

A New World Speed Record for Hypervelocity Launcher

A hypervelocity launcher at the Labs has accelerated a quarter-inch-diameter plate of metal to a record velocity: 15.8 kilometers per second, or nearly 36,000 miles per hour.

This is thought to be the highest velocity ever achieved on earth by an object that large or larger, making the launcher suitable for realistic studies of what happens when space debris strikes an orbital vehicle.

Certainly, say the Sandians of the Shock Technology Applied Research (STAR) facility in Tech Area Y, next to Area 3, theirs is the only facility to achieve such high velocities for masses as heavy as 1/10 to 1/3 gram. (Microscopic or dust-grain-size particles have been accelerated electromagnetically to higher speeds.)

"This new velocity record enables Sandia to maintain leadership in hypervelocity technology," says project manager Lalit Chhabildas of Experimental Impact Physics Dept. 1433. "It provides DOE with a unique, laboratory-scale diagnostic and testing center — related to impact — not only for US government civilian- and military-related space programs, but also for commercial activities in the field of telecommunications."

How Fast Is Fast?

Just how fast does the launcher fling a projectile? A high-powered rifle bullet travels about 0.6 kilometer per second, or about 1,340 mph, so the Sandia-launched projectile is more than 25 times "faster than a speeding bullet."

The world land speed record for a rocket sled, set in 1982, is 2.737 km/sec, or 6,121 mph. A satellite or space shuttle in orbit 250 kilometers above the Earth's surface races along at 7.8 km/sec, or 17,500 mph. And escape velocity for Earth — the speed necessary to escape totally from Earth's gravitational field into deep space — is 11.2

km/sec, or about 25,000 mph.

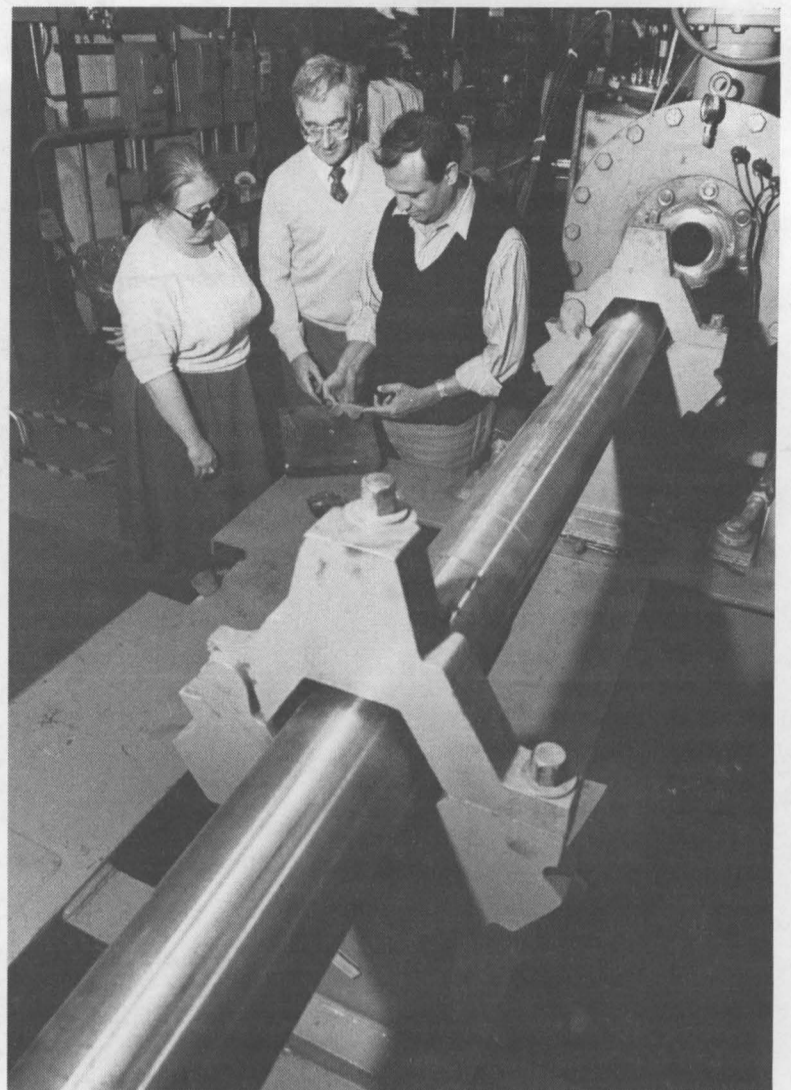
The most relevant of these numbers is the satellite. The 15.8 km/sec achievable by Sandia's hypervelocity launcher just about equals the relative velocity of two space objects colliding head-on in low earth orbit. This is significant because one of the many applications of the Sandia facility is to support NASA in the design of debris shielding for a space station. The launcher allows engineers to reproduce in the lab the effect of orbiting space debris colliding with the structure in orbit.

The same capability should also be useful in studying how best to shield envisioned future low-earth-orbit telecommunications satellites from space debris.

Among other uses for the facility are to support the Defense Nuclear Agency and the Ballistic Missile Defense Organization in studying lethality and survivability issues for their weapon systems. It is also important to DOE weapon safety investigations.

"The new velocity capability is timely," says Phil Stanton, Manager of Department 1433. "It allows us to expand the equation of state studies of materials into pressure and temperature regimes that were once accessible only by underground tests. One advantage of our above-ground capability is it allows the

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EXAMINING TARGET from a previous test, Sandia researchers Luba Kmetyk (6418, left), Phil Stanton, and Lalit Chhabildas (both 1433) are flanked by a portion of second-stage barrel of Sandia's Enhanced Hypervelocity Launcher. The three-stage gas gun recently accelerated a small flyer plate to almost 36,000 miles per hour.



LAB NEWS

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5,000 Items, No Weapons

Sandia Assessing Its Stored Nuclear Materials, Seeks to Lower Quantities

During the last four decades, Sandia has used relatively small amounts of nuclear materials to support non-nuclear weapons testing, reactor safety research, nuclear fuel development, and materials science studies for improving reprocessing operations at sites like Y-12 in Oak Ridge, Tenn.

As a result, Sandia currently has an inventory of about 5,000 nuclear items, mostly metal and oxides, that can be safely stored in their present form. The materials include depleted, enriched, and normal uranium; thorium; and small amounts of plutonium. The chart on page five gives details. There are no operational weapons in the inventory. The items individually range in weight from a half gram to thousands of kilograms. (One gram is equal to 0.035 ounces and one kilogram equals 2.2046 pounds.)

"Some of the materials associated with completed experiments have been stored in six bunkers owned by the Air Force and located in the Manzano Mountain Complex," says John Sichler of Nuclear Material Management Dept. 7445. "They include depleted uranium, enriched lithium, normal uranium, plutonium-239, and thorium."

The legacy, or Cold War era, materials in storage at Manzano represent half of the total items in

Sandia's nuclear materials inventory. The other half are mostly associated with facilities such as the Annular Core Research Reactor (ACRR), the Sandia Pulsed Reactors II and III (SPR), and the Gamma Irradiation Facility (GIF) in Technical Area 5.

"Sandia has done a lot of excellent work for the nation in areas like space nuclear propulsion, spent fuel transportation safety, improvement of the safety of nuclear reactors, weapons testing, and research reactor experiments," says Lynn Jones, VP for Labs Services 7000.

Materials without a Mission

"What's been left behind over the decades are some materials that Sandia doesn't have a mission for anymore. DOE requirements have changed, and now we're working hard to reduce the inventory of nuclear materials to just what we really need. We have a relatively small inventory, but we want to be proactive and responsible in reducing it to the appropriate size."

Sandia has initiated an extensive assessment of nuclear material inventories. The primary objectives are to identify current owners of materials,

(Continued on Page Five)

Sandia Leads All Labs

Strained-layer Devices, Innovative Microscope Bring Two BES Awards

Sandia researchers have won two more Basic Energy Sciences (BES) Materials Science Awards from the Department of Energy, making Sandia the leader in the DOE complex in total awards in this category. Since 1985 Sandia has won 19 awards, more than any other laboratory.

"We are extremely pleased," say Fred Vook (1100) and George Samara (1103), managers of Sandia's Basic Energy Materials Science Program. "These awards are a welcome continuation of our long-standing tradition," Fred says. "They are a reflection of the status and quality of our program in basic energy sciences."

"It's especially rewarding," says George, "because the winners are determined by votes of our competitors in the other labs and so that means the other labs and the BES staff in Washington recognize the quality of our research."

The Two Awards:

- Sustained Outstanding Research in Metallurgy and Ceramics for "Strained-Layer and Artificially Structured Materials," Paul Gourley (1112), Ian Fritz (1312), Eric Jones (1112), Sungkwun Lyo (1112), Jeff Nelson (1112), Rick Schneider (1311), Gordon Osbourn (1155), Bob Biefeld (1126), and Ralph Dawson (1112).

- Significant Implication for Department of Energy Related Technologies in Metallurgy and Ceramics for "Interfacial Force Microscope," Jack Houston and Terry Michalske (1114).

DOE's BES/Materials Science office generally provides \$50,000 of capital equipment money with each award.

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This & That

Great radio vest - I was waiting for a meeting to start several weeks ago when Radio Sandia's Bruce Hawkinson (12662) insulted my necktie, which I thought showed my usual impeccable taste in fine men's clothing. I hate to be petty and vindictive, but I must report that at the time Bruce was wearing a black leather vest that I swear I saw in an earlier time and place. In fact, I'm pretty sure I saw that vest on a villain in a 1950s cowboy movie. With clothes like that, it's a good thing Bruce hosts a radio show instead of a TV show.

* * *

Bargain postage? - Lots of folks grumble every time postage costs rise, but Vernon Marsh (2882) thinks postage may be a bargain at times if you consider the cost by the day. He says his W2 form was postmarked Jan. 29 and was correctly addressed to him at his East Mountain post office box. He received it Feb. 22. Vernon was miffed until he realized that the first-class delivery service cost only 1.16 cents a day. You'd think even the lame mule could cover that distance in less time.

* * *

Nuclear trivia - While reviewing a fairly recent news release from DOE's Nevada Field Office discussing nuclear tests, I started wondering just how much today's Sandians know about these tests. So here's a short quiz. How many nuclear detonation tests have taken place in New Mexico, and where did the blasts occur? And how many and where in California?

The answers: New Mexico has "hosted" three nuclear blasts, but only one was a weapon test. The first, and certainly best known, was the world's first atomic explosion - the above-ground "Trinity" test on July 16, 1945, in an isolated area north of Alamogordo. The second was "Project Gnome," which exploded a 3.1-kiloton nuclear device Dec. 10, 1961, in an underground salt formation near Carlsbad; it was the first of 26 tests in the "Plowshare" series to test the use of nuclear explosions for such purposes as creating underground cavities, excavating ditches for canals, etc. The third was "Gasbuggy," a 29-kiloton underground explosion Dec. 10, 1967, near Farmington; this was a joint test with industry to see if underground nuclear blasts could be used to "crack" natural gas sands to increase gas production.

There has never been a nuclear detonation test in California.

* * *

Living with Grumpy - Overheard from one woman talking to another one in a movie ticket line for *Grumpy Old Men*: "I don't know why I'm paying to see this. I have to live with one every day."

* * *

Breeding butt cans? - In the last issue, I mentioned the new style of "screaming yellow" butt cans at various locations around the Labs and said we even have one in front of Building 800, where most of Sandia/New Mexico's visitors first show up. Now I notice we actually have three of those things in front of the building, counting one out near the public mail box. I have no indication yet that anyone plans to repaint them, but I'm not giving up this easily. If you find those things as ugly as I do, fax a short note to the LAB NEWS at 844-0645 or send one to Mail Stop 0413. If others feel as I do and the Labs can't afford the paint, I'll personally buy and donate enough to cover those three cans. ●LP



TWO SANDIANS won YWCA "Women on the Move" awards recently. Sandra Begay-Campbell (left), structural engineer in Facilities Engineering Dept. II 7906, received the science and technology category award. Julia Norwood, executive secretary for Human Resources Div. 3000, received the business/non-managerial category award. Sandra joined Sandia in 1992 after working at Lawrence Livermore and Los Alamos national laboratories. Julia joined Sandia in 1976, and has worked as a management aide and staff secretary before her recent promotion to executive secretary. The YWCA annually selects a limited number of honorees for their leadership, community involvement, and professional accomplishments from dozens of nominations. Awards were presented in 16 different categories at the Women on the Move Conference in Albuquerque on March 4.

Retirement Open Houses

The Labs is holding open houses in honor of retirees **Richard (R.O.) Johnson (2341)**, Area 1 Cafeteria (Bldg. 861), Friday, March 25, 2-4 p.m.; and **Norbert Siska (2574)**, Coronado Club, Friday, April 1, 4:30-6:30 p.m. Refreshments will be served. Friends and acquaintances are invited.

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BRIEFING FOR THE CHAIRMAN - Senator J. Bennett Johnston, D-La., chairman of the Senate Committee on Energy and Natural Resources (seated), hears an explanation of SMARTWELD, a computerized system for rapid-response manufacturing, from Kim Mahin, Manager of Technology Integration Initiatives Dept. 1707. Also listening are Paul Robinson, VP Laboratory Development Div. 4000 (standing, center), and Victor Reis, Assistant Secretary of Energy for Defense Programs (arms folded). Among others accompanying Johnston on his March 5 tour to learn about Sandia's R&D programs were Undersecretary of Energy Charles Curtis, Undersecretary of Defense for Acquisition and Technology John Deutch, and CIA Director R. James Woolsey.

Teaching Significant Contributions**First Black History Bowl Highlights Month's Observance**

What African-American woman established the first Black Nurses Association? Who was the first African-American to receive a doctorate from Harvard? (The respective answers are Mary Eliza Mahoney and William Edward Burghardt DuBois.)

Competing teams of Sandia/California employees answered questions such as these last month during the first Black History Bowl. Sponsored by the Sandia Black Outreach Committee (BOC), the Bowl was dedicated to two retired Black Sandians recently deceased, Charles Brown and Jesse Watts. Charles worked at the Central Computer Facility and Jesse in Shipping and Receiving.

"The BOC supported a history bowl last year at the First AME Oakland Church," says Johnny Ellison of Facilities Operations Dept. 8615, events organizer. "We thought it was a great way to get information out to people. This year the teams were mostly limited to ES&H and Facilities Center 8600 employees, but next year, we hope to expand the Bowl sitewide."

At the first match, on Feb. 1, Johnny said the purpose of the Bowl was to recognize Blacks in our society.

"This is a rare opportunity to teach the community about the significant contributions made by African-Americans. We hope people will pass this information on to others at Sandia and in the community."

The Bowl consisted of seven matches on Tuesdays and Thursdays throughout the month.

Wide Variety of Topics

History Bowl topics were: Black Women, Black Pioneers, Blacks in the Federal Government, Black Civil Rights, Black Educators, Black Firsts, Blacks in the Arts, and Black Scientists and Inventors. Team members prepared for the competition by studying from the nine-volume Empak "Black History" Publications series. Some participants studied all nine volumes; others studied specific subject areas.

"We each studied on our own and only got together for about a half-hour the day before the Bowl," says Team 1 Captain Scott Hatchett (8613). A total of 36 employees made up the eight teams of four or five members each. Nearly as many employees from several organizations across the site volunteered as scorekeepers, timekeepers, hosts, and judges.

Each contestant received a BOC T-shirt for participating in the Bowl and a certificate for each round his or her team advanced. Each member of the championship team received a plaque. The champions are John Spraggins as captain (8271), Tonja Eaton (8111), Alden Jackson (1951), and Cynthia Whitfield (8353).

The BOC sponsored many events during February, including guest speaker Thomas Cannon, Director of Research Communications Sciences at Bell Labs and a former Sandian; Civil Rights Struggle videos; an African-American Poetry and Cultural Dance Day with catered food for all attendees; and an 8600 Cultural Day that included a potluck of African dishes and people in their cultural dress.

In his talk to employees, Cannon emphasized five main points: (1) Understanding how omissions alter history's meaning, (2) recalling Black contributions to the Old West, (3) remembering centuries of Black contributions to America, (4) implementing what we know about winning, and (5) building a better future for Blacks.

Advice for the Future

He showed clips from a PBS video documentary of Black contributions to the Civil War; early dealings with the Indians, who considered Blacks their brothers due to similar backgrounds; and the



RECEIVING CONGRATULATIONS from the audience after winning the Black History Bowl finals last month at Sandia/California are (from left) Alden Jackson (1951), Tonja Eaton (8111), Cynthia Whitfield (8353), and team captain John Spraggins (8271).

role Black cowboys played in the Old West.

The speaker highlighted some advice for building a better future:

- Renewing the Black commitment to family,
- Understanding how values hold together the fabric of the Black community,
- Reclaiming the Black neighborhoods, and
- Growing professionals instead of prisoners.



On that final point he described a new program he is working on in New Jersey called PRICE (Prisoner Reduction Incentive for College Education scholarships) that gives the community a stake and gives young people hope. "We must choose between the price to incarcerate and the price to educate, and we should stop feeding failures while starving the stars," he said.

He gave the example of his own family in which he has made sacrifices to send his two sons to Stanford. "It costs just as much to keep a person in the California prison system for a year (\$25,000) as it does to educate a student at Stanford," he said.

Lynbrook Repeats as Science Bowl Champs

For the second consecutive year, a talented team of science students from Lynbrook High School in San Jose captured the Regional DOE Science Bowl title, earning the right to compete against 53 other regional champions in Washington, D.C., on April 22-25.

Sponsored by Sandia/California and DOE, the double-elimination tournament matched the scientific knowledge of 95 students representing 19 high schools from throughout the Bay Area.

"The Science Bowl program has two major goals," says Ray Ng (Education Outreach Dept. 8528), who served as director for the event on Saturday, Feb. 26, at Ohlone College in Fremont. "One, we want to recognize the achievements of high school science students, including the many young women who participated in this event. And, two, we also want to show students that science can be fun."

The Science Bowl format closely resembles the old "GE College Bowl" television program. During each round of competition, a panel of moderators and judges — Sandia employees who volunteered their time and expertise — asked the two

teams questions from eight major science and math categories. At the end of each match, the team with the highest point total advanced to the next round.

Vikings Conquer Matadors

In this year's finals, defending champion Lynbrook trailed the Monta Vista Matadors at half-time 50-36. After giving each other a pep talk at the two-minute break, the Lynbrook Viking teammates roared back to capture the title by a final score of 80-64. Only minutes before the deciding match, Monta Vista defeated highly regarded Henry Gunn High School of Palo Alto to reach the championship.

Members of the victorious Lynbrook squad include seniors Jim Wang, Ben Ling, Alex Gong, and Daniel Chang, and junior Tim Wang. Drew Coble, head of the Sciences and Physics departments at the school, served as coach and advisor. Since she is unable to travel with the team to the finals, another science teacher, Leigh Wilson, will accompany them along with Ray Ng.

"Lynbrook was the only undefeated team in the tournament this year, and both Monta Vista and Gunn also competed very well," Ray says. "Everyone at Sandia wishes Lynbrook our best at the national finals in Washington, D.C., where the science whizzes will compete for an overseas trip to participate in international competition."

During the day-long event, Sandia's Beth Fuchs (Materials Performance Dept. 8714) lectured about and demonstrated infrared technology. These sessions included an introduction to imaging in the infrared spectrum, and provided students with an opportunity to learn about thermography.

High schools participating in the competition were Mercy (Burlingame); Los Altos; Sacred Heart Preparatory (Atherton); Gunn (Palo Alto); American, Kennedy, and Mission San Jose (Fremont); Newark Memorial; Chinese Christian Schools (San Leandro); Logan (Union City); Westmont (Campbell); Monta Vista (Cupertino); Los Gatos; Milpitas; Santa Clara; and Lick, Lynbrook, Mt. Pleasant, and Yerba Buena (San Jose). ●MSheehan



WINNING MEMBERS of the Lynbrook High School science team from San Jose show off their first-place trophy. From left are event chairman Ray Ng (8528) and Lynbrook students Tim Wang, Alex Gong, Ben Ling, Jim Wang, and Daniel Chang.

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BES Awards

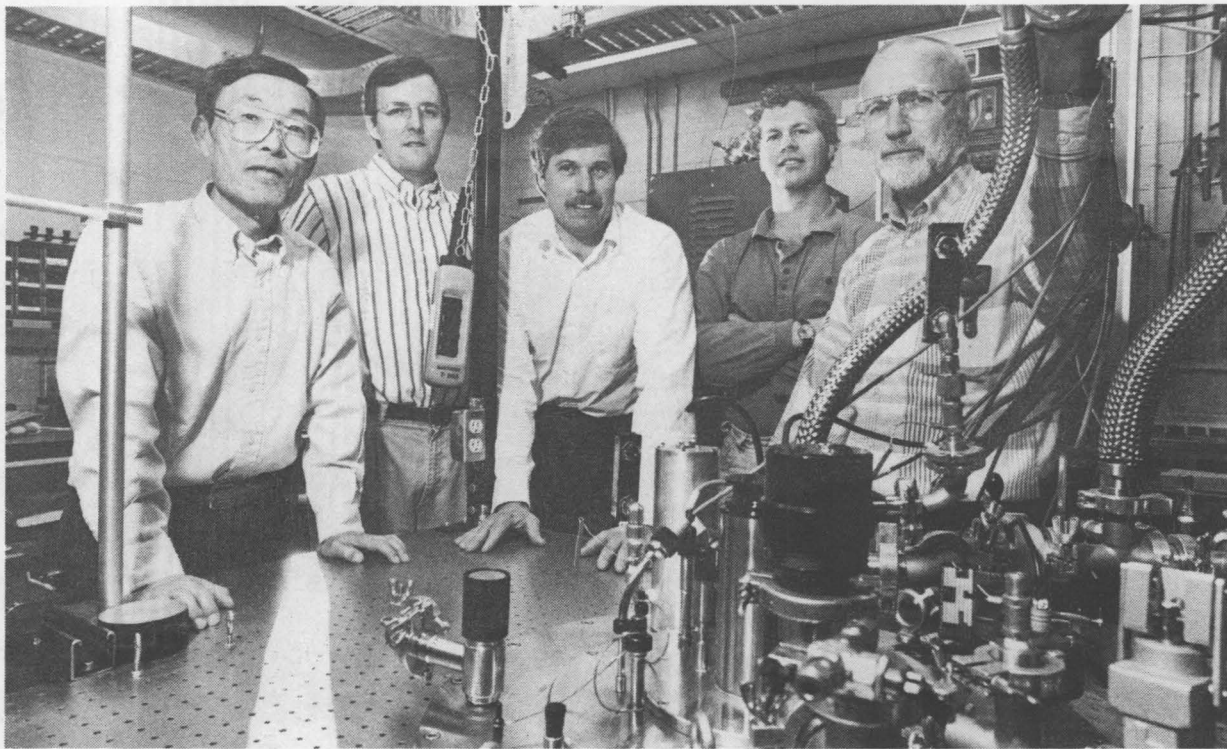
Work with strained-layer-superlattices (SLSs) was pioneered at Sandia, beginning in the early 1980s. Through the Labs' sustained program of research, Sandia has made significant advances in scientific understanding of strained-layer and artificially structured semiconductors, leading to development of many useful semiconductor structures.

This work has already had broad impact on semiconductor science. It was earlier honored with DOE's E.O. Lawrence Award and the American Physical Society's International New Materials Prize.

Commercial laser diodes and field-effect transistors using strained layers of semiconductors are



ATOMIC-SCALE IMAGING — Jack Houston operates keyboard controls of Interfacial Force Microscope he and Terry Michalske (both 1114) developed. The microscope vacuum chamber is at rear. The images on the system's video monitor illustrate the manipulation of individual nanometer-sized grains of gold in a polycrystalline gold film.



FIVE MEMBERS of Sandia's award-winning research program in strained-layer and artificially structured materials, from left, Ken Lyo, Rick Schneider, Paul Gourley, Jeff Nelson, and Eric Jones, with low-temperature superconducting magnet used for studying optical spectra of new semiconductor materials. The program is a winner for sustained outstanding research in DOE's Basic Energy Sciences Materials Sciences competition. Award recipients not included in photo are Ian Fritz, Gordon Osbourn, Bob Biefeld, and Ralph Dawson.

now available. Surface-emitting lasers based on SLS semiconductor mirror structures capable of efficient generation of coherent, low-divergent light have recently been commercialized. New semiconductor quantum-well and mirror materials have been developed for visible-light surface-emitting lasers.

"This work has had a tremendous impact nationally and internationally," says George. "It has revolutionized how optoelectronic structures and devices are made. Work is going on throughout the industrialized world on these materials and devices, and some are already on the market."

Unique Imaging at Atomic Scales

The newly developed Interfacial Force Microscope provides unique atomic-scale measurement and imaging capabilities. The microscope has

already had impact on a broad range of technologies important to DOE.

The microscope provides a unique means to study and model the formation and stability of adhesive bonds and lubricating boundary layers. These measurements are crucial in developing high-performance lubricants and advanced composite structures. The microscope can also image surface topographic and chemical structures without mechanical contact, and provide 3-D images and measurements of micromachined devices being developed for applications as sensors or for microelectronics.

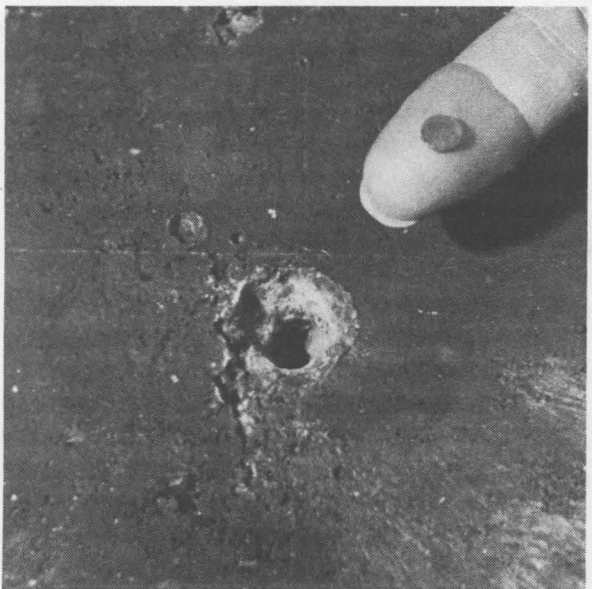
"The Sandia Interfacial Microscope represents a very significant advance in atomic-scale force microscopy," says George. "It is providing us with a microscopic view of the behavior of materials heretofore not available by any other means." ●KF

(Continued from Page One)

World Record

diagnostics and measurements to be easily accessible and more accurate."

The Sandia hypervelocity launcher, a multi-stage light-gas gun totaling about 60 feet in length that creates pressures of up to a million atmos-



SMASHING — Severe damage to this metal plate was caused by impact of a 6-mm-diameter, one-tenth-gram flyer plate, like the one on finger, accelerated to a record 15.8 kilometers per second (almost 36,000 mph) at Sandia. These tests simulate effects of orbital space debris colliding head-on with structures in space.

pheres, had previously achieved velocity milestones of 10.4 km/sec and 12.2 km/sec.

To achieve still greater velocities, a two-stage launcher was modified to add a small third-stage acceleration reservoir where pressures are further intensified. With addition of this third stage, the launcher, now referred to

as the Enhanced HyperVelocity Launcher (EHVL), was used to launch titanium alloy flier plates to record velocities. It accelerated a 10-mm-diameter flyer plate to 13.5 km/sec and a 6-mm-diameter plate to 15.8 km/sec, the new record. ●KF

Million-Atmosphere Pressure Powers Flyer Plates

The Enhanced HyperVelocity Launcher (EHVL) used to reach a new velocity record is the most advanced of six gas guns in Sandia's Shock Technology Applied Research (STAR) facility in Area Y.

The EHVL's tremendous accelerations begin in the first stage with firing of a powder gun, which propels a heavy piston down a 25-foot-long first-stage barrel containing hydrogen gas. The piston compresses the hydrogen to a pressure of about 10,000 atmospheres.

At the end of the first barrel, a rupture disc releases the pressurized hydrogen into an evacuated second-stage barrel whose diameter is only a third that of the first one. This pressure accelerates a cylindrical graded-density impactor down this 28-foot-long barrel, where at the far end it strikes the final projectile, a disc-shaped flyer plate.

The impactor is designed so that its transfer

of energy to the flyer plate is smoothed out to prevent unwanted shock waves; its leading edge is less dense, providing a softening pillow effect. The impact produces pressures now increased a hundred times to about a million atmospheres, which accelerates this much smaller flyer plate up to about 12 kilometers per second.

In the most recent experiments, a final boost is given when the impactor is hurled at a uniquely designed third-stage chamber, which efficiently transfers energy and momentum to the speeding disc as it exits the muzzle.

The flyer plate is imaged by flash X-ray radiography along its flight path before crashing into a target plate simulating a space structure or being stopped by a series of thick steel stopping plates at the back of the chamber. The images on the X-ray film allow scientists to measure the disc's velocity and its orientation as it traverses the final meter of its path to the target.

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Nuclear Materials

identify excess items, and collect and capture historical characterization information in a recently developed data base.

John says the assessment information will be used to provide DOE with Sandia's recommendations for reallocations or disposal of materials no longer required at Sandia. That plan will be ready within a year.

The nuclear materials disposition procedure involves determining if materials are usable, if they can be economically reprocessed for additional use at another site, or if they should be declared waste.

If materials are usable, Sandia will coordinate with DOE to advertise the materials for potential shipment to another DOE-authorized facility that has requirements for them. If other materials can be reprocessed economically, most could go to an appropriate DOE facility such as Y-12. If not, the materials would be stored as wastes until they could be declared either hazardous, radioactive, or mixed wastes and shipped off-site for disposal in accordance with applicable state and federal laws and regulations. ●AStotts/12630

Manzano Safety Precautions Strict

Strict procedures are in place for anyone who needs access to bunkers at the Manzano Mountain Complex where Sandia stores some of its nuclear materials. Because of that, says Joe Costales of Materials Systems & Security Audits Dept. 7442, there has never been a worker contamination incident and there has never been an off-site release from the six bunkers currently used to store materials.

Here is a description of the situation in Joe's own words:

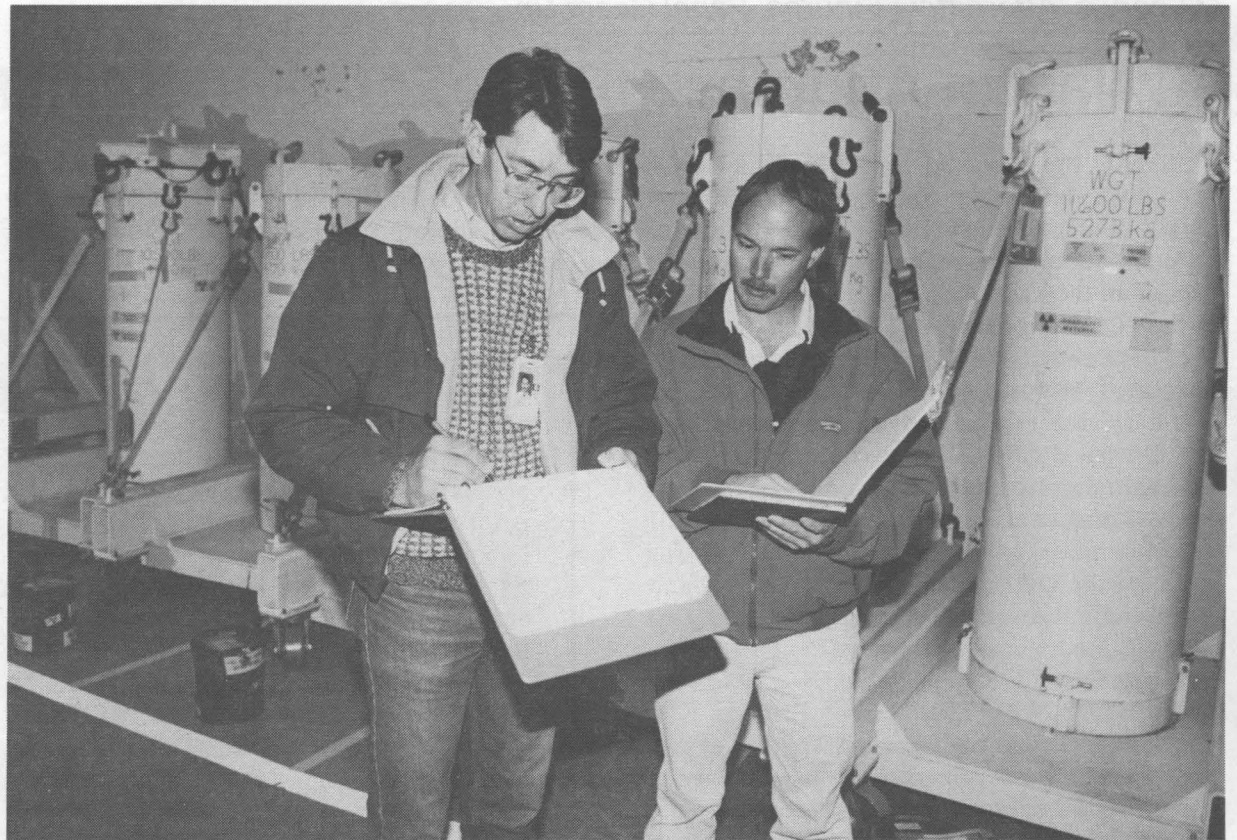
"The quality of storage space at the Manzano facilities is considered excellent. Bunkers are kept extremely clean. Containers are separated with proper spacing for access and accountability, and all markings, labeling, and signs are kept up to federal standards. Containers are periodically checked by health physicists, who do random swipes of both the containers and the floor to sample for radiation.

"No liquids are stored by Sandia at Manzano and there has never been any water leakage into the bunkers from rain. Manzano facilities are also designed to safely drain water if leaks should occur. Drain holes are covered with wire mesh to prevent rodents from entering the bunkers.

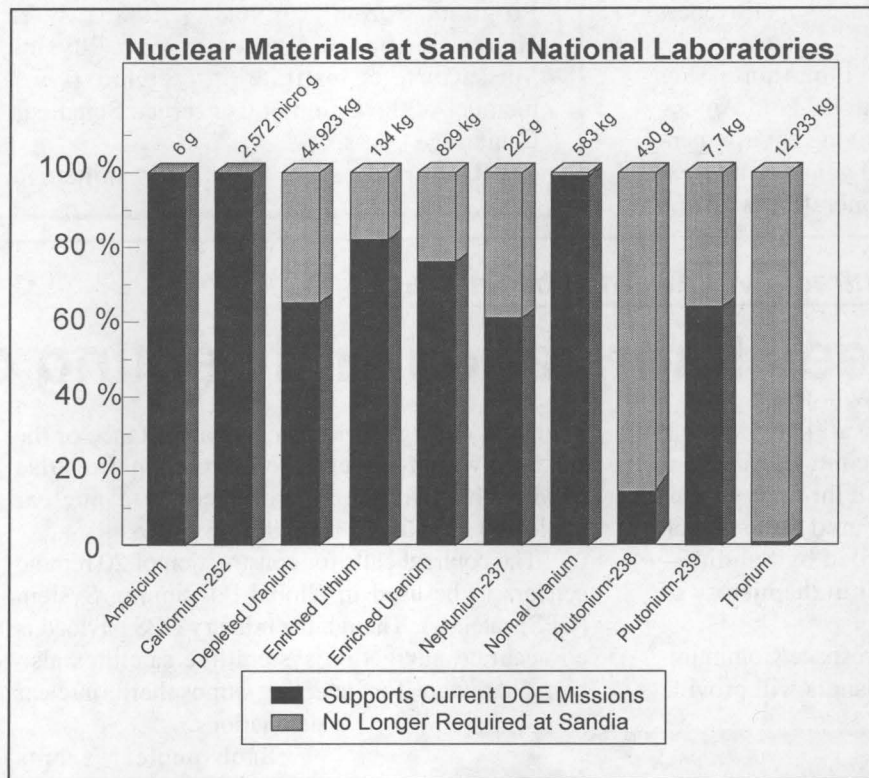
"Access to the bunkers is at least a three-person operation involving a health physics technician and two material handlers. The thick metal exterior doors to the bunkers have locks that must be opened. Inside are doors that require special equipment to unlock.

"Before workers or visitors can go in, they must wear a dosimeter and sign a log. A health physicist then conducts a survey with a hand-held meter at each entrance and briefs all who enter about areas where they may not go. Everyone is instructed to limit conversations, conduct necessary business, and depart.

"Gloves must be worn by anyone who intends to touch storage containers. Gloves and overalls must be worn to move anything. The gloves and overalls are then collected for proper disposal. Before exiting, individuals are scanned again by a health physics technician, and they sign the log again."



SURVEYING MATERIALS in storage at a Manzano Mountain Complex bunker, John Sichler (7445, left) and Craig Wood (7553) double-check their logs. The casks behind them are experiment packages that contain enriched uranium used in breeder reactor safety research conducted by Sandia for the Nuclear Regulatory Commission in the mid 1970s and early 1980s. The project, which concluded when the United States abandoned fast breeder research, also had funding from Japan and Europe. Results of the research have been used in both Japan and France. The weight labels on the lead-shielded casks refer to the empty weight of the casks, not their contents.



TOTAL AMOUNT of accountable nuclear material at Sandia is shown in this chart. The total quantity of each kind is shown divided into material needed for current requirements and material left over from completed work. The information is based on an extensive assessment conducted by Nuclear Materials Management Dept. 7445 of more than 5,000 items in inventory at Sandia. Part of the assessment process required the 15 Sandians who "own" nuclear materials to distinguish between materials required for ongoing work and materials no longer needed.



ONE OF SIX Manzano bunkers where Sandia stores its nuclear materials inventories. Nuclear materials accountability staff members from a variety of Division 7000 departments survey containers.

O'Leary's 'Alternative Futures' Panel Gears Up**Al Narath Addresses Task Force on Behalf of DOE Lab Directors**

Sandia President Al Narath and Lawrence Berkeley Lab Director Charles Shank spoke on behalf of the directors of DOE's nine major national laboratories recently during a kick-off meeting of the Task Force on Alternative Futures for the DOE National Laboratories.

The new task force, chaired by Robert Galvin of Motorola, was created by Energy Secretary Hazel O'Leary Feb. 2 "to take a hard look at what should be the missions for the DOE national laboratories." The product of the task force's one-year review will be a list of recommendations citing specific options for utilizing the DOE laboratories' scientific and technological resources. Among the scenarios O'Leary cited: "possible redirection, restructuring, and/or closure of parts of the DOE laboratory system" (LAB NEWS, Feb. 18).

The March 7 kick-off meeting was an opportunity for task force members to get acquainted and to hear preliminary information pertinent to the future roles of DOE's nine large, multiprogram laboratories.

The meeting was held at Argonne National Laboratory near Chicago. Al and Shank delivered a 40-minute presentation on five current major missions of the DOE laboratories. Shank addressed the science and technology, energy resources, and environmental quality missions, and Al addressed the national security and industrial competitiveness missions.

Al also highlighted several important issues pertaining to the future of the national labs. Among them: the laboratories' role in solving environmental problems left behind by 50 years of nuclear weapons work; their role in cooperating with and

helping other federal agencies solve important national problems; improving the cost performance of the laboratory system without lowering its technical effectiveness, through DOE-wide

application of quality principles; and how the laboratories' contribution to industrial competitiveness might evolve into a DOE mission responsibility with its own congressional appropriation. ●JG

Task Force Membership Announced

DOE recently released the names of 18 people who will serve on the Task Force on Alternative Futures for the DOE National Laboratories. Robert Galvin, Chairman of the Executive Committee of Motorola Inc., and a member of the Secretary of Energy's Advisory Board, will chair the task force.

Braden Allenby, Research Vice President, Technology and Environment, AT&T, Princeton, N.J.; **Linda Capuano**, Vice President, Conductus Inc., Sunnyvale, Calif.; **Ruth Davis**, Founder, Director, and Chief Executive Officer, Pymatuning Group, Alexandria, Va.; **Marye Anne Fox**, Regents Chair Professor, Department of Chemistry, University of Texas, Austin, Tex.; **Ben Huberman**, President, Huberman Consulting Group, Washington, D.C.; **Shirley Jackson**, Professor, Department of Physics and Astronomy, Rutgers University, Piscataway, N.J.; **Lynn Jelinski**, Director of Biotechnology Program, Cornell University, Ithaca, N.Y.; **Henry Kendall**, Professor of Physics, Massachusetts Institute of Technology and member of the Union of Concerned Scientists, Cambridge, Mass.

Richard Lester, Director of Industrial

Performance Center and Professor of Nuclear Engineering, Massachusetts Institute of Technology, Cambridge, Mass.; **Roger Little**, President and Chief Executive Officer, Spire Corporation, Bedford, Mass.; **Gen. James McCarthy**, United States Air Force (ret.), Olin Professor of National Security Studies, US Air Force Academy, Colorado Springs, Colo.; **Mark Murphy**, President, Strata Production Company, Roswell, N.M.; **Richard Nelson**, Professor of Economics, Columbia University, New York, N.Y.; **Edward Roberts**, Faculty Chairman, Management of Technology Program, Massachusetts Institute of Technology, Cambridge, Mass.; **Ben Rosen**, Chairman of the Board, Compaq Computer, and Partner, Sevin Rosen Management, New York, N.Y.; **Harvey Sapolsky**, Professor of Public Policy and Organization Director of Defense Arms Control Studies Program, Massachusetts Institute of Technology, Cambridge, Mass.; **William Spencer**, President and Chief Executive Officer, SEMATECH, Austin, Tex.; **Victoria Tschinkel**, Senior Consultant, Landers & Parsons, Tallahassee, Fla.

Largest Commercial Contract Ever Awarded by Sandia**Labs Oversees Fabrication and Testing of New EMP Sensors**

An updated Air Force satellite system designed to detect atmospheric nuclear detonations will use sensors developed through public-private cooperation and fabricated under a \$68 million contract recently awarded by Sandia — the largest commercial contract in the history of the Labs.

The contract is with ITT Aerospace/Communications Division, Clifton, N. J. Sandia will provide

oversight during fabrication and acceptance of the sensors, which detect the electromagnetic pulse (EMP) that would be produced by a nuclear explosion. Funding is from the Air Force.

The contract calls for construction of 20 remote sensors to be used in Global Positioning System (GPS) satellites. Though the primary GPS payload is an accurate navigation system, the satellites also carry hardware for detecting atmospheric nuclear detonations.

Such nuclear events might be caused by the testing of an experimental weapon, use of a weapon in a regional conflict, a terrorist incident, or a nuclear accident.

The fabrication contract follows a \$12.5 million development effort that included Sandia, ITT, Los Alamos National Laboratory, the Air Force, and Aerospace Corporation (a non-profit advisory organization). The result of the development effort was a prototype electromagnetic pulse (EMP) sensor.

The contract process is a good example of private-government sector cooperation and the role of national labs, says Lee Maschoff, Manager of Operational Satellite Payloads Dept. 9206 and Sandia's program manager.

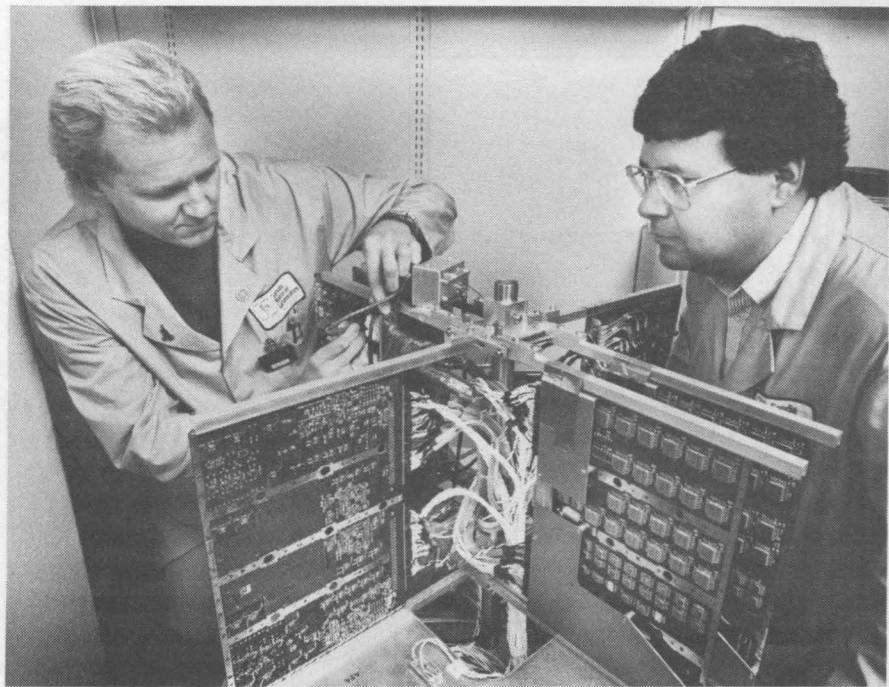
In the detection system, the EMP sensor is joined with an optical sensor, an X-ray sensor, and a data processor to provide reliable information in case of an atmospheric nuclear blast. Such a detonation would generate a number of forms of energy, including radioactive particles, EMP, and a bright burst of light. The timing of these energy impulses' arrival at the array of satellites orbiting the earth would provide accurate information about the time and place of the blast.

Sandia developed the data processor and the optical sensor. Los Alamos developed the X-ray sensor.

Sandia's contract with ITT calls for construction of 10 EMP sensors by October 1996, with the remaining 10 delivered through 1999. The Labs worked with ITT, the Air Force, and Los Alamos throughout the bidding process and development phase of the program, says Tom Sellers, Director of Monitoring Systems and Technology Center 9200. "The teamwork resulted in a product and design that will meet our operational needs, while minimizing the cost to the taxpayer," he says.

The President of ITT Aerospace/Communications, Marvin Sambur, says his company looks forward to working with Sandia on the production program. "We are confident that our continued teamwork will result in a very successful program."

Sandia and Los Alamos began developing EMP surveillance sensors in the 1960s for the Vela satellite program. In the 1970s, Sandia began providing instrumentation for GPS satellites, used to ensure compliance among signers of the 1963 Test Ban Treaty. The treaty prohibits atmospheric, underwater, or outer space testing of nuclear weapons. ●WKeener (12630)



CHECKING THE SENSOR — Raivo Leeto (9216, left) and Jaime Gomez (9225) check a test point on the lab version of an electromagnetic-pulse sensor designed to help detect atmospheric nuclear explosions. This test model, says project manager Jim Hudson (9206), is much more accessible than the production units for which Sandia recently awarded a contract. Production sensors packaged to go aboard a satellite will cram about 48 pounds of hardware into a 14-by-12-by-7-inch box. (Photo by Randy Montoya)

Feed Back

Medical Corner

Aging Parents

by Arlene Price, Clinical Psychologist

Today, more than 24 million Americans are age 65 or older. Their numbers are expected to reach 32 million by the year 2000. Although the needs of the elderly have received increased attention, the needs of their middle-aged children have not. Adult children of aging parents often feel overwhelmed by the struggle to help their elderly parents, support their own children, and live their own lives. This special generation is often caught in the middle, pulled in these three directions. This painful pull, however, is not felt by everyone.

Many aging people are active and self-sufficient into their nineties. Many are helping their own children and grandchildren. Also, old age for many is a period of enjoyment, contentment, productivity, and even creativity. In fact, life for most aging people is generally easier than we assume. However, there are significant numbers who struggle with loneliness, health problems, or the need for financial assistance.

Stages of aging are unpredictable. One person's parent begins to decline at age 65, another's is capably running his or her own life at 85. Physical aging is complicated by emotions, personality, and health. Given the complexities of aging, there is another well-deserved concern about life in the older decades. Within the elderly age range, the number who are 85 and older is increasing the fastest.

It is often said that nuclear families in the US live apart from their parents emotionally as well as geographically. However, although most aging

Aging Relative Talk March 23

Preventive Medicine and Employee Assistance Dept. 3335 invites you to a presentation by Barbara C'DeBaca, Executive Director of Desert State Life Management Services, that will address the emotional aspects of caring for an aging relative. The program, titled "Family Shakeup — Emotional Survival Kit," will be held Wednesday, March 23, noon-12:45 p.m., at the Technology Transfer Center (Bldg. 825). Spouses are welcome. Contact Arlene Price (3335) on 845-8729 for more information.

parents and their middle-age children prefer to live in separate homes, they still want to remain involved in each others' lives. Most people want to help when family members are in trouble, but when elderly people become more dependent, these families discover that love is not enough. The middle generation in the family system has become the basic support of their aging parents.

Although we must understand our parents' needs, we must also understand our own feelings. Otherwise our own emotional reactions may confuse the picture and prevent us from helping effectively.

Old feelings can rise up when our parents get older, feebler, sicker, or poorer and are in need of our help. Old affections may arise, and old wounds may be reopened. New feelings developed in later life may grow more intense. These feelings may range from love, compassion, respect, tenderness, and sadness to anger, resentment, shame, contempt, jealousy, and guilt. We may be surprised to discover old childhood feelings of fear and anxiety even if our parents are now confined to wheelchairs or sickbeds. In fact, they may still wield considerable influence not only because of emotional patterns established over a lifetime, but because of important financial considerations.

It is important for sons and daughters to take stock of their feelings about their aging parents if they want to find some comfort for themselves and be better able to help. Realize that these wide-ranging and often conflicting feelings are normal and are born of the day-to-day family life we experienced as children and which continues into the present. ●

Q: "Destination busy" seems to be the response I get 85-90 percent of the time when I need to get on the Laboratory Information System (LIS). The message this is sending is that the system is in constant use, but is this really true? On a weekly basis, I need to access the LIS maybe once or twice. However, whenever I try, I never fail to get the "destination busy" response.

I have a couple of questions. Do we have enough communication lines for this system? Do other people experience this same situation and fix it by logging on early and staying logged on all day, just in case they have to use it? The LIS is used for everything from ordering Just-In-Time items to managing property to accessing electronic mail. Many of these things can be used by most individuals at Sandia. Why not let everyone get a chance to try it out — not just the early birds.

A: You are absolutely correct about a shortage of communications lines for the LIS machine that currently supports approximately 4,000 customers. Actually, there is a shortage of "red" lines coming into the LIS. You are most likely connected to the LIS via the red PBX. The connection between the red PBX and the "black" LIS machine will be severed in April in compliance with a DOE order. At that time everyone accessing the LIS via the red PBX will need to start using Integrated Service Digital Network (ISDN) phone lines in order to connect. (ISDN data connectivity classes are now being offered, and are being advertised in the *Weekly Bulletin*.) Due to this changeover in April, a conscious decision has been made not to add more "red" lines to the LIS between now and April.

The move to ISDN phone lines will improve, if not totally eliminate, the "destination busy" situation. We are monitoring the access problems and trying to plan ahead, i.e., actively encouraging local area network access, procuring additional communications devices, working with the communications organization, etc., in order to avoid this bottleneck in the future. By the way, a person cannot log on early and stay on all day unless he or she is actually working (hitting the enter key) because we have implemented time-outs on the LIS.

Dorothy Rarick (10324)

Q: The deletion of organization numbers in addresses and distributions is causing a dilemma in many areas lab-wide. Correspondence listing distribution without organization numbers deprives the recipient of knowledge of other organizations receiving the same information. To have the organization and mail stop combined — like our zip codes, to read 12660-0413 for example — would be valuable not only to the mail room, but to all recipients.

A: The secretarial organization felt the need for a format including organization numbers. New secretaries are being trained in this format, although it has not yet been formally approved. The preferred format is:

MS1234 J. Doe, Org. 01234

This is a good format for mail services and also avoids the confusion that can occur when numbers are written in a long string.

Ellen Evans (7601)

Q: Someone in our department had a new phone installed recently and I was told by the installer that the phone cost \$1,200, and that eventually all phones would be replaced with these new phones. Since there are about 10,000 phones at Sandia, that comes to \$12 million for phones. Is this true and, if so, who decided that everyone needs such an expensive phone and why?

A: We are replacing some standard telephones with Integrated Service Digital Network (ISDN) instruments that have voice features that significantly enhance capability and productivity, and additional capabilities that justify their use — and their expense.

As we move from a laboratory interacting

primarily with the weapons community to one focused in a broader context, we are communicating with businesses that require voice and data.

Our new system is integrating voice and computer communication capability in a single instrument. This will link Sandians with computers that hold data such as budget and ES&H information, records, electronic mail, and a number of other data applications both within and outside the Labs.

The ISDN capability is a side street to the National Information Infrastructure Superhighway that is beginning to form throughout the nation. The instruments we are installing range in price from \$350 to \$800, depending upon the requirements and features that are necessary in a given installation.

A team with laboratory-wide representation and support of corporate management generated the priority list for placement of these new instruments. Not everyone will need them, and standard telephones will be used wherever they provide adequate service.

Bob Dougherty (1906)

[See Take Note item on "information superhighway" workshop on page eight.]

Q: I read a recent LAB NEWS article about telecommuting at Sandia/California [working at home part-time, using telephone, computer, and fax links to communicate with the office]. Are there any plans to set up such a program at Sandia/New Mexico? It is an idea whose time has definitely come; many private firms employ this technique with their employees to increase flexibility, reduce the number of interruptions, and cut child care costs, thereby boosting employee morale and productivity.

A: The recently implemented telecommuting policy at Sandia/California is intended to be a one-year pilot project to evaluate the effectiveness of a policy of this type. After this one-year evaluation period, a decision will be made as to whether this policy should be extended to other Sandia locations.

Sandia's Human Resources Center has been tracking the use of telecommuting at other companies over the last few years. A proposal for use of telecommuting was developed more than a year ago, incorporating the input of the Sandia Quality Leadership Council.

The telecommuting pilot project at Sandia/California is just one component of Sandia's Work and Family Initiatives program designed to help employees integrate their work and personal life effectively. Other examples of these initiatives include the child and elder care referral service, reimbursement spending accounts, part-time schedules, and flexible work hours.

Ralph Bonner (3500)

Q: Not long ago, I noticed an excavation outside of Gate 10. Evidently, when the parking lot was paved, the manhole was just covered with about four inches of asphalt.

How much did it cost to redo the job, which, in my opinion, should have been done right the first time? Also, I wonder how many more manhole covers exist in the same paved-over condition around the Tech Area?

A: The Facilities organizations have specific departments whose primary roles are to provide management oversight and acceptance of construction activities. Employees in these departments participate in the process of accepting construction work and enforcing contractual rights.

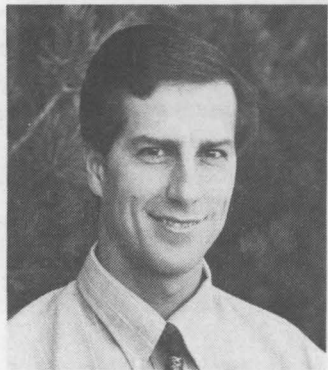
Sandia does not incur additional cost due to unacceptable contractor work. A typical method of installing surface coats of asphalt pavement is to pave over manhole covers and then remove the asphalt around the cover, extend the collar to the new elevation, and patch around the cover.

Joe Martinez (7913)

Supervisory Appointments

PERRY D'ANTONIO to Manager of System Surety Engineering Dept. 12324.

Perry joined the Labs in 1980 as an electrical engineer in the Advanced Arming and Fuzing Division.



PERRY D'ANTONIO

He has also worked for W76, W88 Arming and Fuzing Design, Safety Assurance Studies, and Assessment Technologies departments. Perry was one of Sandia's Change Ambassadors, and received recognition from Sandia

for contributions to the Supervisor Selection Process Action Team and Meeting Design Action Team.

Perry has a BS in electrical engineering from UNM and an MS in the same field from Stanford University. He was named outstanding graduate of the Electrical and Computer Engineering Department at UNM. He is a member of the System Safety Society.

SHARON TRAUTH to Manager of Integrated Engineering Information Systems Dept. 2864.

Sharon joined the Labs in 1983 as an engineer in the Quality Assurance Department.

Her focus has been in life-cycle engineering, manufacturing process characterization, and project management. Other departments she's worked for include Software Quality Assurance and Surety Components.



SHARON TRAUTH

She has a BS in physics and an MS in electrical engineering, both from Louisiana State University. Sharon was nominated for the YWCA Women on the Move Award in 1988 and 1993. She has been a member of American Society for Quality Control and the Institute of Electrical and Electronics Engineers, and has participated in the development of national software engineering standards.

C. DOUGLAS BROWN to Manager of Computer Security Dept. 1932.

Doug joined Sandia in 1976 as a member of the Scientific Software Division.



DOUG BROWN

His work has involved computer security related activities for much of his Sandia career. Other departments Doug has worked for include Distributed Processing Systems Design, Central Computer Network, and Networking departments. In 1991, he was named Distinguished Member of the Technical Staff.

Doug has a BS in engineering science from Florida State University and an MS in computer science from Purdue University. Before coming to the Labs, he worked for Florida State University's Computer Center.

BRIAN BEHLING to Business Manager in Engineering Integration Center 2800.

Brian joined Sandia in 1988 as a member of the Construction Purchasing Department. He also worked in the Administrative Program Office in the Purchasing and Materials Management Center.

He led the design of the Procurement Service Center, established in FY93 and served as purchasing year-end closing coordinator for FY90 and FY91.



BRIAN BEHLING

Brian has a BS in production and operations management from Arizona State University and an MBA in computers and information systems from the University of California at Los Angeles.

Before coming to the Labs, Brian worked for TRW Space and Technology Group as a subcontract specialist and Honeywell Protection Services as installation and service manager. He currently serves as treasurer on the Coronado Club Board of Directors.

New Director for Treasury, Finance

MICHAEL EBBEN has been named Director of Sandia's new Treasury and Corporate Finance Center 10600.

Mike comes to Sandia from Martin Marietta Corporation, where he was Transition Program Director of Business and Personnel Systems at the Pinellas (Fla.) Plant. Special assignments while in this



MIKE EBBEN

position included the business management portion of the General Electric Aerospace (GEA) Merger Due Diligence Process at Knolls Atomic Power Laboratory in New York. He was on the business management team and transition support staff during the transition of the Sandia management and operating contract to Martin Marietta.

He was at Pinellas from the beginning of transition from GEA to Martin Marietta Corporation in April 1992, where as manager of Financial Controls, he was responsible for cost estimating, cost management, cost accounting, and implementation of DOE's Task Order Contracting initiative. He served as Pinellas Proposal and Transition Team Finance Manager in 1991 and 1992. He was a member of the DOE Albuquerque Financial Management Systems Improvement Council and Production Plant Alternative Use Committee. For these efforts, he received Martin Marietta's Jefferson Cup award in 1993.

Mike worked for Martin Marietta Electronics Information and Missile Systems Group in Orlando, Fla., for 13 years, in financial management positions as program finance manager or chief estimator for various weapon systems programs. He served in a central finance staff position in group policies, procedures, and bids and proposals functions.

Before joining Martin Marietta, he worked for the Boeing Company in Seattle and Wichita in various financial and engineering capacities (1973-1978), including participation in NASA's Mariner 10 spacecraft design test and flight control teams.

Mike has a BS in business management from City College of Seattle. He is a member of American Association of Cost Engineers International and the Society of Cost Estimating and Analysis.

Take Note

Members of various Albuquerque area singles clubs will be joining Sandia Singles Club members at the Sandia Singles monthly "big event" on Saturday, March 19, 7 p.m.-midnight, at the Coronado Club. The event features food and DJ-provided music. All Sandia and DOE singles are invited to attend. There is a \$5 cover charge. For information about Sandia Singles, call Janice Bauer (12820) on 281-9754 or Rex LeGalley (9615) on 822-0676.

The next Trinity Site tour is scheduled for Saturday, April 2. Cost is \$20 per ticket for buses departing the National Atomic Museum at 7 a.m. Trinity, site of the world's first atomic explosion, is located on White Sands Missile Range, 130 miles south of Albuquerque. Bob Henderson, who was head of the Engineering Group in the Explosives Division for the Manhattan Project at Trinity, will give a free pre-tour talk on Thursday, March 31, 7-8:30 p.m., at the Museum. For tour ticket information, call 845-6275 or 845-4376.

What is this "information superhighway" we've been hearing and reading about? The Greater Albuquerque Chamber of Commerce is co-sponsoring a comprehensive two-day workshop that focuses specifically on what the "Information

Superhighway" will mean to business, and provides an overview of the system as it is now envisioned and how it is likely to evolve. The workshop will be held in conjunction with the third annual Albuquerque Business Fair March 24-25 at the Albuquerque Convention Center. Cost of the full two-day program, including the kickoff luncheon on March 24, is \$75 per person. Cost of the seminar program only (without the luncheon) is \$65. Cost of the luncheon only is \$20 per person. Call Christina Plante at the Chamber of Commerce on 764-3730 for more information and to RSVP.

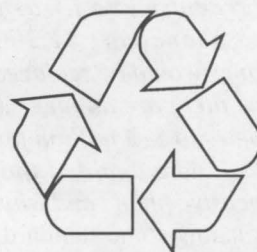
Upcoming New Mexico Volunteers for the Outdoors project is:

Chaco Canyon Trail Project on Saturday and Sunday, April 16 and 17, needs a minimum of 30 volunteers to construct a barrier-free trail from the parking lot to the Pueblo Bonito and Chetro Kettle ruins. Contact Kevin Balcia on 294-1477 for more information.

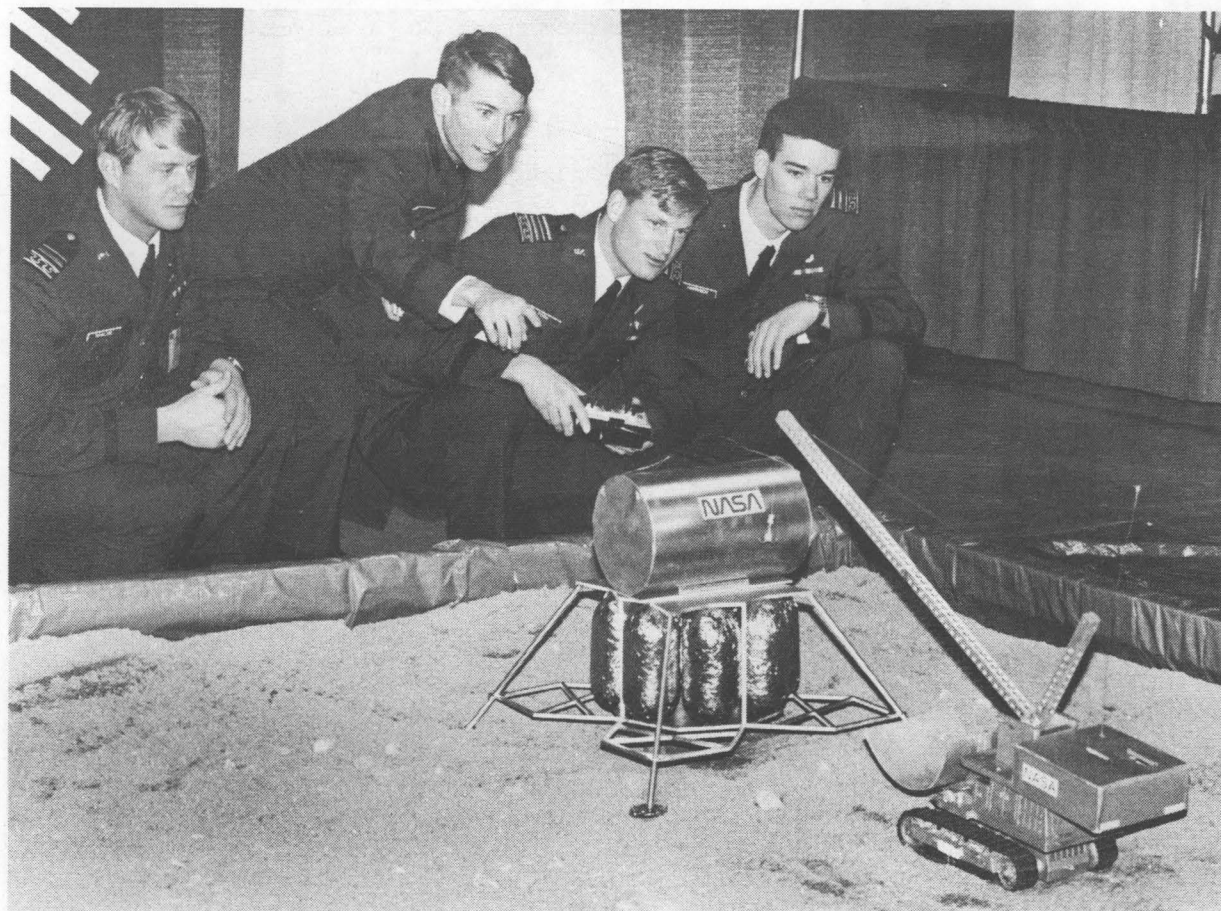
NMVFO projects are open to all. You don't have to be a member to work on a project, but membership dues help support NMVFO activities on New Mexico's public lands. Please call the project leaders or the NMVFO Office on 884-1991 to sign up or for more information.

Retiree Deaths

Arthur Starz (86).....	4222	.....	Jan. 15
Juan Sanchez (85).....	3522	.....	Feb. 1
Julian Perea (81).....	3413	.....	Feb. 3
Albert Elwell (87).....	7213	.....	Feb. 3
Paul Goen (68).....	7172	.....	Feb. 6
Carl Frostenson (69).....	9131	.....	Feb. 8
Eugene Monahan (83).....	4614	.....	Feb. 13
Betty Tanner (70).....	9110	.....	Feb. 13
Loran Anderson (77).....	4323	.....	Feb. 15
Paul Montoya (71).....	4623	.....	Feb. 16
Howard Phillips (72).....	1481	.....	Feb. 21
Royal Winter (81).....	7451	.....	Feb. 25



This newspaper can be recycled with Sandia office paper



TRACKING THEIR PROGRESS — A team from the US Air Force Academy participated in the Lunar Shelter Student Contest hosted by Sandia during the recent International Space Conference in Albuquerque. Cadets (from left) Wade Rawlins, Luke Gainelloni, Brian Toth, and Jason Harrison competed with teams from North Carolina State University and Texas A&M. All had to maneuver the remote-controlled robotic tracked vehicle to offload the miniature habitat from its lunar lander, move it to an emplacement site, place it in a predetermined location, and provide radiation protection for the habitat. The students then had to make oral presentations on the project to a panel of judges.

Sandia News Briefs

Sandians Serving as 1994 Materials Research Society Officers

Kay Hays, Manager of Industrial Program Development Dept. 1709, continues to serve a two-year term as Treasurer of the Materials Research Society for 1994. Her term as treasurer began in 1993. Tom Picraux, Manager of Defense Programs/Military Application Program Office 1102, who was 1993 MRS President, is now serving as Immediate Past President. The Materials Research Society, a non-profit scientific association, promotes interdisciplinary, goal-oriented basic research on materials of technological importance. Membership includes nearly 11,600 scientists, engineers, and research managers from industrial, government, and university research laboratories in the US and nearly 50 countries.

Chris Rautman Receives Certificate for Yucca Mountain Work

The Yucca Mountain Site Characterization Project Office recently presented a Certificate of Appreciation to Chris Rautman, Geohydrology Dept. 6115, in recognition of his project support contributions since he joined the program in 1985. Chris served as administrator and coordinator for the development and maintenance of the Site and Engineering Data Base and the project Technical Data Base. He participated in planning and executing early thermal/mechanical scoping studies for the project, and was a key contributor to the development of the Site Characterization Plan's Rock Characteristics and Systematic Drilling programs. He promoted plans for modeling thermal/mechanical rock properties, assured incorporation of the results in design and performance assessments, and made significant contributions to the development of the overall drilling program.

Jerry Brown Receives DOE Counterintelligence Program Award

Jerry Brown (now retired, former Center 7400 Contract Counterintelligence Officer) received an award "in appreciation for his support of DOE's Counterintelligence (CI) Program, 1988 to 1993," at the recent 1994 DOE/CI Seminar, hosted by Sandia's CI Program Office. Donald McIntyre, Director DOE Office of Counterintelligence, and Richard Schlimme, DOE/AL Counterintelligence Program Manager, presented the recognition award to Jerry. More than 75 counterintelligence officers from DOE facilities nationwide attended the seminar.

DOE Postdoctoral Research Program Brings Researcher to Sandia

Recent PhD recipient Cather Schneebeck will be working with John Shelnett, Fuel Science Dept. 6211, on her research project, "structural design of metalloporphyrins as electron transfer mediators." She is the first researcher to come to Sandia under DOE's Distinguished Postdoctoral Research Program, which was established to provide outstanding young scientists and engineers with opportunities to participate in DOE's research programs. The research fellowship is one of only ten, from all areas of science and engineering, awarded nationally this year. Cather received her PhD in material science from UNM.

Send potential Sandia News Briefs to LAB NEWS, Dept. 12660, MS 0413.

Take Note

The American Lung Association of New Mexico is sponsoring a seven-week "Freedom from Smoking" clinic 7-9 p.m. on Thursdays beginning April 7. Enrollment is limited and

registration is required. Cost is \$50. For more information, call the American Lung Association on 265-0732.

Includes a Disk of Data

Ron Iman Text Offers Real-World View of Statistics

If you've ever tired of textbooks with obviously made-up problems and data, Sandian Ron Iman's newly published statistics textbook *A Data-Based Approach to Statistics* (Duxbury Press/Wadsworth Publishing, Belmont, Calif., 1994) is a fresh approach.

This is the fifth college textbook by Ron (Manufacturing Systems Reliability Dept. 6613) but his first as solo author. The 900-page book emphasizes real-world problems working scientists and engineers encounter daily, and it provides real data that students can work with on their own personal computers.

"I'm trying in this book to emphasize actual applications of statistics," says Ron. Books with clearly artificial data have a way of turning off students and teachers, he says. The book draws on his experience in university teaching and industrial consulting as well as at Sandia.

The text integrates computer usage throughout and comes with a data disk containing 304 data files. "It is loaded with real-world applications," says Ron.

Examples of engineering/technical data sets used in the book include testing the strength of solder joints (Ron is the project leader and organizer of a 20-member task force evaluating low-residue soldering), time between failures in semiconductor manufacturing, fatigue tests for aircraft wheels, success rate of laser-guided bombs, and comparing the mean life of batteries used in toys.

Other applications come from such diverse fields as biology, business, economics, education, environmentally conscious manufacturing, genetics, medicine, pharmacology, psychology, and quality control.

Here's a flavor of the statistical data sets in these areas: eliminating ozone-depleting chemicals, headache relief, treatments for lowering blood pressure, weight loss by diet or exercise, seat belt use, impact of cocaine use on size of newborn infants, what's the best fast-food hamburger, and picking the winner of the next Super Bowl.

Ron says he and the publisher have high hopes that the book will do well in the undergraduate statistics textbook market.

Ron is a Life Member and Fellow of the American Statistical Association. He has served on the ASA Board of Directors and was elected ASA President for 1994. ●KF



RON IMAN

Employee Death

Gilbert Lucero of Sandia Calibration and Instrument Dept. 1044 died March 4 after a long illness.

He was 45 years old.

Gilbert was a repair and calibration tradesman and had been at Sandia since 1976.

He is survived by his wife Theresa, daughter Olivia, and sons Matthew and Timothy.

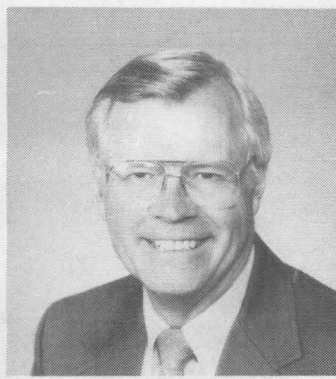
Sympathy

To Richard Medina (7612) on the death of his mother in Mountainair, Feb. 14.

MILEPOSTS

LAB NEWS

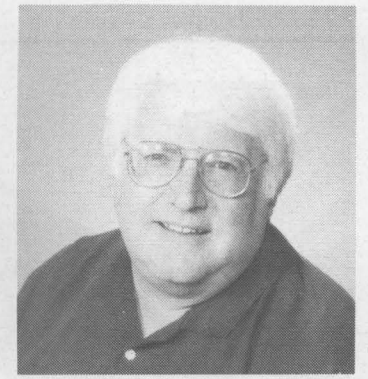
March 1994



John Marion
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Theresa Smith
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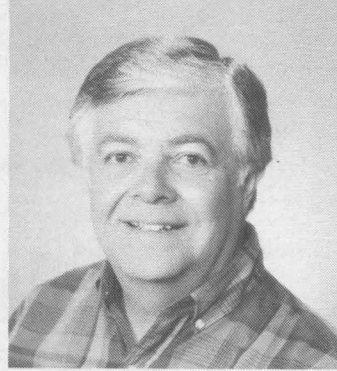
Gerald Henderson
8115 30



Larry Garrison
10402 30



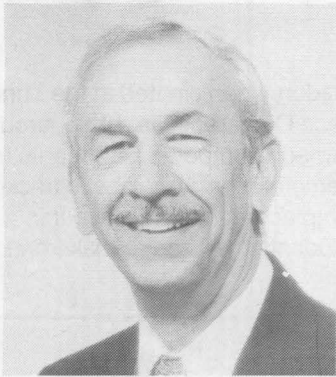
Roy Lee
8117 25



Paul Dominguez
8531 35



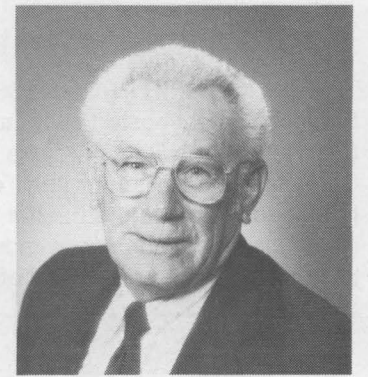
John Daniel
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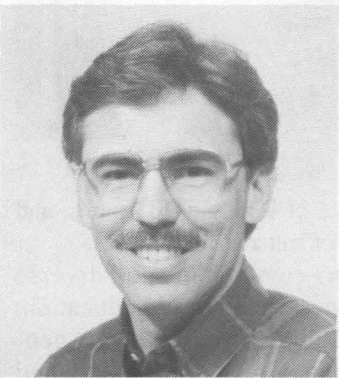
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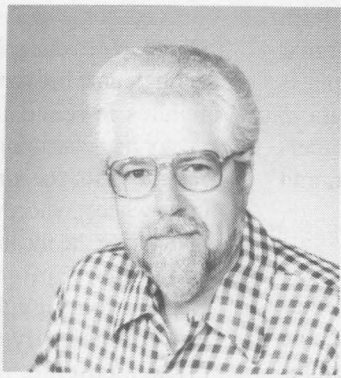
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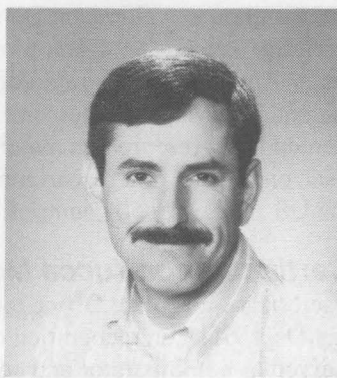
Reggie Tibbetts
7813 15



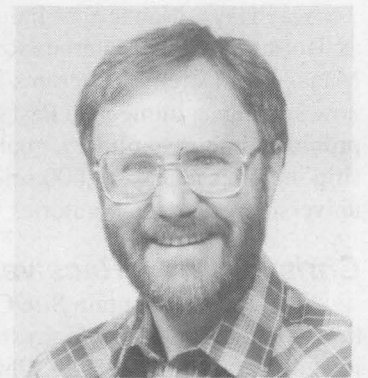
Wayne Chrisman
8347 30



Lorraine Curtis
2252 20



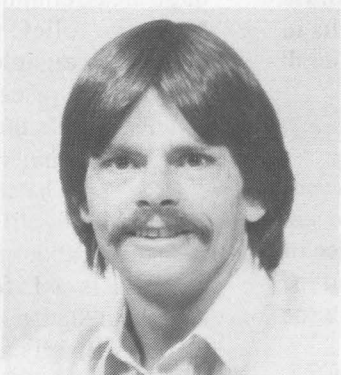
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Larry Ruggles
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Kit Schmitz
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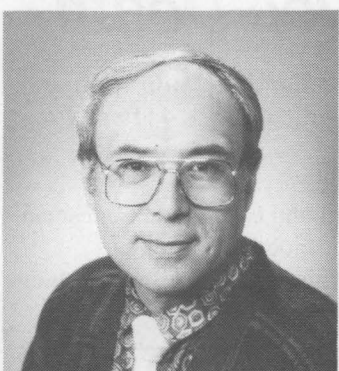
Michael McFadden
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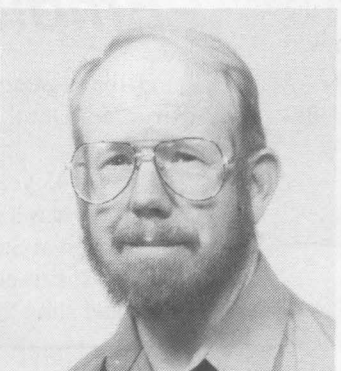
Jerry Wackerly
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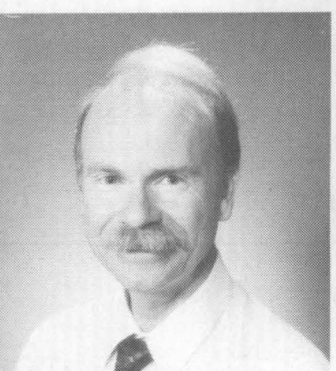
Roy Ellison
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Ron Amaral
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Lucien Rice
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Tim Tooman
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Welcome

Albuquerque — Dennis Anderson (6613),
Patricia Knighten (4204), Deborah Payne (12600).
Other New Mexico — Edward Horst (7572).

Congratulations

To Anne Marie and Kevin (9133) Malone, a
son, Joseph Michael, Feb. 8.
To Jeanette and Howard (7905) Walther, a
son, Nicholas Edward, Feb. 23.



UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

Deadline: Friday noon before week of publication unless changed by holiday. Mail to Dept. 12660, MS 0413, or fax to 844-0645.

Ad Rules

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

MISCELLANEOUS

COUCH & LOVESEAT, w/loose pillows, couch has sofa bed, Southwestern style, \$500 OBO. Ryan, 831-0130.

SET OF CAFE DOORS, \$10; push lawn mower, w/basket, \$20; metal shed, 8' x 6' x 6', \$30; barbeque grill, \$5; bookcase w/planter, \$10. Jackson, 293-0262.

BEDROOM SET, traditional, single dresser, chest of drawers, twin-size mattress w/box spring and headboard, \$400. Williams, 266-6134.

CENTRIFUGAL PUMP, Teel, 1/3-hp, 3/4-in., 1/2-in. out, 115-volt, in box, new, \$125. Moss, 298-2643.

MODEM, 2,400-baud, \$30; type-writer/PC printer, \$60; car speakers, 3-way co-ax, \$40; ceiling fan, 36-in., \$15. Moore, 281-2480.

WOODBURNING STOVE, cast-iron, used only one season, excellent condition, \$495 OBO; sewing machine, (Nordic), in wood cabinet, \$125. Locher, 266-2021.

FUTON FRAME, full-size, clear finish, hardwood construction, \$175. Horn, 821-6721.

LABRADOR RETRIEVER PUPPIES, AKC-registered, chocolate, wonderful with kids, parents on premises, \$275. Fate, 293-2131.

WET GRINDER, \$25; motorcycle trailer, two-rail, factory made, \$150. Waldorf, 836-0642.

COMPOUND BOX, Alpine, Sierra Magnum, lots of extras including sights, arrows, removable quiver, used once, brand new. Brown, 892-5939.

BRINDLE BOXER STUD, AKC-registered, 5 yrs. old, good confirmation, some obedience training, excellent guard dog, \$200 OBO. Neas, 281-8646.

ALUMINUM WINDOWS, two, 44" x 52", \$25/ea.; 500 Kinney bricks, unused, \$75; fill dirt, one yard, you haul, free. Sprauer, 275-0092.

SOLAR ENERGY SYSTEM, four electronically controlled sun-tracking parabolic reflectors, reservoir, pump, plumbing, and hardware, \$800 OBO. Gritz, 292-3244.

'25 ANTIQUE COAL STOVE; CB radio, w/mag mount; TV stand; PV microphone. Ask for Steve. Garcia, 343-8207.

RECLINER CHAIR, tan vinyl, w/nail-head trim, good condition. McCall, 242-4866.

THEATER-STYLE SEATS, 16, good for home-theater use, best offer. Eley, 255-4599.

HIDE-A-BED SOFA, queen-size, green floral pattern, excellent condition, \$100 OBO. Wilde, 281-4511.

EXERCISE BIKE, Weider, digital readouts for distance, time, speed, calories, and pulse, \$50. Seyfer, 292-0179.

SOFA, good condition, both ends recline, \$275 OBO; small entertainment center, dark wood, \$50. Smith, 275-8185.

FISH TANK, 37-gallon, set up w/wood cabinet, plants and decorations, \$200 OBO. Towne, 898-2700.

SOFA AND LOVESEAT, off-white w/beige flecks, coffee table, end table, wood w/glass insets, \$400 for all. Perich, 293-8261.

FACTORY FRONT SPOILER, for '79-'81 Trans Am, includes left and right air dam, never used, \$250. Chavez, 294-8962.

TRAVERSE CURTAIN RODS, two, 86"-150", \$50 for both. Vandewart, 298-4741.

TRAVEL TRAILER, '91 Mallard Sprinter, 24-ft. 5th-wheel, sleeps four, \$12,000; Soloflex, w/butterfly & leg extension attachments, \$500. Madison, 271-9068.

SAMSON CORDLESS MIKE, Carvin 12-channel mixer, Peavy power amp and two speakers, all for \$1500; guitar amp, \$450 OBO. Marquez, 344-8455.

FUGI CLUB, 53cm frame, excellent condition, \$175, or trade for guns, reloading equipment. Anderson, 298-1635.

CROSS-COUNTRY SKIER EXERCISE MACHINE, excellent condition, cost \$300 new, sell for \$100. Sikora, 899-1914.

OAK PLATFORM BED, queen-size, 6-drawer underdresser, mattress (used only 18 months), still under 15-yr. warranty, no headboard, make offer. Denaple, 298-2778.

MACPLUS COMPUTER, 1MB RAM, new 42MB hard drive, \$300, OBO; full-size Sealy mattress & box spring, \$50. Harris, 299-4559.

BERNOULLI DRIVE, 90MB, w/interface board, 2 cartridges, manuals & software, for IBM-compatibles, \$300. Bainbridge, 298-3423.

GARDEN BATHTUB, 48" x 60". Monnet, 865-7941.

ELECTRIC LAWN MOWER, w/grass catcher, used 3 months, excellent condition. Skinner, 299-5063.

FEMALE COLLIE, free to good home with fenced yard, 3-yr. old, tri-colored, AKC-registered, all shots, excellent watch dog. Sturgeon, 281-9035.

DESK, black Formica top, teak drawers, \$100; 1976 World Book encyclopedia, \$35; Sears canister vacuum cleaner, w/attachments, \$32. Purcell, 296-4986.

BALDWIN SPINET PIANO, walnut, \$950; computer desk, \$60. Geitgey, 866-0829.

CONSOLE HUMIDIFIER, Waterwick, \$50; Argus slide projector, \$30; projector screen, junior size, \$10; encyclopedia set, best offer, more. Cocain, 275-9505.

NORDICFLEX GOLD, like new, \$800. Hopkins, 821-3641.

MAGS AND TIRES, four 15x8 key-stone spokes, \$225; two 10.00x15x30, M/H Racemasters, \$120. Fine, 281-2116.

UTILITY TRAILER, new, 4 x 8, 2,000 LB cap, tilt bed, side rails, wood deck, 14" wheels w/spare, lights, \$550. Pantuso, 892-3641.

CEMETERY LOT, in Sunset Memorial Park, three burial spaces, \$500, worth \$2,400. Brown, 294-2375.

COMPUTER, complete, CP/M based, circa 1981, will boot but struggles, \$20 to good home. Blackledge, 845-8307.

RESORT TIMESHARE, full week, April 22-29, The Pines at Meadowridge, Winter Park, Colorado, sleeps six, \$210. Spence, 266-3002.

RADIAL ARM SAW, DeWalt 7-1/2" blade, used very little, \$250; Workmate workbench, perfect condition, \$30. Hamilton, 255-6649.

SWIVEL STOOL, bucket seat, \$18; Prince tennis racquet, \$20; tub whirlpool, \$40; Dynastar GS skis, 195cm., Tyrolia 280 bindings, \$75. Horton, 883-7504.

KITCHEN COUNTER, 10-1/2 ft. formed, dripless butcher block, w/stainless sink, single-lever faucet, \$50. Lachenmeyer, 268-7818.

TABLE SET, leaves, chairs, \$350; sofas, 72" and 60"; loveseat, \$500; bedroom set, four-piece, \$300; bakers rack, \$50. Johnson, 296-1917.

FORMICA TABLE, 42" round, butcher block, w/18" leaf, four matching vinyl swivel caster chairs, \$350. Anastasio, 821-4245.

YARD SALE, Saturday, March 19, Paseo del Norte, north on Wyoming, east on Anaheim to 8404 Wilson Hurley Pl. NE. Sandhaus, 848-0330.

WHIRLPOOL CHEST FREEZER, 9-cu.-ft., new gasket, needs freon, free, you haul; Broyhill sofa, \$50 OBO; sturdy, well-built recliner, green pattern, \$40 OBO. Rezac, 281-1816.

ADMIRAL REFRIGERATOR, almond, 7-yr. old, perfect condition, freezer on top, 64" high, \$150 OBO. Purdue, 275-7503.

COMPUTER-AIDED DRAFTING PROGRAM, CAD-Key 5, major capabilities, \$450. Brunseke, 281-6472.

SOFA AND LOVESEAT, off-white, Southwestern pattern, \$750; dresser and nightstand, \$60; brass floor lamp, \$20; table lamp, \$15. Buchheit, 856-6283.

CIRCULAR SAW, 8-inch, 1/2-hp motor, pedestal-mounted, accessories, \$125; dual electric grinder, 1/4-hp motor, \$40. Kinney, 856-1512.

CAMERA, 35mm Minolta SRT 200, 50mm and 135mm lenses, excellent condition, flash, camera protector, carrying case, \$300 OBO. Rivers, 836-6304.

VACATION BREAK OF A LIFETIME, 7-day/6-night, Florida, Bahamas and cruise, two adults, \$299 OBO. Obrien, 892-2498.

KING-SIZE WATERBED, w/six-drawer underdresser, all accessories, \$250 OBO. Anastasio, 293-8467.

TREADMILL, Precor Model 9.2, up to 9 mph and 10-percent incline, like new, originally \$2,000, asking \$1,200 OBO. Bateman, 237-1205.

RADIAL ARM SAW, Smith, 10", 1-hp, variable speed, w/owners manual and some accessories, \$125. Roh, 869-2108.

NORDICTRACK, model 505, like new condition, \$375. Marrs, 821-5144.

MAKITA FINISHING SANDER, used once, \$25; tach/swell meter, \$10. Jones, 843-9645.

TOW DOLLY, heavy duty U-H, w/spare, new tires; one Goodyear Wrangler radial, 10R15LT, LR-C; two Michelin, 8R19.5XZA, LR-D. Stixrud, 298-0478.

TRANSPORTATION

'85 HONDA CRX Si, quick and sporty, 89K miles, AC, sunroof, 5-spd., great gas mileage, \$3,100. Hoffman, 821-6946.

'92 SUBARU LEGACY, all-wheel drive, w/all options, 32K miles, \$13,500. Normann, 281-7412.

'92 LEBARON COUPE, V6, 2-dr., PB, PS, AT, AC, AM/FM cassette, tilt, tint, air bag, excellent condition, like new, \$11,850. Obrien, 892-2498.

'93 SUZUKI KATANA 750 MOTORCYCLE, custom paint, D&D pipe, lowered gears, ignition advance, low miles. Chadwick, 292-7724 evenings.

'78 FORD LTD, original, smooth, clean, very good condition, \$1,000 OBO. Sanchez, 873-4281.

'73 VOLKSWAGEN CAMPER, new motor, interior, and tires, runs perfectly, all around very good to excellent condition, \$2,500 OBO. Schofield, 268-8011.

'93 JEEP CHEROKEE, 4WD, 2-dr., 31K miles, 2.5L engine, excellent condition, \$15,900 OBO. Neas, 281-8646.

'89 BONNEVILLE, silver, good condition, \$5,900 or trade for late model 4x4 Nissan king cab. Moreno, 294-4268.

'89 TOYOTA GTS, 45K miles, 5-spd., black, power sunroof, PW, PL, excellent condition, \$7,450. Gritz, 292-3244.

'78 FORD STEP-SIDE, w/shell, runs great, only 66K miles; '74 Volkswagen Bug, w/sunroof, runs great. Martinez, 296-9035.

'71 CHEV. IMPALA, 2-DR., V8, AT, AC, 100K miles, new tires and front end, original owner, runs great, \$1,000. Lisotto, 884-7331.

BOAT, 17-ft. Tri-Hull, w/trailer, I/O, 4-cyl., 140-hp motor, custom travel cover, skis, jackets, new battery, \$3,800. Garcia, 899-2707.

'90 PONTIAC, good second car, loaded. Riley, 869-2119 after 6 p.m.

'92 R100 GS BMW, Dual Sport, 5K miles, new, under warranty, \$6,200 OBO. Anderson, 298-1635.

'71 PONTIAC LEMANS, 350, 2-spd., AC, PS, PDB, whole/part out, \$800; '74 Laser sailboat, w/new trailer, \$1,000. Shapnek, 281-5913.

'91 CAMARO RS, V8, loaded, white, excellent condition, \$8,500. Eaton, 883-1778.

'81 CHEV. C10, 4-spd., 250 6-cyl., PB, PS, AC, stereo, camper shell, 2 new tires, \$3,500. Bode, 843-6557.

'85 LINCOLN CONTINENTAL, 4-door, 97K miles, loaded, looks and runs great, \$3,300. Leonard, 884-8566.

TOURING BIKE, Trek 400, 21-in. Cr-Mo frame, 12-speed, Suntour components, \$150 OBO, will trade for comparable mountain bike. Watkins, 281-6005.

'86 MAZDA 626, great condition, fully loaded, electric windows, locks, sunroof, AC, 66K miles, book \$3,800, asking \$3,500. Kelly, 821-9680.

'92 GMC C2500, fully loaded, 5-speed w/overdrive, still under warranty. Green, 898-3791.

'86 LINCOLN TOWNCAR, Signature Series, original owner, fully loaded, low mileage, well maintained, excellent condition, \$5,300 OBO. Dye, 299-2250.

'91 MITSUBUSHI, Mighty Max microcab, black truck, AC, AT, cruise, overdrive, custom shell, 28K miles, like new, \$7,500. Burstein, 821-6688.

'90 ISUZU TROOPER, 4x4, 4-dr., 5-spd., AC, tinted windows, very low miles, excellent condition, \$10,900 OBO. Heald, 281-7885.

'91 LX MAZDA PROTEGE, 5-spd., every option plus premium tint, new Pirellis, 33K miles, records, below book, \$9,200. Lachenmeyer, 268-7818.

'87 TOYOTA SUPRA TURBO, white pearl, 5-spd., 70K miles, original owner, excellent condition, \$9,500. Tipton, 828-2538.

'84 GMC JIMMY, 4WD, loaded, original owner, excellent condition, \$4,000 or trade for equal value pickup. Hoffman, 865-8527.

BOY'S BIKE, w/20" wheels, \$25. Jones, 843-9645.

'81 HONDA CIVIC DX, 1.5L, hatchback, light blue, 34 mpg, 113K miles, new tires, one owner, \$1,000. Rechar, 292-1754.

'74 FORD ECONOLINE, window van, excellent condition, 302 V8, 3/4-ton chassis, seats 8 people, one owner, 110K miles, runs great, \$995 OBO. McKenney, 268-7390.

'87 CHRYSLER LEBARON, 4-dr., 2.2L Turbo, fully loaded, 75K miles, good condition, \$2,750. Burd, 892-2117.

BICYCLES: two Spalding, 27" men's 12-spd., used very little; Sears air resistance exercise bike, \$75 each OBO. Miller, 883-0218.

'87 NISSAN VAN, white, 83K miles, AM/FM stereo, cassette, cruise, power lock, icemaker, sunroof, \$5,900. Burroughs, 275-5882 or 299-7371.

'69 MUSTANG, 302, AT, primer gray, good body, good engine, includes alarm and club, new tires, \$3,200 OBO. Bates, 881-3634.

'90 EAGLE TALON SPORT, low mileage, AC, 5-spd., excellent condition, metallic mist, FWD, tinted windows, must see, \$8,000. Rael, 884-4778.

REAL ESTATE

3-BDR. HOME, 1-1/2 baths, 1,800 sq. ft., 25,000-gal. inground pool, NE, corner lot, shown by appointment. Brady, 291-0305.

4-BDR. HOME, 2 baths, 2,200 sq. ft., large dining room and kitchen, well, septic, 2.5 fenced acres, w/barn, Edgewood, \$98,500. Neas, 281-8646.

3-BDR. HOME, 1-3/4 baths, 2-story, 1,750 sq. ft., large den, city views, Menaul/Chelwood area, \$119,900. Long, 296-4974.

3-BDR. MOBILE HOME, '91 Oakcreek, 16 x 80, 2 baths, w/deck and patio, in family park, near base, excellent condition, \$28,000. Burkinshaw, 293-7563.

LARGE RESIDENTIAL LOT, 100-foot frontage, facing south, overlooks Four Hills, all utilities, 12524 Piru SE, \$56,000 OBO. Abbin, 296-7678.

3-BDR HOME, 2 baths, Jamestown model, sprinklers, 2-car garage, Rio Rancho, Vista Hills, lease up April 1, \$77,500. Sparks, 884-5644 or 880-0324.

3.2 ACRES, 17 minutes east of Albuquerque, all utilities, completely fenced, excellent access, Moriarty schools, \$33,000. Whitlow, 281-4739.

WANTED

PIANO, console or studio, in good condition. Kent, 275-9880.

SHOP MANUAL, for '76 Ford F-100 pickup. Coleman, 884-5009.

SPANISH LANGUAGE TAPES, beginning or intermediate level, to buy or borrow. Faucett, 296-0896.

UMBRELLA STROLLER, clean and in good condition. Brigham, 293-6914.

CAKE DECORATING TOOLS. Monnet, 865-7941.

DISNEY VIDEOS, "Lady and the Tramp," and "Jungle Book." Parker, 884-7219.

RIDING HABIT, small size, full costume needed badly; records, good, usable 45s. Graham, 836-2752.

HOUSEMATE, nonsmoking, to share 4BR NE house, all appliances, garage, large yard, puppy, \$250/mo plus one-third utilities, \$133DD. Eldred, 237-2223.

CARPENTER, w/skills and tools to build bookshelves. Geitgey, 856-0829.

MULCHING LAWNMOWER, Troybuilt or Toro, self-propelled, 21"-22" cut. Kercheval, 1-864-6549.

SLIDE TRAYS, for Kodak Carousel projector, model 550. Carrick, 266-0191.

CHILD BIKE TRAILER, Burley or Cannondale; marimba or other similar mallet instrument. Hietala, 867-9577.

ALLOY WHEELS, 15", for Dodge/Chrysler. Lachenmeyer, 268-7818.

TOW BAR, for Honda Accord, 115V; small portable air compressor; 1-or-2 burner camp stove. Stixrud, 298-0478.

Coronado Club Activities**It's Spring! Celebrate with Buffet, Dancing**

SPRING IS upon us and what better way to celebrate than with a hearty Sunday Brunch buffet, 10 a.m.-2 p.m., March 20, followed by dancing to the music of Bob Weiler & Los Gatos, at the Tea Dance, 1-4 p.m. For brunch reservations call 265-6791.

AFTER a one-week hiatus because of St. Patrick's Day, Bingo Night continues Thursdays, March 24 and March 31. Card sales and the buffet open at 5:30 p.m., and early bird bingo starts at 6:45 p.m.

SAVE SOME ENERGY for Friday night's (March 25) dinner/dance to the stompin' C&W sounds of the Isleta Poorboys, 7-11 p.m. Start off with dinner (6-9 p.m.) with your choice of T-bone steak for \$11.95, fried shrimp for \$11.95, or the

all-you-can-eat buffet for \$6.95.

SKIERS ARE in for one last grand excursion when the Coronado Ski Club takes its long-awaited trip to Jackson Hole, Wyo., March 26-April 2.

IT'S NOT TOO EARLY to get the kids thinking about the Kids' Easter Party & Egg Hunt on Saturday, April 2. More on that next time.

THEN BEGIN anticipating summer weather because it'll be no time at all before the Coronado Pool opens. Swim and tennis lessons go on sale April 1, and discount pool passes can be purchased for up to one-third off if you buy before May 1. Call 844-8486 for pool pass applications or to have lesson information mailed to you.

Fun & Games

Bowling — SANDOE Bowling Association congratulates January Bowlers-of-the-Month: Scratch — Tomas Archuleta (2481), 665; and Micki Archuleta, 611; Handicap — Dick Radtke, 581 and 656; and Cathie Estill (7613), 538 and 634.

Winners of the Best Ball Tournament held at Fiesta Lanes Feb. 12-13 were Don (7613) and Estelle MacKenzie with a 786 combined handicap series. Second place went to Tomas and Micki Archuleta with a 769 handicap series. The next tournament, a Four-Game Mixer, will be held March 19-20 at Holiday Bowl.

Golf — Sandia Women's Golf Association (SWGGA) will hold a "Golf Fiesta" on Tuesday, March 22, 4:45 p.m., at the Coronado Club, main ballroom. This is the annual membership meeting, and includes a style show, golf video, door prizes, and refreshments. Information will be available about golf lessons (beginning mid-April), league play, tournaments, play days, handicaps, golf rules and etiquette, etc. SWGA members include golfers of every skill level, and membership is open to all Sandia and DOE employees, retirees, and spouses, and contractors. SWGA organizes leagues and tournaments for Par-3, 9-hole, and 18-hole groups. The Fiesta is an opportunity to network with Sandia golfers at your level, improve your game by signing up for group lessons, join a group for regular play, receive stroke-cutting tips and equipment reviews, establish a handicap, see the latest fashions, and receive support from other players. Sandians are encouraged to pick up information packets for their golfing spouses. For more information, call Tana Calvin (4514) on 299-5525 or Shirley Lopez (2274) on 821-2246.

Tennis — The Memorial Day Tennis Tournament scheduled for May 28-30 will be held at the Coronado Club tennis courts. Events include men's and women's singles and doubles and mixed doubles. Gift certificates will be presented to winners and runners-up. Drinks will be provided to all participants. SERP and Coronado Club members and military personnel are invited to participate. Participants' guests may play doubles. Entry deadline is May 23. For more information and entry forms, contact the SERP office on 844-8486.

Sandia in the News

This is a periodic column listing a selection of print and broadcast news reports about Sandia. It is provided by Media Relations Dept. 12630 to give Sandians a sense of what is being said about Labs work in national and international media.

CNN, on its "Future Watch" program and regular news spots, reported on a Sandia microsensor that "may save the aviation industry and the military millions of dollars in maintenance costs and tell the rest of us when to change the oil in the family car."

CNN also ran several versions of a story about Sandia's nonlethal weapons research being done for the National Institute of Justice. It included video of an in-action sticky foam dispenser. The foam may be suitable for subduing violent persons.

An Oprah Winfrey show dedicated to discussions about "life in the year 2000" included a look at this sticky foam. Tonight Show fans heard Jay Leno mention the foam earlier this month.

Newsweek and *Business Week* also wrote about sticky foam as a possible nonlethal weapon, and both ran color photos.

KGO-TV, San Francisco, covered the Tri-Valley Science Bowl in Livermore, Calif.

Some Sandia/Idaho National Engineering Lab teaming to develop computer programs to help the textile industry got a mention in the *Idaho Falls Post Register*.

New Technology Week reported that "expertise on energy-efficient and environmentally sound manufacturing will be provided to 25 Mexico-based units of US corporations through a consortium formed with Sandia."

Sun Power for the Farm

Farm Journal quotes Mark Reineke (7913) in its piece about the feasibility of using the sun to power devices to pump water for cattle. It also points out Sandia's work with the Electric Power Research Institute and the Western Area Power Authority to help Western and Midwestern utilities and electric co-ops set up such facilities.

The *San Francisco Business Times* calls Sandia/California's new Silicon Valley office in San Jose a "first of its kind" and describes it as a place that will be "staffed with technology experts attempting to match industry needs with Sandia's skills."

Chemical Engineering Progress reports on Elmer Klavetter's (6212) work with a Texas A&M professor on a new group of materials — silico-titanates — to remove cesium from radioactive waste solutions.

A long *IEEE Spectrum* feature about advances in automated personal identifiers has a sidebar that discusses Sandia-based tests on devices that recognize the uniqueness of a hand.

A variety of publications, including the color magazine *Outside* and the *New York Daily News*, have reported on Harmony, which is being billed as the world's first luxury resort (in the Virgin Islands) operated exclusively on sun and wind power. They also mentioned Sandia's technical advice to the developers.

A story in the *National Examiner* (yes, the grocery story tabloid) about movie star Halle Berry's battle with diabetes mentioned things under development that could improve diabetics' quality of life, including a Sandia device designed to check "blood sugar without penetrat-

ing the skin."

Compressed Air magazine reported on Sandia R&D designed to improve the way amputees are fitted with artificial limbs through the use of ultrasound scanning.

The *Arizona Republic* (Phoenix) reported that as a result of a recent economic development "trade mission" to New Mexico, an Arizona company is working with the Labs on a fluxless soldering technique.

The already widely touted Sandia micro steam engine got another boost from *Popular Science*, which ran a piece about the device.

Measuring Far-Out Dirt

Collaborative work between Sandia and the Jet Propulsion Lab to develop a microchemical lab to measure Martian soil chemistry from Russia's Mars lander was featured in *Aviation Week and Space Technology*.

A long feature in the *Dallas Morning News* about the power and advantages of parallel computers includes comments of praise by Carl Melius (8117).

England's *Electronics Weekly* reported on why Sandians are saying that silicon wafers deliberately created with voids during processing — like a Swiss cheese — may hold the key to better semiconductors, particularly as features become smaller. •



IT'S VIRTUALLY REAL — Members of the Secretarial Quality Process Council got a tour of the Virtual Reality Lab recently as part of a program to acquaint Sandians with what goes on at the Labs. Rosemary Springer (11300, left) gets a firsthand view of the lab's "magic" — pushing buttons and moving her head side-to-side and up and down to drift through gallery walls on a virtual tour of a modern art gallery — as four other members of the group await turns. They are (foreground, from left) Patty Valles (5914, hand on pedestal), Ruth Reeder (12363, arms crossed), Ann Weaver (11300, dark glasses), and Denise Blaisdell (2171, holding brochure). Nineteen secretaries signed up for this tour, which was the second one of the Virtual Reality Lab for group members.