Mile-Long Seismometer In Coyote Canyon

The largest known instrument ever built to measure earth movement has gone into operation in Coyote Canyon. Its extremely wide range of frequency and amplitude give it unique advantages when compared to conventional seismometers. Called a laser strain seismometer, the instrument uses a frequency stabilized laser to create a beam of light through a mile-long (1600 metres) six-inch diameter pipe; the beam is reflected by a mirror back down the pipe to an interferometer and read-out device. The seismometer is capable of measuring earth strains that produce a shift of a fraction of a wave length in the beam.

Unlike conventional seismometers, the laser strain seismometer will record the entire spectrum of earth movement, with no practical limit to its "flat" frequency response.

Based on a design developed by Professor Jon Berger at the University of California, the seismometer is a joint project of Underground Physics Division 1111 formerly headed by Wendell Weart, and Instrumentation Fielding Division I 1123 under Ben Benjamin.

The primary purpose of the instrument is to measure earth movements created by underground testing at the Nevada Test Site, local testing in area III, earthquakes, and other natural phenomena such as earth tides. The instrument is aimed directly at the Nevada Test Site to optimize monitoring of seismic waves from the site.

Sam Stearns and Doug Garbin (both 1111), project scientists, will use the wide dynamic range of the laser seismometer not only for work relating to underground testing, but also for research in geophysics and seismic instrumentation. For the first six months of operation, the instrument is being calibrated by direct comparisons with other seismic instrumentation, including a smaller laser seismometer installed parallel to the main instrument.

The helium-neon laser, a key element of the system, is accurate in frequency output to approximately one part in $10^{11}$. Data from the seismometer is recorded and analyzed on a PDP-11 data logging system engineered by Ken Kimball (1123) and programmed by Harvey Ogden (1111).

On May 26, 1975, an earthquake of magnitude of 8.0 on the Richter scale occurred off the shores of Portugal. Peak strain readings at Albuquerque were about 2100 counts, corresponding to a strain of about 21 parts in $10^{10}$, or about one ten thousandth of an inch over the one-mile instrument length. The record exhibits extremely wide bandwidth and low distortion, qualities unique to the laser seismometer. Several nuclear tests at the Nevada Test Site have also been recorded by the seismometer and even the seismic signal due to the subsequent collapse of the cavity caused by one of the nuclear events was recorded.

The laser and interferometer rest on a granite pier at one end, while the reflective mirror is on a similar pier at the other end of the mile-long pipe. Three pumping stations along the pipe assure the vacuum inside the
Afterthoughts

The Buy-centennial--"The list of commercial efforts to tie in with the Bicentennial is endless. A Bicentennial-planning group in Florida complains of being besieged with literature on such products as a 100-foot high durable rubber statue of Uncle Sam selling for $25,000; and a $495 reproduction of the Liberty Bell from a Belgian firm. There are also Spirit of '76 neckties ('a visible sign of your enduring patriotism'); red, white and blue halters; desk-top Statues of Liberty; and so on...No wonder they call it the Buy-centennial." S. Compton in Media and Consumer

***

Inspired typo--the sentence in the ERDA release read: "More than 75% of our energy comes from oil and gas--a dwindling resource." We retyped that for a LAB NEWS article, and some how here is how it came out: "More than 75% of our energy comes from oil and gas--a dwindling resource."

***

Amen--"The aim of education should be to teach the child to think, not what to think." John Dewey *js

Letter to the Editor

Dear Editor,

Recently several of us bicyclists were riding north along the east side of the Parade Ground. As we approached the stop sign at the corner we slowed down and, seeing no cross traffic, proceeded across the street without stopping. As we did so a feminine voice called out to us politely and reminded us of the stop sign. Her comment deserves a polite reply. Unfortunately, the middle of the street was no place to stop to discuss Air Force regulations. Hopefully she is a reader of the Lab News.

According to the KAFB traffic code, bicycle riders may treat a stop sign as if it were a yield sign. AFR 125-4/KAFB Sup 1 of 10 January 1975, Subsection 9b says "Any person operating a bicycle shall obey the instructions of official traffic control signs, and other control devices applicable to vehicles, unless otherwise directed by a security policeman, provided however, that any person operating a bicycle approaching a stop sign may operate his bicycle as if the stop sign were a "YIELD RIGHT-OF-WAY" sign." (Italics mine.)

This exemption for bicyclists applies only to stop signs and only on KAFB. A stop is required off base by both Albuquerque and New Mexico traffic laws.

Yours truly,
Irwin Janney — 9412

Seismometer

pipe. Installation of the pipe, which is standard six-inch irrigation pipe, was something of a surveying problem — it is not level, it is straight. If it were level, it would bend with the curvature of the earth. Instead, it provides a direct line-of-sight. The vacuum removes density variations along the beam path which would affect beam velocity. Contractions and expansions from temperature changes are handled with a number of sleeve-type expansion joints. Laser and reflector housings are heated and kept at a constant temperature.

Contributing to the project were John Bunister (1150) and Tony Zuppper (8342), consultants; Jerry Brannon (1116), Gerry Laursen (1123) and Dan Parsons (1123), optical systems; Harry Holmes (1123), vacuum and mechanical systems; and John Loukota (1123), electronic systems. Cecil Morrisett, Hyder Burress and Alan Spencer of Plant Engineering Design Department 9740 performed the detail design of the facility construction.
Women's Association Honors Nancy Hunt

Nancy Hunt (8161) was recently named "Woman of the Year" by the Livermore Valley Charter Chapter of the American Business Women's Association. Selection for the annual award is based on the member's contribution to the organization, achievement in the business field, and participation in community activities.

In addition to holding various offices in the chapter, Nancy has been active in the local historical society, and is a member of the Livermore "Sweet Adelines" singing group which has won State and West Coast recognition. A former Grand Ole Opry cast member, she sang with the Checketterettes and later the Beasley Sisters, both groups made up of her mother, sister and herself. Each time she goes back to Nashville on vacation, they reunite and appear on television together at the Opry.

Later this year Nancy will represent the local chapter in competition for the "American Business Woman of the Year" award at the ABSA's 1975 national convention in Cincinnati, Ohio.

Take Note

Livermore Sandians can join the Coronado Club in Albuquerque for $3 a year. It's a long trip for Happy Hour, but membership qualifies you for the deals the Club makes on travel packages. Contact Dick Baughman (at 4-6337) for more info.

1st Class Swine

Sandian Is 4H Mentor

"Fair Week is the climax to the many hours of work — and tender, loving care — each boy or girl has put into raising a premium quality animal," says Dick Cook (8433), swine project leader for Livermore's Crane Ridge 4H Club.

In the last two years, the 10-member Crane Ridge Club has taken top four honors in competition with some 120 youthful swine exhibitors at the Alameda County Fair. This year, Dick’s 11-year-old son Brian won overall grand champion and first place in showmanship in the novice (under 13) category.

Dick, along with his wife Nan, has been active in various phases of 4H work over the past eight years. Actually their 4H involvement developed along the way into a family affair. Older son Kent won the master showmanship award two years ago, and younger daughter Sheryl, entering this year for the first time, placed fourth in novice showmanship.

Many of the club's winning swine are farrowed (born) on the Cook's six acre ranch south of Livermore, including Brian's 1975 grand champion, a seven-month-old gilt (an arched female pig) weighing 234 pounds. Named "Petunia," she was one from a litter of eight registered Hampshire piglets entered at the fair by other club members.

To place in the top 10, Dick cites the ways of winning swine. The animal must be at the correct age to fall within weight limitations at the time of competition. Proper housing must be available, as well as equipment for watering, feeding and exercising. And the young owner must be able to detect and treat animal illness and learn a few techniques for training and showing. With a little luck and if both the 4H'er and the animal are in a cooperative mood on competition day, there's a good chance of placing near the top.

On the last day of the fair, the livestock is brought before the buying public and auctioned. As each youth leads his or her animal into the ring, the auctioneer asks for bids and, after the highest bid, arrangements are made on the spot for consignment to a meat packing or frozen food plant. "It's a terrific way for 4H'ers to develop insight into livestock marketing," remarks Dick.

As a 4H project leader, Dick meets with parents to explain at the outset what is involved and expected in carrying out a 4H project. Field trips are a part of the project, perhaps to a meat packing company or to a ranch that raises competitive market animals.

The young people hear presentations on animal raising and care, talk with experienced project members and meet farm animal professionals.

Considering the price of pork, raising swine looks like a good way to go.
Five Major Changes

ERDA Energy Plan Submitted to Congress

ERDA has submitted to Congress a National Energy Research, Development and Demonstration Plan that outlines priorities for the development of energy resources and proposes five major changes in the nature and scope of the Nation’s energy R&D program.

ERDA Administrator Robert Seamans, commenting on the Plan, said: “We have a serious and continuing energy problem. Our problem now is that we are limited in our choices. More than 75 percent of our energy comes from oil and gas — a dwindling resource. About 20 percent of our energy is imported.

“The United States must shift to new primary forms of energy. Twice before, it has happened: from wood to coal in the 19th century and to oil and gas in this century.

Each time it took about 60 years to reach maximum use. We cannot afford to take another 60 years to accomplish the changeover we need now.”

The ERDA Plan establishes priorities for three time periods — the near-term to 1985, the mid-term 1985 to 2000, and the long-term after 2000.

Under the plan, five changes must be made in the Nation’s energy research, development and demonstration program:

- Emphasize the overcoming of technical problems inhibiting expansion of major energy sources, notably coal plants and light-water nuclear reactors.
- Focus immediately on energy conservation. Primary targets are automotive transportation, industrial processes and energy use in buildings.
- Accelerate commercial capability to extract gaseous and liquid fuels from coal and oil shale.
- Include solar electric as a high priority among energy resources of the future, joining fusion and the breeder reactor in this category.
- Increase the attention to underused new technologies that can be rapidly developed, principally solar heating/cooling and the use of geothermal power.

In the near-term, until 1985, the plan places priority on expansion of existing major energy systems: coal, nuclear (light-water-cooled reactor) and gas and oil, both from new sources and from enhanced recovery techniques in existing fields. Conservation, stressed throughout, can have an especially significant impact in the near-term simply by application of known techniques.

In the mid-term, 1985 to 2000, the development of new processes to produce synthetic fuels from coal, to extract oil from shale, and to increase use of fuel forms such as solar heating and cooling and geothermal energy, and to extract more energy from waste heat would be accelerated.

For the long-term (2000 and beyond) the plan calls for vigorous pursuit of three new energy resources — solar power, fusion power and the breeder reactor.

ERDA stresses the point that in order to deal effectively with the energy problem, the task of choosing projects for the future must be addressed now on an urgent basis.

“Changeover” time to convert to new forms of fuel must be shortened and, while new choices must be developed for the future, care must be taken to avoid the foreclosure of energy options because of overemphasis on a single approach.

Under the Energy Research and Development Act of 1974, ERDA is directed to submit to Congress a comprehensive plan for energy research, development and demonstration dealing with near-term, mid-term and long-term energy needs, together with a detailed program to implement the plan. The two-volume report contains such a plan and proposed implementation.

ERDA plans to conduct public meetings in major cities throughout the country on its National Plan and R&D programs beginning in the fall.

Copy of Vol. I of the ERDA report (ERDA-48) is now available in the technical library.

FY ’75 Payroll Figures Released

The Sandia Laboratories payroll for fiscal year 1975 (July 1, 1974, through June 30, 1975) amounted to $95.3 million at Albuquerque, and $15.2 million at Livermore. For FY ’74, these figures were $88.8 million for Albuquerque and $14.2 million for Livermore. Salaries of some 40 employees at Tonopah Test Range in Nevada are included in the Albuquerque figures.

At the end of FY ’75, about 6,410 were on roll, including some 870 at Livermore. The total is about 65 fewer than at the end of FY ’74.

Assets of the Energy Research and Development Administration’s installations operated by Sandia totaled $323 million at the end of FY ’75, compared to $319.4 million in FY ’74. These figures represent undepreciated value of buildings and facilities at Albuquerque. Purchases by Sandia in New Mexico amounted to $30.5 million for FY ’75. More than 99 percent, or $30.4 million, went to Albuquerque firms. Purchases in the state in FY ’74 amounted to $30.7 million.

Saturday Is Broadcast Day

“Shabbaton,” a weekly public service program of radio station KZIA (1580), is presented by the Jewish Community Council of Albuquerque. The Council administers Jewish welfare programs and contributes to various charities. Mort Lieberman, a chemist in Materials Analysis Division 5825, is vice president of the Council and heads its Community Relations Committee. George Cosden, a procurement analyst in Purchasing Methods Division 3732, is chairman of its Intergroup Relations Sub-Committee. These two Sandians help produce Shabbaton, a Hebrew term for Sabbath discussion.

“The purpose of the program," Mort says, "is to air news and happenings about things Jewish in an informative and entertaining manner." The program includes cultural and religious features, as well as local and international news of interest to Judaism. Prominent visitors and local residents are interviewed, books are reviewed, and inter-cultural problems are discussed. "We always have music," George adds, "which I present with a brief explanation and translation of the Hebrew or Yiddish. We also discuss our customs, for instance the culinary delights of our religious holiday foods."

Twenty volunteers put the program together. Each show is prerecorded during the week. "It’s a lot of work," Mort says, "and a lot of fun." For 45 minutes of air time, Mort figures the group puts in about 60 man-hours.

KZIA carries the program each Saturday from 12:10 to 1 p.m. “Tune us in," says Mort. "We often get ideas for future programs from the comments, calls and letters we receive from our audience.

Congratulations

Mr. and Mrs. Ron Jacobson (5131), a son, Jeff, July 9.
Mr. and Mrs. James Hill (Debi, 5131), a daughter, Jamie Sue, June 21.
Mr. and Mrs. Gerald Cessac (2316), a daughter, Jamie Sue, June 21.
Mr. and Mrs. Kirk Joseph, July 11.
Mr. and Mrs. Leroy Holmes (3616), a son, Marquez, June 12.
**New Car Rental Discounts**

Taking a vacation? This summer you might want to give your car a vacation too — leave it at home and travel by plane, train, or bus, then rent a car at your destination. Car rental discounts for Sandians are better than ever before.

In all cities in the country (save those listed below), Sandians get a 35% discount from Avis (and effective Aug. 1) an identical discount from Hertz. The discount applies whether you use the car on company business or on family sightseeing trips.

In the following cities, discounts are even greater if you use these rental companies: San Francisco and Las Vegas-National; Los Angeles and Kansas City-Thrifty; Albuquerque and Amarillo-Avis.

For discount billing purposes, Hertz wants a special identification card (available in Traffic and in Finance); the others accept a Sandia identification card. Don’t, of course, bill personal rentals to Sandia.

So compare costs for your car versus a rental at current gas prices — and then crank in a factor which represents the tedium of tooling along hour after hour, the danger of driving, and the probability of popping a piston in Peach Springs, Ariz. You may well decide a rental car is the answer.

<table>
<thead>
<tr>
<th>San Pedro</th>
<th>Constitution</th>
<th>7:25</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Pedro</td>
<td>&amp; Kathy</td>
<td>7:35</td>
</tr>
<tr>
<td>In Gate 1, out Bldg. 878</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eve: Bldg. 878, reverse</td>
<td>4:25</td>
<td></td>
</tr>
<tr>
<td>Sandia #5 (30c)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carlisle &amp; Mensal</td>
<td>7:05</td>
<td></td>
</tr>
<tr>
<td>Carlisle &amp; Comanche</td>
<td>7:10</td>
<td></td>
</tr>
<tr>
<td>San Pedro &amp; Comanche</td>
<td>7:15</td>
<td></td>
</tr>
<tr>
<td>San Pedro &amp; Constitution</td>
<td>7:22</td>
<td></td>
</tr>
<tr>
<td>(loop around Twain school)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Gate 1, out Bldg. 878</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eve: Bldg. 878, reverse</td>
<td>4:25</td>
<td></td>
</tr>
<tr>
<td>Bosque (50c)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnnie’s Shell</td>
<td>7:10</td>
<td></td>
</tr>
<tr>
<td>Peralta Post Office</td>
<td>7:14</td>
<td></td>
</tr>
<tr>
<td>First Nail Bank, Bosque</td>
<td>7:18</td>
<td></td>
</tr>
<tr>
<td>Isleta Bridge</td>
<td>7:21</td>
<td></td>
</tr>
<tr>
<td>In Gate 1, out 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eve: Gate 1, 10, reverse</td>
<td>4:36</td>
<td></td>
</tr>
<tr>
<td>Belen/Los Lunas (75c/50c)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garley’s Bar, Belen</td>
<td>6:41</td>
<td></td>
</tr>
<tr>
<td>Ranchers Bank, Belen</td>
<td>6:43</td>
<td></td>
</tr>
<tr>
<td>Belen Butane</td>
<td>6:50</td>
<td></td>
</tr>
<tr>
<td>Los Chavez Baptist Church</td>
<td>6:55</td>
<td></td>
</tr>
<tr>
<td>Simon Nessaulitos/Los Lunas</td>
<td>7:03</td>
<td></td>
</tr>
<tr>
<td>Valencia “Y”</td>
<td>7:08</td>
<td></td>
</tr>
<tr>
<td>In Gate 1, out 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eve: Gate 1, 10, reverse</td>
<td>4:36</td>
<td></td>
</tr>
<tr>
<td>(from 5:00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frost Rd. &amp; Vallee Hermosa</td>
<td>6:55</td>
<td></td>
</tr>
<tr>
<td>Frost Road &amp; Sandia Knolls</td>
<td>6:58</td>
<td></td>
</tr>
<tr>
<td>Hiway 44 &amp; Loma del Cielo</td>
<td>7:04</td>
<td></td>
</tr>
<tr>
<td>Sandia Park Post Office</td>
<td>7:05</td>
<td></td>
</tr>
<tr>
<td>Cedar Crest Hardware</td>
<td>7:09</td>
<td></td>
</tr>
<tr>
<td>Pinon Valley</td>
<td>7:11</td>
<td></td>
</tr>
<tr>
<td>Peralta &amp; Sandia</td>
<td>7:14</td>
<td></td>
</tr>
<tr>
<td>Cedar Crest Post Office</td>
<td>7:16</td>
<td></td>
</tr>
<tr>
<td>Casa Loma Road</td>
<td>7:18</td>
<td></td>
</tr>
<tr>
<td>Cedar Crest Taste-Freeze</td>
<td>7:19</td>
<td></td>
</tr>
<tr>
<td>N-10/14 &amp; US 66</td>
<td>7:22</td>
<td></td>
</tr>
<tr>
<td>S-10/14 &amp; US 66</td>
<td>7:23</td>
<td></td>
</tr>
<tr>
<td>In Gate 6, out 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eve: Gate 1, reverse</td>
<td>4:36</td>
<td></td>
</tr>
</tbody>
</table>

**62¢/gallon**

**Gas Prices Rise Again**

So what else is new? Well, one thing new is that it’s no longer an Arab embargo inflating gas prices. Taxes have here raised the price already, and the OPEC nations have scheduled another price increase for September. We won’t see 1972 prices again.

“The long-range price trend for oil — and for all energy sources — is up,” says John Hill, Deputy Administrator of the Federal Energy Administration. Most other experts, though they may disagree about the causes, agree with Hill on the trend.

Like it or not then, you’re going to be spending more for a gallon of gasoline than you’ve ever spent before. One way to cut the expense is to drive less.

How about a car pool? Dial 4-RIDE for information on how to join an existing pool or create a new one.

**Business or Pleasure**

Or how about one of the nine special commuter buses? If you’re near one of the routes (see the table), you’re one of the cheapest (and most relaxing) ways to get to work. Many Sandians walk, bike, or even drive a mile or two to get a bus stop. It’s worth checking and trying. Again, more information at 4-RIDE.

Ironically, just as the gasoline price starts spiraling upward, the ridership of two of the specials has dropped. If you ride either the South Valley or the Mountain Bus, it’s time to convince neighbor non-riding Sandians to become regular riders. South Valley bus service ends within a month unless a dramatic increase in ridership is apparent.

**Sympathy**


**ENERGY SAVINGS**

**Gas Prices Rise Again**

To Arthur Wickman (3613), on the death of his brother in Chicago, July 6. To C.M. Laskowski (3613), on the death of his brother in Covina, Calif., July 13.

**Sympathy**

Take Note

The Reactor Operations Division and Trinity Section of the American Nuclear Society are sponsoring a conference on Reactor Operating Experience. The meeting will be held at the Hilton Inn in Albuquerque, Aug. 3-6. Jeff Philbin (5221) is general chairman; Bob Jefferson (1814) is coordinating the technical program; Lloyd Bonzon (1721) is handling hotel liaison; Bill Snyder (1800) is in charge of publicity; and Jon Reschuer (5221) has arranged for tours at LASL and of the pulsed radiation sources at Sandia.

The Institute of Environmental Science has issued a call for papers for its 22nd Annual Technical Meeting and Equipment Exposition, April 25-28, 1976, in Philadelphia. Subjects for the technical sessions, working groups and career guidance sessions are: acoustics, shock, vibration, testing instrumentation, environmental protection, environmental education, ecology/pollution (noise, air, water), transportation, transportation, environmental management, data acquisition, seismic test, computer methods, solid simulation, data processing, nuclear energy, fossil energy, wind energy, industrial contamination, standards, artificial environments, communication, specifications and training.

For more information contact: B.L. Peterson, Ex. Director, IES 940 East Northwest Highway, Mt. Prospect, IL 60056; or send abstracts to: T.J. Sereno, Tech. Program Chairman, TRW Systems, M-1, 1270, One Space Park, Redondo Beach CA 90278. Deadline for submission of abstract is Aug. 15, 1975.

* * *

Marvin Becktell (5200) is the new chairman of the New Mexico Section of the American Society of Mechanical Engineers. He replaces Tom Lane (1540) who is now a member of the board of directors. Other new officers include: Vice-Chairman Tom Feldman of UNM, Secretary Bill Alsheimer (1563), and Treasurer John Anderson (1561).

* * *

The Heart Education Research Society is holding its 2nd annual art auction tonight (till 9 p.m.) and tomorrow (10 to 6) at Winrock Shopping Center. Proceeds from the auction will be used to continue the Society’s program of free screening of people to detect heart abnormalities and high blood pressure. Free blood pressure tests will be given during auction hours. The auction itself consists of submitting a closed bid for the art object of interest. Over 16000 persons to date have been screened for blood pressure throughout the state.

* * *

Question: Which employee holds the record for the longest period with no sickness absence? We can’t give you an absolute certified-correct answer, but Roger McKenzie (2120) will be hard to beat. After 24 and a half years or so, Roger reluctantly took a few days of sick leave for eye surgery. He’s working now on his next unblemished 24 years.

In Department 5710

Summer Employees Lending Labs A Hand

Through the years, Sandia has developed a number of programs which bring people involved in education into the laboratories for summer employment. Three of these — the Sandia Work/Study program, Summer Faculty Employment, and One Year on Campus program — are represented this summer by people in advanced Energy Projects Department 5710. LAB NEWS discussed their work with them.

* * *

ELDON BOES, assistant professor of mathematics, New Mexico State University, came into the Labs initially under the Summer Faculty Employment program but has remained for a year during his sabbatical from State. Eldon has been gathering solar radiation data for Solar Energy Systems Division 5717.

“This has been beneficial for me,” he says. “I had no experience in industry before coming to Sandia. I’ve been telling my math students for years that careers existed in industry working alongside scientists and engineers. Now I can give them specific information.”

Eldon has been at New Mexico State for six years. In addition to teaching formal classes, he also directs the Math Learning Center where some 400 students per semester work on individualized courses at their own pace.

Eldon is presenting a paper next week at the International Solar Energy Society meeting in Los Angeles which reflects his work at Sandia. Title is “Estimating the Direct Component of Solar Radiation.”

“I enjoy teaching,” he says, “and I’m looking forward to returning to the classroom. I also get satisfaction from research. I intend to continue work in solar energy.”

* * *

JIM STRICKLAND, assistant professor, mechanical engineering, Texas Tech, has worked at Sandia this summer on aeronautical computation and prediction models for the performance of the vertical axis wind turbine. At Tech last year, he directed development of a 15-foot wind turbine similar to that atop Bldg. 802. He has also helped plan a 5-foot wind turbine in Solar Energy Project Division 5712.

“Very exciting work,” Jim says. “I appreciate the systems approach and computer resources of Sandia. The systems approach will be very helpful next year at Tech where we will be working under NSF grant to develop a solar energy system for cattle feed mills.”

* * *

AUDREY PERINO is working this summer in Solar Energy Systems Division 5717 developing cost analyses of solar energy systems. She is participating in the One Year on Campus (OYOC) program. With a BS in math and economics from Oberlin College, she has another year at University of Michigan before earning her Masters in applied economics and joining Sandia full time.

“It’s very satisfying,” she says, “to be in on the beginning of new and important concepts in future energy systems. Cost is an overriding consideration in planning, and I’m happy to contribute the economist’s viewpoint. There are so many factors to consider — capital investment, installation, maintenance, operation and amortization. It’s exciting, but sometimes frustrating. Many of the needed data do not exist.”

* * *

SIM ROMERO (5717) is one of 12 Work/Study program participants at Sandia this summer.

* * *

LAB NEWS
Recreation Notes

**FUN & GAMES**

_Sandia Bowling Ass'n._ — New officers for the coming season are Verne Christy (9542), president; Bob Statler (1133), VP; Sadie Knight (1115/1116), sec./treasurer; Aurora Baca (3152), women's rep; Wally Granfield (1590), men's rep; and Gary Miller (5842), tournament director. Joe Stiegler (9480) continues as Recreation Council representative.

---

_Boating._ — Carl Boxx (3616) has sent LAB NEWS a Coast Guard summary of recreational boats and engines that have been recalled for sometimes major, sometimes minor problems. For example, the '73 and '74 18-foot Sportsman Powercraft is over-rated in horsepower capacity, while the 16-foot Tournament Tide Craft has insufficient flotation. Theoretically, first owners of these boats and engines have been notified of the difficulty. But this isn't always the case, and you may wish to check the list, which runs to seven pages, in the LAB NEWS office. No phone inquiries, please.

---

_Sandia Golf Ass'n. (Women)._ — Winners and runners-up in the June 14 Belen Tournament were: First flight: Pat Anderson (9815), low gross winner and Pat Hefley (3141), runner up; Joan Gillon (5700), low net winner and Lillian Mancuso (3321), runner up. Second flight: Helen Watkins (3721) low gross and Clara Gearhart (3141); Alice Smith (3141), low net and Liz Bookwalter (9631); Kathy Brady (212), low putts.

Results of the July 12 Los Alamos Tournament were: First flight: Lillian Mancuso, low gross winner and Emma Hollingsworth (4257), runner up; Sybil Milligan (Ret.), low net winner and Joan Gillon, runner up; Pat Anderson, low putts. Second flight: Kathy Brady, low gross and Pat Hefley, runner up; Alma Mischke (4152), low net and Liz Bookwalter; runner up; Tess Reis (4124), low putts.

---

_Wilderness perils._ — Gerse Martinez of LAB NEWS returned from a recent three-day trip into the Pecos Wilderness to find his car broken into and sacked. He learned that the incident was occurring with increasing frequency in the northern wilderness areas. The local mafia types spot a parked vehicle on the edge of the wilderness and correctly conclude they have time to work it over because the owner is likely gone for a few days. Unfortunately, outdoor survival courses don't cover this exigency.

---

_Sandia Bicycle Ass'n._ — Gordon Pike (5155) advises that Albuquerque's bikeway courses don't cover this exigency. The local mafia types spot a parked vehicle on the edge of the wilderness and correctly conclude they have time to work it over because the owner is likely gone for a few days. Unfortunately, outdoor survival courses don't cover this exigency.

---

_Craig Jones Builds Brass Cannons_

Craig Jones, supervisor of Data Processing Systems 2647, was wandering around the flea market one morning last January when he spotted what looked like the barrel of a model brass cannon. Sure enough, it was; but it was in terrible condition.

A couple of bucks and a couple of months later, it was a mint display piece gleaming brass, spoked wheels with brass rivets, fixtures and an oak carriage.

"I sort of eyeballed the barrel and built something that I thought might look right," Craig says. "It worked out fine but it bothered me that it was not an authentic scale model. So I did some research."

Craig gathered literature and finally zeroed in on an American revolutionary war cannon. He made scale drawings and started to work. Hundreds of hours later, the second cannon surpasses the first. Oak, painstakingly shaped in his home workshop, was used for the wood parts of the cannon assembly. All other fittings are brass. The second cannon is complete with accessories — tool box, powder barrel, powder ladle, wadding and water buckets, swab, tamper, and something called a "worm."

"I'm looking for something to use as cannon balls," he says.

Now that the cannons are finished, Craig looks at them once in a while and then packs them away.

"With so much burglary going on, what can I do? Maybe I'll donate them to a museum some day."

However, one of these days, Craig plans to fire the larger cannon.

"A big bang for the Bicentennial," he says.

---

_Big game hunting. — The Game Commission has adopted a 16-day big game season, divided into three periods, to run from Nov. 8 to 23. Division of the season into three periods is expected to distribute hunter pressure more evenly throughout the season. Hunters may hunt only for the single period which they select: Nov. 8 & 9, Nov. 11 through 16, and Nov. 15 through 23. Deadline for application for elk, bighorn sheep, and antelope licenses is Aug. 8. More information is contained in the big game hunting proclamation, scheduled to be off the press July 18."

---

_Coronado Ski Club._ — Frank Biggs (5223), trip chairman for the coming season, has come up with 11 trips, starting out with a 3-dayer to Wolf Creek early in December and concluding, in March, with an Alta/Snowbird package in Utah. In between there are Telluride, Steamboat, Big Sky, Taos, Snowmass, Vail, Keystone, Crested Butte, and Purgatory. All except the Taos trip offer bus transportation. Trip captains have been selected, and it's first come, first reserved. Call Frank on 4-7367 if you haven't received a copy of the schedule.
July 1975

MILEPOSTS
LAB NEWS

Tony Jojola — 3622
Bill Jackson — 4276
Patrick Walter — 9496
Dave Nokes — 1563

Billy Yates — 9633
Marvin Ozmun — 9652
Helen Agats — 3613
Charles Mayer — 9622

George Banos — 212
Bruce Wickesberg — 1241
Tony Gabaldon — 9754
Dick Othmer — 1544

John Freeman — 5241
Bennie Blackwell — 5628
Arthur Hardeman — 4276
Lewis Hanchey — 1232

20
20
10
20
20
10
10
10
25
20
15
25
10
10
10
10
20
20
STANDING ON THE CORNER, Constitution and Carlisle, Laura Garcia (4256) is waiting for other bikers to join her there Sunday morning, Aug. 3 when Mayor Kenney officially opens the Albuquerque Pilot Bikeway. Ceremony is set for 10 a.m. and will be followed by mass bike ride over the new bikeways.

MARVELE NETHERTON (3647) found out from the Metric Information Center in Bldg. 840 that she's 174.5 centimeters tall, weighs 65 kilograms. The Center has literature and displays plus a metric scale for weighing and a ruler for heighting.

MURPHY LANDRY (2441) recently presented six different lectures in three days at the Auburn University Graduate School. He introduced plasma physics students to Q-switch lasers, mode control, tunable sources and pulsed holographic techniques.

BOB GENTZLER (9411) is Sandia's frequency coordinator. Depending on field operations and locations, Sandia uses about 100 communications networks and about 1000 frequencies.

GROVER HUGHES (1243), Sandia astronomer, maintains a bulletin board with latest scoop on space missions, satellites, moonrise, moonset, etc., and times various heavenly bodies are visible from Albuquerque. It's located in Bldg. 860, near X-22.

SANDIA PEOPLE Report
### Retiring Events Calendar

**Through August 17** — Barn Dinner Theatre: “Finishing Touches,” 281-3338.

**July 25-26** — Old Town Studio: “The Diary of Anne Frank,” 8 p.m., July 27, 2 p.m.

**July 25-27, 31, Aug. 1-3** — Corrales Adobe Theatre: “The Little Foxes,” 8:30 p.m.

**July 26** — Santiago’s and St. Anne’s Day, Buffalo and Corn Dances. Santa Ana Pueblo.

**July 26-27** — Annual Puye Cliff Ceremonial, Arts and Crafts Show, Puye Cliff Ruins; Santa Clara Pueblo.

**July 26-27** — Appaloosa Horse Show, 8 a.m., Arena, State Fair Grounds.

**July 27** — New Mexico Mountain Club, San Pedro Park — San Jose Trail, hike 10 miles, 7 a.m., Gulf Mart.

**Aug. 2** — Old Pecos Ball Dance (includes former Pecos Pueblo Celebration), Pueblo Office, 834-7445, Jemez Pueblo.

**Aug. 2-10** — New Mexico Mountain Club, camping in the Tetons, more info, from John Allen, 299-9075.

---

### FOR SALE miscellaneouS

**GUITAR,** hollow body, electric w/four pickups, amplifier has tremolo & reverb. Montoya, 883-1119.

**CHILD’S rocking horse, Hall, 298-8617.**

**MOVING:** 16'x31' pool, all equipment; cement mix; radial arm saw; tractor; trio geeze, girls bike, money order, Riggs, 665-9505 or 685-5531 after 6.

**TRI-BAND 3 EL beam, hygain model TH3 MK2, 842, Richardson, 268-7845.**

**MOBILE home in Mountains, New Mexico, on 2 city lots, 14 x 71 plus 12 x 25 den. Wynn, 847-2464.**

**LARGE Whirlpool Automatic Washer and Dryer Combination, old but good, $40, Denish, 256-5359.**

**COUCH & chair, $80; refrigerator, $30; kitchen table w/4 chairs, $35; golden wheat china, service for 12, $25, Chapak, 294-5462.**

**TRASH BAGS, new stock, $4/box, proceeds to S. Hall, 268-0145.**

**BIDDERが必要な情報 Parasol, 827-8552.**

**FOR SALE TRANSPORTATION**

**TRUCK: 1978 FORD,"BRAND NEW 5 pc. dinette set, crystal glass chandelier, TV, table w/4 chairs, $30; Catalytic heater, $25; outboard motor, $300; boat, $15, Shepherd, 299-9066.**

**WANTED**

**MALE roommate to share 3-bd. home in NE Heights, $295/mo. plus minor chores. Mathes, 831-4851 after 6.**

---

### JUNK • GOODS • TRASH • ANTIQUES • KLINKErS • CREAM PUFFS • HOUSES • HOVELS • LOST • FOUND • WANTED • & THINGS

**FOR RENT**

**SANDIAN ON LOA has 4-bd. nearly-new house for rent; NE Heights, entertainment designed family w/room, $450, 2-pk, no pets available, Aug. 15, lease call Sherman, 621-0212.**

---

### LAB NEWS PAGE ELEVEN JULY 25, 1975

**CENSUS**

[Page-related content]
AMATEUR — storytellers, gather at the Club Aug. 2 and take notes on the delivery of a pro. Judy Davis is a master (mistress?) of the oral tradition, a spellbinding storyteller. Kids, adults, in-betweens — enjoy an almost forgotten art. It’s part of Family Vaudeville.

PHOTOGRAPHERS — celebrities, old timers and new will gather tomorrow night for the Big Birthday Ball. Ink Spots, Johnnie Ray, Sol Chavez, and 500 makers of merriment. Sorry, ticket holders only. (Next time — in the year 2000 — the rest of us should get our reservations in earlier.)

TAKE — a how this week, Felix Padilla. The infant social club you named 25 years ago survives and flourishes. And your cartoons are today a vital part of the C-Club page.

A — thank you too to Pete Gallegos and the Board, Dave Foster and the C-Club staff, PR-type Janet Vermillion, and all the other club organizations and people who put this whole week together. If you own a spare accolade, give it to them.

DIM — lights, cool drinks, forgotten cares, old friends and new (if your spouse isn’t watching) — Happy Hours are all of these plus food. Tonight it’s a Super Supper with ham, roast beef, lobster Newburg, and Denny (he’s the one under the table). Next Friday it’s a New Mexican Buffet with chili rellenos, carne adovada, beef tacos, and other Rio Grande goodies. New: hot hors d’oeuvres — 75¢.

VIEW — the battle of the bands Sunday from 11 on when the Mariachi Gala meets Der Polka Schlingels on the patio. Being in the brunch bunch costs just $2.50 (not $4.50) a mouth. Scrambled eggs, sausages, fried chicken, green chili stew, Danish rolls, and coffee. A great way to end the Birthday bash.

OF — course the Annual Meeting deserves your presence. Nominated for Board positions are Bill Davis, Pete Gallegos, Bruce Hawkinson, Julian Lovato, Stan Meyer, Bud Rufsvold, and Joe Shelby. Nominate others from the floor if you like, but be sure their management acquiesces. New by-law changes: active members who retire may stay on as active members, can vote, hold office; all current dues-paying retirees are now considered active. Free snacks, open bar after the (short, probably) business meeting.

THINGS — that happen in The Wackiest Ship in the Navy shouldn’t happen to a (sea) dog. Or to a Lemmon, like Jack, or to a Nelson, like Ricky. But they do. See the celluloid silliness Saturday the second at Family Vaudeville.

MORE INFO — 265-6791.

---

<table>
<thead>
<tr>
<th>FRIDAY</th>
<th>SATURDAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 — HAPPY HOUR</td>
<td>26 — 25th Birthday Ball</td>
</tr>
<tr>
<td>SUPER SPECIAL</td>
<td>J. Ray &amp; L. Spots</td>
</tr>
<tr>
<td>BUFFET</td>
<td>Cocktails @ 6</td>
</tr>
<tr>
<td>Adults $3.40</td>
<td>Shrimp Peel @ 7</td>
</tr>
<tr>
<td>Under 12 2.40</td>
<td>Show &amp; Dance @ 8</td>
</tr>
<tr>
<td>Denny on Stage</td>
<td>RESERVATIONS ONLY</td>
</tr>
<tr>
<td>TOGETHER</td>
<td></td>
</tr>
</tbody>
</table>

1 — HAPPY HOUR
NEW MEXICO BUFFET
Adults $2.75
Under 12 1.75
Thomns & Marcia
FOUR TRENDS

---

Q. If I take early retirement, after age 55. Sandia’s Basic and First Supplemental Group Life Insurance policies continue to provide me with paid-up coverage. Is this paid-up life insurance coverage provided in the same way if I am given a Sandia-approved disability retirement at any age before 55?

A. A person taking early retirement at age 55 has continued paid-up life insurance coverage if he or she has 15 years of service. For disability retirement the same applies because a person must have 15 years service to be eligible for disability retirement.

R.J. Edelman — 4200

***

Q. Certain days of the year are of religious or cultural significance to employees who are American Indians. None of the present “designated holidays” take these Indian customs into account. Why can’t Sandia change its designated holiday practice to allow American Indians to select a day of significance to them?

A. Following receipt of your Feedback question, the entire matter of the limitation on what might be considered a “designated holiday” was reviewed. Your point that different groups and individuals might have different ideas as to what days might have special religious or cultural significance was well taken and we concur. To effect a change, it was necessary to negotiate with the unions since observance of a “designated holiday” was covered in the labor agreements. Negotiations have now been completed, so that now all employees may designate as a “holiday” any workday having holiday significance to them as individuals.

R.J. Edelman — 4200