hall, 842-8565.

**Jan. 24-25** — "Festival of Percussive Dance," Bill Evans Dance Company presentation of tap dance in its many forms; 9:30 a.m. & 8 p.m. Fri., 8 p.m. Sat.; KiMo Theatre, 764-1700.

**Jan. 24-26** — "Who Ya Callin' a Lady, Too?!" show about women's sexuality, famous women, and personal heroines, locally written with many pieces by the performers (some material best suited for mature audience); 8 p.m. Fri. & Sat., 6 p.m. Sun.; Vortex Theatre, 247-8600.

**Jan. 24-Feb. 3** — Exhibit, "Gustaf Nordenskiöld: Pioneer Archaeologist of Mesa Verde," details work of Swedish scientist who 100 years ago visited the Anasazi cliff dwellings at Mesa Verde and undertook the first major excavation and documentation of the ruins there; 9 a.m.-4 p.m. Mon.-Fri., 10 a.m.-4 p.m. Sat., noon-4 p.m. Sun.; Maxwell Museum of Anthropology, 277-4404.

**Jan. 24-Feb. 9** — Exhibit, "USS New Mexico Battleship," in commemoration of the 50th anniversary of World War II to honor veterans from all branches of the service, sponsored by the Navy League of the United States and the Albuquerque Museum; 9 a.m.-5 p.m. Tues.-Sun., Albuquerque Museum, 243-7255.

**Jan. 24-Feb. 9** — Exhibit, "Horse Tales: An Evolutionary Odyssey," produced by the Natural History Museum in a collaborative program with the Hubbard Museum of the Horse in Ruidoso Downs, tells about the horse from its first appearance in North America to its reintroduction by the Spanish to its modern-day place in the natural world; 9 a.m.-5 p.m., New Mexico Museum of Natural History and Science, 841-8837.

**Jan. 24-March 29** — Exhibit, "Santiago: Saint of Two Worlds," a photo historical exhibition devoted to the history and contemporary presence of St. James, whose exploits (real or in folklore) have been celebrated in Spain, the US, and the Caribbean for centuries; 9 a.m.-5 p.m. Tues.-Sun., Albuquerque Museum, 243-7255.

**Jan. 24-April 15** — Exhibit, "Played and Printed," exhibition of lithographs and monoprints made at Tamarind Institute by art students from Albuquerque, Cibola, Rio Grande, and Valley High Schools, represents students' personal expressions after exploring social issues in selected art forms; 9 a.m.-5 p.m. Tues.-Sun., Albuquerque Museum, 243-7255.

**Jan. 25-March 7** — "Books Alive!" Theatre-in-the-Making makes literature live for the whole family, books performed will be on sale at each performance; 2 p.m. Sat., CenterStage (3211 Central NE), 260-0331.

**Jan. 25** — Plains Indian Arts & Crafts Demonstration by Sharon Zotigh-Howell; 11 a.m.-3 p.m., free, Maxwell Museum of Anthropology, 277-4404.

**Jan. 26** — Concert, Albuquerque Chamber Soloists, featuring "Gebt mir meinen Jesum wieder" from the St. Matthew Passion by Bach, "Dover Beach" for Voice and String Quartet by Barber, String Quartet No. 1, Opus 20 by Ginastera, and Quintet for Piano and Strings, Opus 44 by Schumann; 3 p.m., St. Paul Lutheran

Church (Indian School & University), 888-1842.

**Jan. 27** — Black Light Theatre of Prague, original black light theatre presents "Alice in Wonderland"; 2 p.m. children's performance, 8 p.m. adult and family performance; KiMo Theatre, 764-1700.

**Jan. 28** — People of the Southwest Lecture, "The Archaeological Survey of Bandelier National Monument," Robert Powers, archaeologist, National Park Service, SW Region; 7:30 p.m., Maxwell Museum of Anthropology, 277-4404.

**Feb. 1** — Arnold Herrera Cochiti Children's Dancers, storytelling and presentation about Cochiti drum making will accompany the dance performance; 1 p.m., free, Maxwell Museum of Anthropology, 277-4404.

**Feb. 1** — Pops Concert, New Mexico Symphony Orchestra with Skitch Henderson; 8:15 p.m., Popejoy Hall, 842-8565.

**Feb. 2** — Karpatok Hungarian Folk Ensemble, the oldest, largest, and most accomplished dance company in Western North America, specializing in Magyar folklore; 4 p.m., First United Methodist Church (4th & Lead SW), 243-5646.

**Feb. 3** — Monday Monthly Lecture Series, "Signs of the Ancient Ones," lecture and slides by park ranger from Petroglyphs National Monument; 10 a.m., Indian Pueblo Cultural Center, 843-7270.

**Feb. 7-8** — Women's Trade Fair; 8 a.m.-6 p.m. Fri., 8 a.m.-5 p.m. Sat.; Albuquerque Convention Center, 888-0855.

**Feb. 7-9** — "Dia De Los Muertos," ballet set during the annual celebration of All Soul's Day, humorous approach to problems created by an ill-fated love affair, presented by the New Mexico Ballet Company; 8:15 p.m. Fri. & Sat., 2:15 p.m. Sat. & Sun.; Popejoy Hall, 299-7798.

**Feb. 7-22** — "Isn't It Romantic," comedy by Wendy Wasserstein about today's relationships among friends, lovers, and well-meaning mothers, involves the exploration of the contemporary feminine dilemma and the conflict between personal independence and romantic fulfillment; 8 p.m. Thurs.-Sat., 2 p.m. Sun.; Albuquerque Little Theatre, 242-4750.

**Focus on Law Enforcement****Chief Stover to Speak at Sandia**

Albuquerque Police Chief Bob Stover will talk about crime and law enforcement at a Community Focus lecture at noon Thursday, Feb. 13, in the Technology Transfer Center. Seating will be on a first-come basis.

In addition to serving twice as police chief, from 1973 to 1980 and from 1990 to the present, Stover won two elected terms as Bernalillo County Sheriff in 1982 and 1984.

As the city's chief law enforcement officer, Stover has instituted several new initiatives, including a customer-oriented quality training program. He is implementing many recommendations of the Albuquerque Public Safety Advisory Board on the use of deadly force. He and Albuquerque Mayor Louis Saavedra requested a study of the issue after a series of fatal police shootings last year.

Stover is an Albuquerque native who began his law enforcement career in 1958 as a patrol officer with the Albuquerque Police Department. Prior to his first appointment as chief, he served as narcotics detective, patrol and traffic commander, and head of the department's internal affairs unit.

Between 1980 and 1990, Stover was at various times director of security for Presbyterian Hospital, chief administrative officer for former Albuquerque Mayor Harry Kinney, a candidate for the New Mexico Corporation Commission, and Undersheriff of Bernalillo County. ●

**Favorite Old Photo**

**LEND ME YOUR EAR!** About 25 years ago, my friend asked me to photograph his two dogs — a dachshund and a Brittany spaniel. The old dachshund was cooperating splendidly, but the young Brit was in a playful mood, chomping down and tugging hard on the dachshund's ear just as I snapped the shutter. A second later, the dachshund decided not to suffer this indignity a moment longer and the fight was on.

— Larry Perrine, 3162