



GHOSTLY REFLECTIONS of Wilbur Jorgenson (left and right) and Wil Vandermolen (both 8123) are created by the reflection polariscope used to measure stress points on mirror facet.

LAB NEWS

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JANUARY 6, 1978

SANDIA LABORATORIES • ALBUQUERQUE NEW MEXICO • LIVERMORE CALIFORNIA • TONOPAH NEVADA

Junk Recycled for Bomb Test Program

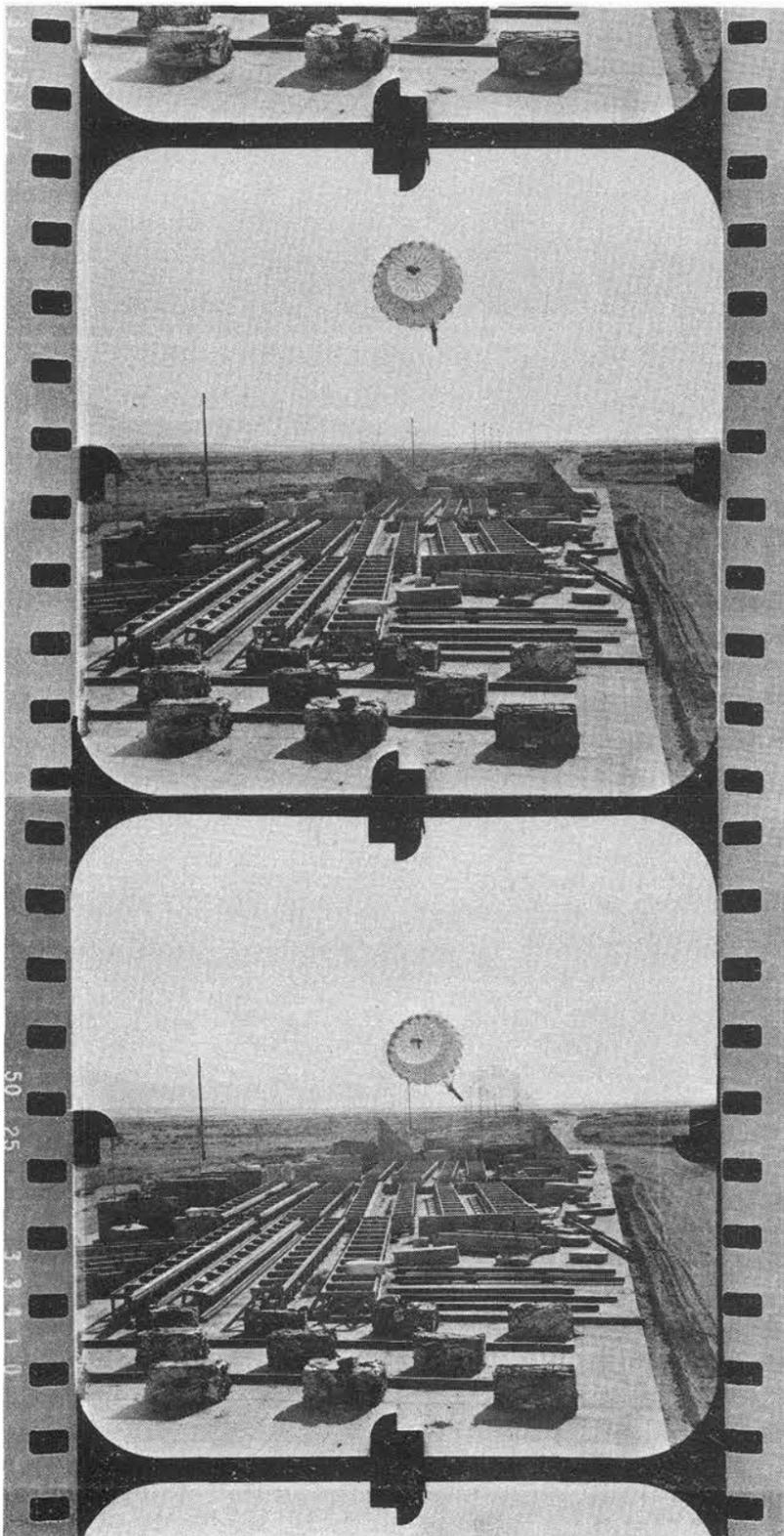
Though a lot of stories end here, this is the first we know of that actually begins in a junk pile. And it's a little more unusual than that, since it involves a lay-down version of the B61 bomb being developed by Department 4310.

Because this weapon is planned for use against hard, irregular targets (like airfields, railroad marshaling yards and heavy industrial complexes), the question was how to test it in a realistic way.

Jim Phillips and Jack Edwards (both of 4312) pondered the problem. Their solution was, well, unique. Instead of building a strong, hard target from scratch, Jim and Jack decided to build theirs by collecting hard, irregular objects from the junk heap and arranging them to form a suitable target.

Jim and Rusty Puccini (4312) scoured Area III and located broken and discarded concrete targets, old test stands, unused sled track extensions, steel rails, crumpled structures — and even some compressed auto bodies. Personnel from Remote Areas Maintenance Division 9718 hauled the junk in and, using a plan devised by Jim and Rusty, laid out the debris over a 240-foot length of concrete at the end of the Area III sled track, thus creating a hard, irregular target for the B61's.

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SLL Analyzes Four Heliostats

Sandia Livermore is currently the only place in the world where four basically different types of heliostats are at work side by side. Primary purpose is to gain engineering and operating experience under identical operating conditions for all four. They represent designs by Martin-Marietta (different from the design in SLA's Solar Thermal Test Facility), McDonnell-Douglas (the design chosen for DOE's Solar Central Receiver Pilot Plant near Barstow), Honeywell, and Boeing.

"We want to know how well each performs over a period of several months through a range of temperatures and wind loads," says Clay Mavis of the Solar Projects Division 8132.

Measuring heliostat performance is not yet a precise science. "We're developing a new measurement system," says Clay. "We'll define several factors related to focus and reflectivity—the evenness of the beam thrown on our two targets, the total power received in 5, 10, and 15 milliradian circles, the ability of the tracking systems to point the heliostats accurately, and mirror reflectivity.

"In several months, we expect a certain amount of degradation in each of these areas. What we want to know is how much and how to measure it. We may, in fact, end up recommending new standards and units of measurement to the National Bureau of Standards. Certainly we'll use the results as a basis for calibrating the banks of heliostats at the Barstow pilot plant and for setting at least tentative specifications for extended heliostat performance."

[Continued on Page Three]

Retirement, Insurance Plan Improved

President Sparks late last month announced a number of improvements in the First Supplemental Group Life Insurance Plan, and in Sandia's Retirement Income Plan for those employees who elected to participate in the modified benefit structure in 1975 and for all employees hired subsequent to July 1, 1975.

Of principal significance is the change to the survivor annuity benefit. Effective August 8, 1977, an automatic lifetime annuity will be paid to the spouse of an active employee who dies after completing 15 or more years of service, regardless of age. Previously, such an annuity was paid only when the deceased employee was eligible for retirement and had at the time of death 15 or more years of service.

Other changes:

- effective January 1, 1978, enhancement of the formulas under which retirement pay is computed for those employees who retire with a pension effective date of August 8, 1977, or later.
- persons granted a disability pension

[Continued on Page Two]

Supervisory Appointments

LOUIS ROPER to manager, Plant Maintenance Department 9710, effective Jan. 1.

Lou joined the Labs in January 1967 as a design engineer in plant engineering. He became section supervisor of a maintenance group and, since 1971, has been supervisor of Maintenance Division 9712. Before Sandia, Lou worked for Honeywell in Denver and Albuquerque.

He earned his BS in EE from the University of Colorado. Lou is a member of the American Society of Heating, Refrigeration and Air Conditioning Engineers and past president of the N.M. Chapter. Most of Lou's off-the-job activities relate to his church—maintenance, specialized lighting and, on Sundays, he helps televise the services. Lou and Mable Lou Roper have three children and live in NE Albuquerque.

* * *

HARRY WEAVER to supervisor of Photovoltaics Division 2146, newly created, effective Jan. 1.

Harry attended Auburn University, earning his BS in physics, an MS in engineering physics and a PhD in physics. During 1967 he worked at Sandia, doing research for his thesis. He became a full-time employee in 1968 as a member of the solid state research department, working on nuclear magnetic resonance studies. In recent years, Harry has been with the tube development group, working on long-life neutron tubes.

Off the job, Harry's interests include tennis and skiing; he's also been active in Little League baseball for several years. Harry and his wife Sarah have three children and live in the NE Heights.

* * *

LYNN TYLER to supervisor of Geologic Projects Division 5337, effective Jan. 1. Joining Sandia in 1965 as a staff member in the aerodynamics group, Lynn has since worked with fluid mechanics, with emphasis on blast wave phenomena



NEW SUPERVISORS—Harry Weaver (2146), Douglas Loeschler (2145), Lynn Tyler (5337), Lou Roper (9710) and Bill Burnett (3310).

and rain erosion studies. In 1970 he joined the underground test group to work on containment problems, field experiments in oil shale fracturing and hydraulic fracturing for gas stimulation. His new responsibilities include developing and managing a nuclear waste isolation program in various geologic formations at NTS.

Lynn is a member of ASME and the American Geophysical Union. He earned a BS in ME from the University of Tulsa and his MS and PhD, also in ME, from Oklahoma State University. Leisure time activities include backpacking and numerous church oriented functions. Lynn and his wife Janet have three children and live in NE Albuquerque.

* * *

BILL BURNETT to manager of Environmental Health Department 3310, effective Jan. 1. Bill joined Sandia in 1960 as a member of the technical staff in the health physics group. In 1966 he was promoted to supervisor of the Industrial Hygiene Division. From 1970-76 he was supervisor of Environmental Health Operations Division and, since 1976, has been supervisor of the Health Physics Division.

Bill earned a BS in physics from Texas Western College, an MS in physics from the California Institute of Technology, and an MS in radiation biology from the University of Rochester. He is a member of

the Health Physics Society and past president of the Rio Grande Chapter, and is also a member of the American Industrial Hygiene Association. He is a member of the Panel of Examiners for the American Board of Health Physics.

Off the job, Bill, his wife Joanne and their two sons enjoy camping, hunting and fishing. The Burnetts live in the NE Heights.

* * *

DOUGLAS LOESCHER to supervisor of Hybrid Microcircuit and Packaging Technology Division 2145, effective Jan. 1.

Doug joined the Labs in February 1969 as a staff member in the solid state physics organization. In this group he performed studies of the oxidation of reactive metals. In 1971 he transferred to the electronics technology group where he worked on electric cables and energy storage capacitors. Since his transfer in 1977 to his present area, Doug has worked on fabrication of large scale integrated circuits.

He earned a BS from MIT and a PhD from Stanford University—both in EE. Doug is a member of IEEE and the American Association for the Advancement of Science. Off the job he enjoys hunting, skiing and fishing. Doug and his wife Mary live in NE Albuquerque.

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Retirement, Insurance Plan Improved

on or after August 8, 1977, will now have the right to elect a survivor annuity at the time the pension is granted, irrespective of the age of the pensioner.

—employees retiring at age 65 with a pension effective date of August 8, 1977, or later and whose terms of employment are 10 or more years, will be granted service pensions entitling them to the company paid insurance programs.

—for employees who retire with a service

pension effective date of August 8, 1977, or later, minimum monthly pensions will be improved.

The improvement to the First Supplemental Group Life Insurance means, in essence, that an eligible employee who retires early with a pension effective date of August 8, 1977, or later, will have more insurance coverage for a longer period of time than previously.

Full details of these improvements are carried in the Sandia Bulletin dated December 21, 1977.

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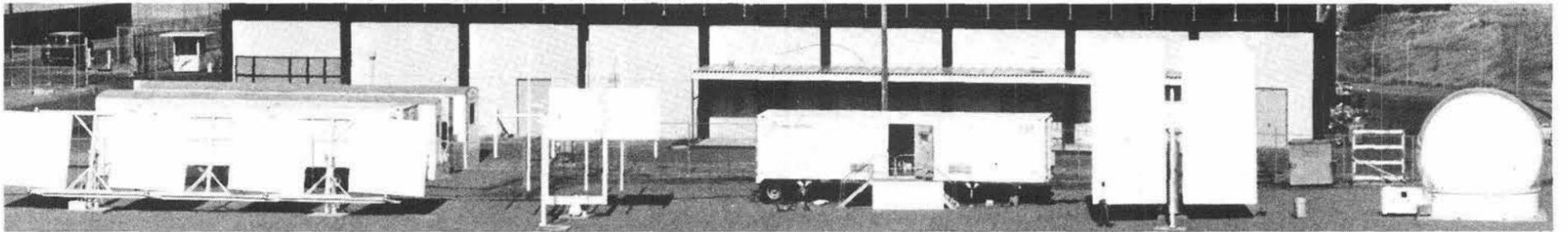
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so does russell smith

bruce hawkinson & lorena schneider report livermore



HELIOSTAT DEVELOPMENT FACILITY—L to R, Honeywell's heliostat with four focused mirror facets (all the others use flat facets); Martin-Marietta's heliostat (with only two of its nine facets mounted); the instrumentation

trailer; the McDonnell-Douglas model to be installed near Barstow; and the Boeing heliostat with its single facet enclosed in a plastic bubble.

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Selvage To Work in Germany, Spain

Yesterday, Cliff Selvage (8180) arrived in Bonn, Germany, where he'll spend a year helping manage a program, sponsored by IEA (International Energy Agency), to develop small solar power systems. Two kinds of small (500-kWe) solar-powered electricity-generating systems are being studied.

The first, a central receiver system similar to DOE's 10-MW pilot plant near Barstow, uses sodium rather than water as the working fluid. In the second, the working fluid circulates through a field of concentrating collectors.

"Our first task," said Cliff before he left, "will be to evaluate system proposals from manufacturers interested in building either system. Dick Braasch from SLA (5715) will help in the evaluation process. Then we'll authorize detailed designs and oversee the design effort.

"If the program appears promising, IEA may authorize a second year, and I'll stay on to help oversee construction of the two side-by-side pilot plants. A site near Almeria on the Mediterranean coast of Spain is proposed.

"Operating two plants side by side will give us some hard data as to which approach is financially more attractive, at least on the 500-kW level. That's one reason we're involved. We'll also gain experience with a power tower system smaller than any now planned in the U.S."

Germany's DFVLR is managing the program for IEA. "DFVLR is the NASA of Germany, and it's the group I'll be working with for the duration of the program," said Cliff.



SEEING DOUBLE—Bill Delameter (foreground, 8121) and Dale Boehme (8424) check out mirrors Dale and others in the Plastics Lab have built to McDonnell-Douglas specifications. Here they're measuring deflections down to hundredths of a millimeter.

Continued From Page One

SLL Analyzes Four Heliostats

Carl Wright of Solar Technology Division 8131 has the task of developing the primary measuring device. "It's a digital radiometric system that will acquire and display data automatically, quickly, and accurately."

In operation, light reflected by the heliostat is directed onto a flat target with known uniform reflectivity characteristics. The output of a video camera focused on the target is then directed onto a square array of points, 100 X 100, by a digitizer. Each point is quantified into one of 256 gray levels for input into a minicomputer. Initially, the minicomputer will provide information on tracking accuracy, beam quality, and total reflected power as a function of time and weather conditions. Continuous videotaping of the camera's output for later transfer to video discs

allows for frame by frame analysis. Another system provides a real time pseudo-color representation of image density contours, as well as isometric projection of the image on color TV monitors.

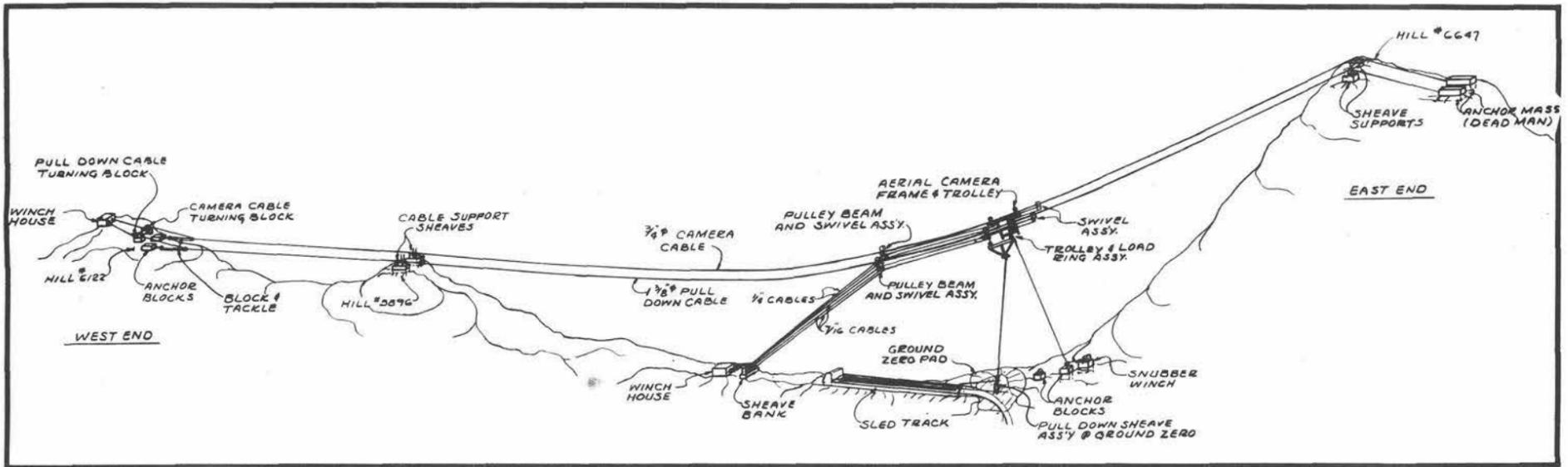
The system will be calibrated by a pyrhelimeter (measures intensity of direct solar radiation, or insolation) and photodiodes mounted on the target. Radiometric data provided by these detectors and data from meteorological instruments will be simultaneously fed to the computer along with the video data.

Several months of heliostat operation will be complemented by environmental tests of mirrors that will simulate exposure of several years. These mirrors are being built to McDonnell-Douglas specifications by Dale Boehme of Model Labs Division 8424.

Retiring



Bobbie Balanda (8266)



DESIGN CRITERIA for an aerial cable test facility for White Sands Missile Range was recently prepared by Sandia Labs. Drawing shows a test facility similar to

Sandia's cable site in Coyote Canyon. Not shown in the drawing is a third parallel cable used to pull a trolley platform across the 8000 ft. span.

Similar to Sandia's

New Cable Facility Designed For White Sands Missile Range

Coyote Test and Track Division 9335 under Dave Bickel this week delivered design criteria and specifications for a new aerial cable testing facility to White Sands Missile Range. Similar to Sandia's larger aerial cable test facility in Coyote Canyon, the concept of the White Sands facility calls for three cables to be positioned between two mountain peaks 8000 ft. apart. Free fall, pull-down by rocket sled

and aerial trolley testing may be performed.

The design project was awarded by White Sands to Sandia since the Labs' facilities and experience in this area are unique. The reimbursable project was funded at \$60,000.

Sandia's original cable facility was built in 1968 to provide a 100-foot-per-second

drop test capability for live ordnance. It was first used for drop testing in the development of a fuel-air bomb.

Later, greater impact velocities were required so a second, higher cable was installed in Coyote Canyon in 1970 with the added feature of a rocket sled "pull down." Lines from test units were connected to a rocket sled via a "turning tunnel" in the impact area which changed direction of the lines from vertical to horizontal. With this arrangement, impact velocities up to 1000 ft. per second were achieved.

A third capability was added later when a trolley was rocket accelerated across the cable to simulate aircraft flight. This requirement was for the evaluation of detectors designed to sense heat seeking missiles. Missiles were fired from the canyon floor at detector-carrying trolleys traversing the cable.

In all testing at the cable sites, precise control may be exercised over test parameters with optimum camera and instrumentation positioning. For example, excellent overhead camera coverage is possible from a cable used exclusively as a camera platform. Testing at the cable facility yields more detailed data and is more economical than testing from a helicopter or aircraft. Certain tests are performed at the facility because they are too hazardous for manned aircraft.

Both Sandia cables are in use full time with a year's backlog of testing scheduled. More than half of these tests are reimbursable programs for the DOD.

"With this much testing it seems appropriate for DOD to build its own facility," Dave says, "and White Sands is a logical choice for a site. Connie Coalson, project leader for Sandia's cable facility, prepared the specifications for the White Sands facility. He surveyed the Range and chose the site for the proposed facility."

The Sandia-furnished design criteria includes a cost estimate establishing the funding level for the facility. If funds are appropriated, the design criteria will be the basis for final construction design.

Plant Engineering Design Department 9740 contributed a major portion of the design criteria package for the White Sands project.

Retiring



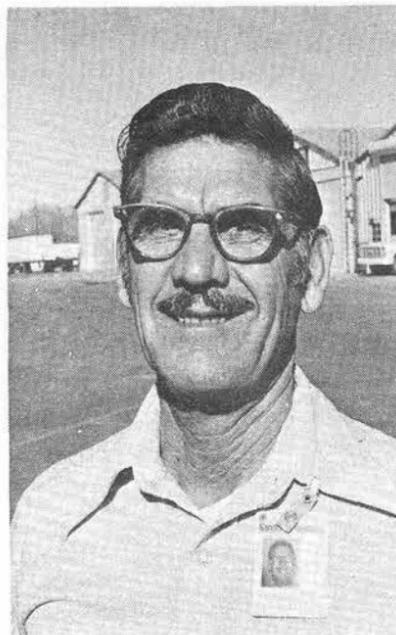
Don Weldon (3532)



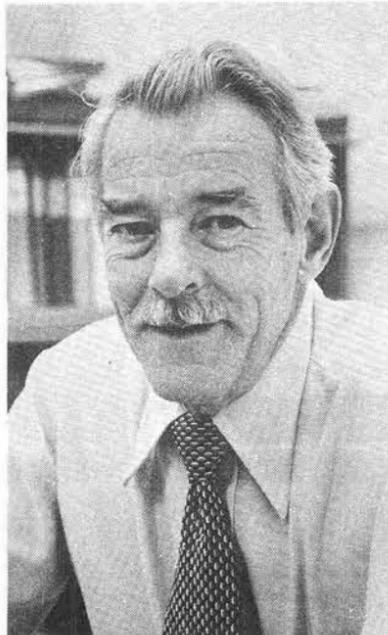
Don Coleman (3313)



Howard Johnson (9713)



Benjamin Cordova (3421)



Art Cole (9655)



John Richardson (4322)

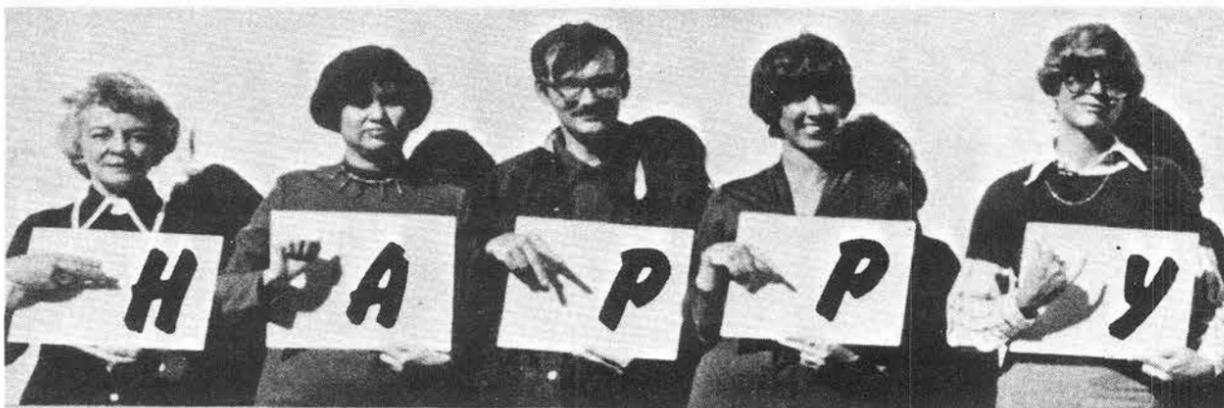
Physical Security Workshop Held at Sandia Laboratories

DOE Security and Safeguards Division Chiefs and members of their immediate staff from 10 separate Area offices spent three days at Sandia in mid-December at a workshop dealing with Physical Protection Systems for weapon and nuclear reactor materials.

The workshop was part of the Fixed Facility Physical Protection program sponsored at Sandia by DOE/Safeguards and Security. Directed by Facilities Protection Department 1750, the workshop dealt with a systems approach to vulnerability assessment. A hypothetical facility was used as an example of how sensors and assessment, barriers and portals, special material transport and storage and response forces can be integrated to provide effective physical protection. Attendees also got a first hand look at current technology during a tour of Sandia facilities where protection system elements are under development.

Technical content of the workshop was under the direction of Steve Chester (1758); Paul Robertson (also 1758) developed materials and coordinated arrangements. Opening remarks were presented by Glenn Fowler (VP 1000) and the introduction was by Tom D'Agostino of DOE's headquarters Safeguards and Security organization. Other departments at Sandia participating were 1220, 1710, 1730, 1760 and 5740.

Because of the enthusiastic response of the attendees, similar workshops are planned at DOE offices around the country. "The objective of these workshops," says Joe Stiegler (1750), "is to help people assess their present physical protection systems and to determine the most effective means of upgrading them."



NOON-TIME CLASS in Basic Manual Communication finger spell their holiday greetings. **HAPPY** is Virginia Foxwell (KAFB), Celina Marquez (9422), David Palmer (2151), instructor Judy Tripp (9424), and Linnie Grace (DOE). **NEW**, Larry Dyer (9424), and Robert Reed (9526). (Our "W" skipped class.) **YEAR**, Dick Thompson (9654), Syd Thomas (1130), Troy West (9526), and Louann Grady (5741).

The Quiet Hour

Talking But Not Speaking

There wasn't a sound in the room when we arrived, but you could tell that a lot of information was being exchanged. Students in three groups were communicating silently, their hands making measured movements in the air, their faces alive with grins and smiles and expressions of concern, confusion and intense thoughtfulness.

Judy Tripp (9424), instructor of the noontime class, "Basic Manual Communication," kept a watchful eye on the class as we talked. She interjected a sign here, corrected one there.

"They all had their own reason for joining my class," Judy says, indicating the quiet talkers, "But basically, they all wanted to break through the silence that separates those who hear from those who don't."

That's a barrier Judy knows something about, since she was born with a severe hearing defect. As a very young child, the prognosis was that she might never learn to speak. But the Superintendent of the School for the Deaf in Santa Fe thought differently.

"He told my parents not to use sign language with me," Judy remembers. "And I had to talk, had to learn to communicate

verbally. It seemed difficult at the time, even unfair, but it's obvious it was worth the effort."

Judy reflected a moment on her class. "The basic step in learning to communicate manually is finger spelling—learning the basic A, B, C's. There's a single hand position for each letter. The next step is learning sign language.

"Signing actually approximates written English, with its own grammar and its own structure. There are regional dialects, too, so a person from one part of the country might have trouble with a regional or colloquial sign. Fortunately, the alphabet is the same everywhere so you can always have the other person spell out the word."

In addition to her noontime class for Sandia, Judy has taught signing to interpreters for use in church, and she hopes to teach classes to medical people so that they can better deal with deaf people in hospitals.

Judy is a computer programmer at Sandia—and has just completed her Bachelor's degree in Business at the University of Albuquerque. She has already enrolled for a graduate Business program through Highlands University.

Her course, LA-011A, will be offered again Spring semester.

Retiree Deaths

October—December 1977

James Hart (73)	11/11/77
Joseph Hegge (58)	11/16/77
Leonard Glover (66)	10/21/77
Vivian Goodwin (65)	11/4/77
Rosalio Silva (74)	12/11/77
David Smith (58)	10/23/77
Hugh Tallman (64)	11/1/77
William White (67)	11/5/77

Events Calendar

Jan. 8—Music Vesper Series, George Shearing Quartet, First Methodist Church, 4th and Lead, 4 p.m.

Jan. 19-21—"Medea," Classics Theatre Company, Popejoy Hall, 8:15 p.m.



Apparently one way to beat the drought is to move to the city. *The Chicago Tribune*, quoting the Illinois State Water Survey, explains it this way: "The 'heat island' effect of cities is just as efficient at making rain as any cumulus cloud. Cities are hot spots because of industry, homes, autos and other sources of hot air. As the heat rises, it pulls moisture from surrounding areas to feed the updraft, frequently leading to the formation of clouds. Particles of air pollution then can serve as the nuclei for raindrop formation. Preliminary evidence indicates Chicago gets 10 to 20 percent more self-inflicted rain than outlying areas."

Can't Stand Running? Here's An Alternative. . .

Last March we ran an athletic event called, since it included three activities, the Triathlon of Albuquerque. Contestants bicycled, ran and swam, one activity after the other, and the winner was the person who completed all three in the shortest time.

The Triathlon was wild-but-fun, with transitions from biking to running, and running to swimming providing an interesting exercise in muscle accommodation. Most entrants were either bikers or runners or swimmers, and the training for the event, as well as the event itself, gave everyone an appreciation of the training possibilities in two other activities. For me, those other activities were biking and swimming. This column discusses biking as an alternative to running.

Question: is bicycling an effective means of enhancing cardiovascular fitness? Answer: definitely yes, but you have to work at it.

A runner will note that bicycling is a lot more fuss than his elegant, non-contrivance, totally human activity. But the fact is that legions of people can't stand running, and they cite compelling arguments for not running:

—their feet, shins, knees, hips, etc., hurt. Running can be orthopedically stressful, and more than a few orthopedists are luke-warm about running for that reason.

—it's monotonous. People who have no mental problems with, say, a 30-minute outdoor walk will decide that the same amount of time spent running is ineffably boring.

—they bounce too much, meaning that their extra weight jiggles and that's physically distressful.

The bicycle provides a good answer to all three problems.

Physically, the critical distinction between running and biking is, of course, that your weight is supported upon a bike. Thus, your body simply isn't subjected to the pounding and bouncing of running. In fact, the pedal stroke is smooth and rhythmic, with little or no orthopedic stress.

On the other hand, biking is not as intensive as running, which generally means that biking workouts, to be equivalent to running workouts, must be of longer duration. My pulse immediately following a run is up around 160, while after a bike ride it's in the 130 region. Either value, however, is high enough to bring about a training effect; i.e., each falls within 70 to 85 percent of maximum heart rate (roughly, 220 minus your age). Aside from the difference in pulse rate, I've concluded that biking isn't as intensive as running simply because I don't feel as tired after a bike workout.

Relevant here is a comment on cycling in a recent *Physical Fitness Research Digest*: "Evidence supports the view that effort on the bicycle is limited by weakness of the most active muscles rather than general

exhaustion..." In other words, your legs give out before you do on a bike.

* * *

Equipment & Courses—Biking is fun. For people who find running monotonous, biking with its speed and visible progress over a course may be the answer. But to be fun you need a good bicycle—the heavy clunker you pick up at the Thrift Shop can be used for a workout but pedaling it over, say, a 10-mile course may be such an unpleasant chore that you'll soon give it up. A "good bicycle" will weigh less than 30 pounds, cost more than \$150, and will likely be a 10-speed of the type that most people think of as a racing bike but which is, in actuality, that selected by the serious biker for long distance touring. A quality 3-speed bike can be used, but it is in no wise as efficient a machine as the 10-speed.

As for bike courses, the object in a bike workout is the same as in a running workout: a *sustained* increase in heart activity and oxygen consumption for a period of at least 20 minutes (after warm-up). Commuting to work by bike is certainly good for improvement of muscle tone, but for most it's stop-and-go and thus does not meet the criterion of "sustained increase" in heart activity and oxygen consumption. As it turns out, we who work on KAFB enjoy a unique advantage—a road network south of the Labs that's practically made to order for long runs on a bike uninterrupted by stop lights or traffic. Courses of 5, 10, 15 and more miles are available, and a future issue of LAB NEWS will carry a map of this network complete with mileages.

Ah, you say, but what do I do in winter months when it's too dark or too cold to bike? Answer: dress warmly and ride on weekends during the heat of the day; get an exercycle, plunk it in front of the boob tube and watch your favorite program as you do your thing (N.B.—The May '77 issue of *Consumer Reports* carries an evaluation of exercycles, recommends the Schwinn XR5 at \$148 as a "Best Buy");



WHEN you first look at bicycle rollers you'll say it can't be done. And, indeed, getting the hang of rollers is a little tricky. Old pro Tom Mayer (1247) shows the way. Set of rollers will run around \$100. Ride on rollers is physically identical to regular bike ride, except for absence of wind.

best yet, to my mind, buy a set of rollers (see photo) so that you can ride your own bike pretty much as you would under normal circumstances (except you can watch TV and not have to contend with the wind).

Does all this seem much too complicated—bikes, exercycles, courses, etc.? Then perhaps it's time for you to assess just how serious you really are about gaining physical fitness. Whether you choose to run or to bike your way to fitness, your investment will not be trivial. In short, it's not easy. But your investment will last a lifetime—probably a long lifetime. •js



MARIE IVERSON, secretary to Information Department 3160, displays magazine covers of recent publications featuring work of Sandia Laboratories. Subjects of the articles ranged from energy projects to ceramic imaging.

The Benefits Of Recycling

If you're concerned about dwindling resources (and there are plenty of indication we all should be) the cardinal rule is don't throw it away—recycle it! In the past few weeks we've had a number of calls that indicate some uncertainties about how that's accomplished.

Most callers know that the collection points on Kirtland have been moved, that the new ones are difficult to find and that they don't seem to accept much except newspapers. So then there's the problem of what to do with magazines, cardboard, telephone books, tin-plated steel cans, aluminum cans and bottles of green, brown and clear glass. And what, we've been asked, do we do with innertubes, worn out washing machines, hot water tanks, refrigerators, freezers, air conditioners, car batteries, clothes, rags, TV dinner trays and aluminum foil from the bottom of the oven.

Surprisingly, there's a market for every one of the items just named—and if you're ecology minded you can give away or sell these items and more in almost any quantity.

Take paper products for example. Newspapers, cardboard, magazines and office papers of all kinds have a ready market. Since they provide paper and paperboard mills with fiber, that means we don't have to cut down so many trees. And since recycled paper doesn't turn up in the garbage, that cuts down on what has to be hauled away—and the amount that has to be plowed under or buried. And paper that's recycled obviously can't burn up in a dump fire—which has obvious advantages in terms of air pollution.

Here's an updated roster of recycling locations:

•**KIRTLAND AIR FORCE BASE**, closest to home (also the most limited recycling effort in the city. They collect *only* newspapers, which should be tied in bundles and left either at the SW corner of Texas and "M" on Kirtland East or at the corner of Randolph Ave. and Francis Drive on Kirtland West.

•**KEEP NEW MEXICO BEAUTIFUL, INC.** is headquartered in the Convention Center and has a depository at 1815 Broadway N.E. This non-profit organization accepts newspapers, cardboard and magazines. They collect glass of all colors, aluminum in any form and tin-coated steel cans. Papers should be bundled or put in shopping bags or sacks to keep them from blowing around and glass should be separated by color. You don't need to crush the cans but they should be clean and the aluminum should be separated from the steel.

Money from the sale of recycled material pays for a full-time employee to operate the depository—and for the organization's education efforts. They provide instructional material on the need for recycling down to the grade school level. They also promote beautification projects (like tree planting and community and countryside cleanup campaigns).



RECYCLING TIN-PLATED CANS is of real value since the U.S. has to import all its tin either from Bolivia or South Africa. This mound of cans at the Keep New Mexico Beautiful Recycling Center at 1815 Broadway NE is destined for El Paso where the tin is stripped out and the steel is used to strengthen other alloys.

Asking what happens to the recycled material, we learned that the newspapers often end up in insulation, that aluminum is remelted and reused directly, and that tin is stripped out of the steel cans (the U.S. has *no* tin—our entire supply comes from Bolivia or South Africa). Steel in the steel cans is alloyed with copper to strengthen it, and the glass is crushed locally and sent to a factory in Texas where it is melted and reused.

Commercial recycling companies abound in Albuquerque. We learned from them that a great many items have commercial value. Rates fluctuate, and price is tied directly to market demand. Right now, the maximum you can get for aluminum is 17 cents/lb. Newspapers bring 1.5 cents/lb., scrap steel (like car bodies) .9 cents, copper 40 cents, cardboard .7 cents, phonebooks .6 cents, clothes and rags from 1 to 25 cents/lb. and magazines .5 cents. Auto batteries are worth up to \$1.75 each, and innertubes will bring a penny a pound.

The following list of commercial recyclers is by no means all-inclusive, but it's a good starting point:

•**NEW MEXICO FIBERS** at 2330 2nd SW buys all kinds of paper products (including telephone books). They also provide leaflets for those interested in regular routes to pick up recyclable materials from their friends and neighbors.

•**NEW MEXICO RECYCLING AND WIPING** at 2820 Williams SE buys all kinds of paper. They also buy old clothes and rags which are washed or cleaned and cut into wiping cloths.

REYNOLDS ALUMINUM RECYCLING CENTER at 4019 Edith NE buys only aluminum—but that includes cans, foil, TV dinner trays, pie tins, etc.

•**ALBUQUERQUE METALS COMPANY** at 3339 2nd SW buys brass, old car bodies and appliances. They also buy batteries and innertubes.

•**ALBUQUERQUE BATTERY COMPANY** at 1507 1st NW buys any and all automotive batteries.



NEWSPAPERS are always recyclable—and are much in demand. They provide fibre for paper and cardboard and often end up in insulation.

Summing up, there's a big market for many things you normally just toss. From society's viewpoint, it makes more sense everyday to recycle everything we can. In a word, recycling pays—in many ways.

Fun & Games

Horseshoes—The Coronado Horseshoe Club is now shaping up for the '78 season and is looking for new members, especially those of the female gender. Bob Schuch (5232) is club president, and he can be contacted on 4-2676, or call Leo Bressan, 4-7933.

* * *

Golf—The Men's Golf Association will have a get-acquainted meeting immediately after work on January 19 at the C-Club's Eldorado Room. Members and those interested in membership are urged to attend. The business meeting will be followed by some golf films. Club president is Jim Bear (4336), 4-5333.

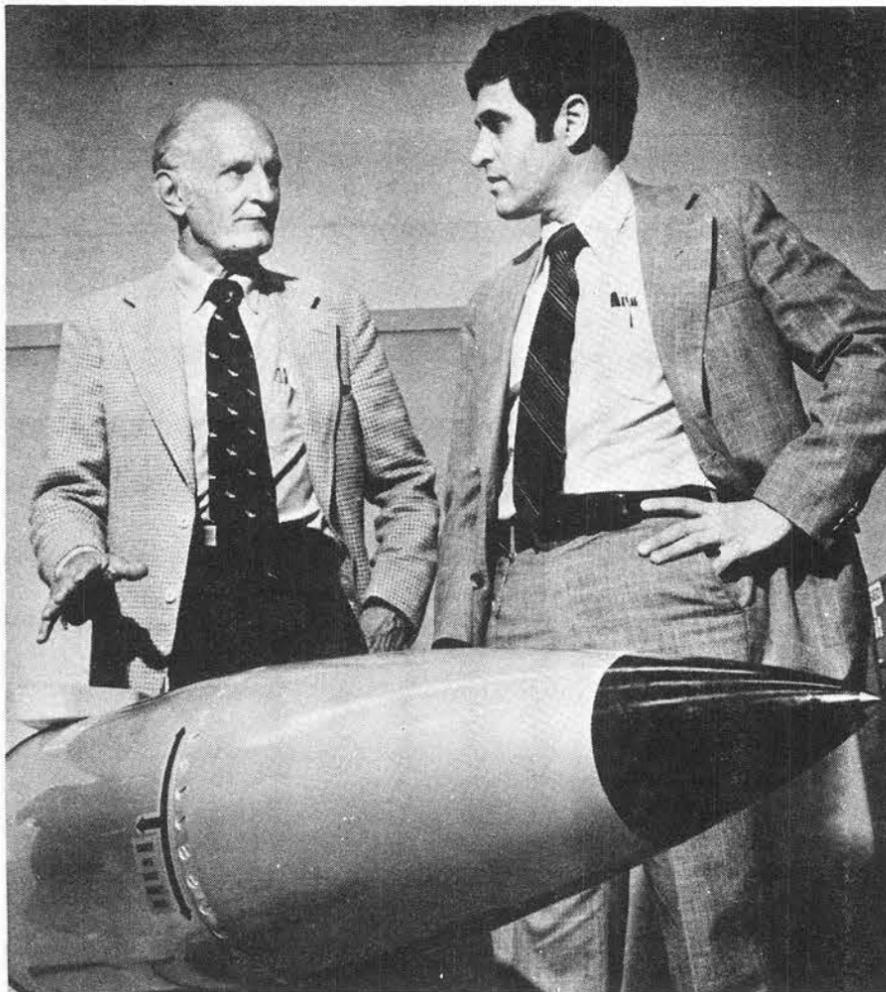
* * *

Rifle & Pistol Shooting—The Sandia R&P Assn. is also setting up the '78 season and needs both new members and coaches. Club president is Dave Overmeir (9486) who can be reached on 4-3436.

* * *

Running & Biking—The response to the call to join the Sandia Runner's Assn. has been sizeable, with 120 Sandians and DOEans (DOERs?) signed up. (Send name, org., E-number and phone to RUN, LAB NEWS.) As the first order of business, the C-Club's Bob Giersberg is about to mail a survey form to both runners and SBA'ers (Sandia Bicycle Assn.) to learn what role the Sandia Recreation Assn. can fill in meeting the interests of runners and bikers.

A number of Sandia Runners made the Phoenix Marathon last month, but special mention and congratulations go to Margaret Johns (1282) who put it all together to complete her first 26-miler. To our knowledge, Margaret is the first woman at Sandia to do a marathon.



SENATOR JACK SCHMITT came to Sandia just before Christmas to be briefed on Labs weapon programs. President Sparks here points out features of Mk 61 bomb. Presentations were made for the Senator by Gene Ives (4330), Max Newsom (1320), Paul Stokes (1352) and Brick Dumas (1240).

feed back

Q. It came to my attention recently (the hard way) that there is a severe gap in medical coverage for those people electing Mastercare coverage. Mastercare dropped all coverage for dental expenses except for medical emergencies caused by accident with the advent of Sandia's dental plan. The dental plan, however, only covers a limited amount per year. A person with a mouth injury requiring repair of several teeth would soon find his dental plan inadequate if he were on Mastercare. Equitable, to my understanding, will provide dental coverage for accidental injury. The case that I unfortunately have personal experience with deals with periodontal surgery. I found that the dental plan does not cover periodontal surgery, nor does my Mastercare plan. Equitable however, would have paid 80% after the deductible. I believe this discrepancy in coverage should be corrected.

A. As you know, employees have the choice of selecting from the two plans which type of health care coverage better suits their individual needs. The two plans are intentionally not identical in order to provide employees this choice. We are considering the feasibility of including this type of coverage in the Dental Plan contract when the current contract is renewed January 1, 1979.

F. P. Prange—4100

Q. I'm curious about our dental insurance. The purpose of insurance is to cover the insured against unexpected financial loss. The Equitable medical insurance works in this manner. It does not cover routine medical checkups but covers unexpected medical illness. Our dental plan works in reverse! Benefits on unex-

pected dental care are practically nonexistent. How come?

A. The Dental Plan is the same as that offered at all Bell System companies, and was not designed by Sandia. The plan's benefit structure is designed to encourage preventive care of employees' and dependents' teeth. For the majority of these types of expenses, the plan will pay 100% of the reasonable and customary fee on a first dollar basis.

F. P. Prange—4100

Q. How about some left-handed desks for noon-hour and in-hour courses?

A. As a result of your inquiry, desks for left-handed employees are being ordered for each classroom for which Education and Training Department 3520 has responsibility. Thanks for bringing this to our attention.

J. R. Garcia—3500

Q. City bus riders sometimes have difficulty in buying bus tokens on Base. Would it be possible for the tellers to sell these?

A. We get requests to handle many small items that are normally considered to be personal financial services such as postage stamps, bus tokens, cashing small checks (under \$25), money orders, certified cashier checks, etc., which are not suitable to an operation that is officially oriented to government business.

Tickets for the Sandia special buses are available at the Sandia Credit Union and city bus tokens can be purchased from local banks, including the Kirtland branch of Bank of New Mexico.

F. P. Prange—4100

Dream boat.



Take stock in America.
Buy U.S. Savings Bonds.

Speakers

B. W. Marshall (5713), "Solar and Photovoltaics Research," Albuquerque Transportation Club, Nov. 1.

L. Wetherholt (5710), "Developments in Solar Energy," Albuquerque Academy Assembly, Nov. 2.

E. C. Boes (5719), "Solar energy," Career Enrichment Center electronics class, Nov. 3.

M. J. Landry (2542), "Holography," Career Enrichment Center electronics class, Nov. 3.

H. C. Monteith (5411), "UFO's in Indian History," Navajo Community College seminar, Nov. 4; "Research in Paranormal Phenomena," UNM nursing class, Nov. 7, Alpha Centura Star Trek Club, Nov. 12, "UFO's and Their Mission to Earth," Northwest Kiwanis Club, Nov. 30.

T. F. Marker (6010), "The Oil Industry: Fact and Fiction," Northwest Kiwanis Club, Nov. 9.

G. E. Brandvold (5710), "Near Future Prospects of Solar Energy for Commercial Applications," Associated General Contractors, Nov. 10.

G. E. Tucker (3313), "Radiation Detection Fundamentals," Career Enrichment Center electronics class, Nov. 10.

M. H. Worstell (5715), "Wind Energy Research," Career Enrichment Center electronics class, Nov. 17 and Los Alamos High School Energy Awareness Workshop, Nov. 18.

W. D. Weart (5310), "WIPP Environmental Concerns," UNM environmental issues class, Nov. 18.

N. J. DeLollis (5813), "Metrication and International Standards," Northwest Kiwanis Club, Nov. 23.

J. M. McGlaun (2165), "A 1-D Model of Foil/Flyer Systems"; A. E. Binder (2165), "Development of a Firing Set for DELS"; J. E. Gover (2165), "A Comparison of Volumes for Different Firing Set Technologies"; G. H. Mauldin (2162), "The Development of Radiation Tolerant High Energy Density Capacitors"; J. H. Stichman (2167), "Thyristor Switching of Capacitor Discharge Firing Unit"; D. L. Fehl (2165), "Directions for COMAG Code Application"; J. M. Portlock (2167), "Ripple Firing," X-Unit/LFSC Firing System Conference, Los Alamos, Nov. 8-9.

R. K. Quinn (2516), "Electrochemical Oxidation and Surface Analysis Characterization of Titanium and Titanium Hydride Electrodes," invited paper at Catalytic Materials Conference, Nov. 14-16, Boston.

S. White (2521) and E. K. Beauchamp (5846), "Secure Seals Using Stressed Glass," N.M. Section of American Ceramic Society meeting, Nov. 18, SLA.

P. M. Richards (5132), "Superionic Conductors," Physics Colloquium, Univ. of Kansas, Nov. 18, Lawrence.

G. Yonas (5240), "Particle Beam Fusion Program," Program Manager's meeting, Nov. 21-22, SLA.

B. M. Butcher (5167), "Ore Aspect of Thermo-mechanical and Physical Research at Sandia," Seminar for undergraduate engineering students, NMIT, Nov. 22, Socorro.

W. E. Warren (5162), "Plastic Yielding Through a Two-Material Interface from Cracks Under Antiplane Deformation," Colloquium at College of Engineering, Old Dominion University, Nov. 28, Norfolk, Va.

H. H. Madden (5114), "Search for Valence Band Information in the Auger Spectra of Lithium and Copper," invited seminar in conjunction with Surface Science and Catalysis Science Seminar, Univ. of Calif., Berkeley, Nov. 28.

R. R. Rye (5114), "Auger Electron Spectroscopy: A Probe of Local Chemical Environment," Seminar at Cornell Univ., Dec. 1, Ithaca.

W. J. Spencer (2100), B. D. Shafer, W. T. Corbett (both 2116), and R. P. Eaton, M.D. (UNM), "Electromechanical Aspects of an Artificial Beta Cell," National Institute of Health Workshop, Dec. 1-2, Bethesda, Md.

A. V. Farnsworth, Jr. (5241), "Recent Developments in Particle Beam Inertial Confinement Fusion," Ariz. State Univ., College of Engineering, Dec. 2, Tempe.

E. J. Graeber (5822), "Fielding Experiments During September '77 Kilauea Eruption," Chemistry Department, NMIT, Dec. 5, Socorro.

J. A. Panitz (5114), "Field-Desorption Mass Spectroscopy," invited paper for the Solid State Science Panel of National Research Council, Dec. 5-6, Washington, D.C.



PLANT ENGINEERING's Al Dickinson (9743), at left, is chiefly responsible for the design of the Lab's filter cleaning plant. Some four to five thousand air filters are washed, dried, and oiled each month in the automated plant. The filters are used to clean intake air throughout the Labs. Bud Hall (3422) is shown with Al, while operator Abedon Ortiz (also 3422) is at right.

J. G. Kelly (5423) and K. T. Stalker (1354), "The Development of a Coded Aperture Fuel Motion Diagnostics system for the ACPR (upgrade)," and "Coded Aperture Imaging Experiments with Reactor Illuminated LMFBR Fuel Pins"; L. M. Choate (5423), W. H. Buckalew (5232) and L. D. Posey (5452), "Flash X-Radiography for Material Motion Detection"; P. J. McDaniel (5231) and S. A. Wright (5423), "The Relation between Detector Response and Fuel Motion for In-Core Fuel Motion Detection Systems"; K. T. Stalker (1354) and J. G. Kelly (5423), "Analogue and Digital Reconstructions of Reactor Illuminated LMFBR Fuel Pins Recorded with Coded Aperture Imaging"; D. A. McArthur (5423), J. A. Halbleib, Sr. (5231) and J. G. Kelly (5423), "The Potential for Using Coded Aperture Imaging for Fuel Motion Detection Measurement in the STF," Specialists meeting on Fuel and Clad Motion Diagnostics for Fast Reactor Safety Test Facilities, USNRC, ERDA, OECD, Dec. 5-7, LASL.

S. G. Varnado, S. G. Vandevender and L. L. Lukens (all 5742), "Solar Powered Irrigation Systems"; S. G. Varnado and J. L. Mitchiner (both 5742), "Prospects of Generating Power with Particle-Beam-Driven Inertial Confinement Fusion"; R. B. Jones (5413), "Application of Computer Animation for Dynamic Display in Complex Energy Systems," Alternative Energy Sources: A National Symposium, Dec. 5-7, Miami Beach, Fla.

G. J. Lockwood (5232), J. M. Hoffman (5212) and G. H. Miller (5216), "Single Electron Capture for Various Ions Incident Onto H and H₂"; Hoffman, Lockwood and Miller, "Charge-Transfer Excitation of CO⁺," 1977 Annual meeting of the Division of Electron & Atomic Physics, Dec. 5-7, Knoxville, Tenn.

J. G. Fossum (2144), F. A. Lindholm (Univ. of Fla.) and L. T. Sah (Univ. of Ill.), "Physics Underlying Improved Efficiency of High-Low-Junction Emitter Silicon Solar Cells"; R. A. Kiehl (5133), "Narrow Microwave Pulse Generation by Optical Enhancement of TRAPATT Oscillations"; E. P. EerNisse, C. E. Land (both 5133), "Piezoelectric Sensor Pen for Dynamic Signature Verification"; K. W. Mitchell (5133), "Computer Analysis of Resistance and Non-Uniform Illumination Effects on Concentrator Solar Cells"; A. Ochoa (2112), "Composite Dipolar and Field Effect Carrier Domain Devices," IEEE 1977 International Electron Devices meeting, Dec. 5-7, Washington, D.C.

L. D. Tyler, C. W. Smith and R. C. Bass (all 1111), "Residual Stresses Produced by Contained Explosives"; R. E. Luna (5432) and B. D. Zak (5443), "Summary of Da Vinci Results and Comparisons with a Model"; B. D. Zak (5443) and P. B. Herrington (1735), "Overview of the 1976 Da Vinci Experiments"; R. L. Schellenbaum (1735) and B. D. Zak (5443), "Onboard Ozone and Sulfur Dioxide Measurements During DV II and DV III"; W. R. Wawersik and D. W. Hannum (both 5163), "Quasi-Static Pressure Effects in a Rock Salt at Low Confining Pressure"; T. M. Gerlach (5813), "Analysis of Recent Volcanic Gas Collection Data from Basaltic Volcanoes: Surtsey, Mount Etna, Erta Ale"; D. E. Grady and R. E. Hollenbach (both 5163), "Interrelation of Flow

or Fracture and Phase Transformation: The Effect on Rate Sensitive Deformation in Carbonate Rock," Fall annual meeting of AGU, Dec. 5-9, San Francisco.

B. Richard (2612) and J. B. Yoder (9625), "Enhancement of a Product Surveillance Data Base by Digital Signal Processing Techniques"; D. A. Young (2612) and J. B. Yoder (9625), "A Proposed Format for the Recording and Transmission of Digital Transient Signals in GEISHA"; J. B. Yoder and B. Richard, "Digital Signal Analysis in the SLA Product Data System—An Overview"; W. W. Sundt (1222), "Reliability Trend Evaluation of Digitized Pulse Data"; J. R. Holpp (9625), "Planning for Digital Signal Processing Withing the SLA Product Data System"; J. A. Cooper (2331), "Orthogonal Transformations of Digital Data"; C. V. Jakowatz (1352), "A Review of Some Algorithms for Image Data Compression"; W. L. Jacklin (1734), "Portable Data Acquisition System"; G. R. Elliott (1734), "Improving the Performance of Perimeter Security Sensors Through Digital Signal Processing"; G. W. Donohoe (1734), "A Hardware Implementation of Adaptive Filtering Using Charge Coupled Devices"; N. A. Bourgeois (1734), "The Software Development of a Real Time Signal Processing System"; L. J. O'Connell (9526), "Apparent Effects of Aliasing in the Time Domain"; R. J. Isidoro (9523), "Data Acquisition and Processing System"; T. C. Bryant (2351), "Digitizing and Analysis of Neutron Generator Waveforms"; Digital Signal Processing Symposium, Dec. 6-7, SLA.

M. J. Landry (9412), "Holography—State-of-the-Art," SME - Lasers in Modern Industry, Dec. 6-8, Arlington Park, Ill.

P. B. Herrington (1757), "Studies of Atmospheric Pollutants Using Balloon Measurement Platforms," ISA, Albuquerque Chapter monthly meeting, Dec. 8.

B. L. Butler (5844), "National Trends in Materials for Solar Energy Systems," Albq. Chapter of ASME, Dec. 8.

A. J. Arenholz (2620), "The Role of the Company-Wide Computer Committee," N.M. Federal A.D.P. Council, Dec. 9, KAFB.

Sympathy

To Delores Smith (9573) on the death of her mother in West Virginia, Dec. 19.

To Vera Romero (9560) and Pat Romero (9712) on the death of their grandmother in Las Vegas, N.M.

To Bob Garcia (3500) upon the death of his mother, Dec. 21.

To Bill Carstens (3511) on the death of his son in Corrales, Jan. 1.

To Russell Leahy (3413) on the death of his mother in Albuquerque, Dec. 23.

To Howard Shelton (3521) and Tillie Pierce (3155) on the death of their father in Albuquerque, Dec. 31.



Speaking of seat belts, a study just released by the Highway Transportation Safety Administration says women use them more than men, young people more than old, and Westerners more than Easterners. However, only 18.5 percent of us use them at all.

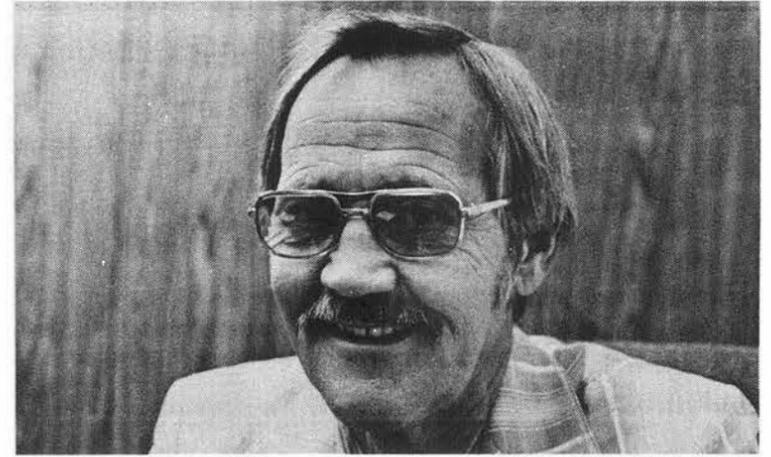
MILEPOSTS

LAB NEWS

JANUARY 1978



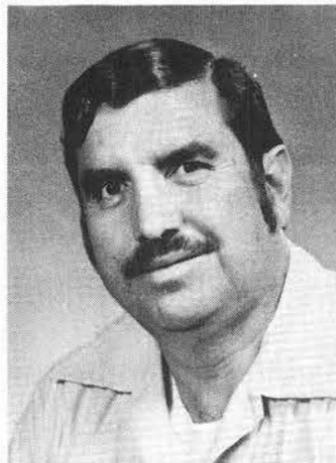
Eugene Meyer - 1336 25



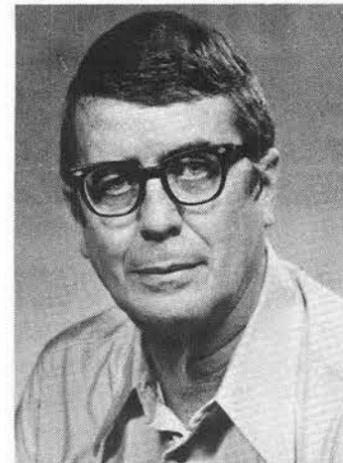
Dave Tarbox - 3400 30



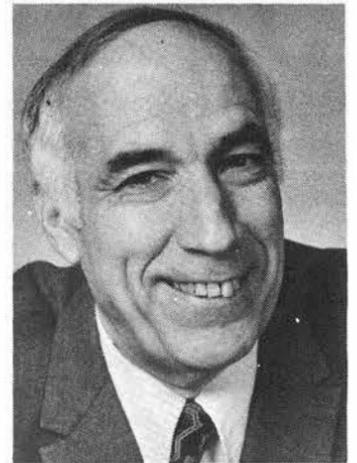
Mary England - 3411 15



Joe Ochoa - 3421 25



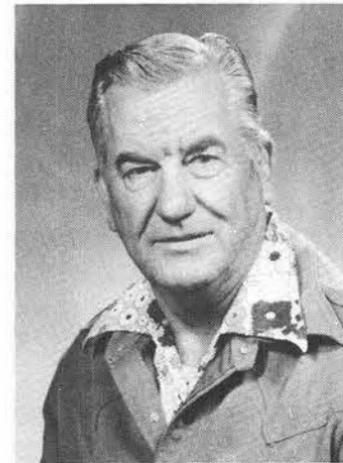
Robert Carleton - 3425 25



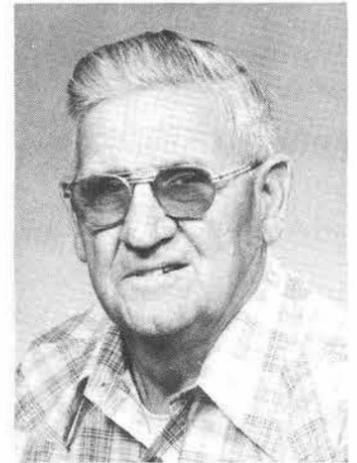
Carlton Scott - 8122 25



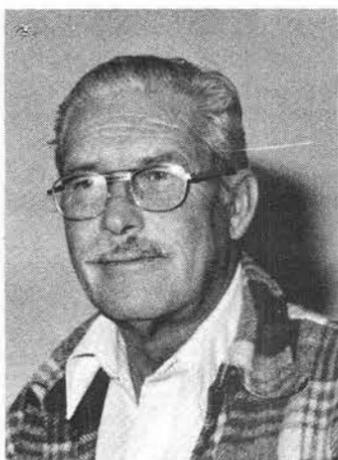
Donnie Papineau - 3735 25



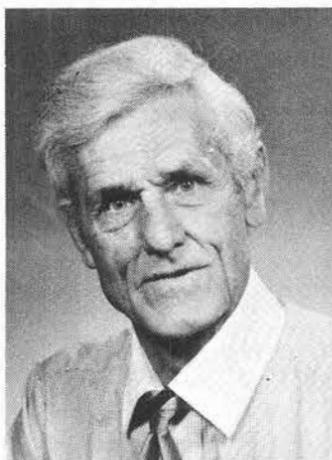
Kenneth Edwards - 9414 25



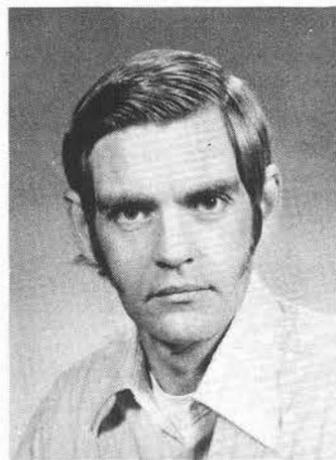
John Cotch - 9713 25



James Allen - 9471 30



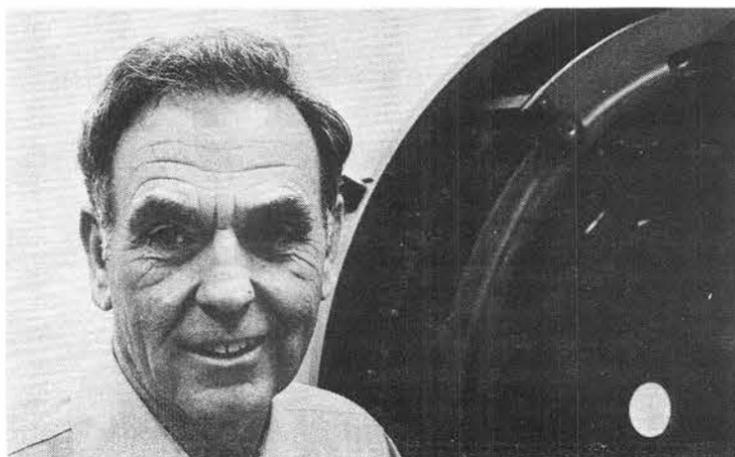
Dulin Westfall - 1756 25



Michael Spencer - 2345 10



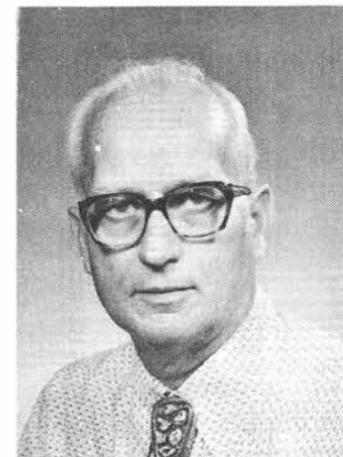
Howard Stump - 4010 25



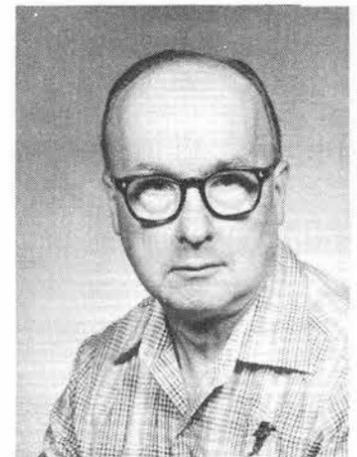
Jrv Lenz - 9412 30



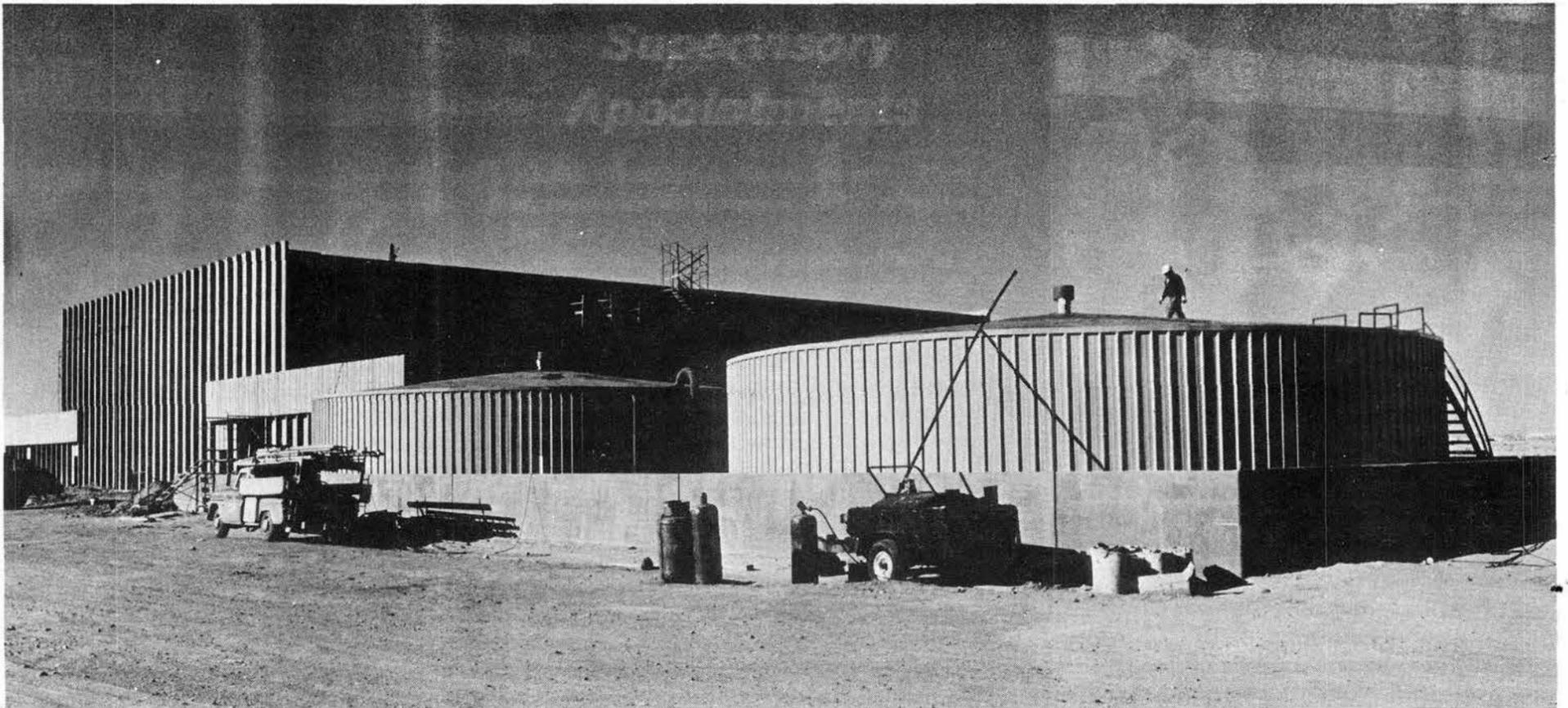
William Tucker - 9524 25



Floyd Mastin - 1136 25



Stanley Owens - 9563 20



E-Beam Fusion Facility Progress

E-BEAM FUSION FACILITY labs and office buildings are approximately 50 percent complete, with accelerator buildup planned for October and office occupancy by Christmas '78. View above shows insulating oil storage tanks in foreground. Columns and beams at right are part of office building. Walls will be of pre-cast concrete like those of lab building. The E-Beam fusion facility will house a 40 terrawatt accelerator capable of creating either electron or ion beams. Site will be called Area IV when facility is completed. It is located about two miles south of Area I.

PSQ Forms Being Mailed

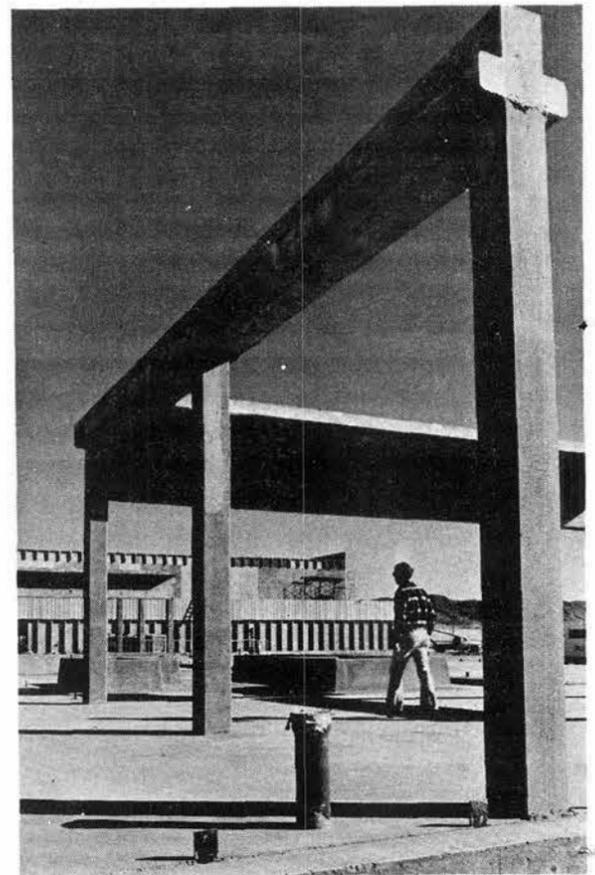
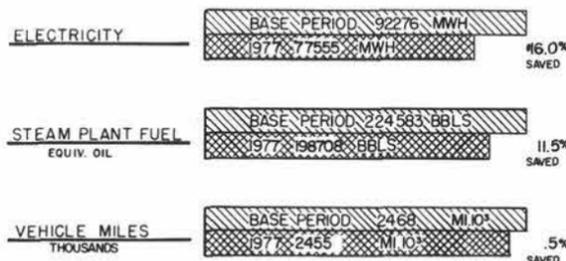
Security is sending out a large batch of PSQ forms to selected employees for the required 5-year updating. Russell Curtis (3433) is coordinating the effort and urges all who receive the forms to complete and return them promptly.



Three printers in their 20's discovered they were addicted to TV and decided to tune out. A thousand people have joined their "Unplug America Coalition." Yvonne Hoarty, one of the founders, reported spending up to five hours a night in front of TV—even when she desperately needed sleep. "Television," she says, "is a placebo creating a lackadaisical attitude that obliterates creative thinking because it doesn't require any response, only receptivity." (Past that, there seems nothing more to say.)

ENERGY SAVINGS

COMPARED WITH USAGE IN BASE PERIOD - JULY 1972 THRU JUNE 1973
CURRENT REPORTING PERIOD ENDING NOV '77



JUNK • GOODIES • TRASH • ANTIQUES • KLUNKERS • CREAM PUFFS • HOUSES • HOVELS • LOST • FOUND • WANTED • & THINGS

CLASSIFIED ADVERTISING

Deadline: Friday noon prior to week of publication unless changed by holiday. Mail to: Div. 3162 (814/6).

RULES

1. Limit 20 words.
2. One ad per issue per category.
3. Submit in writing. No phone-ins.
4. Use home telephone numbers.
5. For active and retired Sandians and ERDA employees.
6. No commercial ads, please.
7. Include name and organization.
8. Housing listed here for rent or sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

AMATEUR RADIO classes, for information, Smith, 281-5239.
SINGER Touch and Sew, Model 758, maple desk cabinet w/drawers, half price, \$350. Dawes, 821-9746.
WOOL CARPETING, 62 sq. yds., beige. Burress, 298-5061.
ELECTRIC RANGE, GE self-cleaning, white, 30" wide, \$200; carpet, 12' x 27', off-white, low shag, foam pad, \$135. Blumenfeld, 298-5779.
PING PONG TABLE, 1/2 in. thick, \$22; bicycle, 5-sp. Sears, men's 26", \$30; bicycle, Sears balloon 26", \$12.50. Bartlett, 299-4861.
HEALTH SPA memberships, two, Olympic Health Spa, Montgomery

Plaza, 1 year remaining on each, both for \$25 month. Bolwahn, 821-6278.
CRIB, Mattress; tire, G78-15 belted whitewall. Evans, 298-4224.
RIDERS Perpetual Trouble Shooters Manuals, 22 volumes w/indexes. \$200 plus shipping. Frederiksen, 7207 Dreyfuss, Amarillo, 79106.
TAPE DECK, 8-track stereo, Craig mod. H260, cost \$140, sell for \$80. Fox, 299-9031.
FIREPLACE SCREEN, wrought iron, w/pull chains, 4' wide, 2' high, \$20. Wilson, 344-5373.
ELECTRIC GUITAR w/amplifier; car radio for '73 Chevy; black tire, 700x14 w/rim. Sedillo, 255-0669.
FIREPLACE SCREEN, wrought iron, tools, free standing, 28" high x 39" wide, \$15; 6x9 shag carpet, gold, \$30. Keck, 294-2887.
MOTOROLA STEREO; Zenith portable stereo, cameras. Trollinger, 268-3414.
PORTABLE STEREO record player, Columbia, \$25; Olympic AM/FM phono, TV, b&w console, make offer. Sweet, 255-0255.
SEWING MACHINE, console model 319W, zig zag stitch & cams, solid light wood cabinet, \$125. Mancuso, 296-4178.
DOG SHIPPING CRATE, medium size, \$45. Griego, 821-8447.
THREE BIKES, 3 sp.; air conditioner for VW van; gas space heater. Stromberg, 255-6131.
TYPEWRITER, Underwood Five,

manual. \$85. Doggett, 293-6210.
BABY ITEMS, stroller \$5; diaper pail, \$1; potty chair, \$1; car seat, \$10, air purifier, ESP, \$20; toaster oven, \$8. Nuttall, 821-2895.
BASS AMP, 360 Acoustic, \$600; MXR phase shifter 90, \$30. Harrison, 821-6666.
QUEEN ANNE mahogany hi-boy; convertible sofa bed. Marder, 256-7805.
FLUORESCENT LIGHT FIXTURES, two, round, with tubes, \$5 ea. Henning, 299-0318.
PUPPIES, miniature Schnauzer, AKC reg., non-shedding. Widenhofer, 298-2510.
PICKUP CAMPER, 11 ft. cabover, gas refrig., monomatic, jacks, tie downs, passthu for Ford pickup. Bagg, 298-4035.

TRANSPORTATION

72 MERCURY MARQUIS, 4dr, V8, AT, AC, AM/FM stereo. Below book at \$1400. Byrd, 299-4869.
X75 HONDA - 75cc. Trollinger, 268-3414.
'64 OLDS DYNAMIC 88, needs transmission. \$100. Meiss, 266-2278 after 5 weekdays and all day weekends.
74 LINCOLN CONTINENTAL MARK IV. All extras, low mileage. Below book at \$5900, or best offer. Chapman, 292-2800.
74 GREMLIN, AC, PS, PB, "Levi" interior. 41K, \$1550. Baremore, 298-8980.
73 COUGAR XR-7, AT, PS, PB, AM/FM stereo, vinyl top. 351C

below book. Bagg, 298-4035.
74 CAPRICE, AC, PS, AT, below book. Two tires, G78, both for \$18. Walter, 883-5411.
73 FORD GRAN TORINO, one owner, 4dr sedan, AC, PS, PB. \$1690. Lowrey, 298-4288.
71 VW-411, 4 dr. AT, fuel injection, radials, radio, AC., yellow, \$1090. Ostrander, 298-8374.
74 PORSCHE 914, 1.8 litre, AC, AM/FM stereo cassette tape deck. Chandler, 296-9788 or 299-4496.
'64 CHEVY, V8, 3 speed. New battery, nearly new tires. Dependable, \$175. 293-3809.
77 MONTE CARLO, extras, low mileage. Firm \$5000. Chavez, 831-2692.
73 VOLVO 1800ES SPORTS HATCHBACK, 45,000 miles, leather interior, AM/FM stereo, factory air, radials. Firm \$7000. Cockelrears, 256-7570.
70 VW squareback, AT, fuel injection, new battery. Paul, 255-0422.

WANTED

RIDE from 221 Rhode Island NE to Bldg. 800. Weiss, 4-2492.
ELECTRONIC PIANO and amplifier. Copeland, 266-4944.
KING BED FRAME or twin frame; couch, chair; recliner; kitchen table w/chairs; dresser; chest of drawers. Shoaf, 296-6166.
NEED TWO additional members for balloon club. Cost \$750/share. Instruction available at reasonable cost. Wilmot, 298-9243.

FOR RENT

3 BEDROOM, 1 bath, NE, close in, stove, refrigerator, carpet. Martinez, 881-3289.
ONE BEDROOM TRIPLEX, fireplace, closed patio, near base, 840 Ortiz SE, \$165/mo. Durand, 842-6700.

REAL ESTATE

BI-LEVEL, 4 bdr., 2 1/2 bath, family room, fireplace, wet bar, 3-car plus R.V. garage, corner lot, covered patio, sun deck, 2400 sq. ft., mid 60's. Sheffield, 293-5237.

LOST AND FOUND

LOST—3x5 looseleaf address book w/black binding; oval shape turquoise heishe earring w/pukashell loop; turquoise ring w/2 small diamonds; man's black leather glove for left hand.

FOUND—bifocal sunglasses w/black plastic rims in black case; black plastic-rimmed glasses w/wire mesh guards; round gold miniature ball on spike; key (similar to bicycle lock key); contact lens in white cylinder case; woman's blue and white sweater; brown pocketknife (3 1/2"); car key labeled "Family of Fine Cars"; bracket in plastic bag; black eyeglasses case. LOST AND FOUND, BLDG. 832, 264-6245.

Take Note

A retired Sandian and his wife visited LAB NEWS last week to ask us to express their gratitude to friends at Sandia who helped them during the illness and eventual death of his wife's mother. They are Donato and Ferminia Lovato of La Joya, N.M. Mrs. Lovato's mother, Marillita Esquibel, died on Dec. 11. Donato retired in 1969 following serious injury in an automobile accident.

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The Kirtland Officers Wives Club has announced their scholarship program for the 1978-79 academic year. Dependents of Sandia Labs' employees are eligible. The scholarships are open to freshman and upperclassmen entering an accredited college or university, including accredited technical or vocational institutions approved by the Veterans Administration. Selection is based on scholastic ability, financial need, and recommendations of faculty members. If you wish further information and an application, send your name and organization to Scholarship, LAB NEWS.

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If you go for grapes, perhaps you'll be interested in Baron Brumley's (2166) course being offered this Spring in UNM's Community College. Entitled "Grape Growing in New Mexico," it's described as "A practical course in the art of growing grapes in New Mexico." Baron says the course is intended for both casual and serious growers, and it includes tours of local vineyards. Baron is current president of the New Mexico Vine & Wine Society.

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Two seminars on microprocessors and microcomputers are scheduled this month.



The first is Tuesday, Jan. 10, starting at 8:30 a.m. in Bldg. 814. Texas Instruments speakers include Jim Aiken, Phil Roussey and Bob Bergeler. They will discuss TI technology, 9900 computer architecture and single board products, 9900 and 0400.

On Jan. 17, the seminar will be held in the Exhibit Center starting at 8:30 a.m. Data General people will discuss the DG Micronova.

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The 30th annual meeting of the Sandia Lab Credit Union is set for Jan. 26 at 5:15 p.m. at the C-Club. Following the customary election of officers and other matters of the business meeting, the customary drawing for prizes—three of them—will be held, but with a difference: you don't have to be there to win a prize, just be a member as of last Dec. 31 and have continued your membership until the date of the drawing. Purpose is to reduce the crush. Door favors will continue to be given to those who do attend. The three drawing prizes consist of cash share awards.

* * *

Wood-burning heaters are staging a comeback because of rising fuel costs, and DOE is funding research by Auburn University aimed at improving their energy efficiency, safety and usefulness. LAB NEWS will keep readers informed as more developments are reported to us on this subject.

1978 Holidays

Sandians will observe the following 1978 holidays:

Memorial Day Monday, May 29
 Independence Day Tuesday, July 4
 Labor Day Monday, Sept. 4
 Thanksgiving Thursday, Nov. 23
 Christmas and New Year
 Shutdown Dec. 23 through Jan. 1

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Junk Recycled In Test Program

The test bombs are propelled down the track by rocket and ejected into the air by a piston on the rocket sled. A parachute deploys and slows the bomb—which then settles into the target area as though dropped from an aircraft.

After the first test, efforts continued to increase the density of the target—to maximize the possibility of the bomb hitting something. "Since Area III had already been swept clean," says Jack Edwards, Project Engineer for the test series, "Jim Phillips and Rusty Puccini moved out to scavenge Area V, and, later, Coyote Canyon. We really cleaned up—and that's an unusual spin-off from a bomb testing program."

Coronado Club Activities

January Calendar Packed at Club

TONIGHT Happy Hour at the Club features barbecued ribs on the buffet and the Prisoners loose on the bandstand. The buffet costs \$3.75 for adults, \$1.92 for kids. Next Friday, roast beef tops the buffet; Shalako plays for dancing.

TOMORROW a magic act by Kelly Dickers will headline Variety Night followed by a movie, "Monkees Go Home," and cartoons. It's free to members.

FRIDAY THE 13TH is the date set for the next Single Mingle. Mike Michnovicz and accordion will entertain starting at 4:30 in the El Dorado room.

Singles will get organized at a meeting Tuesday, Jan. 17, at 4:45 p.m. Plan to be there to help plan.

TRAVELOGUE NIGHT Wednesday, Jan. 18, will reunite the Club's Mazatlan and Manzanillo travelers for a session of slides and movies starting at 7:30 p.m. All Club members are invited to share the fun.

SANADOES will lunch Tuesday, Jan. 10, at 1 p.m. Program speaker is G. Ward Finley, "Mr. Action Line." Call Barbara Gunderson, 298-2133, right now for reservations.

CLUB MEMBER RETIREES will get together Jan. 20 at 4:30 in the El Dorado room. Mike Michnovicz and accordion will entertain.

DANCE LESSONS, ballroom and squaredance, start in early February. Enroll now at the Club office. Plans are also underway to organize a Coronado Squaredance Club. Call the Club office (265-6791) if you are interested.

TRAVEL DIRECTOR Ed Neidel (2166) has a number of special packages available in coming weeks. Two of them require action now if you're interested.

—Disneyland, scheduled during the school Easter vacation, includes Disneyland, Universal Studios, Marineland and a possible museum visit to the Treasures of King Tut. Call the office now if you're interested.

—Jamaica, 7 days starting April 30. Package includes roundtrip air fare to Montego Bay and bus to the Jack Tar Jamaica (ex-Playboy resort) where the group will stay for 7 nights. Included at no extra cost are tennis, snorkeling, water skiing, sailing and continuous entertainment. Cost is \$419. Make reservations at the Club office by Jan. 25.

Other upcoming trips include Easter in the Holy Land, Hawaii in mid-April and an extended Mediterranean air/sea cruise June 23 to July 5.

Ed will be in the lobby of the Club tonight from 6 to 7 p.m. with the full scoop on all the travel packages.