

First Firing of Gamma-Ray Simulator: A Successful 'Big Bang'

Some called it a "pop." Others called it a "big bang."

Whatever they called it, there was general agreement that the first firing — several weeks ago — of Hermes III, a gamma-ray simulator that's part of the Simulation Technology Laboratory (STL) complex at the east edge of Area IV, was successful.

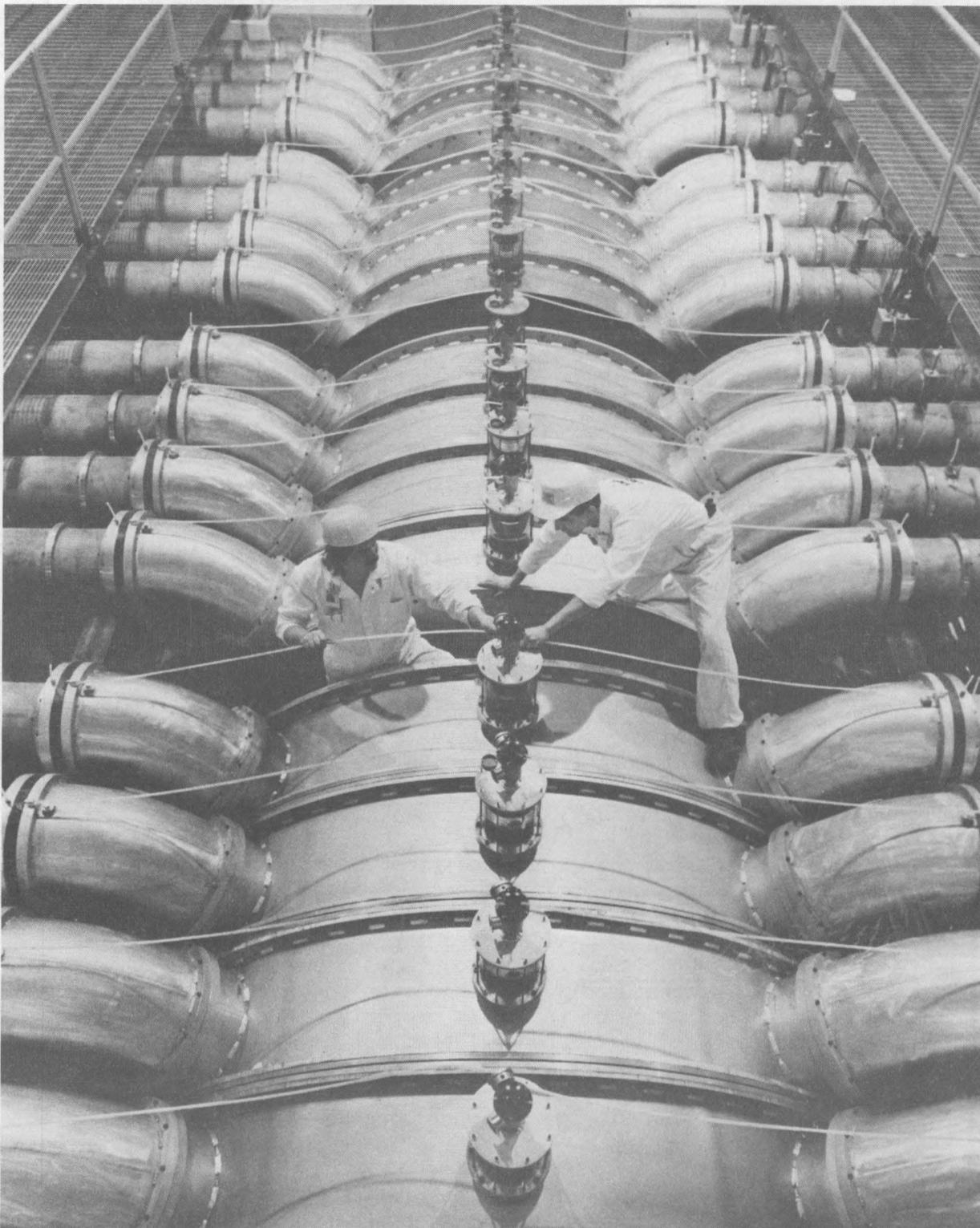
"After we obtained an acceptable vacuum in the diode, the pre-shot control sequence went exactly as predicted," says Juan Ramirez, supervisor of Pulsed Power Development Division 1245. "There weren't any glitches along the way to delay the test." Juan was project leader for the Hermes III R&D base for three years, and also oversaw construction activities for the pulse-forming section of the machine.

Hostile Environments

So what's the significance of this house-sized (70 feet wide, 50 feet long, 16-1/2 feet high) machine whose purpose is to generate a lightning-like bolt of electrons that produces a flood of radiation when it strikes a heavy metal plate?

"Current weapon systems — especially their electronics — must be tested for radiation vulnerability," says Jim Powell (1230), manager of Sandia's simulation program (see "Simulation Program"). "We need to ensure that system components can survive the hostile environments that might occur from nuclear countermeasures.

"We believe that Hermes III will simulate exposure to a gamma-ray environment that a weapon might see more accurately than has ever before been possible in above-ground testing in the laboratory," Jim continues. "It should be a key tool for helping weapon designers to better understand gamma-ray effects on systems and components."



STEVE NEELY (left) and Jim Flores (both Ktech) inspect one of the expansion reservoirs atop the Hermes III magnetically insulated transmission line (MITL). The reservoirs are used to adjust the level of transformer oil — a high-voltage insulation medium — inside the accelerator's 20 induction cavities.



EMOTIONAL ROLLER COASTER (top to bottom): apprehension, a bit of concern, "thumbs-up." Juan Ramirez (1245) had his ups and downs the day that Hermes III was first fired. As the bottom photo demonstrates, Juan considered the "big bang" a success.



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The burst of gamma rays must be short — 20 billionths of a second, or about the time it takes light to travel 20 feet — and intense. Hermes III produces rads at a rate of 5000 billion per second — 10 times as much as its predecessor, Hermes II. (A rad is a measure of absorbed radiation energy.) An entirely new technology has been required to make this advance.

Gamma rays are a very short wavelength, high-frequency (and therefore highly energetic) form of electromagnetic radiation. Produced abundantly in nuclear weapons, they can pose a radiation hazard to weapon systems and components; that is, electronics either may not function or may work erratically after they're zapped.

"Dose rate has a lot to do with failure rate of the devices tested," says project scientist Ken Prestwich (1240). "The higher the dose rate — and the

more photons deposited on a test object — the greater the chance of component failure. Using Hermes III to zap subsystems and components should give us a much better understanding of how much radiation they can take."

Like Saturn, an X-ray simulator in the STL, Hermes III will be a useful complement to underground weapon effects tests at Nevada Test Site. According to Jim, the accelerator will make it possible to test large components and subsystems at higher dose rates than previously could be achieved outside an NTS tunnel.

"But," notes Jim, "machines such as Hermes III or Saturn — useful tools that they are — don't obviate the need for underground testing. Machines never completely duplicate all of the individual radiation effects of an underground test."

(Continued on Page Six)

Antojitos

Hard Hats in Ivory Towers -- That clash of symbols is prompted by our lead story on Hermes III, Sandia's newest and largest producer of gamma rays for nuclear effects simulation testing. It shows not only that Sandians have penetrated further the mysteries of pulsed-power physics but also that they can transmute ivory-tower theories into full-scale, working machines that have never before been built.

. . . never before been built. That's why the Hermes III operating crew is currently running the machine manually. Each member must learn each sound the machine typically makes as it's being readied for a shot. That way, once the sequence is automated, they'll be better able to detect any anomaly. There's an art to this science.

* * *

No, "Sandia's" Not a Household Word in Sandusky -- Yet But Directorate 1400's parallel processing breakthrough (remember last issue?), announced through a press release and interviews handled by Div. 3161, resulted in phone calls from USIA Washington, Voice Of America (for a radio spot for worldwide distribution), Milwaukee Journal, Business Week, MIS [Management Information Systems] Week, a computer news syndicate, New Technology Weekly, Bay City News Service, Inside Energy, TIME, Computer Design, Newsweek, AT&T, US News & World Report, Science, and Supercomputing Review. KOAT-TV and KKOB radio attended a press conference with the parallel processing principals.

Not every one of those phone calls will result in an article or mention, of course. But both the Associated Press and the Washington Post News Service sent the story to their subscribers. We've already seen stories in New York Times, Washington Post, an AT&T newsletter, Los Angeles Times, Newsweek, Business Week, and, of course Sandia's "local" papers -- Albuquerque Journal, Albuquerque Tribune, San Francisco Chronicle, San Jose Mercury News, (Oakland) Tribune, Tri-Valley Herald, and Valley Times.

Parallel processing is one of several such biggies in recent years. In 1983 it was the strained-layer superlattice (SLS), in late 85 the first firing of PBFA II, in late 86 RAPRENOx. In other words, superlattice, superbeam, super-reducer, and (now) supercomputer. Ready, superconductivity folk?

* * *

Memorable Media Moment -- For the first time, two Sandia programs -- parallel processing and verification technologies -- made the same issue of a national newsmagazine, the March 28 Newsweek.

* * *

Get to Know Your Nightworkers No, those cars you see each morning in the lot north of the Sandia cafeteria aren't doubleparked. Their owners have learned which of the lot's properly parked cars have owners who work the graveyard shift and will head for home just before 8 a.m. The dayworkers are waiting to pounce on each empty (momentarily) slot.

Remember, ladies and gentlemen of the night, you get a shift allowance -- no fair auctioning off your soon-to-be-vacant parking slot to the highest bidder. ●BH

* * *

"Some good may yet come of the Crash of '87, [Nobel-Prize-winning economist Robert Solow] says, if it lessens the flow of bright graduate students to investment banks. 'It may make engineers out of some puppies,' he smiles. 'Sweet are the uses of adversity.' " --TIME



MAUREEN BACA (3510)

Supervisory Appointment

MAUREEN BACA to manager of Equal Employment Opportunity and Affirmative Action Department 3510, effective March 1.

Maureen joined Sandia in July 1979 as a member of an Education and Training division. In December 1981, she transferred to the Equal Opportunity and Affirmative Action Division, and in February 1984, became supervisor of that division. In September 1984, she transferred to Education and Training Div. I. Maureen was supervisor of Management and Staff Development Div. 3523 from July 1986 until her promotion.

Before coming to the Labs, she was a personnel officer and management analyst at DOE/AL. She has also held posts as comprehensive plan administrator for the City of Albuquerque and economist for the State of New Mexico.

She has a BA in political science and an MA in public administration, both from UNM. Maureen was a NASA fellow in graduate school. She is a member of the National Society for Performance and Instruction.

Maureen enjoys skiing, backpacking, and raising dogs and horses. She and her husband Stephen (2854) live in the Sandia foothills.

Congratulations

To Cindy Schinkel and Steve Ring (8532), married in Pleasanton, Feb. 6.

To LaVonne Pickens (8534) and William Hill, married in Carmel, Feb. 26.

To Bonnie Folks and Paul Dominguez (8531), married in Livermore, March 11.

Sympathy

To Anton West (8446) on the death of his mother in Pittsburgh, Pa., Feb. 26.

To Howard Johnsen (8313) on the death of his father in Livermore, March 1.

To LaVonne Pickens Hill (8534) on the death of her mother in Modesto, March 5.

Fall '87 Volleyball League champions include: A League -- Team 3, captain Gerald Wellman (1521); B League -- Team 8, captain Michael Widmer (132); C League -- Team 8, captain Gary Harms (6421); and D League -- Team 3, captain Ben Garcia (6452).

* * *

Archery -- Correction to last issue's information about the Manzano Archery Club: You must be a member to use the club's range. For more information, contact Dewey Reed on 4-4558.

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Fun & Games

Bowling -- SANDOE Bowling Assn. February Bowlers-of-the-Month are: Scratch -- Ron Van-Theemsche (2854), 665; and Micki Archuleta, 604; Handicap -- Richard Kuehn (2113), 609 and 693; and Frances Baca, 563 and 695.

* * *

Golf -- Sandia Women's Golf Assn. (SWGGA) will hold a rules clinic April 19 at 4:45 p.m. at the Coronado Club, Eldorado room. Voting will be held on the revised by-laws and constitution mailed to members March 8. The new season brings an 18-hole tournament schedule (prepared by Debra Tricoglou, 7485) that includes play on courses at Pagosa Springs, Tanoan, Inn of the Mountain Gods, and others; preseason lessons; 9-hole tournaments; short-course leagues, and more. Call Marijo Hinrichs (3544) on 6-0464 for membership information.

* * *

Volleyball -- The spring volleyball season opens April 11 and runs through the middle of June. Sandians, spouses, dependents (18 yrs. and older, still living at home or attending school), and anyone with a SERP membership are eligible. If you have a team to sign up or are interested in joining one, contact Fred Gunckel (2543) on 6-7235.

Math/Science Conference Expands Girls' Career Horizons

For most teenagers, Saturday means sleeping late. But on March 5, 250 local sixth-through-twelfth-grade girls spent a Saturday getting challenged to keep their career options open — specifically, to take math and science classes throughout high school.

The challenge was issued by the mathematicians and scientists who staged the local Expanding Your Horizons (EYH) in Math and Science Conference at Chabot Valley Campus.

Although nine EYH conferences have been held at Chabot in as many years, the 1988 conference was the first one co-chaired by a Sandian, precision sheet-metal worker Judy Tejada (8284).

"This is my eighth conference," says Judy. "I've worked on several committees over the years and have chaired one committee, but I've never before held a position of such responsibility.

"More than 40 Sandia women participated this year," Judy continues. "That's an increase of 300 percent. I'm proud of that."

Sponsored in part by Sandia and Lawrence Livermore national labs through the Math/Science Network at Mills College, the Livermore Valley conference was one of 80 such career conferences held across the country during March.

The 12-through-18-year-old-girls, as well as some of their parents, had a full day of activities. The day began with keynote speeches by two women whose careers in science have taken them in different directions. Angelica Stacy, professor of chemistry at UC Berkeley, urged the girls to "aspire to greater things — don't think of chemistry and science as mysterious, but rather as something friendly and part of the world around you, like cooking."

Pick Your Battles Well

The other keynoter was Devra Davis, an environmental health scientist and director of the Board of Environmental Studies and Toxicology for the National Academy of Sciences and the National Research Council. She advised the participants to "pick your battles well. You can do anything you want, but the competition is out there. Bias against women is alive and well, so you must be better prepared than your competitors."

After the speeches, the young women attended hands-on workshops covering such subjects as computers, radiation, psychology, engineering, and technical photography. And, during the Career Fair portion of the conference, they talked with 37 representatives from colleges and universities, large and small companies, state and federal governmental agencies, professional societies, and the US military.

While their parents attended a special adult program on financial aid and career planning, the girls talked in small groups to women with diverse math- or science-related careers about the work they do and how they prepared for it.

"Sandia was represented in every area of the conference this year," adds Judy. "We had committee chairs, workshop teachers, mystery women [see



"MYSTERY WOMEN" Jane Ann Lamph (8442, seated at left) and Nina Bergan (8363, seated at right) answer questions from conference "detectives." Girls had "blind" lists of high school interests and current interests for each woman. They then asked questions to enable them to match each woman (two engineers, a nuclear chemist, a science journalist, and a biomedical scientist) with the proper occupation.



JUDY TEJADA (8284) co-chaired EYH conference with Rebecca Failor of LLNL.



SANDIA MECHANICAL ENGINEER Beth Fuchs (8243) pours liquid nitrogen into a heat-sensing camera to illustrate how heat rather than light is detected, and how computers can be used to predict heat patterns. (Conference photos by Jim Stoots—LLNL)

Lots of Sandians

In addition to those Sandians mentioned in the article and photo captions, these women worked on the EYH conference: Celeste Rohlfling (8341), Terry Porter (8235), Jeanne Yu (8245), Charlotte Acken (8144), Lupe Alameda (8161), Kathy Benna (8284), Diane Bestider (8283), Deana Butler (8514), Susan Crawford (8444), Cherie Cuthbertson (8444), Susan Gancas (8144), Marilyn Hawley (8478), Lee Ann Hubbs (8532), Sheryl Johnson (8161), Glenda Mohrman (8144), Glenda Muir (8144), Donna Opdahl (8284), Val Pestanas (8441), Debbie Post (8431), Kit Schmitz (8284), Karen Scott (8524), Holly Stryker (8161), Joanne Volponi (8353), Hazel Willyard (8535), June Winter (8142), Sally Antonchuk (8282), Carolyn Pura (8434), Ann Yoshimura (8478), and Gloria Christensen (8315).

photo], and, of course, a co-chair. Recruiting chair Lois Johnston (8444), facilities chair Alice Johnson-Duarte (8283), her assistant Mary Rivenbark (8534), and Sandra Lormand (8524), who organized the Career Fair, worked especially hard. They were new to the conference, as were most other Sandia women, but they exceeded the expectations we had for them."

In addition to the Sandians, Denise Vickers of Theoretical Div. 8341 and Tricia Henry of Education and Technical Library Div. 8524 (both are Livermore High School seniors and Work Experience students at Sandia) staffed the newly created Teen Liaison Committee. That committee helped the co-chairs decide what this year's conference should add or drop.

"The conference was truly a joint effort this

year," Judy says. "It included women from LLNL, Sandia, and private industry — and we all meshed like gears. Without that, very little could have been accomplished.

"Becky [Failor of LLNL, a chemist and Judy's co-chair] and I knew we'd staged a successful conference when, at the end of the day, we announced to the junior high girls that the conference was over — and they booted!"

(This article was written for the LAB NEWS by Cynthia Ivanetich, a KMI Energy Services employee assigned to Publications Div. 8535.)



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Mature Passenger Appreciates Ride in Mature Plane

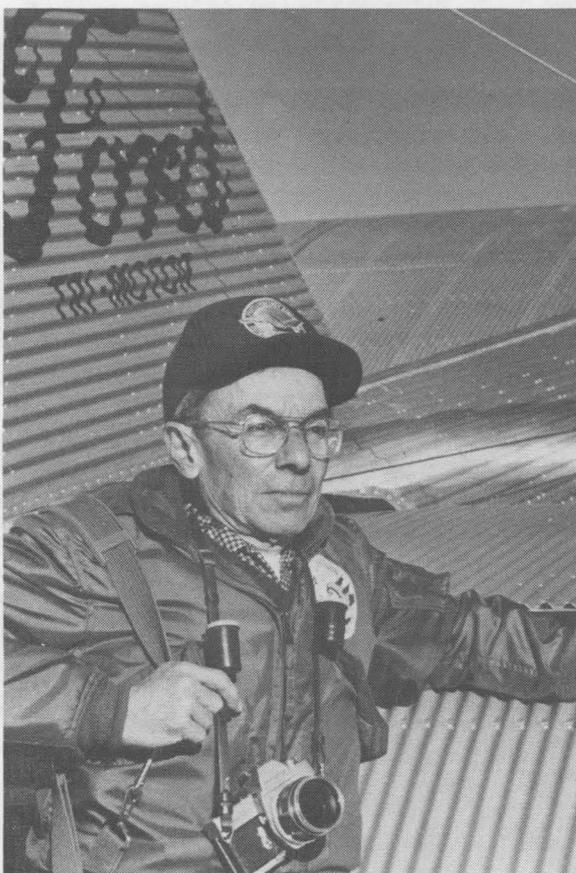
By Bill Laskar (Ret.)

I was sipping coffee and reading the morning paper when the phone rang. The voice was friendly and familiar, and after the usual exchange of greetings, I was asked a question that got my immediate attention.

The voice belonged to LAB NEWS Editor Bruce Hawkinson. His question: "Would you like to get a ride in a Ford Tri-Motor?"

"Wow, you bet!" I answered. "When do we leave?"

But there was a catch. I had to take photos of the plane and write a few words — this story — about the flight. No sweat. I love to photograph airplanes. Been doing it since I was 12 years old. And the few words? No problem. I've never been at a loss for words when it comes to old airplanes.



PHOTOGRAPHER, author, and aviation buff Bill Laskar (ret.) appreciates planes of his own vintage. Note the Tri-Motor's corrugated steel exterior and external control cables. (Photo by Anton Kozikowski, KGGM-TV)

I agreed to take on the assignment and wait for further instructions. Meanwhile, Bruce made arrangements with Bill Andrews, owner and manager of KGGM-TV, the station that arranged for the Ford Tri-Motor to visit Albuquerque; and Byron Johnson, Curator of History at the Museum of Albuquerque, who put together the recent *Balloons-to-Bombers* exhibit at the Museum. I was selected to go up with the media group. Fair enough.

\$50,000 Airplane — Back Then

Before I describe the flight, let me give you some background on the Tri-Motor.

Ford Motor Company built 198 Tri-Motors between 1927 and 1933. About 10 of them are still left. The "economy" model cost about 40,000 depression-era dollars. (Do-it-yourselfers could save a few bucks by ordering the kit version, which was shipped in crates; theoretically, it could be assembled after reading the instruction manual. Batteries not included.)

The larger, more powerful 5-AT-C model (the one I flew in) cost \$50,000 then; it's valued at \$1.5 million today. Special equipment — skis, pontoons, electric starters (handier than the hand-cranked "inertia" starters that were original equipment), and Thermos bottles with cup containers for the passengers, and so on — could be ordered at extra cost.

Powered by three 450-hp Pratt & Whitney en-



DOWNTOWN ALBUQUERQUE and the Rio Grande provide a panoramic view from a '29 Ford Tri-Motor, the same kind of plane used in the first coast-to-coast rail-and-plane passenger service. Retired LAB NEWS photographer Bill Laskar was the paper's intrepid correspondent on the media flight.

gines, the plane weighed a little more than 4.5 tons empty, slightly more than 6.5 tons fully loaded. It could cruise 300 miles at about 105 mph (no headwind). Maximum ceiling was 17,000 feet (we flew over town at about 1500 feet). Rate-of-climb was 950 feet per minute at sea level, and it could get airborne on two engines (though the rate-of-climb would be reduced dramatically).

The panel held thirteen instruments (compare that with today's airliners). In addition, each of the two outboard (wing) engines, hung about six feet from the cockpit, had separate engine instruments (oil pressure, temperature, and tachometer) mounted right on the engine nacelle. All the control cables were strung outside the fuselage and were activated by a wooden steering wheel (the same as that used on the deluxe Model-T Ford).

The brakes were applied by pulling a large brake lever located between the pilots. The full-back position locked both wheels; left or right lever movement braked individual wheels. The brakes and rudder were the only way to steer the plane down the runway — the tail wheel wasn't steerable and couldn't be locked in forward position. (Our plane had been upgraded with rudder-pedal-activated brakes, same as on modern planes.)

The cabin was 4.5 feet wide, 6 feet high, and about 16 feet long. The original seats were wicker — light but flimsy. (Later models used padded, leather-covered aluminum seats.) Cabin interior trim

varied, but the plane we flew in was Henry Ford's personal plane, so it had been fancied up with special side lights, window shades, and deluxe leather seats.

A Ride in a Plane Almost as Old as I Am

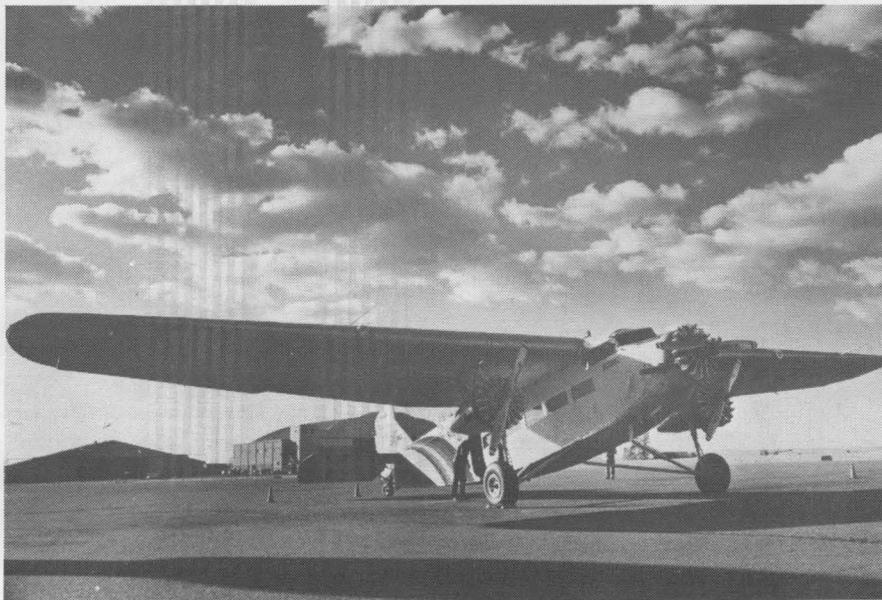
Now for the flight. As I drove to the Sunport (which is what we old-timers still call it), I was as excited as a 10-year-old boy going to his first circus. I rounded a hangar and there it was — the GREAT BIRD! Squat, powerful, ugly, majestic, solid as a rock and twice as heavy.

Loaded down with a video camera, batteries, 35mm camera, and film, I climbed through a small oval door into a cozy cabin with 14 seats and a very narrow aisle. I chose a rear seat (near the exit) so I could include the engine, landing gear, and part of the wing in my aerial shots.

The cabin was filled with media types — TV reporters and cameramen, press photographers, reporters, and writers. As I sat in my seat, I tried to imagine how it must have felt to passengers who were going for their first flight in a Tri-Motor 60 years ago. Then it occurred to me that I was probably the only one on board, pilot included, who could have actually flown in one that long ago. So much for nostalgia.

The buzz of conversation was interrupted by a whine, a few clanks, a cloud of gray smoke and a

(Continued on Next Page)



HENRY FORD'S '29 Ford Tri-Motor, now owned and operated by Scenic Airlines, spent a weekend in Albuquerque recently. Between flights for media folk, community leaders, and ordinary people (winners of a drawing), the plane was admired by several hundred visitors. KGGM-TV sponsored the event, timed to promote the Museum of Albuquerque's "Balloons-to-Bombers" exhibit.

(Continued from Preceding Page)

Tri-Motor

roar — the first engine was being fired up. The other two engines started, and we slowly waddled out on the taxi strip and into take-off position at the end of the runway. After the pilots ran each engine up to full throttle to check the mags (magnetos), we were ready to roll.

The pilot received take-off clearance and shoved a fistful of throttles to the firewall. We were rolling!

The engines' roar raised the sound level in the cabin several decibels — about the same as a six-piece rock band. We rocketed down the runway with the speed of a '31 Ford pickup, but I was surprised by the small amount of runway we used.

We were airborne at 80 mph and used up only about 1200 feet of runway in the process. Not bad for a fully loaded 59-year-old airplane — older than the pilot, United Airlines Capt. Bernie Godlove, who has more than 26,000 flying hours in his log book — more than 1200 of them in Tri-Motors.

Picture-Window Panoramic View

A gentle, climbing turn got us out of airport traffic, and as the Northeast Heights scrolled beneath the landing gear, I thought, "Boy, what a way to fly!" Even after we reached altitude, we could still see the moving traffic and recognize buildings and shopping malls — a panoramic view through the large picture windows. (Tri-Motors weren't pressurized so windows could be larger than in modern airliners.)

The big bird gracefully rode the slight turbulence without any of that scary flapping of wings that I always notice on the jet airliners.

This was fun, but I had work to do, so I began shooting pictures. I hoped they would convey some of the thrill I felt riding in a plane that was almost as old as I am.

I finished the shooting and settled back in the seat to relax and enjoy what was left of the flight when I felt a slight shudder run through the plane as the pilot came back on the power. Was it landing time already? It sure didn't seem as if we'd been up for 45 minutes, but that's the way time flies when, well, when you do.

I decided to grade the pilot on his landing — all pilots are judged by their landings and take great pride in a good one. Well, Bernie really greased this one in (made a super landing), and I awarded him a good ten.

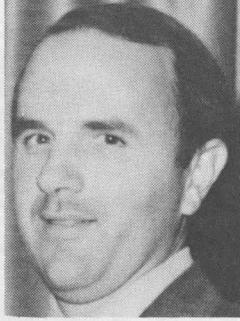
I stayed in my seat while the rest of the passengers made their way to the door. I wanted to savor all I could of making believe that we were back in the 30s and I was a little boy who dreamed that he got to fly in a Ford Tri-Motor.

Finally, my dream had come true. Now back to reality.

Ray Romatowski Retiring

Twining New DOE/AL Manager

Bruce Twining, currently Acting Deputy Assistant Secretary for Nuclear Materials, Defense Programs, has been named by DOE Secretary John Herrington to succeed Ray Romatowski, Manager, Albuquerque Operations Office (AL). Ray retires today.



Herrington also announced that James Culpepper, Deputy Assistant Secretary for Planning and Resource Management, Defense Programs, will become Deputy Manager, AL. He succeeds Ronald Cochran, who will rejoin DOE's headquarters staff.

Twining was Deputy Manager of the Savannah River Operations Office from 1984 until August 1987, when he was named to his current post in Defense Programs. Before his Savannah River assignment, he was Assistant Manager of Energy Research and Technology and Project Manager for the Mirror Fusion Test Facility Project at the San Francisco Operations Office.

He has a BS in engineering from California Polytechnic State University (San Luis Obispo), an MS in nuclear engineering from the University of Wash-

ington, and an MBA from St. Mary's College (Moraga, Calif.).

Before being named to his current position, Culpepper held a variety of posts with DOE or its predecessors, dating back to 1963. He has a BS and an MS in public administration from the University of Missouri.

NASA to ERDA to DOE

Ray Romatowski has been the AL manager since August 1981. Established in 1946, AL is responsible for field coordination and direction of all US nuclear weapon production activities, which stretch from California and Washington to Tennessee and Florida; for coordinating the nation's nuclear weapons and materials transportation systems; and for overseeing weapon development and energy R&D at both Sandia and Los Alamos national laboratories.

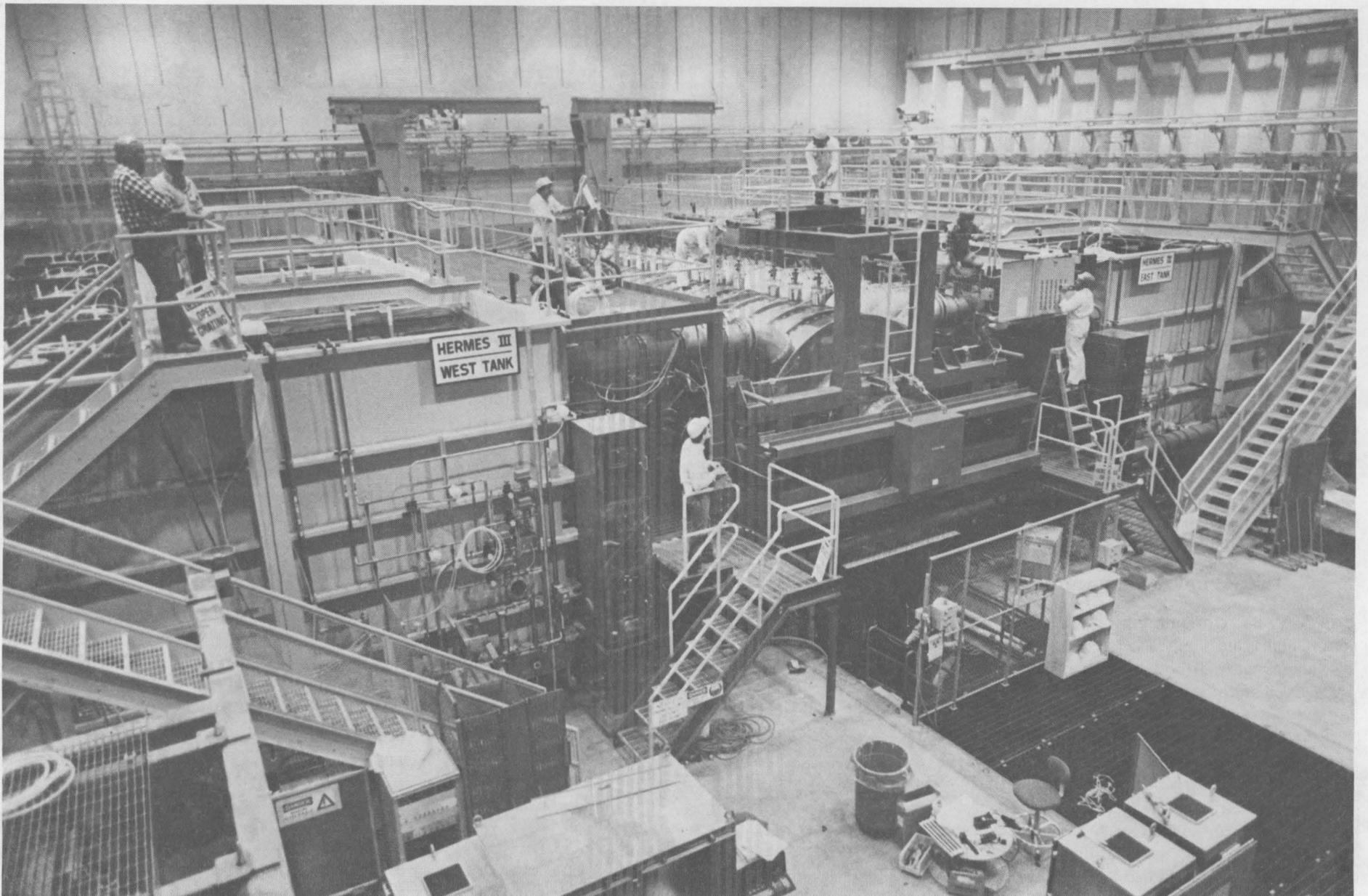
Before he came to Albuquerque, Ray served as DOE's Acting Undersecretary during the first six months of the Reagan administration. He has been with DOE or with its predecessor, the Energy Research and Development Administration (ERDA), since the latter's inception in January 1975. His government career began in 1958 with a series of positions in NASA.



STEPPING DOWN — the one on the right, that is. Ray Romatowski, Manager of AL, retires today from the post he's held since August 1981. Here, during Sandia's "farewell, Ray" get-together, he and President Welber recall some of the good times they've shared. "I was extremely fortunate in being able to work with someone like Ray during the time I had to learn about working in this new — for me — field," says Irwin. Speaking now for Sandia, he adds, "We have a unique relationship with the Albuquerque Operations Office, and Ray has set the example that makes that relationship work so well with all the folks at AL."



SEVEN NEW MEMBERS were recently appointed by their vice-presidents to serve a two-year term on the Women's Program Committee. They are (from left) Kathy Branagan (2544), Merri Lewis (1131), Donna Eaton (2614), Ree Gerchow (122), and (not shown) Gina Bailey (3142), Ann Chipman (5256), and Marie Grady (7233). The Committee, established in 1982, serves as a resource to management by participating in outreach activities (such as job fairs and career days), identifying issues of concern and proposing possible remedies, and assisting in the identification of qualified women for Sandia employment. The new members join Arian Pregoner (1231), Marcella Madsen (6323), Lydia Boye (9114), and Margaret Harvey (3510) on the Committee. Women with job- or career-related concerns can contact any of the members.



HOUSE-SIZED HERMES III gets some maintenance attention between test shots from members of STL Operations Div. 1236, Pulsed Power Development Div. 1245, and employees of Ktech.

(Continued from Page One)

Hermes III: What Sets It Apart

One of a kind. That's the way Juan Ramirez (1245) describes Hermes III. What sets the giant gamma-ray accelerator apart from other machines?

According to Juan, several features of Hermes III are based on new developments or concepts established only during the past few years. "For instance," he says, "the combination of induction cavities and a magnetically insulated transmission line [MITL] voltage adder was a new idea — originated at Pulse Sciences-Titan — whose effectiveness was confirmed in previous HELIA [high-energy linear induction accelerator] experiments."

Hermes III's induction cavities — usually found in linear accelerators — use a magnetic material (called Metglas) to isolate the high-voltage terminal, allowing many cavities to be stacked side by side and preventing the proliferation of high voltage outside the cavities.

(Metglas, a metallic glass developed by Allied Chemical Corporation, has high permeability and a large-saturation magnetic field level under short-pulse conditions, which make it an ideal material for providing magnetic isolation. HELIA and Hermes III are the first accelerators to use the material for this application.)

Engineering Challenge

A MITL, consisting of an outer and inner cylinder, uses the large magnetic field from high currents it transmits to prevent loss of large amounts of energy along its length. In Hermes III, MITL impedance is controlled by decreasing the inner cylinder diameter each time output from another of the 20 induction cavities is added.

The inner cylinder of the Hermes-III MITL, more than 50 feet long, is cantilevered from one end. (If the inner cylinder were mechanically sup-

ported by insulators, high voltage between the two cylinders would "short" the insulators, causing electrical breakdown.) "Construction of the cylinder so as to maintain the required alignment was a real mechanical-engineering challenge," says project scientist Ken Prestwich (1240). "The Pulsed Power Engineering Division [1251], headed by Ed Burgess, did an outstanding job on that and other difficult engineering problems associated with the program.

"Ed's group was supported throughout the program by the Project Design Definition Division V [2853]," Ken continues. "Jack Smith of that organization was the functional representative for drafting."

Another unique feature of the accelerator is its indented-anode diode, a new diode geometry that prevents a high-current electron beam from "pinching" (collapsing) to a point on the diode's axis because of the beam's self-magnetic field. (A pinched beam cannot provide a uniform radiation dose over a substantial volume.) The indented anode, invented at Sandia expressly for Hermes III, passively prevents beam pinch and thereby should produce a uniform radiation pattern. Tom Sanford, John Halbleib (DMTS), and Jim Poukey (DMTS) — all of Div. 1231 — developed the indented-anode diode.

To achieve another Hermes III design goal — a 20-nanosecond (20 billionths of a second) radiation pulse — water-dielectric peaking and crowbar switches are used to clip off the front and back of the pulses fed to the induction cavities. Laser-triggered spark gap switches provide precise control of pulse-generation timing from Hermes III's 80 pulse-forming transmission lines to produce the 20-ns pulse. Operators using easy-to-reach optics vary arrival time of laser light at the switches, thus "tuning" them to optimum operating condition.

Hermes III

"Hermes III is a one-of-a-kind machine," says Juan. "At peak capacity, it's designed to produce 22 million volts and a 730-kiloamp electromagnetic pulse — a very high current for that voltage. It's a very exciting machine from a pulsed-power point of view."

The excitement was evident on March 2, less than a week after the first firing, as a LAB NEWS representative observed the fourth of five shots that day. In Juan's words: "This is more than we'd hoped for. It's really amazing that this machine, which just came on line, is performing at the shot-rate goal we'd set for October 1989 [three to five shots per day]."

Preliminary data from the first test indicate that Hermes III operated at about 90 percent of capacity; electrical current output was consistent with the production of 20 million volts, a record for pulsed-power accelerators.

During HELIA (see "Simulation Program") experiments at Sandia, 1-million-volt, 250-kiloamp pulses from four induction cavities — special high-voltage isolation transformers — were combined with a magnetically insulated transmission line (MITL) to form a 4-million-volt, 250-kiloamp pulse used to generate an electron beam. "Those experiments — the first to combine induction cavities and MITLs to produce high-current, high-voltage pulses — helped confirm some of the basic physics theory related to Hermes III," says Ken.

Outputs of Hermes III's 20 induction cavities are fed into a MITL, and an electromagnetic wave is repeatedly voltage-amplified in 20 stages along the MITL's length. At the end of this line, an electron beam is generated in an indented-anode diode (see "What Sets It Apart"). High-energy electrons striking the anode generate the gamma-rays that impinge on test items.

Each time an electron strikes the gamma-ray converter (made of tantalum, a heavy element) and loses energy and/or changes direction, it releases a photon of bremsstrahlung (German for "braking") radiation. High-energy bremsstrahlung photons sim-



THE COUNTDOWN — and Hermes III project team members, in varying degrees of readiness, wait for the "big bang": (from left) Len Torrison (1236), Juan Ramirez (1245), Larry Seamons (7866), Jim Flores (Ktech), Dave Johnson, and Jerry Weber (both 1245).

ulate gamma rays released in a nuclear explosion. (In comparison, low-energy bremsstrahlung photons simulate X-rays.)

The Hermes III energy storage section consists of 10 2.4-megavolt, 156-kilojoule Marx generators. Each of the Marx generators charges two water dielectric intermediate storage capacitors. Laser-triggered gas switches release energy from the 20 intermediate storage capacitors to charge 80 water dielectric pulse-forming lines. The pulse-forming lines produce

Simulation Program

Sandia's simulation program, managed by Jim Powell (1230), has responsibility for providing radiation sources such as Hermes III and Saturn (an X-ray simulator that's also part of STL; see LAB NEWS, Oct. 9, 1987) for DOE radiation effects testing.

Hermes III is based on entirely new accelerator technology developed by Sandia and Pulse Sciences-Titan (San Leandro, Calif.) in a program supported by the Defense Nuclear Agency and Sandia. The program, called HELIA (high-energy linear induction accelerator), uses modular pulsed-power components to drive induction cavities.

DNA and Sandia have a coordinating committee — the Joint Simulation Working Group — that jointly funds such technology programs.

high-power (1.0 megavolt, 200-kiloamp) pulses, four of which are combined in each induction cavity to produce a 1.1-megavolt, 730-kiloamp pulse that feeds the MITL.

Ahead of Schedule

"Hermes III's first shot occurred more than a month ahead of the target date [April 1] set by the project team back in July 1985," says Ken. "That achievement was a direct result of outstanding cooperation from many Sandia organizations."

"You might say that construction was really on the 'fast track,'" adds Juan. "Just a little more than a year ago — in January 1987 — there were just a couple of pieces of sheet metal where Hermes III now stands. A lot of dedicated people worked many long hours to build what we regard as a state-of-the-art facility for simulating gamma-ray effects."

Jim Powell, Wendland Beezhold (1232), and

Larry Posey (DMTS, 2321) had responsibility for defining simulator requirements for Hermes III, and for conducting "simulation fidelity" research to show that the accelerator would meet DOE requirements for weapon effects testing above ground.

Besides Juan and Ken, other Sandians responsible for the research and physics that provided the technical base on Hermes III were Dave Hasti (1242), Ron Pate (1245), and Tom Sanford (1231). Juan, Ken, Ron, and Dave were responsible for the accelerator research, Tom for the electron beam diode research.

Ken Mikkelson, Pete Micono, and Mike Eaton (all 1236) developed a large data acquisition system to serve Hermes III. The accelerator's control and monitor systems were designed and implemented under the direction of Dave Davis (7521). David Johnson and John Corley (both 1245) led the assembly and test team.

Project Management Division 7866, with Larry Seamons as project manager, managed the Hermes III construction portion of the \$40-million STL (see "Project Management Methodology").

The project team included dozens of people from Departments 1230, 1240, 1250, 1270, 2850, 3310, 3720, 7520, and 7860. Contractors from Pulse Sciences-Titan, EG&G, Kirk-Mayer, Ktech, and C&D also contributed throughout the construction phase.

Phase II Will Confirm Physics

During Phase II of the project — the next 18 months — researchers will focus on confirming theoretical physics assumptions made about operation of the accelerator and diode, and on establishing radiation specifications. Some testing of weapon subsystems will also occur during Phase II.

"We'll be monitoring the operation of the accelerator to ensure that it meets design criteria," says Juan. "And we'll continue research on the diode to make certain we can achieve uniform dose rates over volumes that are adequate for good exposure experiments."

Operation of Hermes III — during Phase II and after the machine reaches "cost-center operation" status (about October 1989) — will be the responsibility of STL Operations Division 1236, headed by Jerry Zawadzka. Once full testing status is achieved, about 600 shots a year are expected. ●PW

Project Management Methodology

Hermes III is another in a list of large pulse-power projects successfully completed by using a project management methodology tailored to the unique requirements of Sandia's R&D environment. "Project management methods tend to improve with each program," observes Ken Prestwich (1240), "because we learn valuable lessons each time and apply that understanding to the next project."

"A single scientific or engineering organization can't design and construct machines as large and complex as those in the STL," Ken

continues. "Therefore, we establish matrix organizations — project teams. For instance, pulse-power sciences divisions supply research and engineering expertise, and other Sandia organizations supply specialized support."

Project teams report to a project office (headed by a manager), which evaluates and reports project progress, at the same time controlling costs and schedule. That way of doing things, according to Ken, is the reason that Hermes III's first firing was ahead of schedule, and that performance objectives were achieved.

Events Calendar

March 25-April 3 — "The Road to Mecca," by Athol Fugard, drama about an aging South African woman who finds herself in conflict with her friends and community, presented by New Mexico Repertory Theatre; 8 p.m. Mon.-Sat., 2 p.m. matinees Sat. & Sun.; KiMo Theatre, 243-4500.

March 25-April 3 — "My Fair Lady," Albuquerque Civic Light Opera Assn.; 8:15 p.m. Thurs.-Sat., 2:15 p.m. Sun.; Popejoy Hall, 345-6577.

March 25-April 10 — "Betrayal," Harold Pinter play about love and deception among three friends; 8 p.m. Fri.-Sat., 6 p.m. Sun.; Vortex Theatre (2004-1/2 Central), 247-8600.

March 25-April 10 — "Educating Rita," alcoholic English literature tutor meets hairdresser hungry for education; 8 p.m. Wed.-Fri., 6 & 9 p.m. Sat., 2 p.m. Sun.; Albuquerque Little Theatre, 242-4750.

March 27 — "Bringing Them Back Alive," lecture by artist John Gurche, who illustrates the step-by-step procedure used to achieve photo-like paintings of dinosaurs; 2 p.m., New Mexico Museum of Natural History Theatre, 841-8837.

March 28-April 1 — Godzilla Movie Festival, 1 & 3 p.m., New Mexico Museum of Natural History Theatre, 841-8837.

March 29 — Pops Concert III: Big-Band Galaxy of Stars, featuring the Kay Kyser Orchestra, Jimmie Rodgers, Maxene Andrews, Harry Babbitt, and the New Ink Spots; 8:15 p.m., Kiva Auditorium, 842-8565.

April 1 — Concert, Friends of Music benefit for young musicians, featuring the Duke City Chamber Orchestra conducted by William Houston III; 8:15 p.m., Keller Hall, 277-4402.

April 2 — Easter Parade, through Old Town; 10:30 a.m. at Rio Grande Blvd. & Mountain Rd., sponsored by Old Town Merchants Assn., 242-6656.

April 2 — "We're Neighbors/Somos Vecinos" Day: musical entertainment, Summer Science Camp scholarship awards, and "Reptilicus" movie in the theatre (11 a.m., 1 & 3 p.m.); 12-6 p.m., New Mexico Museum of Natural History, 841-8837.

April 2-3 — Easter-weekend celebration, Basket and Corn dances at most Indian Pueblos, free, 843-7270.

April 3-29 — "Visions of Excellence," Albuquerque United Artists annual juried show, contemporary art in all media; 12-6 p.m. Wed.-Fri., 1-5 p.m. Sat.-Sun.; Fine Arts Gallery, NM State Fairgrounds, free, 265-1791.

April 5 — Concert, UNM Student Woodwind Quintet, featuring works by Hindemith, Nielsen, and Ligeti; 8:15 p.m., Keller Hall, free, 277-4402.

April 5 — Chamber Music Series Concert Four: New Mexico Symphony Orchestra, featuring music by Schubert, Feldman, Britten, and Mendelssohn; 8:15 p.m., Simms Auditorium (Albuquerque Academy), 842-8565.

April 6 — "A New World of Dinosaur Tracks," lecture by Museum of Western Colorado research associate Martin Lockley; 7 p.m., New Mexico Museum of Natural History Theatre, 841-8837.

April 7 — Keller Hall Series: "Voice of the Whales" by George Crumb, and Beethoven's "Sonata, Op. 102, No. 2"; 8:15 p.m., Keller Hall, 277-4402.

April 7-9 — Margaret Jenkins Dance Company, world premiere of work commissioned by the Albuquerque Cultural Affairs Division; 8 p.m., KiMo Theatre, 848-1374.

April 8-9 — "Mikado" by Gilbert and Sullivan; 6:30 p.m. dinner, 7:30 p.m. performance; First United Methodist Church Fellowship Hall (3rd & Lead SW), 243-5646.

April 8-10 — "Giselle," Southwest Ballet Company production of romantic tale of country girl's betrayal by an aristocrat; 8:15 p.m., Popejoy Hall, 294-1423.

April 9 — UNM Jazz Festival, 8:15 p.m., Keller Hall, 277-4402.

flex@liback

Q. 1) When and how do we recover our own pension contributions? 2) Will we be taxed again for contributions made from previously taxed income? 3) Do pension contributions (as compared to no contributions at all) increase an employee's pension? 4) Does the company contribute anything to a retiree's pension before personal contributions are used up? 5) Why doesn't the company return the employee's contribution plus interest in a lump sum upon retirement?

A. As stated in the Summary Plan Description booklet, you may withdraw your employee contributions plus interest (referred to as your accumulation) only if you terminate your employment with Sandia other than by retirement on a service or disability pension; however, your deferred vested pension payable at age 65 will be reduced by the amount of pension your accumulation would have provided. If you die while you are an active employee and your surviving spouse chooses to withdraw your accumulation, the survivor annuity will be forfeited. If you die after termination of employment and you did not waive survivor annuity coverage, your accumulation cannot be withdrawn. Upon your death (and the death of your surviving annuitant, if applicable), any excess of your accumulation over the amounts paid as pension or survivor annuity benefits will be paid to your named beneficiary or to your estate.

Under current Federal income tax law, a portion of each pension annuity payment will be treated as a recovery of employee contributions and will be nontaxable. The portion of the payment that is not taxable is determined by multiplying each payment by a fraction, the numerator of which is the individual's total employee contributions and the denominator of which is equal to the total expected payments under the annuity. The total expected payment is generally determined by multiplying the individual's annual pension payment by his or her life expectancy (or joint and survivor life expectancy, if applicable). If the employee and the surviving annuitant die before recovering tax-free the full amount the employee contributed, the amount that was not recovered is deductible on the last annuitant's final tax return.

For most employees, the actual amounts contributed to Sandia's pension plans do not factor directly into the computation of their pensions. However, those employees who were on roll before pension contributions were discontinued in mid-1975 receive credited service for (1) the first year of employment, (2) other years of employment prior to 1975 unless contributions were not made (or were withdrawn and not repaid), and (3) all years of employment since 1975.

If retirement-eligible employees withdraw their pension contributions plus interest in a lump sum, the amount of their annual pension payments would be reduced. This reduction is equal to 10 percent of an employee's total accumulation per year for the duration of the annuity. In addition, as deferred vested pensioners, they would not be eligible for other ancillary benefits that are currently being provided to service pensioners, such as medical, dental, and life insurance coverage.

Ralph Bonner - 3500

What Other Companies — and Sandia — Are Doing

By B. J. Jones (3545)

My Jan. 29 LAB NEWS column discussed the increasing cost to Sandia of the health care benefits it provides. But Sandia is not alone. Employers nationwide are facing a delicate balancing act — finding ways to slow the rise in their health care costs while maintaining good coverage.

Some companies have already taken steps to curb costs, including requiring employees to have their non-emergency hospital stays approved beforehand, asking them to get second opinions for certain types of surgery, encouraging outpatient treatment — where appropriate — to avoid unnecessary hospital stays, providing coverage for alternative treatment settings, promoting wellness, and sharing costs with employees.

Other companies have instituted provisions that not only control costs, but also improve the quality of care. These provisions — typically, a review of their doctors' recommendations — are a way for patients to make better-informed decisions about their medical care treatment.

Hospitals Not Always Ideal for Treatment

Although managing costs is one reason for these new provisions, there's a good health reason too — patients avoid the risks associated with unnecessary medical procedures and hospitalization, particularly the risk that surgery presents. Many patients assume a hospital is the best place to receive treatment. However, studies show that about one out of 18 people admitted to the hospital acquires an infection caused by the hospitalization.

Other studies indicate that one in five hospital admissions is not appropriate and that one-third of all days spent in a hospital are unnecessary. That's one of the reasons that companies have begun to consider alternative settings. Using these alternative settings and avoiding unnecessary surgery can reduce risk in several ways — you are less likely to acquire hospital infections, treatment is often less costly, and emotional and physical strain is minimized.

One of the ways that surgery and hospitalization can be monitored is by pre-certification of elective hospital admissions — a doctor's recommendation for hospitalization is reviewed by a professional health care group. After reviewing the diagnosis and related facts, the group advises the prospective patient, doctor, insurance provider, and hospital whether it has certified the hospitalization.

Such a program gives patients access to medical professionals who, while keeping patients' information strictly confidential, can be advocates for the most appropriate medical care. In most companies with this pre-certification provision, employees who choose not to participate in the process must pay a financial penalty.

Employers such as PNM, Albuquerque Publishing Company, UNM, the City of Albuquerque, LLNL, Argonne National Lab, AT&T, and Martin Marietta offer programs of this type.

Some companies have arranged for care at set fees, such as pre-established rates with local hospi-

tals and doctors. Employees can choose whether to use these "preferred providers" — but using them means that employees can save some of their normal out-of-pocket expenses; employers may save some money also.

Wisdom of 'Wellness' Programs

Other companies, including Sandia, are taking a long-term "wellness" approach by promoting good health among their employees. For example, the TLC (Total Life Concept) program, run by Medical, encourages employees to learn how they can stop smoking, lose weight, exercise, control their blood pressure and cholesterol levels, and manage stress. Thanks to the TLC program, Sandia expects to have healthier employees, with a corresponding drop in the need for medical care.

Letting employees choose from a menu of health benefits is another method of controlling costs. At some companies, employees are allowed to tailor their plan to match their needs — rejecting some benefits in favor of others. These companies have found that this flexible benefits approach — often called a "cafeteria menu" approach — can help slow the rate of health care cost increases but still respond to employees' changing needs. Employees realize they don't need the most expensive coverage available, yet they're covered in areas important to them.

Sharing costs with employees is another way companies are trying to slow the growth of health care costs. At IBM, benefits were redesigned so the employee pays 40 percent of the hospital charge for room and board for the first day. To encourage the use of alternate settings, insurance coverage was broadened to include home health care visits and reimbursement for birthing-center services.

Medical Care Plan Already Changed

Sandia has already done some work toward controlling medical costs. Within the last five years, the Medical Care Plan has introduced such cost-containment measures as pre-admission testing, voluntary second opinion, and incentives for outpatient surgery.

In addition, a joint union-management committee has examined medical costs. And we are studying statistics on how the Medical Care Plan is used. I will discuss some of these statistics in a future article. We hope these data will help determine which provisions of the Medical Care Plan are increasing.

But more work needs to be done. At a time when companies are examining every cost in order to remain competitive, Sandia must do the same. We cannot ignore the issue of rising health care costs — but we also are committed to provide reasonable and comprehensive protection against the severe financial hardship caused by unforeseen or unpreventable health problems.

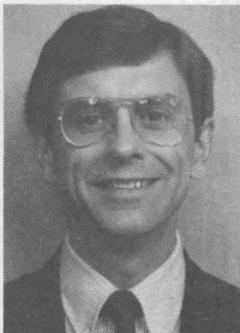
We will continue to discuss with you Sandia's plans to temper these escalating health care costs while maintaining health care coverage that allows you to receive quality care.

Ike's Hard Line on Software

... "In late 1946 or early 1947, when I was working with the War Dept. General Staff in Washington as a civilian scientist with an appointment as expert consultant to the Secretary of War, I was asked to prepare a broad policy statement to guide the newly established Research and Development Division . . . I coined the term 'software' for use in the policy document that I drafted, for contrast to 'hardware,' and both terms appeared frequently throughout the draft document . . . The document was reviewed by Gen. Eisenhower and returned to me for revision, with the firm guidance from Gen. Eisenhower that 'there will be no software in this man's Army' . . . I was certainly neither greatly surprised nor disappointed by the turn of events, although I had come to like the term software!"

Merrill Flood, *Datamation*

Deaths

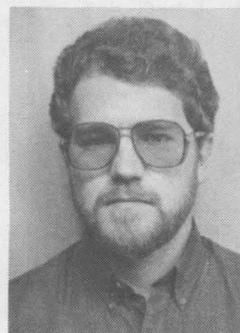


Paul Wengert of Inorganic Process Division 7471 died March 7 after a long illness.

He was 44 years old.

He had been a member of the technical staff since October 1983.

Survivors include his wife, two daughters, one son, one sister, and his parents.



Fred Zeigler of Computational Physics and Mechanics Division I 1531 died March 15 from injuries suffered in a traffic accident.

He was 34 years old.

He had been a member of the technical staff since January 1984.

Survivors include his wife and two sons.



SANDIA'S TOSI (Technical On-Site Inspection) facility, just south of Area I, is a test-bed for several means to verify the number of "treaty-limited items" (certain types of nuclear-tipped missiles, for example) shipped out of a production facility. Collectively called the Portal and Perimeter Monitoring System, it includes tamper-indicating fences and surveillance cameras, a vehicle-weighing scale, sensors that measure a vehicle's size and shape, data acquisition and authentication capabilities, etc. Given current attention to the conditions of the proposed INF (intermediate nuclear force) treaty and the possibility of START (strategic arms reduction treaty) talks, TOSI is receiving increased national and international attention (see this week's issue of *Newsweek*, which mentions Sandia's verification technology work). If the US and the USSR agree to establish continuous on-site inspection capabilities at the other country's production plants, the provisions of the treaty could be monitored by versions of devices tested at TOSI. In this photo, Dick Sons of Verification Technology Div. 5219 mans a central control console as a truck enters the weight and size/shape measuring system. TOSI was designed by Safeguards Application Dept. 5210 and Systems Research Dept. 9110 and constructed in three months (thanks to fast work by such groups as Plant Engineering, Design Definition, and Purchasing) in late 1986.

Welcome

Albuquerque

Steven Bargman (7818)
Susan Bodette (121)
Thomas Casaus (7412)
James Curtin (7818)
Abel Gamboa (7412)
Robert Griego (7812)
Dale Kemper (9214)
Terry Litts (7481)
Raymond Lozoya (7813)
Andrew Silva (7811)
Colleen Wakefield-Reyes (7412)

David Van Ornum (7481)

Arizona

Mary Louise Young (7531)

Illinois

James Novak (1411)

Indiana

Hans Oldewage (3312)

New Mexico

John Cresap (7481)
Martin Dimas (7813)
Thomas Gallegos (7481)
Steve Trujillo (7813)

January Earnings Factors

	Earnings Factors
Savings Plan for Salaried Employees (SPSE)	
AT&T Shares	1.1050
Government Obligations	1.0199
Equity Portfolio	1.0284
Guaranteed Interest Fund	1.0070
Diversified Telephone Portfolio	
Unrealized Appreciation	1.1117
Realized Appreciation	.0050*
Savings and Security Plan — Non-Salaried Employees (SSP)	
AT&T Shares	1.1066
Guaranteed Interest Fund	1.0073
Diversified Telephone Portfolio	
Unrealized Appreciation	1.1128
Realized Appreciation	.0052*

* The 1 has been removed from the earnings factor. Current month's DTP earnings may be calculated directly: Earnings Factor x DTP Current Worth = Current Month's Earnings.

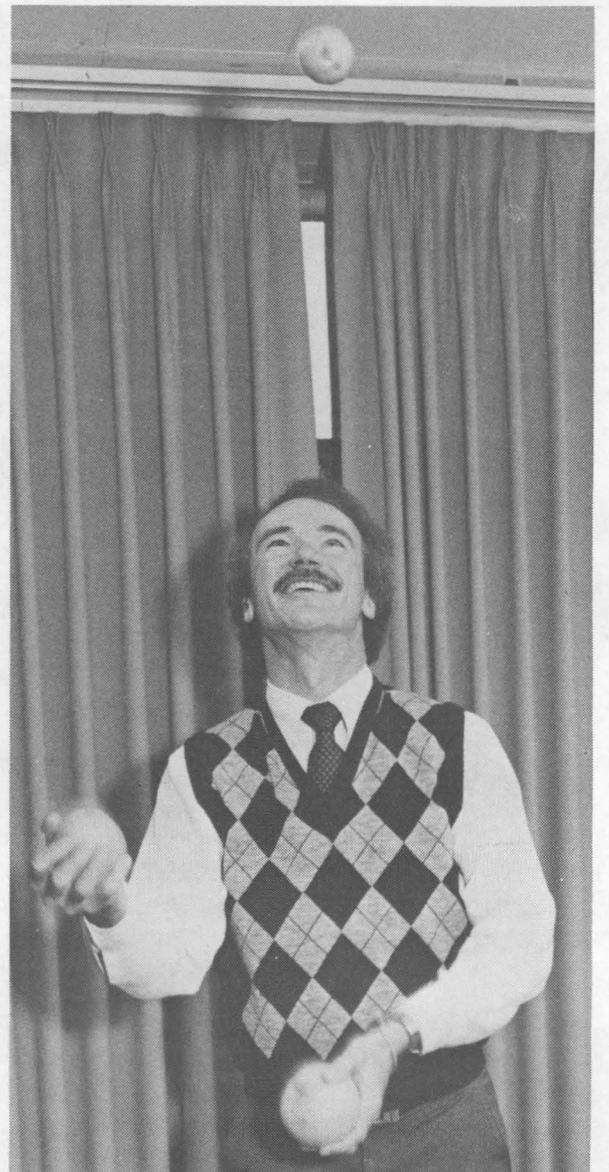
Congratulations

To Cheri and Jim (3532) Stromberg, a son, Michael Christopher, March 6.

To Paula (1265) and Steve McAllister, a daughter, Stephanie Marie, March 7.

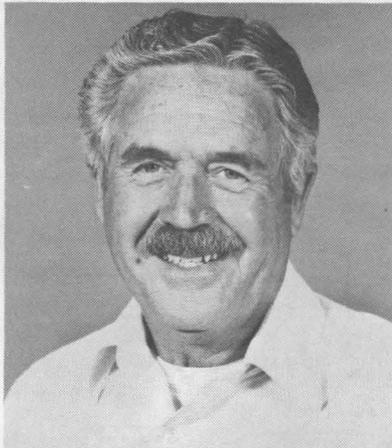
To Linda (22-2) and David Raybould, a daughter, Megan Elizabeth, March 10.

To Amanda and Alan (2116) Righter, a daughter, Sonia Katherine, March 16.



SUPERVISORS JUGGLE many tasks, as Thom Fischer (2154) aptly demonstrated to fellow attendees during lunchtime entertainment at a supervisory management development course earlier this month. The course for new division supervisors, coordinated by Management and Staff Development Division 3523, consists of eight half-day sessions — held once a week — covering a variety of topics.

Retiring



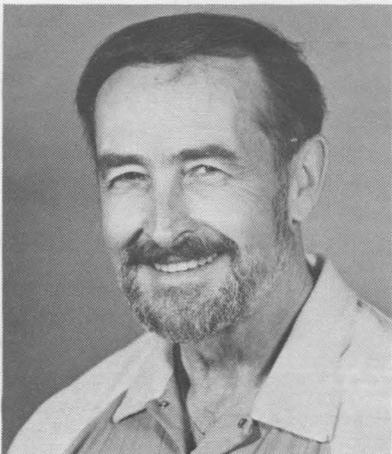
Wayne Hancock (3153) 39 yrs.



Edward Martinez (3741) 39 yrs.



Chuck Smith (7262) 35 yrs.



Bob Armstrong (7212) 39 yrs.

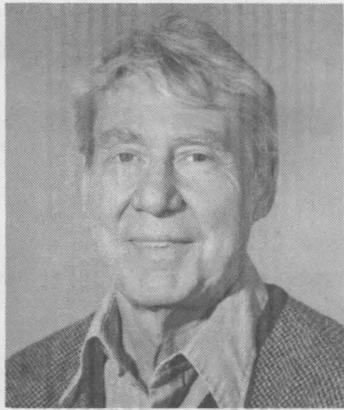


Tom Zudick (3155) 36 yrs.

MILEPOSTS

LAB NEWS

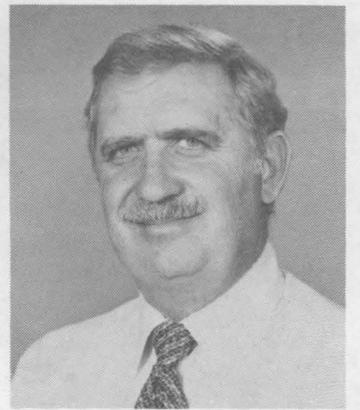
MARCH 1988



Richard Rudolph (7137) 35



Sherry Bowen (8274) 20



Wayne Young (9122) 25

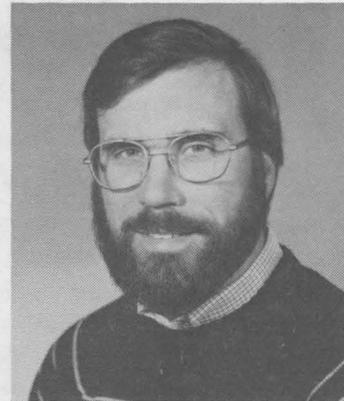


Marv Moss (1824)

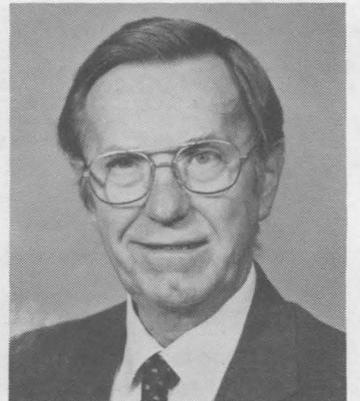
25



Donnie Papineau (7815) 35



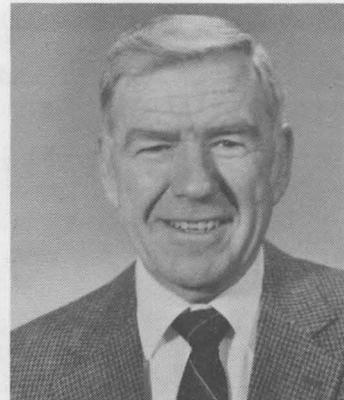
Michael Bukaty (9115) 15



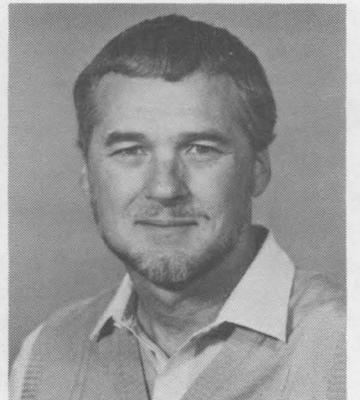
Delfred Olson (7500) 35



Robert Durand (3413) 40



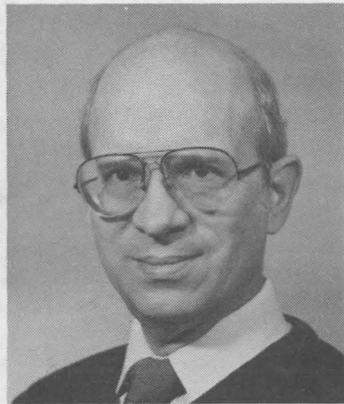
John Willis (2566) 30



Lou Feltz (9113) 25



Gerald McCoach (5249) 25



Roger Roberts (7525) 25

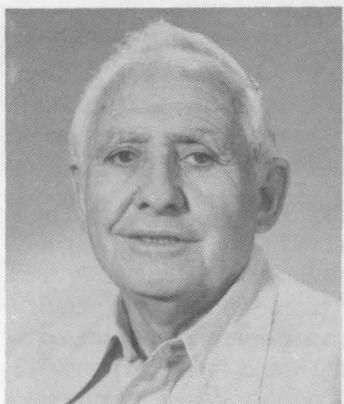


Adron Pritchard (3152) 25



Verna Clark (7413)

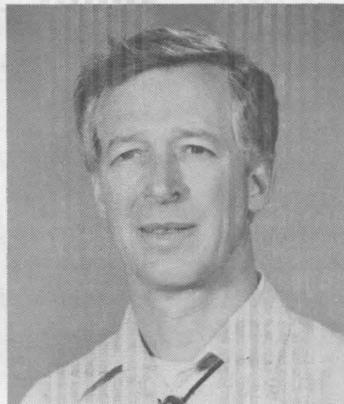
35



Celso Sanchez (7818) 25



John Weydert (7133) 35



Victor Schulze (9232) 25

Spare Your Wastebasket

If you're about to retire or leave the Labs,
don't toss your historically valuable records.

Corporate Historian Necah Furman (3151A) is looking for
audiotapes, records, and photos.

Call her on 6-9619.

Sympathy

To Joseph (7812) and Carla (3426) Minichello
on the death of his father and her father-in-law in
Albuquerque, Feb. 28.

To Dale Young (2631) on the death of his
mother-in-law in Colorado, March 7.

To Aileen George (3428) on the death of her
husband in Los Lunas, March 11.

UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

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

Ad Rules

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

MISCELLANEOUS

LITTON 880 MICROWAVE and self-cleaning conventional ovens, wall unit, 7 yrs. old, best offer. Shane, 294-4920.

COMMODORE 64, disk drive needs work, printer and interface, no monitor, dozens of disks (word processors, games, etc.), \$150 OBO. Asprey, 296-6673.

POOL TABLE, regulation-size, slate bed, \$150. Wilson, 299-1480.

TRUMPET, Mercedes III, case, mouthpieces, for serious buyer, \$250. Gage, 293-1707.

SHELVING UNIT, Mediterranean style, w/secretariat and enclosed lower shelves, \$225. Warren, 275-1364.

3-PIECE SOFA, curved L-shape, solid Kroehler, needs cover, \$150; Hoover vacuum, \$25; full-size box spring, mattress, \$50. Anderson, 299-9336.

FERTILIZER STAKES, Ross and Jobe, evergreen type, approx. 100, 20¢ ea. Schkade, 292-5126.

3-PIECE BEDROOM SET: blond wood, full-size bed, 4-drawer vanity dresser w/mirror, chest of drawers, \$400. Zurzolo, 898-1175.

EPIPHONE ACOUSTIC GUITAR, full-size, 6-string, w/hardshell fuzzy-lined case, \$125. Newman, 266-9418.

BROKEN COMPUTER, Spectravideo, 64K, cassette, 40 programs, joysticks, Centronix interface and cable, \$20. Cancilla, 293-1620.

MEDICINE CABINET, w/mirror, 42" x 32", \$7; bathroom sink, wall-mount, w/fixtures, \$4. Geck, 299-5095.

SEARS "BIG-T" GYM SET, w/slide and 2 swings, 2-in. rust-proof steel, you haul, \$60. Hunter, 293-8707.

CLARINET, w/case and music stand, \$100 OBO; beginner's electric guitar, w/amplifier and case, \$75 OBO. Archibeque, 242-7097 evenings.

CHILDCRAFT by World Book Encyclopedia, complete set plus 10 supplements, \$150. Salisbury, 268-7113.

RADIO AND TV TUBE CADDIE, \$227; 350 tubes, 65¢ ea.; 2 electric typewriters, \$15 and \$24. Montoya, 883-9115.

QUEEN-SIZE SOFA BED, earth tone, \$100; love seat, \$20; 2 bicycle racks, fit most cars, \$15. Klaus, 843-6439.

NEC MULTISYNC MONITOR, \$400; misc. software and all support material, make offer. Luther, 293-4462.

B.F. GOODRICH TIRES, 33x12.5R15, 50 percent of tread, set of 4, \$150. Reif, 299-2665.

FREE CHAMPAGNE BOTTLES, empty. Skogmo, 294-0133.

COUCH AND LOVE SEAT, earth tone, \$200; smoked-glass chandelier, 5-globe, \$50; wheelchair, \$250. Faculjak, 898-6502.

DARKROOM ENLARGER TIMER, solid-state electronics, 0.1-100 sec-

onds, automatic reset. Vokes, 884-4697.

PARTS for Kawasaki Ninja 600. Hickman, 296-6989.

TORO LAWN MOWER, 21", side bag, recently reconditioned, \$75. Dippold, 821-5750.

KEROSENE HEATER, Kero-Sun Radiant 36, 9000 BTU, \$65. Miller, 268-5992.

CAMERA, Minolta X700 35mm, 50mm lens, 260PX flash, Vivitar 35-200mm macro zoom lens, case, \$570 value for \$275. Dunlap, 884-0232.

DINING TABLE, solid pine, 2 leaves, 6 high-back chairs, \$375; 8' sofa, cream, wood trim, \$275. Aragon, 291-0536.

12" TELESCOPE MIRROR, f1.5 in aluminum tube w/secondary, \$200; 8' TVRO station on small trailer, 85" K LNA, Drake receiver, \$400. Scott, 281-4332.

TENNIS RACKETS: graphite/fiberglass Yamaha YFG50, \$40; fiberglass Yamaha YFG30, \$25. Terhune, 292-0736.

DRUMS: Tama 5-piece set w/3 cymbals, hi-hats, throne, 10 months old, \$625. Rhoden, 293-5301.

COMMUNICATIONS RECEIVER, Hammarlund HQ-100, new tubes, \$50. Durkee, 255-4211.

ROWING MACHINE, Amerec 610, \$150 OBO. Maloney, 828-9610.

NAMBE WARE COLLECTION, DeGrazia plate collection, Rockwell figurines, tub and matching sinks, metal closet doors, Jeep tires w/rims. Otts, 884-5072.

13" MAGS, 6-point star pattern, fit Chrysler, Dodge, Toyota, VW, \$150/set of 4. McMullen, 298-2801.

RECLINER, black vinyl, \$35. Stephenson, 296-9330.

SPEAKERS, Warfedale, walnut veneer case, 12" woofer with 5" midrange and tweeter, \$35/ea. Denney, 268-0004.

EXCEL WEIGHT-LIFTING SYSTEM, complete, bench, barbells, cost \$550, sell for \$500. Hartenberger, 281-1452.

MOTORCYCLE TIRES: Bridgestone 100/19-18, front, \$20; Continental RB2, 3.50-18, front, \$20. Barnard, 831-4114.

YAMAHA KEYBOARD, PSS-470, includes power jack, \$150. Edmunds, 293-3503.

QUEEN-SIZE MATTRESS, box spring, frame, Sealy Posturepedic, \$100; hood ornaments: Cadillac, Cordoba, Cougar, LeBaron, Ltd., Mercedes, Monte Carlo, Thunderbird, \$5/ea. Guillen, 291-0177.

NEW DINETTE SET, laminated top, 4 upholstered chairs, \$200; LWB aluminum camper shell, \$115. Mata, 898-3377.

UNIVOX GUITAR, 6-string, flat-top acoustic, w/case and strap, \$65. Brooks, 883-1485.

PRECOR 612 ROWING MACHINE, purchased at Gardenswartz, 1 year old, \$150 OBO. Eisenberger, 877-7041.

SQUARE-DANCE DRESSES and underskirt, sizes 10 & 12, man's matching vest, size 38. Owen, 299-4963.

BUILT-IN OVEN, \$25; cooktop, \$15 (both Frigidaire). Garst, 884-5176.

MAGNAVOX B&W TV, 17", w/stand, \$35. Barr, 821-5870.

SIBERIAN HUSKY, purebred male, black & white, sky-blue eyes, 10 weeks old, \$100. Neil, 291-9760 after 5.

SOFA BED, Ward's, light beige, \$325 OBO; Gibson heavy-duty gas dryer, auto- and time-dry, \$25. Jones, 881-6006.

DINETTE, white Formica, octagonal, 48" x 42", w/4 blue/green chairs and 12" extension, \$50. Phipps, 299-8490.

WESTINGHOUSE FRONT-LOADING WASHER, \$75; Norge gas dryer, \$30; box spring for single bed, \$25. Feibelman, 242-1946.

AIRCO AC/DC ARC WELDER, 180-amp, \$200; Craftsman high-frequency TIG attachment, 300-amp, w/torch, \$125; Craftsman wood lathe, \$50. Schuler, 821-8944.

BABY CRIB, white, mattress, sheets, bumper guard, quilt, \$100; Gerry expansion gate, \$10. Webb, 828-2271.

MICROWAVE OVEN, Sears, full-size, 10 power levels, memory program, \$140. Esherick, 299-8393.

STEREO SYSTEMS, Realistic and York w/speakers; misc. stereo parts. Lukens, 891-0985.

CUSTOM-MADE DRAPERIES, floral print chintz: 1 pr. 44" x 94", 1 pr. 53" x 73", \$50/pr. Burstein, 821-6688.

MOVING BOXES, approx. 50, \$1/small, \$2/medium (dish barrel), \$3/large, \$30/lot. Barger, 296-0676.

IBM-PC, 512KB, two 360KB drives, CGA color graphics, Amdek R-G-B monitor, serial and parallel ports. Schroeder, 296-1011.

GAS DRYER, Sears Kenmore, copper, \$40. Zirzow, 294-7296.

FISH AQUARIUMS: 100-gal. tank w/accessories, 55-gal. tank w/accessories and stand. Rowe, 299-0961.

PACKING BOXES and supplies for all household goods including wardrobes, dishes, etc., discounted 80 percent, will consider delivery. Clark, 869-2569.

SCANDANAVIAN FURNITURE, leather and rosewood classic: sofa, cocktail table, 2 end tables; 2 sets windows w/custom shades. Jones, 298-2067.

BEDROOM SET: light yellow 4-drawer chest, headboard, frame, twin-size mattress set, \$100. Kearns, 898-4122.

CAB-OVER CAMPER, 11', Mobile Traveler, sleeps 4+, AC, toilet, stove, oven, closet, \$1200. Denney, 897-7550.

GRO-LITE, \$15; thatch rake, \$8; grass whip, \$6; electric charcoal lighter, \$4; charcoal box, \$5; newspaper shredder, \$15. Crowther, 821-0172.

MAN'S WEDDING RING, 18-kt. gold, Artcarved, w/3 diamonds, appraised \$820, sell for \$440 OBO. Roeske, 255-6188.

SIDE-BY-SIDE REFRIGERATOR, new, \$550; dinette, \$75; king-size bedroom set, \$350 (bed only, \$75); stereo and other furniture, make offer. Davis, 275-1984.

DOUBLE-OVEN GAS RANGE, \$100 OBO; antique bathtub w/legs, \$30 OBO. Blacker, 298-0096.

TRANSPORTATION

'76 DODGE ASPEN SW, 50K miles, one owner. Walker, 294-2293.

'83 DATSUN STANZA, 47K miles, AT, cruise, AM/FM stereo, 4-dr. hatchback, \$3450. Gage, 293-1707.

'84 HONDA XL200R, .6K miles, \$675. Warren, 275-1364.

'79 SUBARU DL, 4-dr. sedan, brown, 5-spd., AC, 84K miles, \$975 OBO. Wood, 884-5232.

'81 TOYOTA TERCEL, 3-dr., 5-spd., AC, AM/FM cassette, \$1450 firm. Newman, 266-9418.

'81 YAMAHA 650 SPECIAL, 9.3K miles, \$600. Sharp, 873-0618 after 5 and weekends.

'78 FORD THUNDERBIRD, V-8, all power, one owner, \$2500. Chavez, 831-0171.

'87 WINNEBAGO LeSHARO, 3.2K miles, all options. Mulryan, 296-3628 after 6.

HOBIE 16 CATAMARAN, w/trailer, trapeze w/harness, righting lines, \$2100. Smith, 298-9588.

'78 PLYMOUTH VOLARE, \$500 OBO. Leyba, 873-3684.

'78 GOLDEN EAGLE JEEP, 304 V-8, new fiberglass top, PS, AM/FM cassette, 72K miles. Baca, 864-2493.

'74 MERCEDES BENZ 280C, \$8000. Luther, 293-4462.

'81 SUZUKI GN400, 4.2K miles, \$700.

OBO. Yu, 268-5355 or 256-9308.

'81 CHEV. C-10 PICKUP, long bed, 6-cyl., 4-spd., 65K miles, new tires, sealed bid, we reserve the right to refuse all bids, all bids subject to prior sale. SLFCU, 293-0500, ext. 269.

'77 CHEV. MONTE CARLO, \$1300. Aragon, 292-2514.

'76 VOLVO SW, 4-spd., OD, needs steering rack, \$1195 OBO. Folkins, 345-2801.

'73 HONDA CB350, needs minor work, w/2 helmets, \$150 OBO. Miller, 296-8724.

'85 FORD RANGER 4x4, w/camper shell, 16K miles, original owner, extras, \$7700. Schaub, 299-5867.

'83 MUSTANG, 4-cyl., AC, PS, PB, power door locks, \$4200. Gutierrez, 821-4852 after 5.

'74 CHEV. LUV PICKUP, some new parts, \$1099 OBO. Beaulieu, 865-1781.

'69 EL CAMINO SS, new T/A tires, paint, interior, 396 engine, \$4800 firm. Macias, 831-9414.

'70 PONTIAC LeMANS, 50K miles on rebuilt engine and transmission, \$700. Zarrella, 891-9829.

'82 FORD PICKUP, 1/2-ton, 6-cyl., radio, heater, 64K miles, \$2500. Durkee, 255-4211.

'86 OLDS. DELTA 88 ROYALE BROUGHAM, loaded, 21K miles, selling for balance owed. Lopez, 881-1363.

'73 FORD MUSTANG CONVERTIBLE, 35K miles. Otts, 884-5072.

'84 FORD BRONCO II, 4-WD, 5-spd., AC, PS, PB, cruise, tilt, AM/FM cassette, two-tone tan, \$5800. Sargent, 828-1460.

'87 H-D FXLR CUSTOM MOTORCYCLE, black w/red pinstripe, 3K miles, transferable warranty, wire spoke wheels, windshield, \$7800 OBO. Loving, 291-0341.

'85 HONDA MAGNA V/65, 1100cc, 7K miles, full leather seat, OD, electric gear indicator, loaded. Arana, 299-1214.

'87 NISSAN MAXIMA GXE, 4-dr., AT, leather, sunroof, digital dash and entry, alarm system, light pewter color. Brooks, 299-1884.

'79 YAMAHA XS1100, 35K miles, dark blue, clear fairing, rack, trunk, helmets, other accessories, \$1000. Imbert, 294-8176.

'80 PONTIAC PHOENIX LJ, 4-dr., power everything, 61K miles, \$1750; '68 Honda CT90 motorcycle, 4.5K miles, \$100. Luth, 292-1642.

'81 RENAULT LeCAR, FWD, 4-spd., AM/FM cassette, Michelin radials, sheepskin seat covers, 63K miles, new brakes, lifetime battery, \$1250. Patrick, 265-4569.

'79 MERCURY ZEPHYR SW, 6-cyl., 4-spd., luggage rack, 60K miles, \$1300. Feibelman, 242-1946.

'77 DATSUN 280Z 2+2, 5K miles on rebuilt engine, standard, AM/FM, AC, make offer. Browne, 296-6938 or 884-0345 evenings.

'66 MUSTANG, rebuilt 6-cyl. engine, 3-spd., AC, new white paint, \$3950. Schuler, 821-8944.

10-SPD. BICYCLES: woman's Schwinn "World Sport," \$100; boy's 24" Sears "Free Spirit," \$75. Owyong, 294-1884.

MOUNTAIN BIKE, 20" CyclePro, 2 yrs. mountain-tested, thorn-proof tires, bottle racks, toe clips, \$220. Goodson, 291-9397.

'84 SPORTS COACH CROSS-COUNTRY MOTORHOME, 31', 8K miles, \$30,000 OBO. Rowe, 299-0961.

'81 HONDA CX500D, shaft drive, water-cooled, helmets, manual, make offer. Zirzow, 294-7296.

'85 HONDA GOLDWING LTD. EDITION, CB, radar detector, remote burglar alarm, floorboards, driving lights. Hufnagel, 294-5949.

'80 CHEV. VAN/CAMPER, 3/4-ton, raised top, carpeting, built-ins, \$4200; '73 VW pop-top camper, built-ins, \$1795. Davis, 275-1984.

'86 GMC JIMMY 4x4, PS, PB, AC, 4-spd., stereo, \$10,600. Perez, 873-0643 after 5.

'85 HONDA INTERCEPTOR 500, 11K miles, \$2300; '78 AMC Matador, 360 engine, all power, \$1200. Sanchez, 255-5515.

REAL ESTATE

DOUBLE-WIDE MOBILE HOME, refurbished, and 1.4 acres in Meadow Lake, discount for cash or will finance. Barnett, 268-8356.

HOUSE, 13528 Terragon Dr., appraised at \$122,000. Buza, 298-1531.

WOODED LOT, approx. 1 acre, water system, stocked lake, 13 miles from Cuba, \$6000 OBO. Mora, 281-9815.

NE HOME, 3300 sq. ft., on acre, indoor pool, horses allowed, appraised at \$179,900, sell for \$165,000. Baker, 294-3334.

2-BDR. MOUNTAIN HOME on 1.5 fenced acres, 2 baths, all amenities, orchard, stream. Knapp, 281-3192.

ONE ACRE in Meadow Lake area, 8 miles east of Los Lunas, \$10,000 cash. Leyba, 865-6195.

2-BDR. MOBILE HOME, 14' x 64', 1-1/2 baths, 22' LR, new AC and roof, carport, appliances, in adult SE park, lot rent \$155 including gas, \$10,500 OBO. Hodgen, 293-5265.

3-BDR. HOME in Belen, all brick, 2000 sq. ft., 2-1/2 baths, solar heat, landscaped, surrounded by golf course, \$117,500. Brown, 864-6112.

2-BDR. MOBILE HOME, 14' x 64', '81 Wayside, 2 baths, upgraded, deck, skirt, landscaping, NE Heights, \$12,900. Rightley, 822-0383.

FOUR HILLS HOME, 2450 sq. ft., view of city and mountains, call for directions. Weisiger, 298-8243.

3-BDR. HOME, NE, Loma Del Norte area, near Dennis Chavez Elementary School, cul-de-sac lot, landscaped, auto sprinklers, assumable. Oliphant, 821-2751.

2+ ACRES, Los Lunas, west side of river, ditch irrigation, mobile homes permitted, \$18,000/acre. Zirzow, 294-7296.

2.43 ACRES, north of Navajo Dam. Van Deusen, 291-8196.

2-BDR. HOME, NE, optional loft, 2113 sq. ft., 2 full baths, country kitchen, spa room w/hot tub, \$86,000. Alderete, 883-0900.

WANTED

STUNT-KITE FLYERS for exhibition of flying skills (winds permitting) at Fitness Day '88. Montoya, 4-5605.

DECOMPOSED GRANITE, for landscaping. Hey, 898-6679.

D-FLAT PICCOLO and bass flute. Brin, 281-3834.

WHEAT PENNIES, one or any amount, have pennies to trade. Silva, 865-4752.

NON-PERISHABLE FOOD for the St. Vincent De Paul Society. Lovato, 243-0195.

INDIVIDUAL to do automotive upholstery. Prevender, 296-8586.

AMATEUR RADIO GEAR: transmitter/receiver, antenna, tuner, tower, etc. Lennox, 821-0474.

WATER SKI EQUIPMENT: skis (not slalom), vests, beginner level or better. Salmen, 881-8612.

ROOMMATES or couple to share 4-bdr. house near Constitution and Juan Tabo, \$225/mo. per person plus utilities. Vickers, 299-0192.

10-SPD. BICYCLE, frame should be 19" or shorter, good quality. Coleman, 296-1697.

FEMALE ROOMMATE, share 2-bdr. apt., Lomas/Chelwood, must like pets, \$210/mo. Browne, 296-6938 or 884-0345 evenings.

BABYSITTER for 3-year-old girl, days. Falacy, 293-2517.

HO-SCALE MODEL TRAINS, track, transformers, accessories, etc., working or not. Blacker, 298-0096.

Eggstra! Eggstra! Mr. Cottontail Is on the Way

IT'S NO EGGSAGGERATION to say that one of the biggest kids' parties of the year is just around the corner. It's Easter egg hunt-and-roll time — along with other entertainment, including a visit from The Bunny — on Saturday, April 2, from 10 a.m. to noon. As usual, profuse prizes go to hunters (egg-beaters?) whose eggstensive efforts lead to the most hard-boiled treasures. Admission's free, but bring along the membership card, as this one's eggsclusively for members' children.

MANAGER SAL proclaims tonight as "Ladies Night," and *that* means a special deal for the distaff side of the house — a free drink anytime between 6 and 9 p.m. Make a night of it by starting out at the two-for-one special dinner (prime rib or shrimp scampi) and dancing later to the shuffle-strains of Western Flyer (8-midnight). Don't forget the dinner reservation (265-6791).

Retirement Coming Up?

Steven Stubbs and Michael DeVincentis of Dean Witter Reynolds discuss "Planning for Your Retirement" at a seminar set for April 6 at 5 p.m. in the Eldorado room. Learn about Dean Witter's new retirement-planning tool — the Pre-Retirement Income Management Evaluator (PRIME) — as well as IRA rollovers and other topics.

HEAD FOR THE CHAMPAGNE BRUNCH on April 3 and make Easter Sunday a very special day for the whole family. A mouth-watering menu — served from 10 a.m. to 2 p.m. — includes all sorts of elegant entrees: turkey, ham, baron of beef, spaghetti, omelets and scrambled eggs, sausage, green chile, and much more. As usual, there's a discount (up to \$2/family) for club members. Prices are \$10.50 for adults, \$5.75 for children ages 5 through 12, and free for toddlers under 5. Early reservations recommended, since Easter is a big "eat-out" day.

GETTING IN THE SWIM for a new season is what it's all about when Coronado Aquatic Club (CAC) members and prospective members get together on Thursday, April 7, from 7 to 9 p.m. in the ballroom. Register the kids (18 years old and younger) and get info on plans for this summer. Only prerequisites for CAC membership are Club membership (for parents) and a pool/patio pass.

WESTERN NIGHT WHOOPEE on April 7 starts out with c/w lessons from 6 to 7 p.m., followed by more stompin' (7-10) to the shuffle tunes of the band with the noteworthy name — Trio Grande. Free munchies and special drink prices throughout the evening.

IT'S A GOOD DAY (for singing a song — and

for signing up for one of those terrific C-Club trips). Several goodies:

Best of Britain (May 17-June 1) — Better hurry on this one; sign-up deadline is April 1. The \$1585/person (double) tab includes RT air fare from Albuquerque, all lodging, ground transportation, splendid scenery throughout the British Isles, and much more.

Laughlin, Nev. (April 29-May 2) — For just \$162/person (double), this trip to "Las Vegas-South" packs a lot into four days. Included in the price are three nights' lodging (Riverside Hotel/Casino), RT charter bus fare, some meals, and side trips (Lake Mohave, Davis Dam, and Oatman, Ariz.).

Canadian Capers (Aug. 27-Sept. 4) — This one's in the "don't miss" category; it's a wonderful chance to O.D. on some of the most spectacular scenery in the world. Tour the magnificent Canadian Rockies, with stops along the way at Banff, Glacier National Park, Kamloops, Jasper, Lake Louise, and Calgary. Cost of \$876/person (double) includes RT air fare to Calgary, motor coach transportation through the Rockies, eight nights' lodging, boat cruise on Maligne Lake, tram rides at Banff and Jasper, Columbia Ice Fields snow-coach tour, stern-wheeler cruise on Shuswap Lake, several meals (including a farewell dinner in Calgary), and much more. Price breaks on triple or quad occupancy. A \$300/person deposit holds your space; final balance due on July 27.

Take Note

KAFB will host a national security seminar, "Global Affairs and US National Security," on April 22 at the KAFB East Theatre. Five internationally recognized academic, international affairs, and national defense specialists will participate in the 9 a.m. to 4:30 p.m. seminar. Issues to be addressed include "National Security Considerations of Nuclear Test Ban"; "International Terrorism and US Responses"; "Western Hemisphere Considerations into the Year 2000"; "Arms Reduction Proposals: Requirements, Realities, and Responses"; and "The Middle East and US Security." For more information, contact Bob Duff (3180) on 6-2918.

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The 10th annual Ideas in Science and Electronics Exposition and Symposium (ISE '88) is scheduled for May 10-12 at the Albuquerque Convention Center. The symposium includes an expert panel discussing "American Competitiveness in Electronics," a keynote speech on Air Force research and development, and seminars and tutorials organized by the Albuquerque Section of IEEE. Ruth David (7121) is IEEE chapter president. Sandians participating include Jim Schirber (1150), presenting a tutorial on superconductivity; Jerry Stauffer (2830), presenting a paper on computer-aided engineering; Kurt Wessendorf (2534), Phil Garcia, and John Anthes (both 2531) presenting papers on electro-optics. Charlie Harmon (6451) is on the nine-member governing board of ISE, Inc. For more information about the event, contact Charlie on 4-2361. Advance registration is free; contact ISE executive coordinator Becky Rouse on 262-1023.

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On April 19, voters in the Albuquerque Public School district will decide whether to raise property taxes to build new or renovate old school buildings. APS has issued a three-page document that provides answers to common questions about this "Buildings Act Election." If you'd like a copy, send a self-addressed 9-by-12 envelope to "Election," Div. 3162.

Retiring and not shown in LAB NEWS photos: Lorraine Cook (7533), Howard Hayden (3153), Jo Hayden (4021), Fred Pena (3154), Joseph Pavelko (5248), Frank Rivera (7130), and Edgar Schreiner (7484).

Laydown Delivery: Exploding Eggs



In Salzburg, Austria, it was so cold [in early January] that chicken eggs exploded immediately after being laid. . . In Bucharest, the Romanian government continued its policy of conserving scarce fuel by turning off the capital's gas heating, except for two hours at night.

New Scientist



ALBUQUERQUE "EXPANDING YOUR HORIZONS" Conference, sponsored by the New Mexico Network for Women in Science and Engineering, encouraged eighth-through-twelfth-grade girls to pursue non-traditional careers. More than 300 girls and 50 adults from Gallup, Grants, Zuni Pueblo, and Albuquerque attended. Sandians participating were Margaret Carroll (3317) - career panel; Ruthe Jones (2814) - career panel; Donese Mayfield (9224) - career panel/organizer; Jennie Negin (3140) - career panel; Mary Ann Sweeney (1265) - workshop career panel (astronomy); Eleanor Walther (9221) - career panel/organizer; Margie Whipple (7832) - career panel; Jan Williams (7841) - career panel/organizer; Sharon Kurtz (2624) - organizer; Michi Wada (2117) - organizer; Karen Greulich (8263) - tour of Maxwell Museum (anthropology workshop); Ellen Edge (3745) - workshop ("start a business").