

Sandians Will Monitor Soviet Nuclear Projects

On-site observation and monitoring of peaceful-purpose nuclear explosions conducted by the Soviet Union are features of a treaty on limitation of underground nuclear explosions for such purposes. The treaty is one of two, and both have been signed by the heads of state and will be sent to the U.S. Senate for ratification. The treaties follow negotiations between this country and the Soviet Union on arms control and limitation of nuclear testing.

Under the Threshold Test Ban Treaty, underground nuclear weapon tests with yields exceeding 150 kt are prohibited. But nuclear explosions for peaceful purposes were recognized as an unresolved problem when the treaty was negotiated, and a second treaty was called for. This treaty has the same limit of 150 kt, and it establishes the principle of on-site observations and measurements of the explosion, an arrangement the Soviet Union has never before permitted.

The Threshold Treaty calls for the definition of test areas and the exchange of technical data, including location and geological characteristics of these sites. Yields of a few nuclear tests will also be exchanged.

Under the treaty covering nuclear explosions for peaceful purposes, measurements to be taken and the size of the observation team may vary according to anticipated yield. If total yield exceeds 150 kt, then measurements to determine the yield of each nuclear device are allowed. If the total yield exceeds 500 kt, the treaty provides that seismic measurements may be made to detect any clandestine larger test executed simultaneously.

Although this country has no specific plans for peaceful-purpose nuclear explosions, the Soviet Union is considering the technique for projects such as excavating reservoirs and diverting the flow of a river. A possibility also exists that either country may be called upon to carry out such a project for another country.

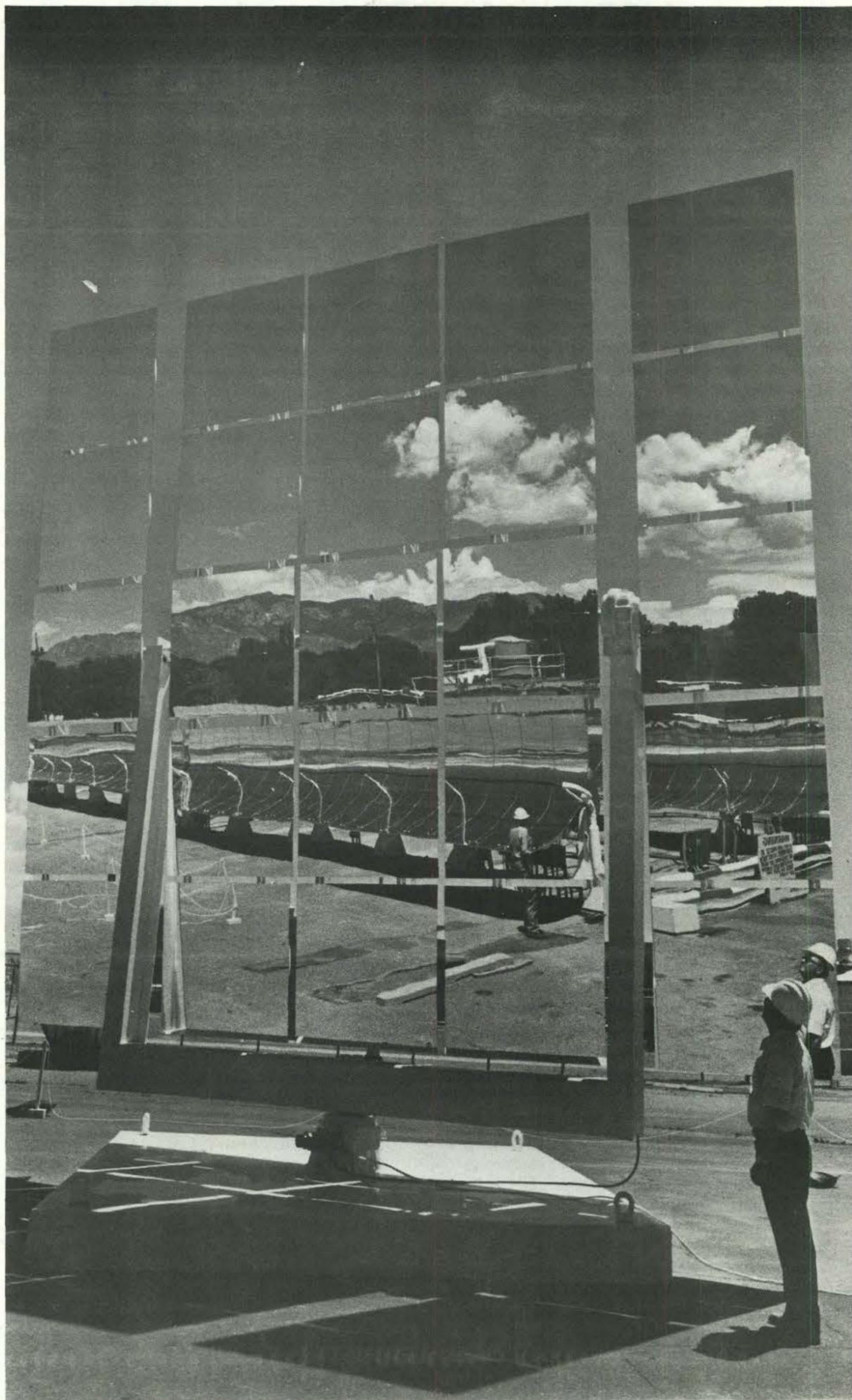
ERDA's Nevada Operations Office is responsible for team selection, training and deployment. LASL will perform primary analysis of yield measurements, while LLL handles primary seismic analysis. Sandia has responsibility for both yield and seismic measurements and also provides back-up on the analysis of both yield and seismic measurements.

Clarence Mehl (1111) is scientific advisor to NVO in matters relating to training and fielding operations. He also chairs the NVO committee concerned with verification team selection, training and deployment. Ben Benjamin (1123) is Sandia representative on this committee.

Sandia Labs will develop the instrumentation used for on-site measurements. At the outset, equipment currently used to measure yield and seismic waves at NTS will be assembled as an interim measure against an early call to participate in a test. Later, hardware will be developed that is more suited to remote operation with minimal support.

Requirements and specifications for an improved seismic system are being defined. Present thinking calls for a digital system with central recording and radio links to the seismic stations. For yield measurements, the

(Continued on Page Five)



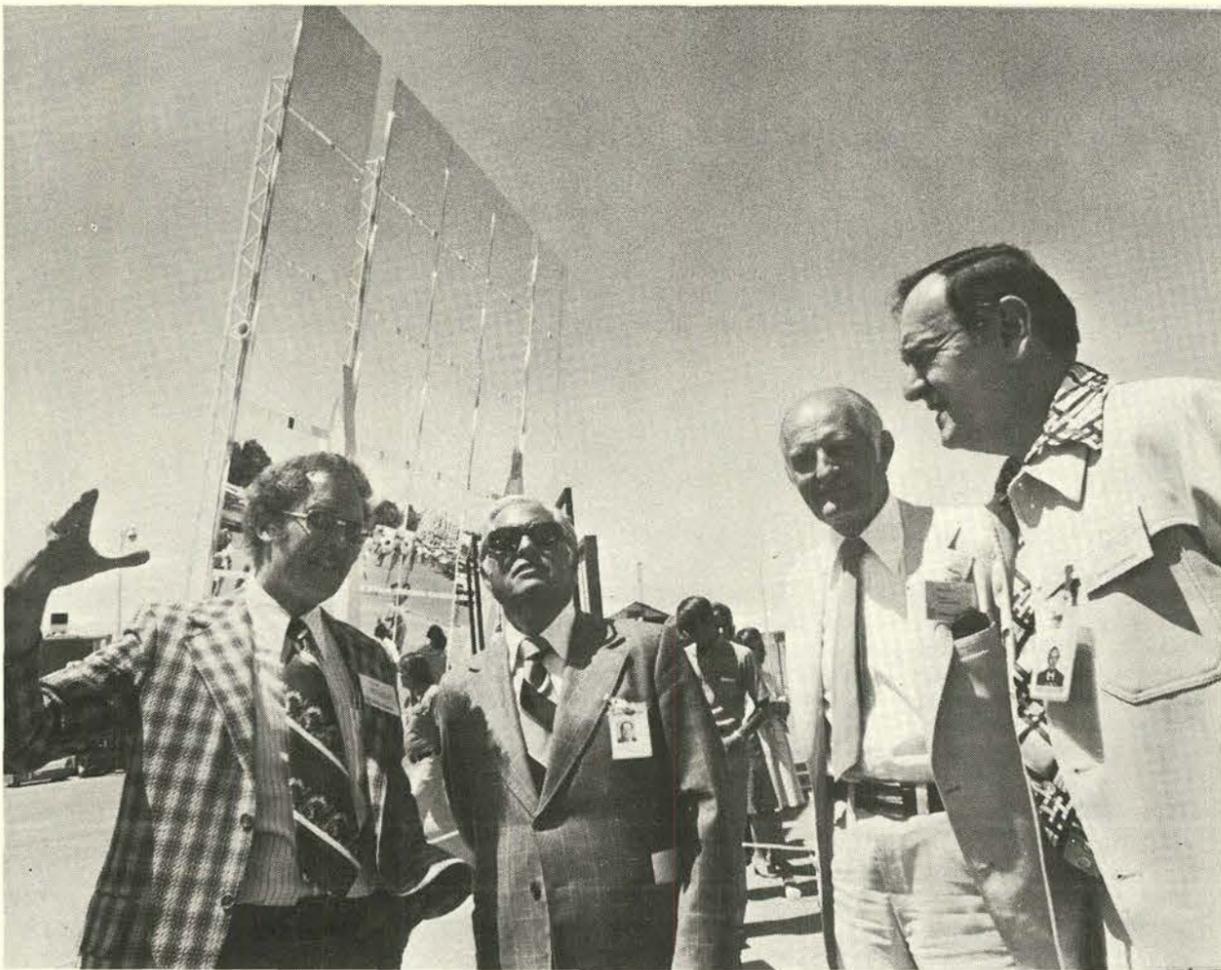
MIRROR, MIRROR — This is one of the initial 78 heliostats which will focus the sun's rays upon a boiler atop the 200-foot-high tower in the Five-Megawatt Solar Thermal Test Facility in Area III. Reflected in the mirrors are the parabolic solar collectors for Sandia's Solar Total Energy System Test Facility near Bldg. 832 where the heliostat is undergoing test. Designed and manufactured by Martin Marietta, the 78 heliostats will provide the new facility with a one-megawatt capability. A total of 320 heliostats is needed to provide the five-megawatt capability. In foreground is George Anderson (5713). For more Sandia solar news, see page two.

LAB NEWS

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JULY 23, 1976

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



JIM LEONARD (left), supervisor of Solar Energy Projects Division 5712, discusses operation of Sandia's solar facility with Senator Joseph Montoya, President Morgan Sparks and Don Beattie, ERDA Deputy Assistant Administrator, during recent ceremonies.

'Significant Progress'

Ground Broken for Solar Facility

It was an outstanding event for the Laboratories. On July 8 Sandia's Solar Total Energy Test Facility was dedicated, and the start of construction for the Five-Megawatt Solar Thermal Test Facility was observed.

Speakers for the occasion included U.S. Senator Joseph Montoya and Don Beattie, Deputy Administrator for ERDA's Solar, Geothermal and Advanced Energy Systems. Following are excerpts from their talks:

"It is significant that this project is taking place in New Mexico—New Mexico which is the heart of the sunbelt. New Mexico, which is the sunbelt in more ways than one!

"If it is true that the total solar energy falling on the United States is over 500 times our total energy consumption, a very high percentage of that energy falls on the states of the Southwest. It has always fallen here —

and only recently have we begun to think about what that means. As our energy consumption grows — more and more of that sun energy will come from here.

"To you, it is a challenge. And you are accepting that challenge, as you have accepted others in the past. Your creative minds are finding new ways to make our most elemental and natural energy work harder for mankind. All the laboratories in New Mexico are doing that, in one way or another.

"But what you are doing is helping to make something else happen. I think we are seeing the beginning of a new gold rush — but this time the gold is in the air and over our heads. This time the 'gold' is sunshine."
—Joseph Montoya

"We at ERDA are very proud of the progress that has been made at Sandia. Without the technical competence, know-how, and plain hard work of the engineers, scientists and technicians here, we would not be participating in these ceremonies today. And with such competence and dedication, we have great hopes for the role this facility will play in leading the way to the future development of large-scale solar thermal electric generating facilities that one day may be built in many parts of the U.S."
—Don Beattie

Death



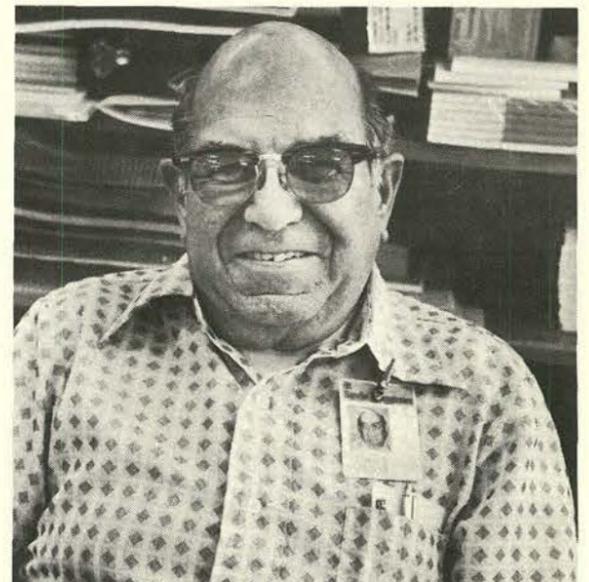
Berman Sanchez of Plant Engineering's Administrative and Coordinating Section 9753-1 died suddenly July 19. He was 41.

He had worked at Sandia 19 years. Survivors include his widow and three daughters.

Retiring



James Dickie (2645)



Loyd Kelley (3252)



Miguel Montoya (9753)



Bob Hiltunen (9550)

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Data Obtained From Shell in Flight

In Sandia Livermore's W79 artillery shell program, weapon engineers realized early the need for reliable data on how components were functioning when the shell was fired. With some 12,000 g's to contend with, the components undergo extreme stress and their performance has to be monitored closely.

This was the essence of the telemetry problem presented to Telemetry and Instrumentation Systems Division 8183. Bob Peterson, division head, traced for us the history of the group's effort to retrieve data from an artillery shell that has been fired and is in flight.

"We first became interested in this problem in the early 60's in connection with a Phase 2 program — another artillery shell — which has since been cancelled. At that time one technique was to run a wire down the gun barrel and connect it to the instrument package. When the gun was fired, the wire folded up into a cap on the front of the shell. You obtained data until the shell left the barrel and the wire broke.

"This wouldn't work for us. At 12 thousand g's, the wire would break immediately. So we began looking at other ways of transmitting and finally settled on using the gun barrel itself as a wave guide. The concept appeared feasible, but at that time high frequency transistor technology wasn't much advanced and there were signal strength and power problems. Then the program was cancelled and we shelved the work."

The early effort was to have a later payoff, however, when the 8-inch artillery shell program was authorized in the early 70's. In Bob's group, Clarence Loveless and Max Schell were given the job of developing the telemetry package for the shell. Today, that package is a reality — an operating unit that has successfully transmitted data on component performance in scores of flight

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tests. Clarence is the telemetry project engineer, while Max has responsibility for design of the transmitter.

"The basic difficulty when we started was that a transmitter will shift frequency under shock conditions," says Max. "But then transistor technology advanced, and we were able to get transistors which would work at higher frequencies and could generate significant power — 50 to 100 milliwatts. And, thanks to work by the Harry Diamond Ordnance Lab, we finally got frequency stabilized crystals for the transmitter — they stay on frequency even during firing. Our final design makes extensive use of hybrid microcircuit technology, which serves as a very important contribution to the success of these circuits."

A standard telemetry receiver is employed with the system, operating in a relatively narrow bandwidth.

Much early work was done with the help of people in other divisions, notably Instrumentation Applications Division 9482 under Arny Bentz and Electronic Measurements Division 9471 under Ron Bentley, as well as the Microcircuits Lab and the Electronic Fabrication shop of Division 8424 under Ray Sheppard. These groups helped meet packaging problems and offered valuable advice on other components in the telemetry system. Within their division, both Clarence and Max emphasize the contributions of technicians Bruce Nevin and Gil Esquibel.

"It all hangs together in that gun barrel," notes Clarence. "We've used — and reused — the telemetry packages thirty, maybe thirty-five, times. They almost always work. That's a pretty good track record." •js

Speakers

John Kryvoruka (8158), Invited Paper: "Flight Test Evaluation of Roll Torque on Tape Wrapped Carbon Phenolic Heatshields," Reentry Body Aerodynamic Response Meeting, Colorado Springs, Colo., Jan. 7-9.

Don Hardesty (8115), "Shock Initiation of Detonation in Explosives," American Physical Society annual meeting, Pasadena, Calif., Dec. 29-31.

Ron Musket (8334), "Neutrals and Ions Emitted During Sputtering of Titanium and Titanium Hydride Surfaces;" Ken Wilson (8334), "Blistering Effects in Ion-Irradiated Solids;" Mike Malinowski (8334), "Deuteriding of Thin Titanium Films: The Effects of Carbon Monoxide and Carbon Dioxide Surface Contamination," Seventh ERDA Conference on Surface Studies, Los Alamos, N. Mex., Mar. 9-12.

Jim Shelby (8334), "Diffusion and Permeation of Gases in Vitreous Silica," Invited Presentation, American Ceramic Society Silica Symposium, Cleveland, Ohio, Mar. 25.

Mike Soderstrand (8159), "Engineering Careers," Freshman Forum, San Joaquin Delta College, Stockton, Calif. Mar. 23, and Richmond School District Career Day, Harry Ells High School, Richmond, Calif., Apr. 22.

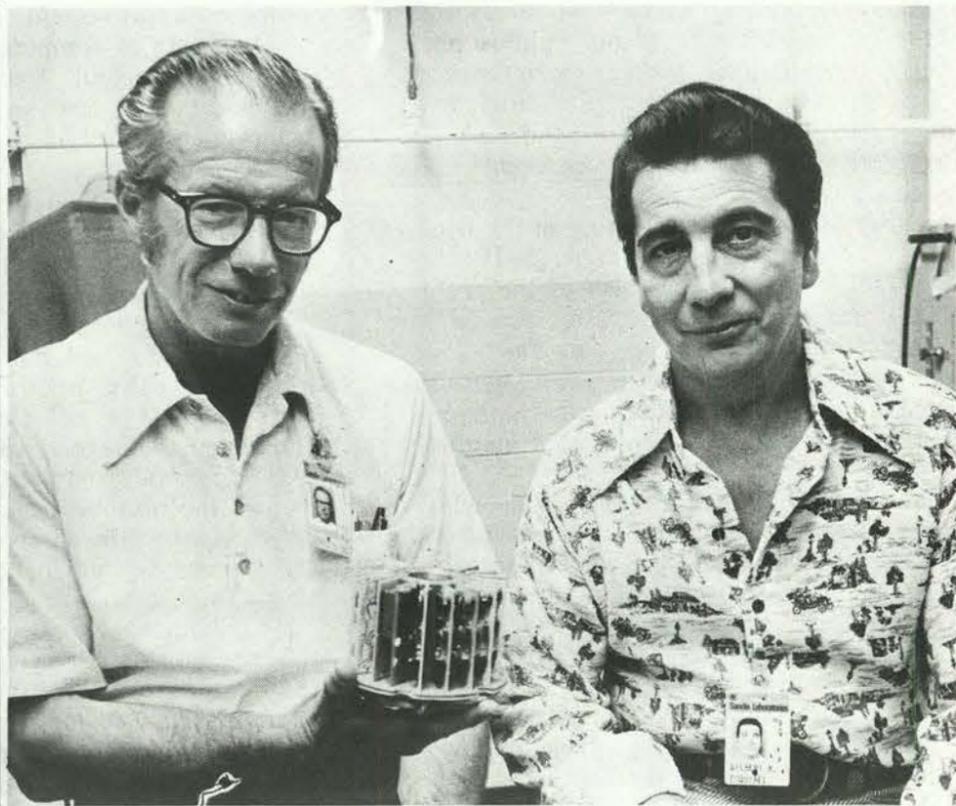
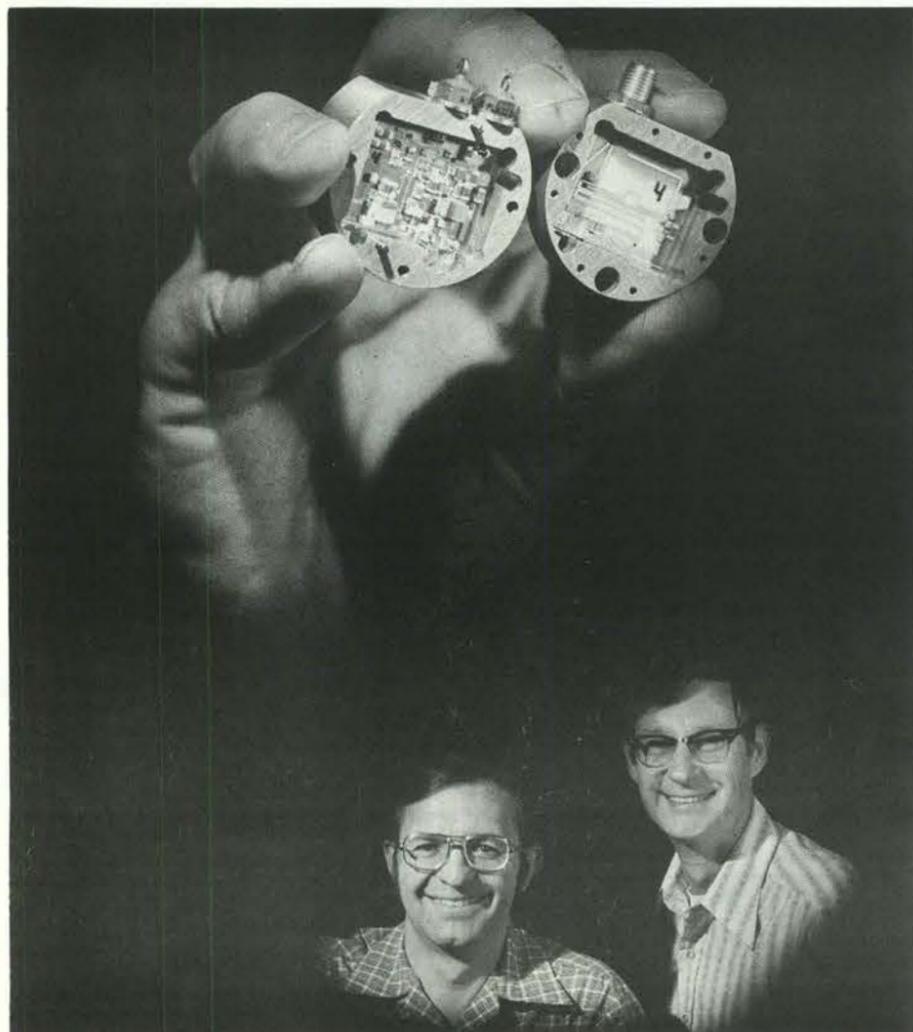
Bill Ashurst (8115), "Numerical Simulation of Free Turbulent Mixing Layers Via Vortex Dynamics," Applied Mechanics Seminar, University of Southern California School of Engineering, Los Angeles, Calif., Mar. 24.

Carl Melius (8341) and Sue Niemczyk (5151), "The SCF-X-alpha-SW Method and Dissociation," 12th Annual Symposium of American Vacuum Society New Mexico Chapter, Albuquerque, N.M., Mar. 15.

Congratulations

Mr. and Mrs. Noel Cooley (8181), a daughter, Sherlyn, June 8.

Gina Howell (8212) and Emmanuel Lamons, married, in Oakland, June 26.



(Above)

TELEMETRY PACKAGE for 8-inch shell is held by project engineer Clarence Loveless. Gil Esquibel worked closely with Clarence to develop package.

(Left)

TINY TRANSMITTER for telemetry package was designed by Max Schell, at right. Bruce Nevin oversaw transmitter crystal development and helped Max throughout project.

DURING recent test in Coyote Canyon area, a spark from the propellant landed on the dry hillside and, in short order, the wind had fanned it to considerable proportions. Local Air Force people helped bring it under control, and LAB NEWS photographer Bill Laskar caught this scene during the mopping up phase.



New \$400,000 Project

Sandia Studying Nuclear Plant Fire Protection Systems

A new project underway at Sandia Laboratories will evaluate nuclear power plant fire protection systems, seeking to define improvements and to provide assistance in implementing them.

The project, which has been given high priority by the Nuclear Regulatory Commission, Office of Standards Development, will continue through fiscal year 1977 and is funded at \$400,000.

Project manager Emile Bernard, of Sandia's Regulatory Assistance Division 5432, says the effort "will look into all aspects of the fire protection program — philosophy, design, installation, testing, maintenance, training, awareness, etc. — and will emphasize the development and use of practical alternatives to conventional systems."

Other Sandians participating in the work are Gil Cano (5433), Ron Pope (5431) and Vern Duke (9751). "Members of the group have varied backgrounds, mostly outside of the fire protection field," says Bernard. "We think such experience will be helpful because we have been encouraged not to limit our thinking to conventional concepts," Bernard says.

Last year's Browns Ferry (Ala.) nuclear power plant fire was the motivation for the new study. That fire started when flammable foam was ignited by a lighted candle being used to check for air leaks. Data obtained from investigations of that fire, as well as a thorough review and evaluation of existing codes, standards and regulations pertaining to fire protection systems in nuclear power plants, will be an important element of the Sandia study.

"Of special concern in the study will be new approaches and advanced technologies in fire protection," says Bernard. "Expertise regarding such innovations is being obtained from a number of institutions — Illinois Institute of Technology Research, National Aeronautics and Space Administration-Ames

Research Center, and March & McLennan Protection Consultants. These groups have exhibited excellent capabilities in identifying and supporting advanced concepts and technologies in the fire protection area."

Sandia investigators will be studying detection systems, fire safety management programs, fire protection technologies, the latest in fire retardant materials and means to limit the consequences of a fire. Use of analytical procedures and cost effectiveness data will determine the relative importance of proposed improvements.

A variety of complex analytical methods — event tree/fault tree analyses, Markov chains and risk analysis — will be used to determine the level of protection provided by a specific fire protection system. Such analysis will enable the researchers to determine the relative change in levels of protection associated with various alternatives in the fire protection system.

For example, studies could lead to the assignment of a "risk number" to a particular system — the product of a number representative of the magnitude of consequences due to a fire and the probability of the fire producing these consequences. The higher the number the more severe the consequences (for example, loss of redundant safety systems) and/or the more likely its chance of occurring.

A risk number can be changed by reducing the probability of a given consequence through implementation of design alternatives. Since one alternative may reduce the risk number more than another, the study can determine the relative merit of proposed alternatives and establish priorities for their adoption.

Fire safety management programs at nuclear power plants will be examined to determine whether the various elements of the written program — administrative controls, employee training, well-maintained firefighting equipment, investigation of

incidents and accountability — do in fact exist. "Some concern has been expressed that management is not giving sufficient attention to fire safety in some instances," Bernard says.

One of the advanced technologies in fire protection equipment that will be considered is the use of light-sensitive fire detectors instead of the traditional smoke or heat sensing varieties.

Another development which could be beneficial is extensive use of nitrogen inerting systems which reduce the oxygen content in the air and therefore extinguish a fire or actually prevent a fire from starting.

However, because such oxygen-reducing systems are a potential threat to human life, attention in fire control is also being given to use of aqueous foam solutions and liquids other than water. Fire barriers designed to confine a fire to a small portion of a nuclear plant will also be examined, as will means of limiting creation of smoke and highly toxic environments which hinder firefighting efforts. It's believed this can be accomplished by more careful selection of materials for use in nuclear power plants.

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Sympathy

To Ray Foster (1131) on the death of his wife in Pahrump, Nev., June 25.

To H.V. Riley (3613) on the death of his father, July 5.

Congratulations

Mr. and Mrs. Peter Feibelman (5151) a daughter, Camilla, July 4.

Sandian and Son Are Co-Authors Of Technical Article

Ray Krieg of Applied Mechanics Division 1281 has written and submitted an article to a technical journal. There's nothing unusual about that because Ray has had a number of articles published. The uncommon aspect is that Ray's co-author is his 17-year-old son, David.

Last summer Ray was temporarily assigned to work at SLL. His family accompanied him to Livermore. David had to give up his job in Albuquerque and was unable to find another when they arrived.

"I was working on the article and I knew David had the capabilities to help me," Ray says, "so I told him to try it." The paper, "Accuracies of Numerical Solution Methods for the Elastic-Perfectly Plastic Model," required many, many calculations and equations. David did the calculations, worked out some of the equations, and checked others. "He did a fine job," Ray says. "He even found an error in one of my equations."

The Kriegs finished the paper a couple of months ago and submitted it to the JOURNAL OF PRESSURE VESSEL TECHNOLOGY. In the meantime, David graduated from El Dorado High School last month and plans to pursue his interest in mechanical engineering at UNM this fall and hopes to attend Purdue next year. Ray has been at the Labs for 15 years. He earned a BS from the University of Texas and his MS and PhD from UNM.

Recreation Notes

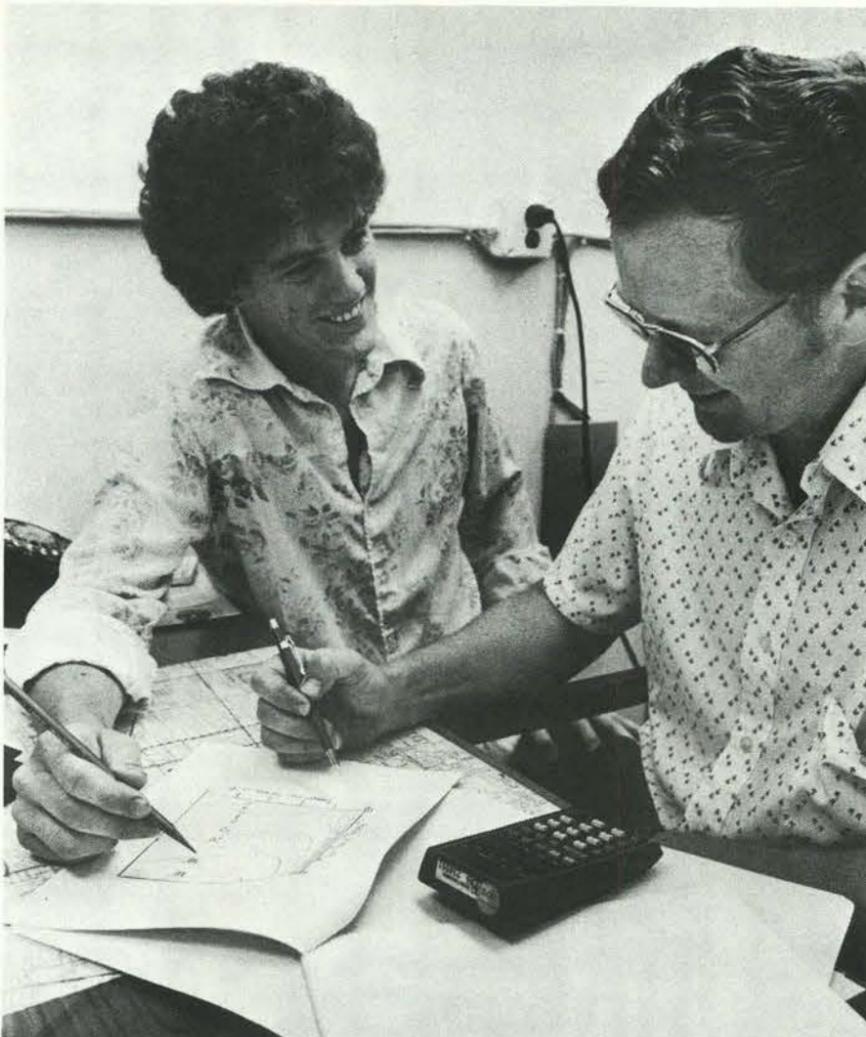
FUN & GAMES

Hockey — The hockey division of the International Senior Olympics is held annually in Santa Rosa, Calif. Hosted by Charlie Schultz (Peanuts and Snoopy cartoonist), the three-day event attracted nearly 400 participants, including six Canadian teams.

Rol Hewitt (9483) put together two teams from Albuquerque which brought home two medals. The team entered in the 40-44 age bracket collected the bronze medal and the "old guys" in the 45-49 age division won the silver medal. "It was really a tough schedule," Rol says. "We played seven games in three days and even for youngsters that isn't easy." Rol has had an interest in hockey for 40 years. He continues to coach local youngsters and is player/coach on his team.

Bowling — The Sandia Labs Women's Bowling League has openings for additional teams or individuals as regular bowlers or substitutes. Active or retired Sandia or ERDA employees and wives of employees are eligible. For more information contact Debbie Hill (5131) or Margaret Lucas (5000).

Horseshoes — The Sandia Labs Horseshoe Pitching Tournament will be held at the Los Altos Courts at 9 a.m. on Aug. 14. Entry deadline is Aug. 11. Employees and retirees from Sandia, ALOO and ERDA are eligible. Singles play starts at 9 a.m., followed by the doubles. Pairings for the doubles will be based on singles results and run-off by single elimination. For entry forms and more information, contact Leo Bressan (9532) or Earl Saxton (9412).



RAY KRIEG (1281) and his son David discuss one of the figures David prepared for a technical paper on the numerical accuracy of material models in structural calculations.

Take Note

An art auction, a fund raising event for the Animal Humane Society, is set for Sunday, Aug. 1, starting at 11 a.m. at the Shalako Inn (formerly Holiday Inn East). Sandia artists who have contributed works include Dick Strome (3155), Anne Morrow (1135) and Felix Padilla (9754). Bob Banks (9000) and the trio will provide music. Barbara Rush (200) is event coordinator.

Summer classes at the Northeast YWCA, Parsifal at Candelaria, have just started. A wide variety of skill development courses is being offered. Physical fitness programs include yoga, karate, slimdown, dance exercise, belly dancing and self-defense for women. For information, call 247-8841.

The Albuquerque High School class of 1951 is holding a reunion on Aug. 28. The classes of 1950 and 1952 are also invited to the dinner-dance which will be held at the Four Seasons. Contact Letitia Crevling Peirce, 268-0370, class of 1950; Jeanette Palladino Rose, 243-2013, class of 1951; and Joan McKinnon Allen, 842-3277, class of 1952.

Continued from Page One

Sandia to Monitor Soviet Nuclear Projects

SLIFER (Shorted Location Indicator by Frequency of Electrical Resonance) system, developed by Robert Bass (1111), Al Chabai (5166) and Don Eilers (LASL) will be used.

Present SLIFER's record oscillator output on a magnetic tape. Dale Breeding (1123) and his co-workers are developing a digital recording system that can be deployed with greater flexibility and greater assurance of successful operation. Paul Stokes (1352) is working on methods to detect interference with equipment and to make the introduction of false data more difficult.

John Banister (1150) is the program's manager for Sandia Laboratories; Paul Stokes (1352) is program advisor and Dee Ellett (1152) his assistant. Ben Benjamin is

Events Calendar

July 23 - Aug. 22 — Barn Dinner Theatre, "Sunshine Boys," 281-3338.

July 23 — Annual Parks and Recreation Arts and Crafts Fair, Tiguex Park, 19th St. and Mountain Rd. N.W.

July 23-25, July 29-Aug. 2 — Corrales Adobe Theatre, "A Thousand Clowns," 898-3323.

July 24 — KHFM Radio, 96.3 FM, "Ben Franklin in Paris," 6:40 p.m.

July 24-25 — Santa Ana Fiesta, San Felipe Pueblo.

July 25 — N.M. Mt. Club, Winsor Trail hike near Santa Fe Ski Basin, 8 miles, Gulf Mart, 8 a.m.

July 25-26 — Santa Ana Fiesta, Santa Ana Pueblo.

July 27 — Albuquerque Road Runners, casual running meet, Columbus Park (Guadalupe Trail), events start at 6:30 p.m.

Aug. 4 — Santa Domingo Feast and Corn Dances, 465-2240.

Aug. 7-8 — National Mexican Rodeo, State Fairgrounds, 265-1791.

project engineer while Bob Bass and Luke Vortman (1111) are the project scientists.

Other Sandians involved are: John Dickinson, Jim Johnson, Harvey Miller (all 1123); John Brouillard (1131), Sandy Sandgren, Mike Burke, Jerry Chael, Stan Dains, Jimmy Lee, Leonard Livingston, Gary Miller, Ernie Norton, Chuck Smith, Henry Stuckert and Stan Yager (all Mercury Instrumentation Section 1125-1). Dr. Sheldon Bliss (3300) is a candidate for the position of team physician and Pat Newman (3144) and Ken Touryan (5260) are under consideration as team interpreter. Seismic analysis scientist candidates are Dee Ellett and Luke Vortman.

The training of people is already underway and a dress rehearsal of the operation is planned for this fall.

Authors

F.G. Yost (2432) and I.J. Hall (1223), "Failure by the Processes of Nucleation and Growth," Vol. 25, No. 1, IEEE Transactions on RELIABILITY.

L.V. Rigby (4250) and A.D. Swain (1222), chapter entitled, "Some Human-Factor Applications to Quality Control in a High Technology Industry," *Human Reliability in Quality Control*, Taylor & Francis Ltd., London (1975).

E.P. EerNisse (5112) and D.K. Brice (5111), "Sputtering of ErD₂: Experiment and Theory," Vol. 132, Jan.-Feb. 1976, NUCLEAR INSTRUMENTS AND METHODS.

R.A. Langley (5111) and R.S. Blewer (2353), "Measurement of the Stopping Cross Sections for Protons and He Ions in Erbium and Erbium Oxide: A Test of Bragg's Rule," Vol. 132, Jan.-Feb. 1976, NUCLEAR INSTRUMENTS AND METHODS.

K.K. Murata (5151), "Dynamics of a Coupled-Mode System: Explicit Analysis at Order E²," Vol. 13, No. 5, PHYSICAL REVIEW B.

G.C. Nelson (5825), "Influence of Surface Roughness on the Intensity of Elastically Scattered Low-Energy Noble-Gas Ions," Vol. 47, No. 4, JOURNAL OF APPLIED PHYSICS.

R.B. Pettit (5842) and R.R. Sowell (5834), "Solar Absorbance and Emittance Properties of Several Solar Coatings," Vol. 13, No. 2, THE JOURNAL OF VACUUM SCIENCE AND TECHNOLOGY.

E.L. Venturini and P.M. Richards (both 5132), "Temperature-Induced Magnetization in an Amorphous Ferrimagnet," Vol. 47, No. 4, JOURNAL OF APPLIED PHYSICS.

W.Y. Velez (5121), "Some Remarks on Problem E2468, April 1974," Vol. 83, No. 4, THE AMERICAN MATHEMATICAL MONTHLY.

R.A. Hill, A.J. Mulac (both 5642), and D.R. Smith (5443), "Relative Intensity Calibration of Rotational Raman Spectra," Vol. 30, No. 2, APPLIED SPECTROSCOPY.

R.A. Kiehl (5133) and R.L. Gunshor, "Internal Dynamics and Microwave Properties of X-Band Transferred-Electron Devices," Vol. 24, No. 4, IEEE Transactions on MICROWAVE THEORY AND TECHNIQUES.

J.W. Nunziato (5131) and L.T. Wheeler, "Wave Propagation in a Chemically Reacting, Linear Elastic Sphere," Vol. 43, No. 1, JOURNAL OF APPLIED MECHANICS.

D.A. McArthur (5423) and P.B. Tollefsrud (5230A), "Measurement of Optical Gain in CO Gas Excited Only by Fission Fragments," Vol. 12, No. 4, IEEE JOURNAL OF QUANTUM ELECTRONICS.

F.R. Norwood (5166), "Correction and Extension of Broberg's Results on Brittle Crack Propagation," Vol. 14, No. 5, INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE.

J.E. Schirber (5150) and R.L. White (5151), "Pressure Derivatives of Fermi-Surface Cross Sections by the Solid-He Phase-Shift Method," Vol. 23, No. 3-4, JOURNAL OF LOW TEMPERATURE PHYSICS.

Speakers

J.A. Reuscher, B.F. Estes and J.S. Philbin (all 5421), "Performance Characteristics of the Sandia Pulsed Reactor III," D.A. Benson (5167) and W.H. Buckalew (5232), "The Uranium Dioxide Vapor Equation of State," L.L. Bonzon (5432), "Radioactive Material Package Testing," R.H. Marrion, C.H. Karnes (both 5847), F.M. Morris and J.A. Reuscher (both 5421), "Graphite Matrix Fuels for Pulsed Reactors," L.L. Bonzon (5432), "In-Containment Radiation Environments Following the Hypothetical LOCA (LWR)," R.A. Langley (5111) and J.M. Donhowe (U. Wis.), "Study of the V-Be Diffusion Couple," D.K. Brice (5111), invited paper, "Methods of Charged Particle Damage Analysis," H.D. Sivinski (5440), "The Sandia Waste Resources Utilization Program," J.R. Brandon (5442), "Pathogen Reduction and Filterability Enhancement in Irradiated Sludge," R.A. Langley (5111), "Depth Profiling of Hydrogen and Helium Isotopes Using Ion Beams," invited paper; D.W. Lawson and D.O. Lee (both 1283), "Preliminary Study of Molten Material/Decomposing Solid Interface Conditions," S.T. Picraux (5111), "On Depth Profiling of Hydrogen and Helium Isotopes in Solids by Nuclear-Reaction Analysis," R.E. Luna, D.R. Smith (both 5443), A.R. DuCharme (5413), and J.M. Taylor (1233), "The Risk in Transporting Radioactive Materials," American Nuclear Society Annual Meeting, June 13-18, Toronto, Canada.

P.J. Chen, P.C. Lysne (both 5131), and H.J. Sutherland (5167), "Electrical Responses of Ferroelectric Ceramics to Dynamic Loads of Uniaxial Strain," W. Herrmann (5160), "Some Recent Results in Elastic-Plastic Wave Propagation," ASME Symposium on Shock Waves and Solids, June 14-17, Univ. of Utah, Salt Lake City.

R.M. Jefferson (5430), "Our Powerless Society," Caravan Shrine Club, June 7, Albuquerque.



NEW LABOR AGREEMENTS were signed last week by Sandia and the Office and Professional Employees International Union. Discussing the contract are Maxine Stephenson (9631), OPEIU president, Ernie Peterson, Labor Relations Department (4220), and Nancy Barela (3152), OPEIU secretary treasurer. In addition to wage increases, the contracts call for a new paid holiday schedule and new sickness absence benefits. A similar agreement was signed with the Metal Trades Council.

feed back

To get a response to your comments and questions about Sandia Labs, complete a Feedback form (available near bulletin boards) and return it to the Feedback administrator. The substance of questions and responses of wide interest is published in LAB NEWS.

Q. Since Nambeware is such a useful item, why not consider letting employees select it in lieu of awards that are now offered for 20-year anniversaries?

A. In setting up the service award program, it was decided that the awards for twenty years and under should be "stock" items with "special order" items beginning with twenty-five years of service. Your suggestion concerning employee selection of Nambeware within a certain dollar amount for twenty years would not be in keeping with this philosophy. While we might consider adding a particular piece of Nambeware as one of the choices for twenty-year anniversary, our experience with twenty-five and thirty-year anniversaries does not indicate that Nambeware has great universal appeal and we are not planning any change in the immediate future.

R.J. Edelman - 4200

Q. Everyone has known for some time that the poorest investment we are making is payments to the Social Security System. Is there any possibility that Sandia Labs could legally withdraw from the system and if so, has any thought been given to the idea? Sandia could really have a top notch retirement system with the money being wasted on S.S. going into the plan.

A. Sandia Laboratories and its employees are required by law to pay into Social Security and cannot withdraw from participation in that program.

R.J. Edelman - 4200

Q. MNB Vol. 20, No. 22 indicates Szabo stocks machines with fresh, palatable products. Maybe so, but there is nothing palatable about the microwave ovens. I've been looking at them for weeks and they haven't been cleaned for quite a long time.

A. These ovens are the property of Szabo and were installed in conjunction with the

food vending centers.

Regarding their cleanliness, they are cleaned each morning when the vending areas are serviced. Some employees use the ovens to heat the food they bring from home — pizzas, Mexican food, you name it. Even popcorn is popped in the ovens on occasion. It was recently observed in Bldg. 836 that a person who had bought food from the vending machine had to wait to use the oven while four persons who brought their own food warmed it in the oven. This sort of thing accounts for the ovens becoming dirty in a short period of time. There is no easy solution to this situation unless people display some consideration for others by cleaning up the mess they themselves make.

R.J. Edelman - 4200

Q. Recently two new hires joined our division and I was surprised to learn that in their new hire orientation they were not told about Sandia's vacation or sick leave policy.

Perhaps a short talk on these subjects by the people who make the vacation and sick leave policies (or by Payroll who polices them) to the new hires would be a very worthwhile thing.

A. Each new employee is given a booklet called "Here at Sandia" in which the vacation and sick leave policy is covered in detail. In addition, it is the function of the Personnel Representative for each Vice Presidency to meet the new hire on the first or second day of employment and review these policies as well as answer other questions relating to working at Sandia.

The situation you mention in your Feedback has been discussed with all the Personnel Representatives and it is hoped this will not occur in the future.

You may find the booklet "Here at Sandia" helpful to you. Copies are available from Organization 4250 should you be interested in your own copy.

R.J. Edelman - 4200

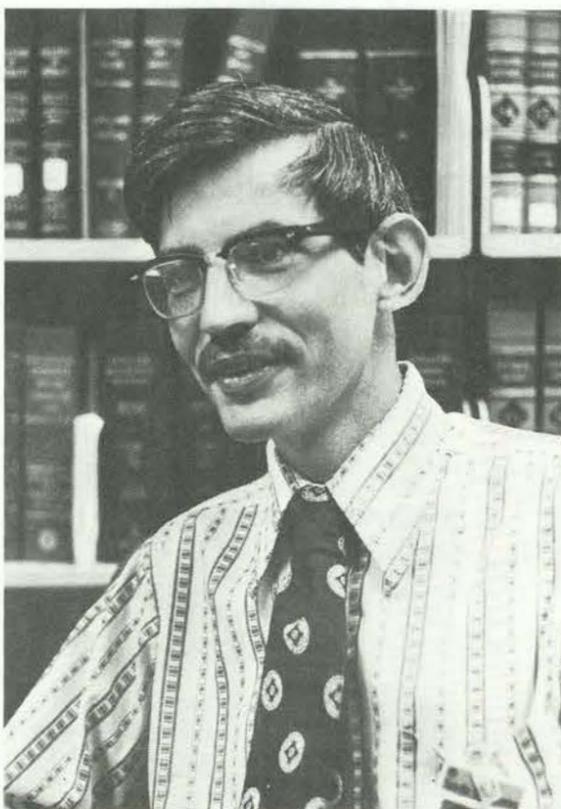
RESTORED 1930 Model A is the work of Sam Griego (9722) and Kathy Martinez (ERDA). The car was completely rebuilt from the chassis up. Final step will be a jazzy upholstered rumble seat. Sam has also built a prize-winning '65 custom Chevy pickup and a '74 Chevy van which took top honors at the custom rod and van show here last winter. In Sam's workshop now are two antique pickups and a hybrid sports car.



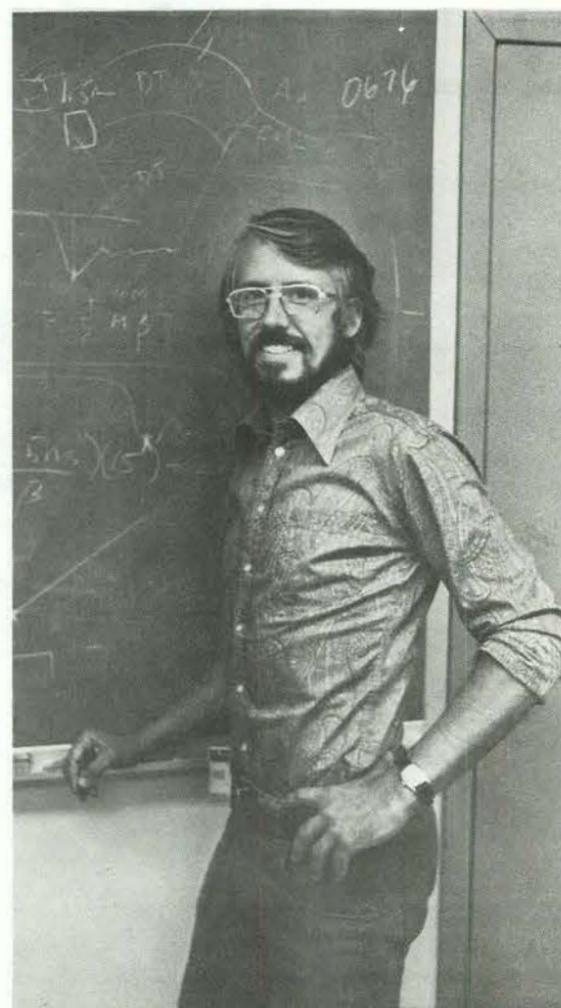
sandia PEOPLE Report



ELLEN WOOD, Telecon Service Clerk in Control and Operations Division 9753, has been on the job since April and is the first woman to fill the position. "I've been at Sandia for 25 years and I've never been so busy—I love it!" The job entails taking calls for short-order work—between 80 and 100 calls each day—logging the calls and preparing the paperwork. Besides the routine service requests, Ellen gets many emergency calls—especially following a storm. "It's a busy place and I do my best to handle the requests, even if I couldn't provide a downtown taxi for a recent caller."



ON LOAN from Western Electric is lawyer Hugh Kelly, who has recently joined Sandia's legal organization (6000). Hugh has worked with Western for nine years at WE headquarters in New York. He gained law degrees from Fordham and NYU. The Kellys have five children and reside at 23 Sandia Hts. Dr. NE.



JOHN OLSEN (5242) has returned to Sandia after a year as guest researcher at the Max Planck Institute for Plasma Physics at Garching bei Munchen, Germany. "Pulse Shaping in Iodine Lasers" is the tech paper resulting from work performed there. The laser plasma research group used lasers to create hot, dense plasmas. John joined Sandia six years ago after earning a PhD in physics from Ohio State.

MILEPOSTS

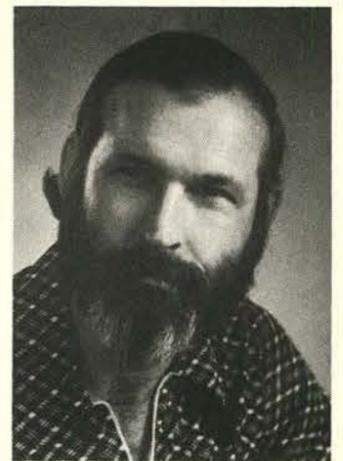
LAB NEWS

JULY 1976



Charlie Albright - 3623

10



Vic Ham - 8312

15



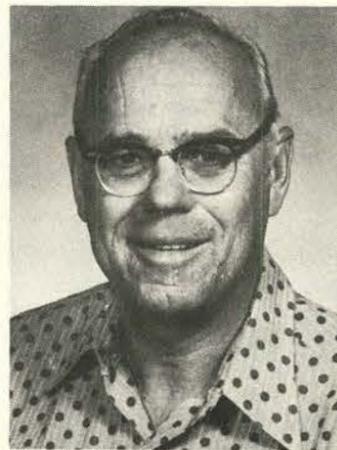
Mae Lovelace - 3617

25



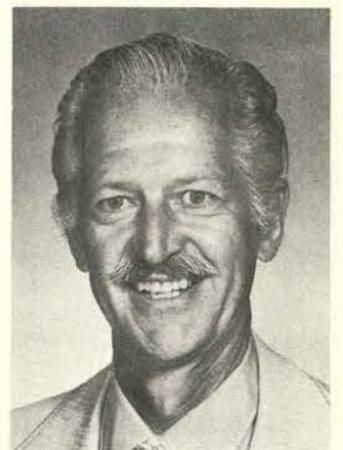
Jim Pergrossi - 8165

10



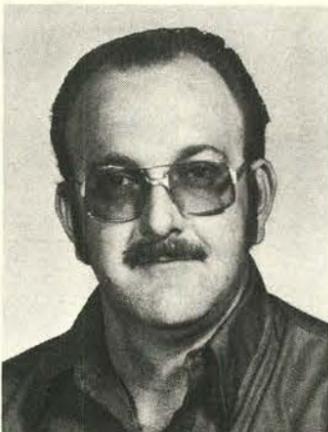
John Irwin - 1323

20



Chester Ricker - 4212

25



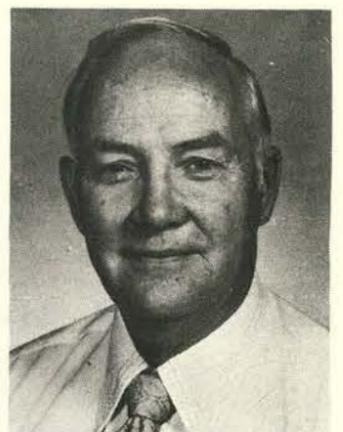
Sam Thompson - 5166

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Thomas Philbin - 9622

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Phillip Young - 4312

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Don Arquette - 2122

20



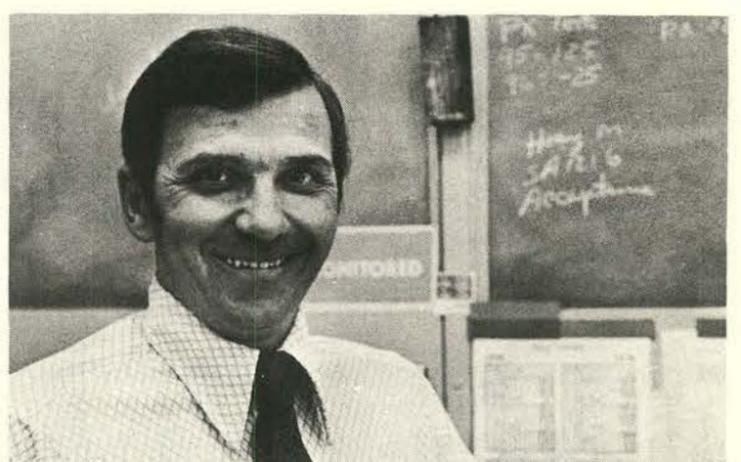
Benito Padilla - 9713

20



Francis Vogel - 9750

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Bob Balthaser - 9515

15



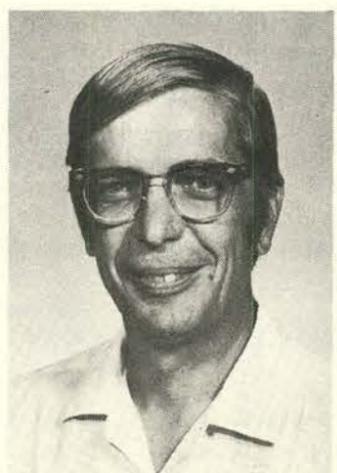
Bill Drozdick - 9651

15



Jay Gear - 1232

25



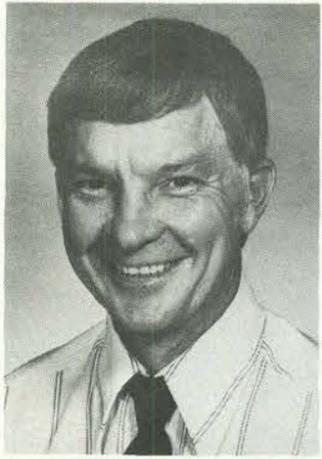
Ed Summons - 1352

15

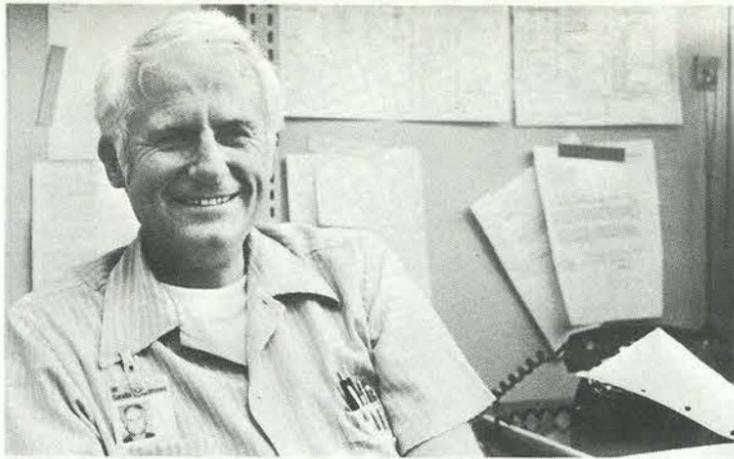


Alan Pope - 1400

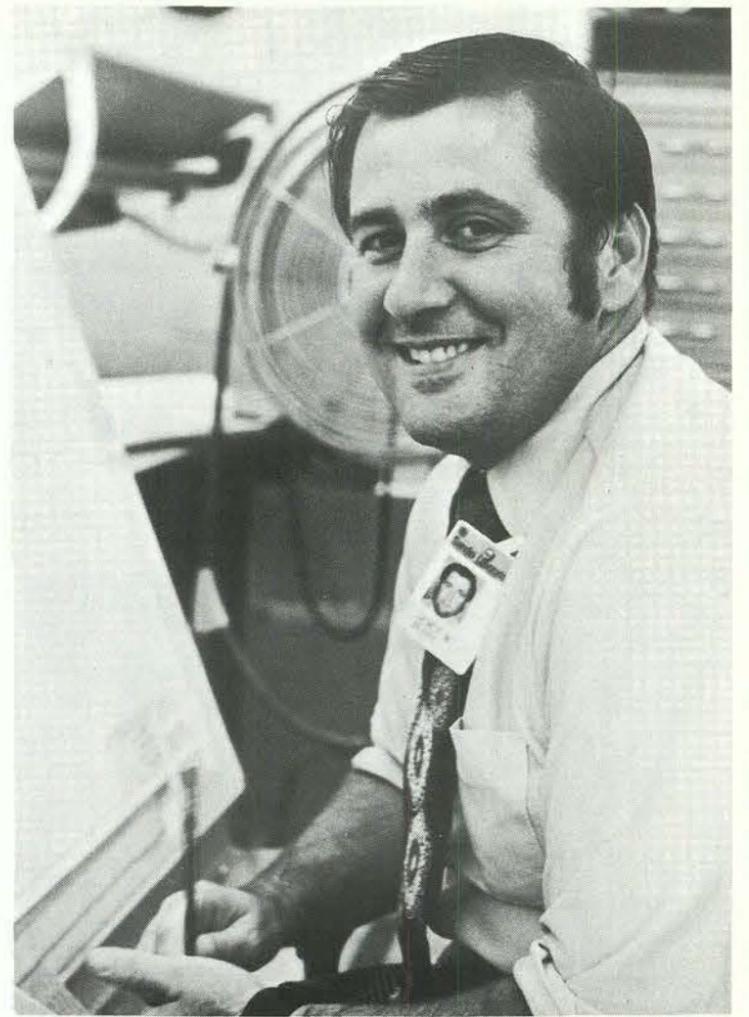
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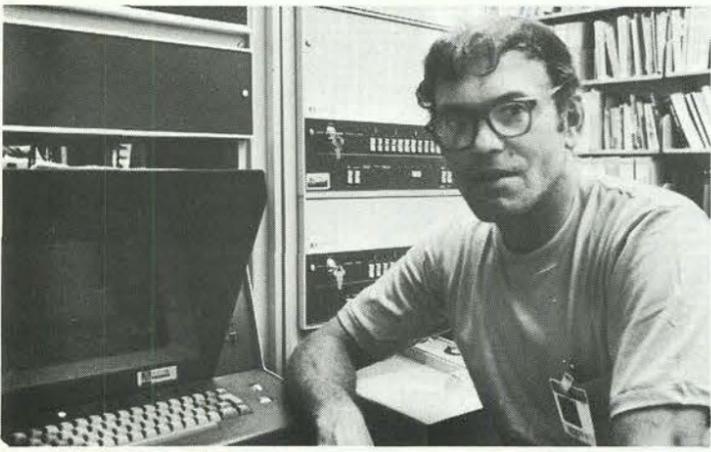
Charles Kinsey - 1732 15



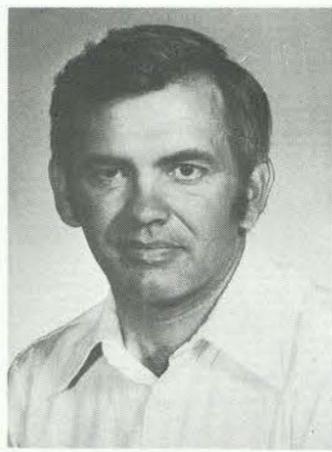
Dick Brooks - 9332 20



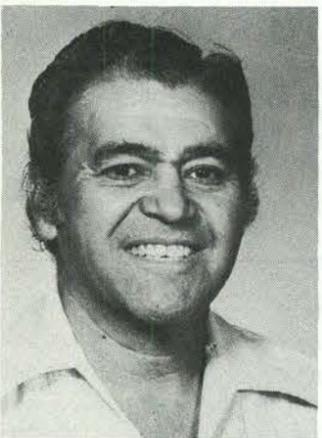
Dewey Berry - 9654 10



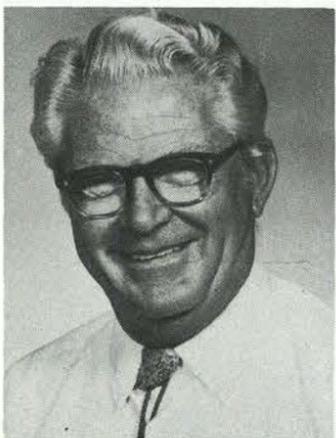
Ken Bauhs - 9344 15



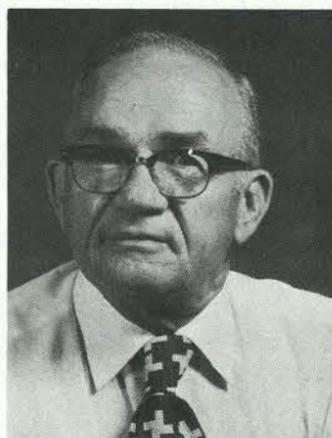
Matt Gubbels - 1284 15



Ben Lucero - 2356 25



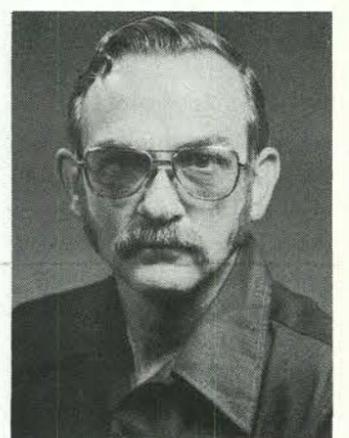
Wilbert Jones - 9652 15



A.W. Reger - 9530 25



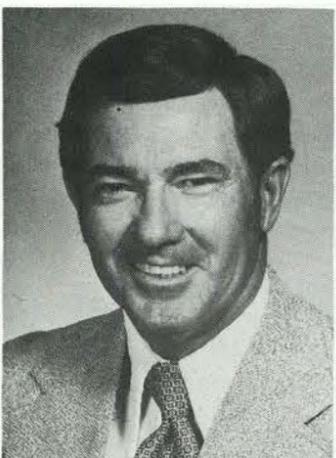
Robert Wemple - 5834 15



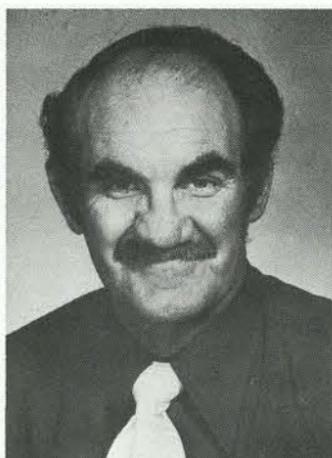
Richard Griffith - 1753 20



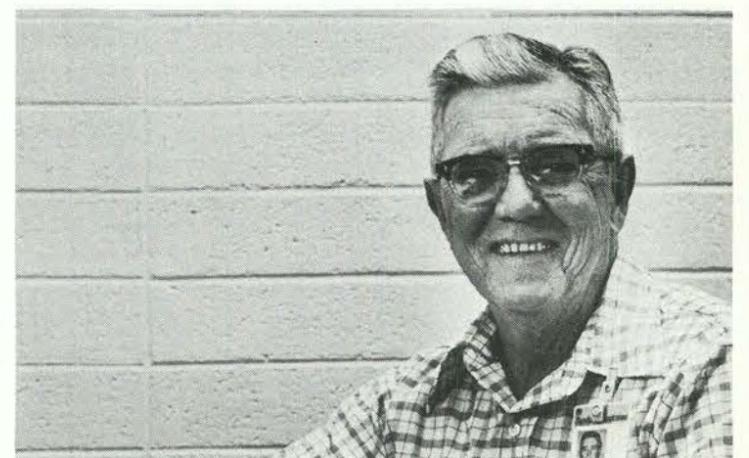
Mina Carnicom - 1333 20



Don Lundergan - 4010 20



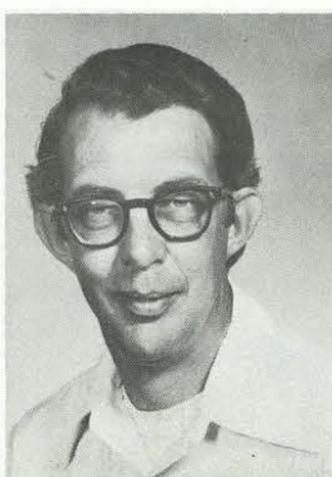
Leland Pierce - 2521 20



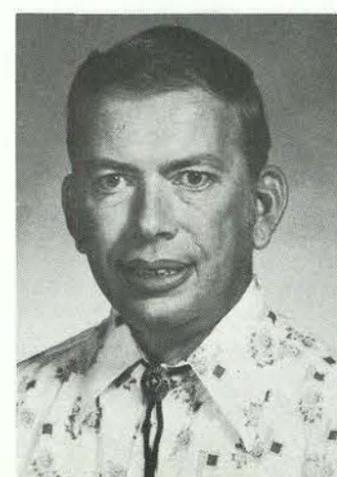
Tom Cook - 2317 20



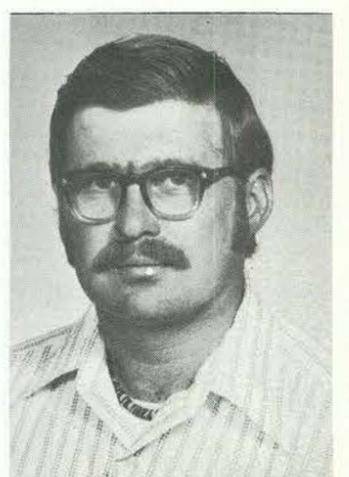
Herb Jewett - 3645 30



Richard McKnight - 1751 20



Jack Bloomquist - 5423 20



Robert Davis - 5233 15



Gene Lisotto - 9634 15



Roger Abbott - 9482 20



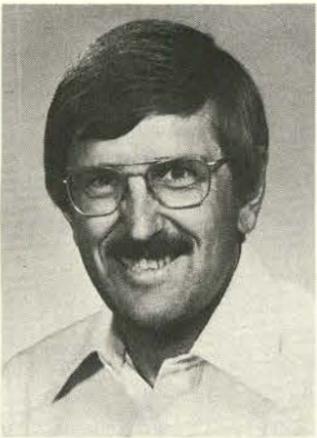
Bob Frazer - 9424 15



Bob Dawirs - 1353 25



Edward Barkocy - 9484 15



Ray Klein - 5212 15



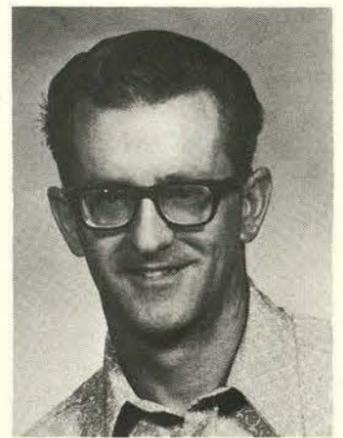
Jay Holton - 9742 10



David Johnson - 5245 10



Dick Illing - 9521 15



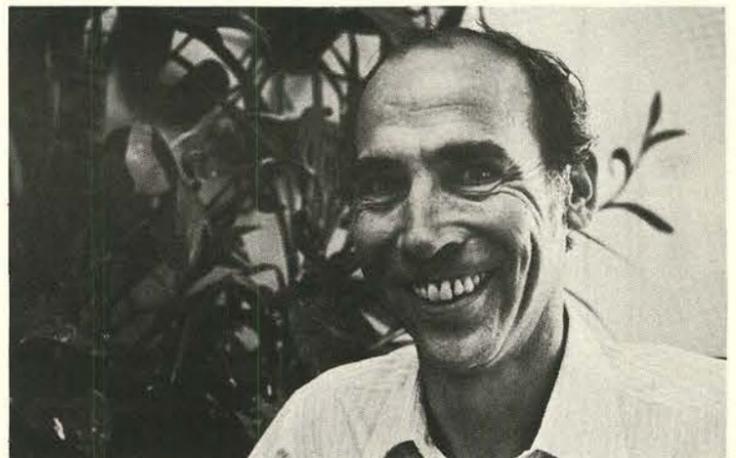
David Shank - 4322 15



Clayton Erickson - 1715 25



John Stanalonis - 9622 10



Charlie Blaine - 2136 20



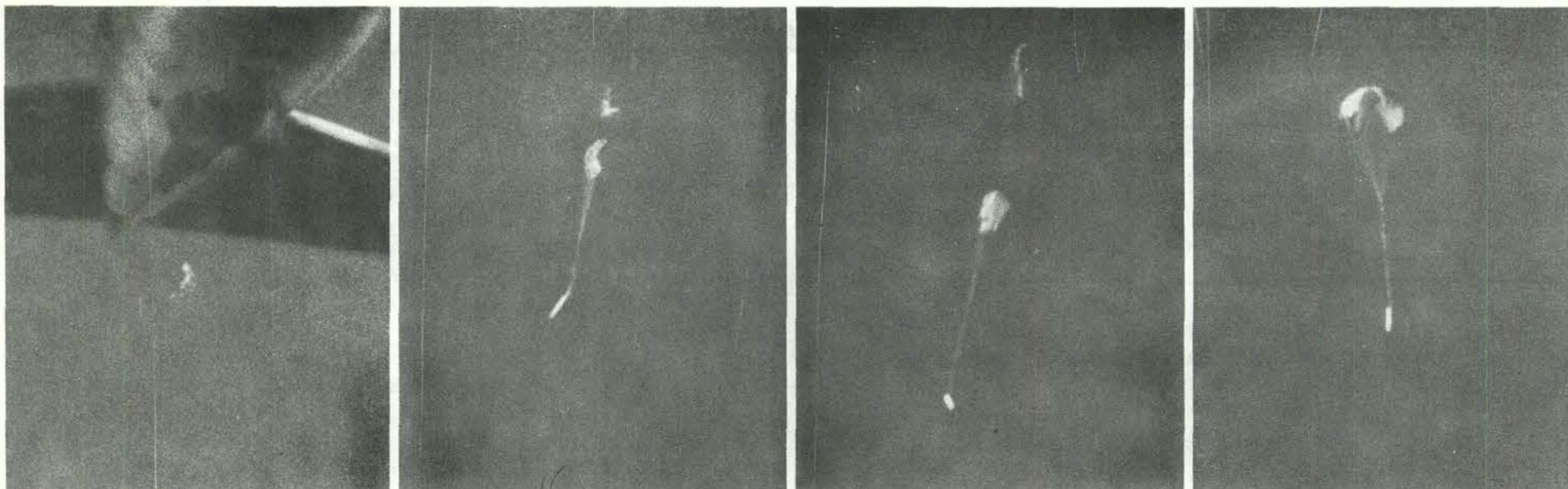
Marv Torneby - 211 15



Ronald Soutar - 9351 15



Betty Sherred - 3254 20



DROPSONDES, devices designed to measure atmospheric conditions while floating to earth from 1500 metres (5000 ft.) after release from an aircraft, kept men of Tonopah Test Range Department 9470 busy in recent weeks as a series of 33 drops of the instruments from a C-135 was conducted. The dropsondes will be used in 1979 in a global atmospheric measurement project with some 70 nations participating. Data will be collected to verify computer models of the atmosphere for weather forecasting. Tests were conducted at TTR for the National Center for Atmospheric Research, Boulder, Colo., and the Air Force. Sandia provided the

Range facility, extensive photographic coverage and trajectory data, including real-time viewing on TV from a new 350 cm (140 in.) focal length telescope with zoom lens mounted on a new radar system at TTR. Harold Rarrick (9411) is test project manager. These pictures were taken at 2000 metres (6300 ft.) with a 600 centimetre (235 in.) focal length telescope. The dropsonde instrument is 11.5 centimetres (4.5 in.) in diameter and 46 centimetres (18 in.) long. The parachute is 1.25 metres (4 ft.) in diameter.

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.

RULES

1. Limit 20 words.
2. One ad per issue per category.
3. Must be submitted in writing.
4. Use home telephone numbers.
5. For Sandia Laboratories and ERDA employees only.
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

PRACTICE AMP for beginning guitarist, 4" speaker, \$20; maple bunk beds, bookcase headboard, mattresses, \$100. Rightley, 268-4673.

TIMING LIGHT, Penske, \$10. Smith, 296-8519.

DINING TABLE, wood, 2 extendable leaves, \$60; dresser, \$10; 9x12 ft. rug, \$10; CO2 pistol, \$18; Swedish javelin, \$7. Miller, 255-6838.

POCKET CALCULATOR, Texas Instruments, SR50, recharger, \$50; GE built-in dishwasher, \$50. Joseph, 299-6989.

SKI BOAT, 14 ft., 50 hp Johnson outboard, tilt trailer. Falacy, 881-1802.

TIRES, rim, spokes, fender, etc. for 185 Suzuki motorcycle. Noel, 298-2142.

STEREO, Zenith, solid state, 2 speakers. Fletcher, 298-2142.

CAPACITIVE IGNITION, Delta MK-10B, new, guarantee, list \$64.95, sell \$35. Young, 299-6550.

PATIO STONES, Riccobene, ten, 18"x18"x2", dark red, brick patterned surface, will cover 23 sq. ft., \$1.50 each. Keeling, 296-9729.

POLAROID Super Colorpack IV Land camera, case, focused flash, 3-element lens, 114 mm, f/9, uses type 108 or 107, \$25. Shieler, 881-8723.

TICKETS, Santa Fe Opera, one pair for July 31 and Aug. 10, at cost, \$14. Miller, 255-7716.

TAPE DECKS, Roberts 1740X Cross-Field stereo deck, 3 speeds, \$150; Ampex FR-100A 7-track transport, 6 speeds, half-inch tape, \$300. Kobs, 298-9133.

PUPPIES, German Shepherd, AKC registered, 14 weeks old, shots, \$75 or best offer. Abbin, 256-0188 or 292-3965.

TURNTABLE BASE and dust

cover, walnut, for Miracord 620 turntable, \$3 each. Borgman, 299-6010.

BEIGE CARPET, 14x16 room size, sand color, \$50. Burress, 298-5061.

DINETTE SET, chrome, yellow, 4 matching chairs, \$25; unicycle, 20" wheel, \$20; child's climbing tower, \$15. Mills, 299-2130.

CALCULATORS: SR10, \$30; Sears 5877, with memory, trig., log, etc., \$40, both with adapters. Peters, 298-4800, after 6.

120 BASS ACCORDION, case; sewing machine. Johnson, 344-9369.

BANJO, 5 string, resonator, \$60. Barnaby, 265-4353.

DINETTE SET, 6 chairs. Cyrus, 898-5006.

CARPETS: 10x14 gold with pad, \$75; 10½x11½ blue-green, \$50; refrigerated window air conditioner, 8500btu, \$65. Fletcher, 293-4204, after 5.

PLAYPEN, Strolee, folding, \$20; Evenflo automatic electric sterilizer, \$3; safety seat, \$2; Swyngomatic, \$7; car bed, \$5, misc. Stevens, 266-0314.

NAVAJO RUG, Circa 1900-1910, red, black, white, approx. 5x7, professional appraisal furnished, \$600 or offer. Bennett, 296-8041.

SADDLE, by "Little Horn" of Dallas, junior size, \$75. Baxter, 344-7601.

CONSOLE PIANO, Behning, mahogany, bench, \$550. McIlroy, 299-4977, 296-7275.

FIREPLACE TOOL SET, brush, tongs, shovel, wall mount bracket, black iron, \$5. Holmes, 292-0898.

TRUCK TIRE, L78-16, Sears steel belted, 6 hole Chevy rim, \$50; rims; 6 hole 16 in. Chevy, \$6; 6 hole 16.5 in. Chevy, \$5; Mattox, 296-4149.

POOL TABLE, 4½x8 slate bed, you move, \$350, set up in your home with new cover, \$450. Hart, 293-6396.

KITCHEN CABINETS, 2 base unit, one with double sink, other with range top; one wall unit. Sisneros, 265-2162, after 5.

WOOD PICKET FENCE, 4 ft. high, 100 ft. long. Joseph, 268-5414.

TRAVEL TRAILER, Aristocrat 16', sleeps 6, stove, oven, ice refrigerator, electric brakes, 2 gas bottles, \$1300. Shepherd, 299-9066.

MOBILE HOME, 3 bdr., 12'x65', skirted, located in Four Hills mobile home park, \$6000, firm. Perry, 292-2581.

MOWER, Craftsman Reel 18", \$50; bunk beds, mattress, \$80; one 7.75x14 tire tube rim, Chevy, \$20. Langley, 881-7264.

AIR CONDITIONER, GE model AGAE906LA, 5500 btu, compressor and case under original warranty, \$150. Glaser, 293-8110.

TOOL BOX, cross-over, for wide bed pickup, Koenig Stor Master, torsion spring doors, sliding tray, recessed door operators. Johnston, 299-1830.

FREE KITTENS, either sex. Jeffery, 298-1231.

LAWN MOWER, Jacobson, \$40. Faychak, 821-4833.

FREE LILY of the Valley plants for the digging. Shieler, 881-8723.

VW CAMPER EQUIPMENT, Westfallia, bed and table, seats, cabinets, etc., \$375; F78-14 Firestone tires, 5-hole VW rims, \$30 each. Madden, 296-1082.

DIAL TELEPHONE, cradle type, \$20; ladies hood hair dryer, \$9; G78-15 truck tire, \$6. Koletar, 255-4751.

ROUND DINETTE, four swivel chairs; light green Springcrest drapes, 154x84; white/beige floral drapes, 153x94 and 142x94; fireplace screens. Greenwood, 298-5268.

CARPETS, short shag, green, 10'4"x11'11"; gold 10'6"x11'11", \$40 each. Trellue, 293-0923.

FIVE DRAWER CHEST, bookcase, twin headboard, table, all antiqued red, twin roll-away bed, few antique dishes, misc. Bland, 265-6286.

SLOOP, Aquarius 23', new sails, roller furling, custom trailer, galley, head, 6 HP Evinrude, sleeps 5, extras, \$4395. Allen, 296-6453.

MOBILE HOME, '71 Tourite, 12x60, on corner lot in Terrace Park, landscaped, 8x40 covered patio, carport, storage shed, furnished or unfurnished. Thayer, 296-7256.

TRANSPORTATION

'71 DODGE Colt, 2 dr., HT, AT, radio, 4 cyl. Carter, 296-8709.

'74 MUSTANG II, AT, AC, 14,000 miles, best offer. Buttz, 293-4190.

'75 DODGE Coronet, AC, power brakes, PS, \$3800. O'Connor, 292-0592.

'75 MAVERICK, 4800 miles; '74 Ford Mustang Ghia, \$3150 each. Romero, 298-8586.

'75 OLDS Starfire Sports Coupe, V-6, AT, AC, PS, PB, AM-FM, extras, below book, \$3795. Willis, 881-8077.

'65 DODGE 3/4 ton crew-cab, '71 custom made Mitchell camper, sleeps six, jacks, spares, extras, \$2400. Hitchcock, 298-4746.

VW BUS with new tires, camper accessories, \$650. Caruthers, 821-4035.

'74 HUSKY 400 WR, new air cleaner, handlebars, tires, \$875. Kist, 299-6887.

'70 FORD ½ ton, 3 gas tanks, 302 V-8, 17 mpg, radio, heater, camper sleeps 2, \$1875. Smith, 294-7667.

'74 YAMAHA Enduro 125, \$375. Baczek, 255-3429.

'72 FIAT 124, 4 dr. sedan, AT, yellow, radial tires, below book, \$1500. Ault, 281-3280.

'68 RAMBLER American, 6 cyl., \$495; '70 Renault R16, \$925 or best offer. Folkins, 344-5917.

'72 PINTO stationwagon, yellow, luggage rack, 46,000 miles, \$1795. Hubbard, 299-7818.

'75 HONDA XL 250, 4100 miles, rack, service manual, \$675 or best offer. Brooks, 881-4319.

'64 VW Bug; Honda 90, less than 1050 miles. Wilkinson, 299-8327.

'69 SAAB 96, 2 dr., V-4, \$450. Workhoven, 281-3246.

'73 CAPRI, V-6, 4 spd., 34,000 miles, radials, \$2500. Souther, 842-9630.

'70 VW Poptop camper, Michelin radials, recently overhauled clutch and transmission, 84,000 miles, \$2100. Detry, 299-3117.

REAL ESTATE

THREE 10 ACRE tracts, north 14, \$1500 per acre. Ortiz, 881-9564., 831-0294, 299-2613, after 5.

RESIDENTIAL lot, Cochiti Lake City, \$3900 plus \$60.73/month for unpaid balance of approx. \$3200. McClafflin, 268-1352.

TOWN HOUSE, San Pedro and Montgomery area, 3 bdr., 1½ baths, double carport, 1250 sq. ft., \$25,500, \$163/month, will help finance. Duvall, 883-3735.

TWO 10 ACRE tracts, 5 miles east of Edgewood, electricity on property, \$900/acre, 15% down, balance on REC. Coalson, 298-0061.

WANTED

TO RENT or house sit a home in Livermore area from Aug. 1 to 21. Claghorn, 298-2043.

GAS WELDER outfit, 2 stage regulators preferred, tanks not necessary. Gruer, 298-4776.

BICYCLE, men's 26 in. ten speed. Jarrell, 883-2660.

SAILBOAT, preferably daysailer class, will consider small cabin cruiser, also need trailer. Rose, 298-4849.

SCHEMATIC for GE clock radio model C1400A. Yingst, 293-7980.

WORK WANTED

BRICK PATIOS BUILT, trees planted, and landscaping, by two college students. Roger, 298-1324. George, 299-1868 after 5.

FOR RENT

HOUSE, completely furnished, for two month period, 3 bdr., 1½ baths, \$400/month plus deposit. Hender, 292-1452.

YEAR OLD, 3 bdr., 2 bath, den, F/P, laundry, double garage, fenced yard, available Aug. 1, LaCharles and Mountain Rd. NE, draped. Moody, 821-1128.

3-BDR, office, furnished, large back yard, garden and play area, close to schools, YWCA, park, 1 year lease. Ellison, 296-1721.

CONDOMINIUM, Purgatory Ski Basin, sleeps 6, kitchen, fishing, hiking, relaxation, Sept-Oct dates available, \$25/night, \$125/week, reservations. Smatana, 299-6278.

ONE BDR APARTMENT, furnished, utilities paid, 541 Espanola SE, private patio, frostless refrigerator, \$210/-month. Aragon, 242-1651.

LOST AND FOUND

LOST - Safety sunglasses in brown case.

FOUND - Blue key; small brown four-holed button with monogram "S". LOST AND FOUND, Bldg. 832, 4-1657.

FRIDAYS	
23 — HAPPY HOUR GERMAN BUFFET Adults \$3.25 Under 12 1.92 UPCOUNTRY Denny in Lounge	30 — HAPPY HOUR BBQ RIBS BUFFET Adults \$3.50 Under 12 1.92 Amy & Leesa MIDNIGHT SPECIAL

EDUCATION — in the Arts Aquatic awaits all attending 1) the swim meet in the Twin Pools on the 30th and 31st; and 2) the National Junior Olympic Water Polo Championships on the 6th through 8th of August. Boys and girls teams from all over the country will pool their talents and have a ball. It's great watching — and our Aquatic Club teams have a good chance of swimming away with another championship or two. So head for the Annex Pool that weekend.

GETS — Denny really tuned up, turned on, and taking off. It happens later in the Lounge tonight when he does "Tiny Bubbles" with such feeling you forget he's not one. But he's not the only reason to show up tonight: there's a German buffet you'll split your lederhosen encompassing. And there's *Charley B* (as in Busched, which is what you'll be after dancing from 7 to 10).

YOU — want maybe some new faces to sing for your supper next week? Voila! It's Amy and Leesa, new and neat. It's also ribs, corn-on-cob, home-fries, and, to dance to, *Midnight Special*.

INTO — a tropical paradise you'll fly on September 23 for a week of sun-drenched days, newmoonlit nights in the Canary Islands. That's if you get signed up soon. It's a great package (from \$479). Remember, the Canaries are not for the birds!

MORE — fine DOW's coming up: the week of the 26th it's a wine cooler at four bits; the week of August 2nd it's a bottle of red



TWO WEEKS from tonight is the Jimmy Carter Show right out of Nashville. That's Jimmy (fiddle, electric bass) on the left; Roy Dudley, the drummer (and Jimmy's brother-in-law); Cheryl Lee, lead guitarist, pianist, singer (and Jimmy's sister); and Gary Carter, steel guitarist (and Jimmy's brother). (It's a family affair.) Country variety by seasoned professionals — Jimmy's been on the road since he was four (strange he hasn't been run over, isn't it?).

wine (probably not a 1964 Chateau Mouton-Rothschild) for six.

INTELLIGENT — C-Clubbers were asked to make a pitch at the Annual Meeting on the 2nd. But one was ill and the other didn't want to come out alone. So the rest of us will have to carry on as usual with the important business of the day — and the year:

election of new Board members. Annual Meeting is at 7:30 on the 2nd.

TROUBLE — in the form of a "Tender Trap" is what Sanadoes get into on August 7 at Ole Henry's Dinner Theatre. Package deal is \$10; prepay Vicky Clark by August 2.

MORE INFO — 265-6791.



THE RUDY LEWIS (3621) FAMILY — Gloria, Eric, Rudy and David — enjoy a Wednesday evening picnic on the Coronado Club patio. Scheduled every Wednesday for the remainder of the summer, the picnics are proving popular with members. Bring a basket of goodies (no glassware, please) and have a pleasant summer evening.