

FACULTY VISIT—Stirling A. Colgate (left), president of New Mexico Institute of Mining and Technology, is shown chatting with C. F. Bild (1100) and President Hornbeck during a recent visit to the Laboratory. Dr. Colgate and four NMIMT faculty members met with R. S. Claassen (5100) and Mr. Bild to discuss areas of mutual interest.

SANDIA LAB NEWS



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SANDIA LABORATORIES ALBUQUERQUE, NEW MEXICO OPERATED BY SANDIA CORPORATION FOR
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Craters on Dry Lake Bed at Tonopah Help Advance Excavation Theory

Antelope Lake at the Tonopah Test Range is one of many dry, flat, barren lake beds which dot the Nevada desert. They have been formed through the millenniums by the silt suspended in the water spilling down the mountain slopes after rare desert rains. The soil in the lake bed is called playa, and it is a fine, powdered, silty clay. Nothing grows in it. It is some 900 feet deep at Antelope.

The lake beds are absolutely flat. Antelope Lake, because of its flatness, its barrenness, and its easy identification from the air, is a perfect target area and site for many of Sandia's activities at the Tonopah Test Range.

At the far south end of the dry lake bed, the flatness is interrupted by long lines of earth mounds, each adjacent to a small square hole. In some of the holes, water collected from a recent winter rain is slowly evaporating.

The craters were formed during the past several years as a result of a series of experiments to develop the laws of excavating with explosives. Small 64-pound spheres of conventional high explosive have been used in the experiments, but the information gathered is valuable to Project Plowshare, the nation's program to develop peaceful uses of nuclear explosives, including a nuclear excavation technology.

The experiments have been under the direction of L. J. (Luke) Vortman of Underground Physics Division 5232, and conducted by Rockets and Ordnance Operations Section 7233-1 under R. C. Holland. Permits is furnished by Divisions 7231 at Tonopah. Instrumentation for the experiment 7232.

"Without the range personnel's professional skills and personal enthusiasm for the projects," Luke says, "we might still be guessing about craters and air blast from arrays of charges. These experi-



L. J. Vortman

ments have been invaluable in developing a formula for predicting crater size as a result of the size of the charge, the burial depth, spacing between charges, and the geological composition of the surrounding earth."

Ultimate aim of the program is to be able to predict with confidence the amount of excavation possible in a specific situation using nuclear explosives — for example, digging a new Panama canal or a harbor in Alaska, or uncovering large ore bodies.

Luke has been involved in Plowshare work for more than 10 years. He did the first comprehensive scientific report on the possibility of creating a transisthmian canal with nuclear technology. Through the years, Luke has written many technical re-

(Continued on Page Two)

Variable Annuity Retirement Option Selected by Total of 6576 Sandians

Enrollment period for Sandia's new variable annuity option of the retirement plan ended recently with a total of 6576 employees electing the variable annuity in some form.

Largest number of employees—5487—chose the 50 percent variable annuity option and also conversion of 50 percent of

their past accumulated retirement credits to the variable annuity.

Another 775 employees chose to accrue 50 percent of their future retirement credits in variable annuity form.

The 25 percent variable annuity option with conversion of accumulated credits was elected by 166 employees. Another 148 chose the 25 percent variable annuity option for future retirement benefits.

Employees who elected the variable annuity will have a combined retirement income—part fixed according to the present formula and part (depends on the variable annuity option selected) that will vary according to the value of the common stocks selected for the plan by Prudential.

Since the initial enrollment period has closed, it will no longer be possible to convert previously accumulated retirement credits to the variable annuity. However, employees who desire to change their selection for future retirement benefits may do so at any time. Such changes will become effective the following Jan. 1.

Within the near future, all employees will receive a statement of their retirement accounts. These will be distributed when the computer programming for the operation is completed. Target date is late March.

Clean-Out Campaign Yields 8800 Cubic Feet of Purged Records at Sandia Corporation

A monumental 8800 cubic feet of purged records resulted from Sandia Corporation's recent Clean-Out campaign, according to Bill Scott, supervisor of Records Management Division 3428. This includes both Sandia and Livermore Laboratory totals.

"The total represents a reduction of 16 percent of filed material," Bill says. "The effort on the part of Sandians was outstanding, and the results were remarkable. Undoubtedly the amount of purged materials and reduction percentage would have been much larger if we had not been conducting a records management program for the past four years. Under this program, personnel of Division 3428 work with offices in five vice presidential organizations to help establish effective management of records."

As a result of the Clean-Out campaign, a total of 68 filing cabinets, 20 bookcases, 23 space finders, and 44 small miscellaneous file units were returned to office equipment divisions.

Most of the material marked for destruction in the campaign represented an office accumulation of "working" material — reports, tech memos, catalogs, publications, and technical journals. Most of the material was out of date.

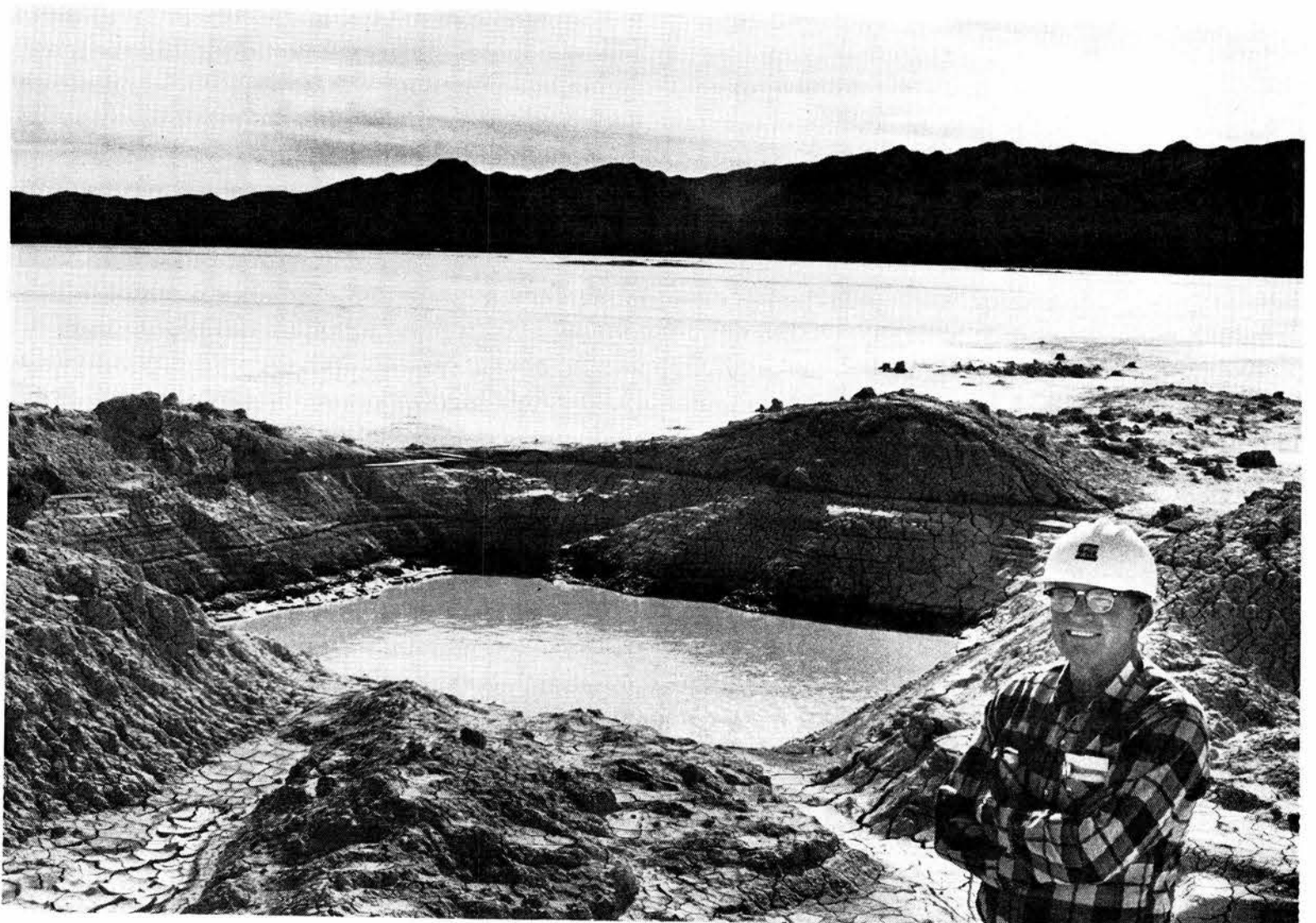
"This kind of material is available either in the Technical Library or from Central Technical Files," Bill says. "We hope that organizations will continue to dispose of excess materials and prevent an accumulation of unneeded records."

Second Supplemental Insurance Enrollment Reaches 4961 Total

Some 4961 Sandia employees responded to the opportunity to obtain additional life insurance at nominal cost under Sandia's new second supplemental insurance program. The total is 67.9 percent of approximately 7300 employees eligible to participate.

Through a special extension period, any eligible employee who wishes to join the plan without proof of insurability may do so by completing a registration form and sending it to Employee Benefits Division 3122 by 5 p.m., Tuesday, Feb. 28.

Purpose of the second supplemental plan is to make available a supplement to private insurance. Employees may purchase life insurance equal to one year's salary (rounded to the next highest thousand) at very low cost, made possible by low group rates.



SQUARE CRATER (containing rain water) created during an experiment using five 64-pound spheres of high explosive interrupts the flat surface of the dry Antelope Lake at Tonopah Test Range. Bob Zumwalt (7233) is one of the range personnel helping with the experiments.

Sandians to Participate in AIAA Conference on Sounding Rocket Vehicles

A number of Sandians will participate in the AIAA Sounding Rocket Vehicle Technology Specialist Conference to be held Feb. 27-March 2 at Williamsburg, Va.

Most flight research experiments conducted today use small research or sounding rocket vehicles. This conference is expected to bring together the principal experimenters in the international scientific community who are concerned with these vehicles.

Since present trends in the technology lean toward use of existing, proven vehicles, the conference will offer an opportunity to determine how these successful systems can be adapted for future programs.

K. F. Crowder (9224) and A. W. Fia, director, Rocket and Space Division, Bristol Aerospace Ltd., Winnipeg, Canada, will be co-chairmen of two sessions on Vehicle Design and Structural Dynamics. Papers to be presented in this field include "Calculations of the Aeroelastic Bending of a Sounding Rocket Based on Flight Data," by G. E. Reis and W. D. Sundberg (both 9321), and "Attitude Control for Spinning Sounding Rockets," by D. R. Schafer (7214), N. F. Sinnott (7211), R. O. Ras-

mussen, and A. Lanzaro, both of Whitaker Corp.

P. J. Langdon (1312) will present a paper entitled "High-Energy Initiators (HEI)" during the Propulsion and Pyrotechnics II session.

A presentation on "Controlled Recovery of Payloads at Large Glide Distances, Using the Para-Foil," by W. R. Barton (9324) and C. F. Knapp, University of Notre Dame, will be given during the Launch Operations Session.

One of the presentations during the Aerodynamics session will be "Some Comments on the Aerodynamic Characteristics of the Tomahawk Sounding Rocket," by W. H. Curry (9322) and J. C. Uselton, ARO Inc.

The conference will include a display of vehicle hardware and a one-day field trip to the NASA Wallops Station to see rocket vehicle handling and launching facilities, data acquisition and tracking systems, and range control facilities. Conditions permitting, a research sounding rocket will be launched.

The banquet speaker on Feb. 28 will be H. E. Newell, associate director, Office of Space Science and Applications, NASA, Washington, D. C.



PLAN CONFERENCE—An outstanding program of speakers is set for the IEEE one-day Technical Conference Feb. 28, according to members of the planning committee, (l to r) R. G. Scharrer (7252), B. L. Gregory (5212), and H. H. Sander (5212). The conference is open to the public, no fee, and will be held in the Sandia Base Theater.

Take Note

The third annual Sandia Lab Handicap Bowling Tournament is scheduled March 11-12 and 18-19 at Fiesta Lanes, according to Dutch Eisold (2213), tournament director. Deadline for entries is Saturday, March 11.

The ABC-sanctioned tournament is open to all Sandia employees but entrants must submit their highest 1965-66 season average of 21 games or more earned in any ABC-sanctioned Albuquerque league.

Singles, doubles, and five-man teams may enter. Trophies and prizes will be awarded in all categories.

For entry blanks or additional information contact the director or Bob James (3133).

Jerry Shinkle (1322), president of the Sandia Employees Golf Association, has issued the call for new members. League team play starts in March and eight tournaments are scheduled for the season.

"SEGA is devoted to providing golfing recreation for all Sandia employees," Jerry says, "from the beginner to the most experienced player. Our league and tournaments are conducted so that the competition is between golfers of the same caliber. Join SEGA now, establish your handicap, and enjoy golf more than ever by participating in organized league and tournament play."

Entry blanks are available from Employee and Secretarial Services Division 3126, Bldg. 610, tel. 264-7775. Deadline for enrollment is March 15.



SWIM 50 MILES—From left, Bill Myre (5610), Robert Bulcock (AEC), and John Eckhart (9210) recently completed the swim-50-miles requirement to earn certificates in the Red Cross "Swim and Stay Fit" program. The Sandia Base Olympic Pool is open to all Sandia Laboratory and AEC employees during noon hours for recreational swimming or for participation in physical fitness programs.

The TDP Wives Club will hold an Easter style show March 6 at 7:30 at the Albuquerque Federal Savings and Loan, East Menaul Branch.

Mrs. Tom Cordell will give the commentary, and members of the club's music interest group will entertain. Club members who will model include Charlene Luckey, Gail Mason, Mariam Hunter, Jane Everett, and Cari Boyd. Refreshments will be served.

One-Day Technical Conference Set By IEEE Section Here February 28

George C. Dacey, former Sandia Corporation Vice President of Research, will be one of the featured speakers at a one-day technical conference Tuesday, Feb. 28, sponsored by the Albuquerque-Los Alamos Section of the Institute of Electrical and Electronics Engineers.

Mr. Dacey, executive director of the Telephones and Power Division of Bell Telephone Laboratories, will discuss "New Developments in Telephone Communications—The Picturephone."

Other speakers and titles of their presentations are Marvin B. Rudin, Fairchild Corporation, "The Design and Fabrication of Silicon Integrated Circuits"; T. R. Finch, Bell Telephone Laboratories, "Large Scale Integration of Digital Electronics"; Kenneth Jungling (KAFB), "A Look at Lasers, Their Present and Future Uses"; and Dr. T. O. Nevison, Jr., and W.V.H. Mason, both Lovelace Foundation, "Recent Advances in Bioinstrumentation."

G. A. Fowler, vice president 9000, will open the conference at 9 a.m. and also will introduce the luncheon program. The luncheon will be held at the Holiday Inn from noon until 1:30 p.m.

Morning and afternoon sessions of the conference program will be held in the Sandia Base theater. No advance registration or fee is required to attend the conference. The public is invited. Tickets to the luncheon, \$2.50 each, are available from B. L. Gregory (5212), conference chairman, tel. 264-7148.

Members of the conference planning committee include Mr. Gregory, H. H.

Sander (5212), and F. N. Coppage (1413). President of the Albuquerque-Los Alamos Section of IEEE is R. G. Scharrer (7252). L. J. Frenkel, Jr. (2131) is secretary. Membership of the IEEE exceeds 700 in Northern New Mexico.

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Cratering Study At Tonopah

ports on developing cratering technology.

The work continues at Tonopah. The explosives are placed with extreme care according to a detailed plan to get maximum data from each shot. Spacing, burial depth, timing between explosions during a series of almost simultaneous explosions along a straight line — these considerations are extremely important.

After the shot, various sample patterns of "ejecta" (the debris blown out of the crater) are collected, marked, weighed, identified, and noted. In recent experiments, various colors of ceramic beads have been placed in the projected crater area according to a complex plan. From the blast site, long plastic sheets are arranged in a circle around the proposed crater. After the shot, the ejecta is collected, the beads counted, and an accurate picture is obtained of how and from where in the crater the ejecta emerged. As many as 20,000 colored beads are used in a single experiment.

The experiments include four-charge shots with the HE spheres placed at the corners of the square, and five-charge experiments with an additional charge in the center of the square. Luke is determining the ideal burial depth and spacing of the charges to form the maximum-size "apparent" crater, the visible hole left after the fall-back of ejecta.

They have created some unique craters — almost perfectly square, level at the bottom, with smooth, steep walls.

Also an important consideration of any cratering technology is air blast — the shock waves created in the atmosphere by the released energy of the explosion. For many of the cratering experiments, air blast measurements are made from ground zero to distances which correspond to as much as 100 miles from nuclear excavation projects such as an interoceanic canal.

"The work of Bill Gault and Carl Northam in providing the instrumentation and making the measurements is appreciated," Luke says. "They worked in the beginning of the program and now this task is handled by Howard Gipson, Bob Zumwalt, and Joe Geltz. The range personnel have been extremely cooperative, and we appreciate the contributions of B. G. Edwards, Andy Max, R. D. Robinett, Ray Brin, Bob Statler, and the continuing interest of Ralph Holland who is the project leader at Tonopah."

AEC Temporarily Halts Cabriolet

On Friday, Feb. 10, the Atomic Energy Commission temporarily halted work on Project Cabriolet at the Nevada Test Site. The AEC issued the following statement:

"The nuclear excavation experiment, Cabriolet, is being temporarily postponed in order to avoid any possibility of complicating the current discussions concerning a non-proliferation treaty or the Latin American Nuclear Free Zone Treaty, which includes consideration of provisions for peaceful uses of nuclear explosives.

"In the weeks ahead we shall be considering the relations between the peaceful and constructive uses of atomic energy and the issues raised in these discussions."

A number of Sandians were participating in the Cabriolet project. As planned, the experiment called for detonation of a nuclear device 170 feet underground, releasing about 2.5 kilotons of energy and creating a crater estimated to be from 115 to 145 feet deep and up to 460 feet in diameter.

Part of the Plowshare program which explores peaceful applications of nuclear energy, Cabriolet was designed to advance the nation's nuclear excavation technology.

Events Calendar

Feb. 25—Jemez Canyon Dam. N. M. Mountain Club, leader Ed Clark, tel. 296-4541.

Feb. 27-28—National Shakespeare Company presents "Hamlet" (Feb. 27, 2 p.m. and 8:15 p.m.), "Julius Caesar" (Feb. 28, 2 p.m.), and "Much Ado About Nothing" (Feb. 28, 8:15 p.m.) UNM Concert Hall.

March 1—Community Concert Series presents Philharmonia Hungarica, Civic Auditorium.

March 9-12, 16-19—"The Caretaker," Old Town Studio, 1208 Rio Grande NW. For reservations call 242-4602.

March 10-17—Shaw's "Caesar and Cleopatra," UNM Rodey Hall.

March 12—Hike to Indian ruins in the Jemez region. N. M. Mountain Club, leader Ray Nethers, tel. 255-3929.

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LIVERMORE NEWS

Rev. James C. Upshaw To Speak at Livermore Colloquium March 7

The Rev. James C. Upshaw, pastor of Christ Presbyterian Church in Terra Linda, Calif., will be the speaker at Livermore Laboratory's March 7 Colloquium.

The title of this talk will be "Communication: Man's Difficult Task."

Mr. Upshaw's talk will explain how people can learn to convey ideas with a minimum possibility of misinterpretation. Case histories of communications problems will be discussed along with recommended corrective action.

Mr. Upshaw received a BA degree (majoring in psychology) from the University of Miami. He also has a BD degree from Princeton Theological Seminary and MTh degree from the San Francisco Theological Seminary. Further information concerning the Colloquium will be posted on bulletin boards the week of Feb. 27. Tickets are required for admission.

G. R. (Gib) Margruth, Jr. (8127) is serving as host for this Colloquium.

Retiring



Pearl E. Payne, senior clerk in Administrative Support and Services Section of the Purchasing Division 8243, retires Feb. 28 after 10 years at Sandia. She joined Livermore Laboratory in February 1957 and has

worked in the Purchasing organization the entire time.

Before coming with Sandia, Pearl had her own tailoring shop in Livermore for a number of years.

Now she will be leaving Livermore to live in Phoenix, Ariz., with her daughter, son-in-law, and two grandchildren. "I've been able to sell the biggest share of the furniture in my apartment and plan to move on March 1," she says.

"But I also want to do a great deal of traveling," Pearl added. "My mother is still living, and I will be visiting her and my sister in Ohio. I formerly lived in the East and will be traveling up and down the coast from Florida up into New England seeing many old friends."

Later on, Pearl says, she plans to join some travel clubs and tour overseas, possibly to Hawaii and Europe.

She enjoys playing bridge and is looking forward to becoming active in several bridge clubs in Phoenix.

Livermore Notes

Evelyn Foote of Employment and Placement Division 8212 recently addressed one of the classes sponsored by the Manpower Development Training Program. The program was established and funded by the Federal government to train or retrain women to enter the labor force.

The class was offered in conjunction with the California State Employment Service (CSES) in Hayward. Her topic was "Skills Requirements and How to Apply for a Job."

Evelyn also made a similar presentation to the Adult Career School in Livermore, sponsored by the California Welfare Department.

Chabot College's Office of Community Services is presenting Mrs. Lisa Hobbs—foreign correspondent and author of the best selling book, "I Saw Red China"—in a lecture at 8 p.m., Monday, Feb. 27, in Bldg. 2300, on the College campus. Her topic will be "Red China Report." The lecture, presented free to the public as a community service, is sponsored in cooperation with the Hayward League of Women Voters.

"Nite Life" ticket books are still available from Employee Benefits Division 8214. A set of three ticket books at \$5 provides San Francisco and Bay Area dining, including four restaurants in the Livermore area, as well as night life and sports activities.

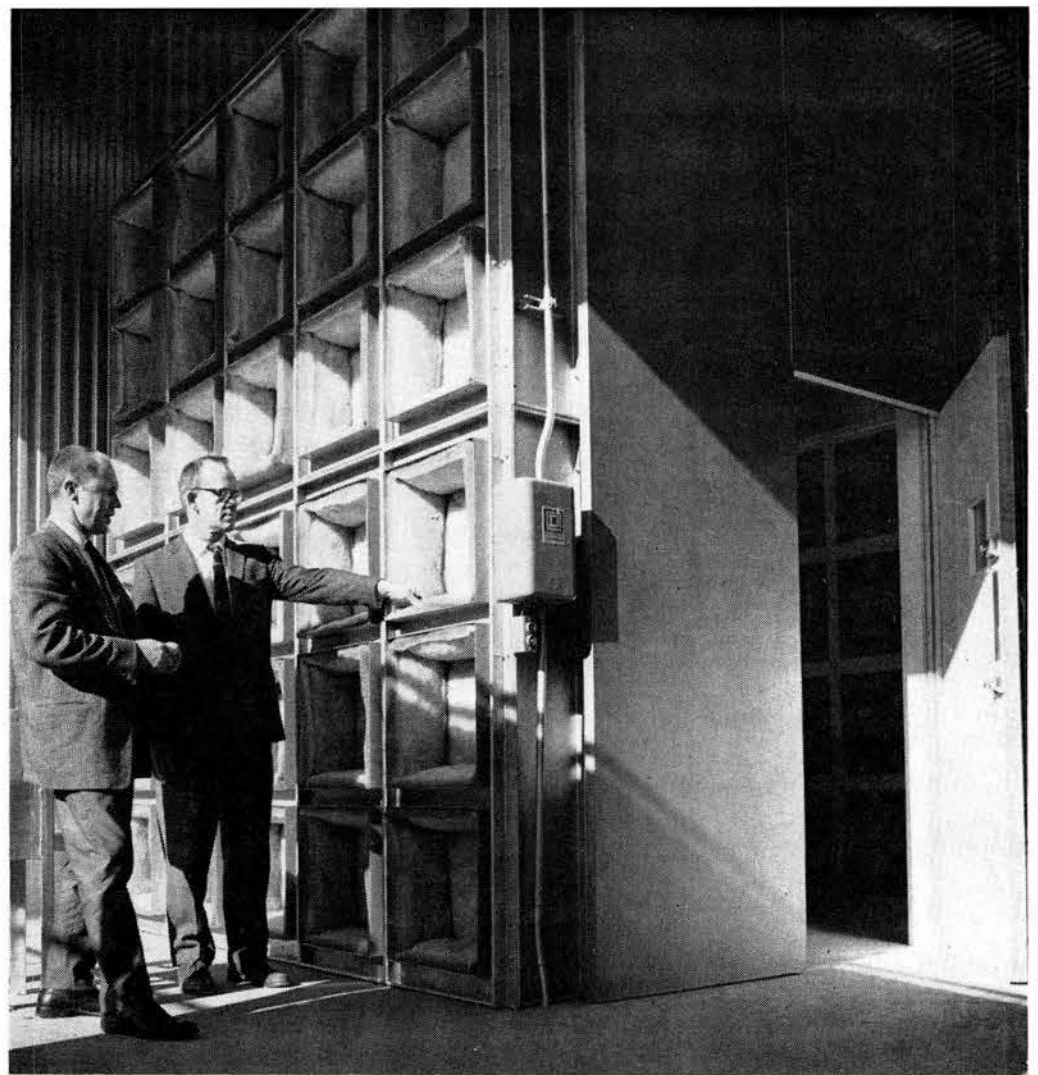
New ASCET Chapter Elects Two Sandians

Jim Bauman (8111) has been elected president and Loren Converse (8122-1) secretary-treasurer of the newly established East Bay Chapter of the American Society of Certified Engineering Technicians (ASCET). Gerald Allison of LRL will serve as vice president.

ASCET encourages participation in the engineering technician certification program sponsored by the National Society of Professional Engineers.

In order to become a member of ASCET, an engineering technician must have his technical qualifications and work experience certified by a national board. Certificates are issued in three grades—Junior Engineering Technician, Engineering Technician, and Senior Engineering Technician.

Those employees who are interested may obtain further information regarding the certification program and membership from any of the officers of the local chapter.



DRY OPERATIONAL AREA—R. O. Campbell (left) of Environmental Health Division 8255 and C. Calder of Plant Engineering Design Division 8254 check prefilters to the laminar air flow system in the dry operational area of SCLL's new hazardous material handling facility. High efficiency filters can be seen through the door at the back of the booth.

New Hazardous Material Handling Facility at Livermore Laboratory

When Sandia test units and field specimens are exposed to toxic or radioactive environments, they usually require decontamination before they can be handled safely. A new decontamination facility recently completed at Livermore Laboratory assures this safety.

Contained in an addition to the east side of Bldg. 921, the facility and its capabilities represent several new concepts which demanded a re-evaluation of many standard design practices.

Due to the unique requirements of certain projects underway at Livermore, it was necessary to provide both wet and dry decontamination capabilities in close proximity.

The wet operation involves the removal of surface contaminants by flushing or flooding exterior surfaces with large amounts of water, nonflammable solvents, or detergent solutions. While the wet operations are open and fairly crude, the nature of the contaminants requires total confinement of the effluent in a concrete holding tank. A representative sample of the effluent is obtained by an agitation pump system which creates high velocity, turbulent mixing of the effluent. An analysis of the sample then determines whether the effluent may be released into the sanitary sewer system or must be retained for special disposal.

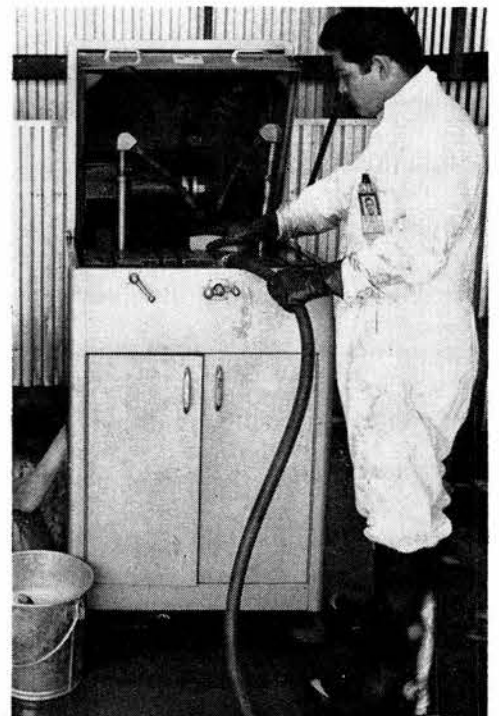
Dry operations are performed within a totally enclosed booth with laminar air flow into HEPA (high efficiency, particulate, air) filters. Contaminants are trapped in the filters releasing clean air into the atmosphere through a backdraft damper and a vertical discharge stack. Air flow rate is adjusted to provide a minimum air velocity of 150 feet per minute past the work area within the booth.

The HEPA filters are supported by shelves and a structural frame, which permits air-tight sealing by the use of conventional tape. This method of filter mounting provides an efficient means for replacing the filters and minimizes employee hazards.

Because the dry operation must have an unrestricted source of outdoor air and the wet operations tend to create excessive humidity conditions, a lean-to type building of minimum enclosure was used. Corrugated-aluminum roof and wall panels were attached to a conventional prefabricated steel structure to comply with security sight-screening criteria and to provide adequate weather protection.

Located adjacent to the storage building for hazardous materials and equipment, the facility is sufficiently remote from office and laboratory buildings so that the exhaust fan noise is not objectionable.

Material to be processed is received in a wide variety of shapes and sizes. The general layout of the facility is such that conventional material handling equipment may be used to transport this material to



WET OPERATIONAL AREA—J. Ruiz (8215) is decontaminating a cut-off saw in the wet operational area of Livermore's hazardous material handling facility.

and from the floor area immediately adjacent to both the wet and dry operational areas.

Clark Calder of Plant Engineering Design Division 8254 was the project engineer responsible for the design of the facility in conjunction with Raymond O. Campbell, industrial hygienist in Environmental Health Division 8215.

Welcome . . . Newcomers

Jan. 26 - Feb. 13

California	
Noel H. Cooley, Santa Clara	8123
Kenneth L. Fogle, Jr., Bakersfield	8252
Mary K. Lee, Livermore	8235
John P. O'Neill, San Francisco	8212
Donald L. Osbourn, Santa Rosa	8252
Mary D. White, Livermore	8232
Colorado	
*Gerald A. Hickey, Lafayette	8155
Oklahoma	
Robert F. Schumaker, Lawton	8124
Washington	
H. Bruce Faires, Colfax	8155
*Denotes rehire	

Sympathy

To Walt Young (8223) for the death of his father in San Leandro, Jan. 25.

To Jack Parry (8156) for the death of his father-in-law in New Jersey, Jan. 16.

To Dr. Max Biggs (8215) for the death of his father in Miami, Fla., Feb. 9.

To Evelyn Bachman (8233-2) for the death of her mother in San Diego, Feb. 15.



"CLEAN-OUT" CAMPAIGN EFFORT provides more space in the vault of Test Projects Division 8124. Secretary Pat Mauer (8124), right, shows Terry Wolfe (8222-3) a few of the empty shelves as he picks up filing equipment for reassignment within Livermore Laboratory. According to D. C. Held (8213), coordinator of the campaign at Livermore, the Laboratory either destroyed or transferred to Central Technical Files and Records Retention 1700 cubic feet of records. The figure represents a 20.2% reduction in record holdings.

New Computer Graphics System Aids Design Engineering at Lab

A new computer graphics system which enables engineers and a small computer to solve problems together was recently installed at Sandia.

Such a computer-aided design graphics system requires a tremendous "software" base of graphic data manipulation and design analysis programs linked together in a system tailored to Sandia's specific areas of application. It will be some time before the system is routinely usable in the Laboratory's design work. It will be operated initially on an experimental basis while the necessary development work is being done.

With the new display device, an engineer will be able to draw a schematic diagram, or make a design sketch on a television-like (cathode ray) tube in somewhat the same manner that he sketches a layout. Instead of a pencil, he will use a light pen which is a photosensitive device with a button-operated shutter. The pen, when placed against the illuminated cathode ray tube, detects displayed information and transmits a signal to the computer. Pictorial material drawn on the tube is sensed and remembered by the computer.

The user will have the assistance of computer operations for erasing, translating, rotating, editing, and adding more information. Complete drawings stored in the computer's memory can be recalled for output or additional processing at a later time. It will be possible to call on computer procedures, such as a stress analysis program, to assist the engineer in evaluating the design.

The new graphics system is expected to be an invaluable tool for design engineers, and can be used in a variety of computer application areas. An engineer at the console can watch the computer process programs and respond immediately to changes in his design or his analysis. This eliminates the usual two-to-three-hour waiting period required to process a program on Sandia's larger computers. With this time-saving feature, an engineer can explore more design possibilities and obtain a better design in a shorter period of time.

Currently operating as a stand-alone system, the small computer graphics system will be connected to a large-scale, time-shared computer. This interface will greatly increase the capability of the system and the number of applications that can be implemented.

Heart of the Sandia graphics system is a Digital Equipment Corporation Programmed Data Processor-7 (PDP-7), which

is a general purpose, solid-state, digital computer.

The basic PDP-7 includes the processor with operator console, 16,384-word core memory, a tape reader, paper tape punch, and teleprinter. In addition, peripheral equipment at the Laboratory includes magnetic tape equipment and card equipment.

Connected to the computer is a cathode ray tube display (PDP-340) which permits rapid conversion of digital computer data into graphic and tabular form. Location of any desired point may be specified by any one of the 1024 X and 1024 Y coordinate addresses contained in a 9 $\frac{3}{8}$ -inch square on the tube face.

The computer graphics system is being developed as a joint venture by organizations 2223, 9424, and 9427.

Sympathy

To George Blanchette (4252-3) for the death of his mother in Montreal, Canada, Feb. 7.

To W. R. Dameron (2565) for the death of his mother in New Jersey, Feb. 6.

To C. J. Puglisi (3428) for the death of his father in Eastchester, N. Y., Feb. 13.

Fever May Help . . .

Care of The Common Cold

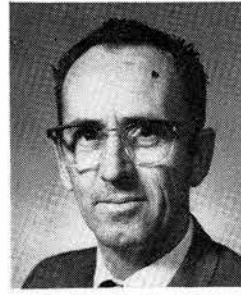
Remember the old saying, "If you don't take anything for a cold, it'll last a week; if you take medicines, it will last seven days?" Generally, most doctors will agree. But now there is some evidence that might have us modify the saying to, "If you don't take anything for a cold, it'll last five days; if you do take medicines, it may last seven days."

Some years ago a study was conducted in France on children with colds. Those with temperatures of over 102.5°F were excluded (generally, it is most unusual for a person with a common cold to run a temperature as high as 102.5°F.) The researchers then divided the children into one group that was given aspirin regularly to help normalize their temperature and a second group that was given no medicine.

The surprising result was that the untreated group got well in five days while the treated group took seven days!

The explanation advanced was that the

Supervisory Appointments



WILLIAM L. WHITNEY to supervisor of the newly created Sandia/Livermore Effects Instrumentation Section 7247-1 (located at Livermore), effective Feb. 1.

Bill joined Sandia's quality assurance group at Rapid City, S. Dak., in July 1956. In March 1960 he transferred to Livermore Laboratory as a test project engineer for a missile flight test program. Since June 1963, he has been in Sandia Effects Instrumentation Division where he has been working on full scale test programs at Nevada Test Site.

Before coming to Sandia, Bill was employed by General Electric as a field engineer installing and checking out military radar equipment. From 1951 to 1952, he was designing radar systems at Bendix Aviation Corporation in Baltimore, Md.

Bill received his BS degree in electrical engineering from the University of Miami in Florida in June 1950. From 1943 to 1946, he served with the Air Force, mostly as an aerial gunner and radio operator in the European theater.



HAROLD (Hap) M. STOLLER to supervisor of newly created Division V 5636 in Advanced Systems Development Department III, effective March 1.

Hap joined Livermore in December 1963 in the Applied Mechanics Organization where he was involved with development work and project support in aerodynamics and gas dynamics. In January 1966, he transferred to the Analytical Division and worked on special studies in aerodynamics. Most recently he has been concerned with aerodynamics analysis in SCLL's Advanced Design Division.

Before coming to Sandia, Hap worked for two and a half years at Hydronautics, Inc., Rockville, Md., in fluid mechanics research and for about six months at General Dynamics/Astronautics, San Diego, in aerodynamics design.

Hap received a Bachelor of Engineering Science degree in mechanical engineering from Johns Hopkins University in 1960 and an MS degree in aeronautical engineering from the University of Maryland in 1963. He has also done graduate work at the University of California.

He is a member of the American Institute of Aeronautics and Astronautics, Pi Tau Sigma, and Tau Beta Pi.



ROBERT J. BURTON to supervisor of LRL Field Support Section 7261-1 (located at LRL, Livermore), effective Feb. 1.

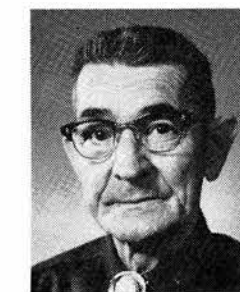
Bob joined Sandia in October 1951 and has been in field test organizations the entire time. For three years he worked with telemetry systems for ballistic drop tests and since then has been involved with the arming and firing for nuclear weapons testing at the Nevada Test Site and in the Pacific. He transferred from Albuquerque to Livermore in September 1966.

Before coming with Sandia, Bob was employed as an electrical engineer in electronics design at Convair in Fort Worth, Tex., for about a year and a half.

He received a BS degree in electrical engineering from the University of Oklahoma in 1950. During World War II he served three years with the U.S. Navy, aboard an aircraft carrier in the Pacific.

Bob is a member of Tau Beta Pi and Eta Kappa Nu, engineering honorary societies.

Retiring



Andrew W. Kuntz will retire the end of this month after more than 16 years at Sandia. He joined the Company as a janitor in November 1950 at the old West Lab. In early 1951 he transferred to Tech Area I, and since 1961 has been

a machine cleaner in Grinding & Jig Boring Section 4254-4.

In 1927 Mr. and Mrs. Kuntz left Missouri to move to Arizona. "We arrived in Albuquerque," Andy says, "and that was as close to Arizona as I ever got. We've called Albuquerque home since then, though I've spent a good deal of time in other parts of the state."

Before coming to work at Sandia, Andy was placer mining for gold near Golden, N. M. He had also worked in the logging and sawmill industry in several areas of the state.

Andy's hobby is rock cutting and polishing. He became interested in lapidary work a few years ago and is sorry now that he didn't develop that interest while he was mining. "I can remember some beautiful rock samples I found that I wish I had saved," he says.

"These 16 years at Sandia have been just fine. The Company's been good to me and I've tried to do my best. I'm kind of proud of the fact that in all these years I've never clocked-in late and never forgotten my badge."



USING A LIGHT PEN to sketch an electrical circuit as part of a demonstration program on the new Sandia computer graphics system are B. T. Fox (9427), left, and C. R. Martell (2223).

PAGE FOUR

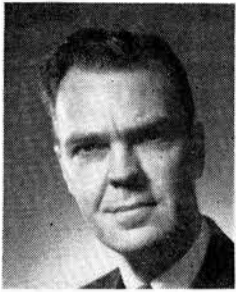
FEBRUARY 24, 1967

SANDIA LAB NEWS

Sandia Service Awards

Retiring

20 Years



R. C. Clifton
4613

15 Years



F. C. Almaraz
7336



A. L. Anderson
2453



J. A. Andrews
4631



E. H. Baber, Jr.
4254



J. C. Baca
4613



H. C. Baisdon
4213



E. K. Baker
4212



E. H. Bowman
1423



R. J. Brown, Jr.
7344



J. J. Clemons
5141



A. V. Engel
5632



Mary Fischer
2234



W. R. Green
5632



T. B. Heaphy
3461



R. S. Jacobson
8113



R. C. Jaramillo
4234



W. L. Kurlfink
4252



L. L. Lathrop
7211



C. J. Lucci
4513



G. F. McFall
2413



W. B. Minser
4253



T. W. Moody
1432



Canuta Ortiz
2234



C. C. Paschal
4254



J. W. Pearce
7330



J. B. Pedroncelli
4575



J. G. Peterson, Jr.
2522



P. F. Proulx
5223



H. J. Przystas
2554

10 Years

Feb. 24-March 9

Ruth B. Barrett 3126, Raymond Garcia 3462, T. June Santiago 4135, R. J. Dye 4543, S. L. Gonzales 4622, O. T. Caudill 7334, C. E. Kyger 9221, Wilda M. Ward 9411, Helen M. Pipher 7331.

W. B. Estill 1122, R. M. Jefferson 5224, F. A. Delnick 2212, L. E. Kelley 4152, R. F. Turnbough 4254, C. P. Thomson, Jr. 4512, G. R. Sharp 4541, Rudy Lucero 4614, H. W. Church 5234.

C. W. Karls 8134, J. F. McManus, Jr. 8253, B. D. Navalesi 9412, L. Jean La Paz 2112, V. L. Harker 2213, F. A. Ross 2444, R. R. Hamilton 3242, Margaret B. Burgess 4131, Esther I. Stevenson 4131, Martha A. Leverenz 8253.

P. E. Armijo 4212, J. R. Doyle 7245, W. E. Boyd 1324, R. H. Miner 2545, W. M. Howard 2562, W. P. Harvey 3152, Wilma R. Ash 4136, R. C. Thomas 1525, Gladys L. Goodlive 3126, and H. R. Johnson 8133.



Gertrude Stephens
3240



O. B. Trujague
4575



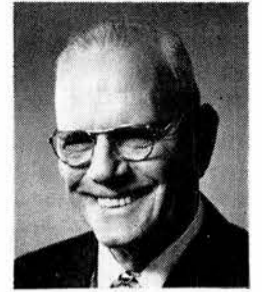
A. R. Verardo
2551



Elmer White
7331



D. A. Young
9421



Anticipation and enthusiasm describe the feelings of Albert D. Barton toward his approaching retirement. After 11 years at Sandia, he retires Feb. 28.

Al joined the Inspection Organization at Sandia in March 1956. Five years later he transferred to Electrical & Electronics Section 4213-4, where he has worked on electrical inspection, repair, and consulting activities on printed circuit boards, component parts, assemblies, and PT systems. Before coming to Sandia, he worked 23 years in the mechanical and electrical inspection field in Lansing, Mich.

Mr. and Mrs. Barton have purchased a home in Yucaipa, Calif. "We will be 50 miles from the ocean and 70 miles from Los Angeles," Al says, "living in a community where about 70 percent of the population are retired people. There are terrific recreational facilities, bus tours, and just about any activity that you can think of."

Al has numerous hobbies—raising flowers, fruit and nut trees; ceramics, fishing, bridge, and sight-seeing. "We plan to take in everything and 'live it up' while we can," he says.

Mr. and Mrs. Barton have two children and 15 grandchildren living in Michigan.

Sandia Authors

R. L. Schwoebel (5123), "A Diffusion Model for Filamentary Crystal Growth," March issue, JOURNAL OF APPLIED PHYSICS.

C. D. Taylor (1425), "On the Exact Theory of a Prolate Spheroidal Receiving and Scattering Antenna," March issue, RADIO SCIENCE.

J. M. Phillips and J. K. Shane (both 2451), "Design Idea," Jan. 18 issue, ELECTRONIC DESIGN.

G. L. Morrisroe (2522), "Metal Working... A Time of Change," January issue, TOOL AND MANUFACTURING ENGINEER.

Paul Slepian (former summer employee) and P. V. O'Neil, University of Minnesota, "An Application of Feussner's Method of Tree Counting," September issue, IEEE TRANSACTIONS ON CIRCUIT THEORY.

T. S. Church (1410), "Responsibility for Classification of Information in Technical/Scientific Projects," 1966 Proceedings of the Second Annual Seminar of the National Classification Management Society, Inc.

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CLASSIFIED ADVERTISING

Deadline: Friday noon prior to week of publication unless changed by holiday. A maximum of 125 ads will be accepted for each issue.

RULES

1. Limit: 20 words
2. One ad per issue per person
3. Must be submitted in writing
4. Use home telephone numbers
5. For Sandia Corporation and AEC 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.

FOR SALE

CARS AND TRUCKS

- '65 BUICK Sportswagon, AT, factory air, PB, PS, other extras, 31,000 miles, \$1995. Schmierer, 299-2352.
- '60 VW SEDAN, radio, leatherette seats, new brakes and clutch, \$595. Buck, 265-4863.
- '61 IMPALA HT, PS, PB, w/'67 sticker, \$825. Browne, 344-9675.
- '65 CHEVELLE Supersport, V8, ST, yellow exterior, black interior, low mileage, Vigil, 1111 Marron Cir. NE, 296-3590.
- '61 VOLKSWAGEN, radio, no trade. \$625. Chavez, 255-1585.
- '63 FORD 9-passenger Squire wagon, all power and air, geared for trailer pulling, below book at \$1250. James, 298-0709.
- '59 HILLMAN MINX, \$325. Conley, 298-2600.
- TR-4 factory HT, back window glass, center of roof removable, includes soft top, \$1500. Jones, 268-4954.
- '66 FIAT Spider 1500, Pirelli tires, many extras, owner moving, \$2000 balance on loan. Treon, 298-1066.
- '61 DODGE, milk truck body, one ton, refrigerator. Lynes, 268-0144.
- '64 FORD V8, 2-dr. Cruisematic, AC, PB, R&H \$1045. LaPoint, 268-2290.
- '61 PORSCHE, 1600 Super, \$1800. Gum, 255-0452.
- '56 PONTIAC Star Chief, 4-dr. HT, loaded, including air, new brakes, \$195 or best offer. Martin, 282-3794.
- '64 DKW, R&H, seat belts, \$495, consider trade. Flowers, 282-3458.
- '57 PONTIAC 4-dr. HT, AT, PS, PB, R&H, recent MOH, \$295. Harker, 282-3435.

ECONOLINE FORD station wagon, bus type, w/ built-in camper unit, \$950. Cleveland, 298-0218.

'60 BUICK Electra, factory air, PS, PB, R&H, 4-dr. HT. Scussel, 265-0543.

'55 FORD V8 station wagon, R&H, original owner, \$160. Hart, 299-8832.

REAL ESTATE

- 2-BDR., 30x15 den w/fp, all appliances. FHA \$13,250, \$400 down plus closing costs, furnished if desired, 432 Gen. Chenault NE, Le-Clair, 299-6995 after 5:15.
- 3-BDR., den w/fp, 1 1/4 bath, large utility rm. Tucker, 255-0109.
- 3-BDR. MANKIN, \$12,300 furnished, \$11,900 unfurnished, walled backyard, pitched roof, AC, sprinklers, on bus line, open evenings and weekends. Gossin, 299-6722.
- 2-BDR., hw floors, carpeting, fp, garbage disposal, garage, AC, cfa, \$275 and take over payments of \$89/mo., you pay closing costs of \$25. Campbell, 1114 Princeton NE, 256-3214.
- AMERICAN HERITAGE, 3-bdr., all brick, 3 yrs. old, completely carpeted, draped, AC, 5 1/4% FHA, 1713 Bellehaven Court NE. Nuckolls, 299-6011.
- 3-BDR., 1 1/4 bath, 1400 sq. ft., den, w/fp, lg. lot, near school, shopping center, carpool, Paradise Hills. Holesinger, 898-2296.
- FRAME STUCCO HOUSE, 3-bdr., hw floors, fp, AC, new carpet attached garage, complete mature landscape, \$13,900, 329 Morningside Dr. NE. Nelson, 255-2364.
- 3-BDR., den w/fp, DR, carpeting, Springcrest draperies, electric kitchen w/dbl. oven, dishwasher, professionally landscaped. Meyer, 299-5442.

MISCELLANEOUS

- SINGER Featherweight portable sewing machine. \$35. Oravecz, 282-3667.
- CONTOURED light metal car top carrier, 4'x7'x18", lockable, doors both sides, sell or trade for 2-wheel utility trailer. Stark, 243-3110.
- TWO 35-000 BTU floor furnaces, \$35 ea. Simmons, 344-4527.
- YEARLING FILLY, registered, 1/2-Morgan-1/2-Standardbred, gentle, good riding or driving prospect, \$150. Ault, 282-3280.
- 20-POWER ARGUS SCOPE and mount, \$45; Hensley .45 cal. mold, 165-gr., 4-cavity, \$12; large & small pistol primers, 55c per 100. Larsen, 255-6407.
- TWO PIECE SECTIONAL, \$40; maple corner table, \$15; naugahyde wingback chair w/ottoman, \$50; Sears electric stove, \$10. Blaine, 299-1036.
- MOLITOR racing ski boots, buckle, custom made, size 10D, 2 yrs. old, \$39.50 (\$130 new). Kjeldgaard, 296-2212.
- MIDLAND power brake booster kit, \$35; large rear-view mirror, \$5, both adjusted to fit Jeep Wagoneer. Stevens, 299-6086.

SHASTA DAISIES, free for the digging, several big clumps, first come, first served. Steisinger, 299-4626.

BOOKCASES, glass-fronted, oak, 5 sections, two at \$25 ea., both \$45; bookcase, oak, 5'x3', \$15. Klinkoff, 268-6659.

CESSNA 172, '56 model, good radio, 380 hours on chrome major overhaul, \$5295. Kreitter, 299-8494.

SIAMESE KITTENS

- Seal Points, we own both parents, kittens will be 8 wks. old Feb. 27, \$15. Ashworth, 296-2855.
- SEAR'S Hi standard .22 target pistol, 6" bbl w/holster, belt, \$30. Mackay, 298-1972.
- SET of Encyclopedia Brit. w/yearbooks 1957-64, \$75, w/case \$80. Quayle, 298-0979.
- 1 PR. CCM boy's racing skates, size 7 1/2, \$5. Mellone, 298-6449.
- SINGER portable sewing machine, case, attachments. Constant, 296-1431.
- HI-STANDARD, .22 target pistol w/extra barrel and weights, holster, \$65. Alvino, 255-6339.
- DISHWASHER, Kenmore automatic, under counter model, \$25. Fite, 255-6943.
- REVOLVER, .38 special, Smith & Wesson, original nickel plated, \$47.50. Smitha, 299-1096.
- '55 25HP Evinrude outboard, needs gas tank, looks rough but runs good, \$70. Longfellow, 299-7062.
- GIRL'S ICE SKATES, white, size 2 1/2, \$5; Rainbird sprinklers, 4 for \$10; bed frame, double size, \$2. Chandler, 877-2835.
- SIX-YEAR maple crib; Peterson stroller; car seat, can be used as stroller rumble seat; 2 pr. short drapes. Bartlett, 299-4861.
- 9 x 9 UMBRELLA TENT w/floor, alum. pole, metal stakes, used 5 times, cost \$35, sell for \$15. Martin, 298-6644.
- TWO 6:50x16 truck tire carcasses, some tread left, \$3 ea. Causey, 299-0089.
- PLAYPEN w/folding nylon web sides, \$10. Bentz, 299-3448.
- THOROUGHBRED MARE, 7 yrs., sound, excellent blood lines, well broken, \$750; washer, Signature, bronze, \$100; dining set, 6 chairs, \$50. Wallace, 264-5050.
- KNIGHT KG-870 stereo amplifier, \$75; Sony 263-D tape transport, \$75; Viking 85 tape transport, Knight R/P preamp, \$100. Kobs, 298-9133.
- TERRAZZO TILE, 12"x12", 100 piece, \$40. Romero, 344-0302.
- SELL OR TRADE for trail bike: '66 Honda 100cc Scrambler, 3500 miles, \$380. Cobb, 268-3151.
- FULL LENGTH white wedding dress and shoulder length veil, size 9, worn once, \$50 for both. Abshire, 264-6795.
- RCA washer dryer combination, \$100. Sweley, 298-6694.

- OLD refinished hardwood drop leaf tables, 6 legs, casters, scratched, closed top 21" x 40", leaves 17 1/2" x 40", \$50 or offer. Porter, 299-7985.
- HEATHKIT oscilloscope, \$20. Rhyne, 299-4813.
- TELESCOPE, 40X, 2 mos. old, 7 element lens system, 28 1/2" metal body tube, 10" tripod, \$10. Stathis, 268-4037.
- SIX-YEAR crib and mattress, \$15; '62 AQHA mare, excellent for barrels and reining, \$800; 1 1/2 HP gasoline engine, \$10. Bassett, 898-1840.
- SILVERTONE Suburbanite console TV, does not work, trade for good typewriter or portable TV that works, or cash. Hamblett, 1514 Altez NE.
- .44 MAGNUM Ruger Blackhawk w/oversize grips, lined holster, belt, cases and shells, \$85. Adams, 268-5943.
- 24" BOY'S bicycle, needs tires, \$5. Corli, 255-5683.
- STEEL SASH, 48x69; 16" lawn mower; overhead garage door hardware, \$5 ea. Wade, 299-2050.
- KROEHLER, 3-piece sectional, brown, \$35; occasional chair, tangerine color, \$10. Scott, 299-7893 after 5.
- REBUILT '60 Renault transmission and differential, has never been in car since being rebuilt, \$30. Ernst, 344-8694.
- JEEP transmission and overdrive, everything works, \$25. Frasier, 299-6933.
- MODEL 164 Domestic sewing machine, won at '66 State Fair, never used, 20-yr. guarantee, best over \$40. Collatz, 268-4969.
- RF signal generator, VTVM, 5" scope, battery eliminator, capacitance bridge, picture tube checker, 8mm camera, projector and screen. Tognami, 299-6672.
- 30-06 Springfield sporterized, \$55; 8mm Mauser carbine, \$35; 8mm Mauser w/scope, \$60; half Arabian mare, 3 yrs. old. Harrington, 282-3188.
- DINING ROOM SET, table, 8 chairs, china cabinet, and buffet, American of Martinsville, \$375. Harvey, 299-5209.
- DOBERMAN PINSCHER puppy, female, 13 wks. old. Foster, 282-3975.
- USED KENMORE automatic clothes washer, top loading, temp. & water level controls, \$30. Buchanan, 299-7487.
- BIKE: for a little girl, 16" Murray, coaster brake, \$12.50. Coleman, 299-2377.
- MOSSBERG .22 auto, 4X scope, \$30; Rem. Enfield 30-06, \$25; 98 Mauser 8mm, \$30; Winchester 94, 30-30, \$25, will trade. Zaluga, 344-1564.
- '61 CHEVROLET convertible body, motor ready to assemble, spares for another 3-2 setup, rebuilt heads, all for \$350. Workman, 298-8201.
- TWO dacron sleeping bags; 2 air mattresses w/foot pump; 6x8 pup tent w/floor, zippered mosquito netting, storm flap. Tuler, 298-2685.

MATCHING SOFA and chair, \$30; platform rocker, \$15. Holmes, 299-4167.

CAMP HEATER, alcohol, 3600 BTU, new \$19.95, sell for \$8.50. Smaier, 299-8413.

FOR RENT

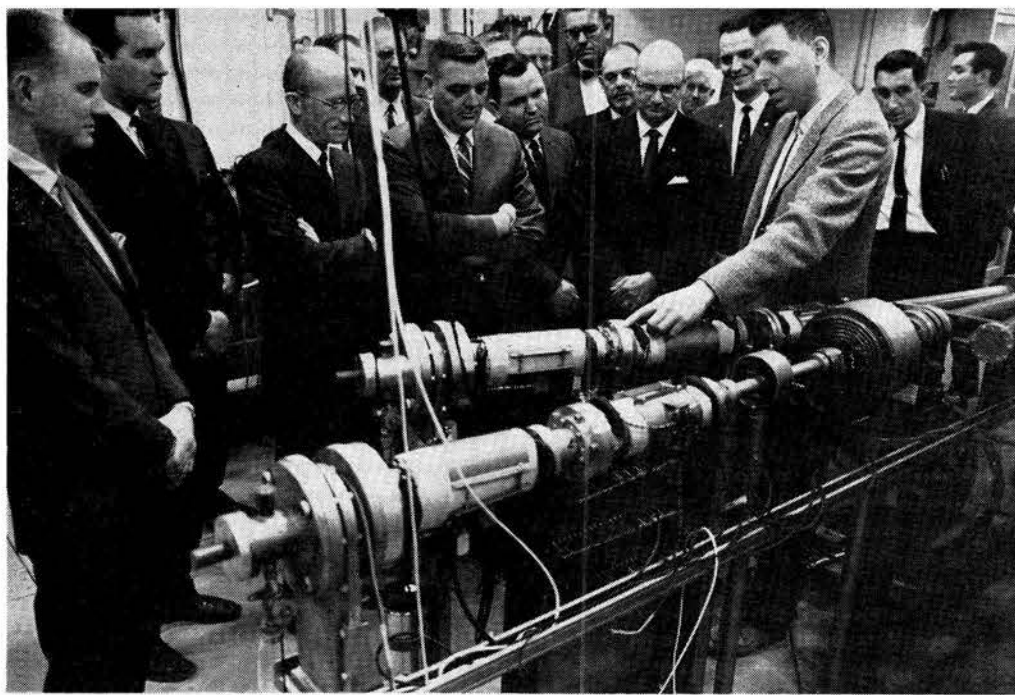
- 2-BDR. HOUSE, 1 bath, utility rm., garage, built-in gas range, cfa, no children, lease \$70/mo., 1605 5th NW. Pena, 242-6060.
- 2-BDR. furnished or unfurnished, electric kitchen, carpeted, drapes, swimming pool, off-street parking, near Eastdale shopping center. Bell, 299-4643.
- 3-BDR., clean, carpeted, built-ins, water & garbage paid, or will sell, 633 Claudine NE. Saviter, 296-3750.
- 3-BDR., 1 1/4 bath, Hoffmantown, range, refrig., cfa, landscaped, AC, covered patio, large utility, water paid, \$115. Cover, 268-0921.
- 3-BDR. ROBERSON, very clean, carpeting, drapes, large landscaped yard, AC, 1 1/4 baths, near Eastdale, available April 1. Clark, 299-6410.

WANTED

- 1958, '59, '60, or '61 compact automobile, good running and reasonable price. Groll, 898-0641.
- HAVE OPENING for a rider in carpool, vicinity Parsifal & Candelaria NE. Carman, 299-3851.
- JOIN or start a carpool to UNM any night for 8 p.m. class, from vicinity of Lomas and Juan Tabo NE. Bartlett, 299-4861.
- SET of 15" snap-on wire wheel covers, w/simulated knock-offs, reasonable. Longfellow, 299-7062.
- RIDE from Montclair SE and Zuni RD. SE to 887 parking lot. Gonzales, 256-6728.
- OLD PICTURE FRAMES. Doherty, 298-9578.
- ELECTRIC vegetable juicer in good condition. Besser, 268-5194 after 5:30.
- RIDE from vicinity of Quincy & Menaul NE (3 blocks west of San Mateo), will share expense. Buccheri, 255-8028.
- SNARE DRUM, in good condition. Dickason, 299-8125.
- ROADRUNNER FLYING CLUB is expanding to two planes, new members wanted, students accepted, moderate initial cost, Fox, 299-9332.

LOST AND FOUND

- LOST—Bifocal glasses, silver-mounted tie tac w/sea shell, Cross mechanical pencil, long black knit glove, Corporation Prescription safety glasses, brown leather gloves w/ur linings, ivory earring, Green watch, silver and turquoise earring, Sandia safety glasses, silver ballpoint pen. LOST AND FOUND, tel. 264-2757, Bldg. 610.
- FOUND—Butane lighter, grey leather glove, gold tie clasp, Ford Mustang key, earrings w/orange leaves, 10-yr. tie clasp. LOST AND FOUND, tel. 264-2757, Bldg. 610.



TECHNICAL INSTITUTE DIRECTORS from schools throughout the state recently visited Sandia Laboratory in connection with an annual meeting of the Technical Institute Branch of the New Mexico Department of Vocational Education. R. L. Vook (5210), right, explains the operation of the Van de Graaff accelerator during a tour of the facility.

Honoring St. Patrick

'Beefeaters Ball' is Feature Event On Coronado Club March Calendar

Big event in the March Coronado Club calendar is the Beefeaters Ball scheduled Saturday, March 11. This one has a couple of things going for it, namely, a St. Patrick Day theme and the Coronado Club's famous "baron of beef" buffet. In addition, Tommy Kelly, the original Irishman, and his leprechaun orchestra will make the music. Social hour starts at 6, dinner at 7, and dancing at 9 p.m. Make your reservations and pick up your tickets at the Club office by 9 p.m., March 10. The tab is \$3 for members, \$3.50 for guests.

Tomorrow, the monthly teenage go-go is set for launching at the Club at 7 p.m. The Jeremy Bentham Four will provide the blastoff and the group will orbit until 10:30 p.m. Parents should pick up tickets (members 25 cents, guests 50 cents) at the Club office by 5 p.m. mañana.

Social Hours

Tonight, meet the Coronado Club's seafood buffet following social hour. Admission is \$1.25 for adults, \$1 for kids. Rex Elder will make the mermaid music.

On Friday, March 3, Frank Chewiwe will provide the happy music. With courage and all the trimmings, the chicken buffet will be served.

Elaine Harris will make the happy music Friday, March 10, and the chuckwagon beef and shrimp creole buffet will be featured.

Bridge

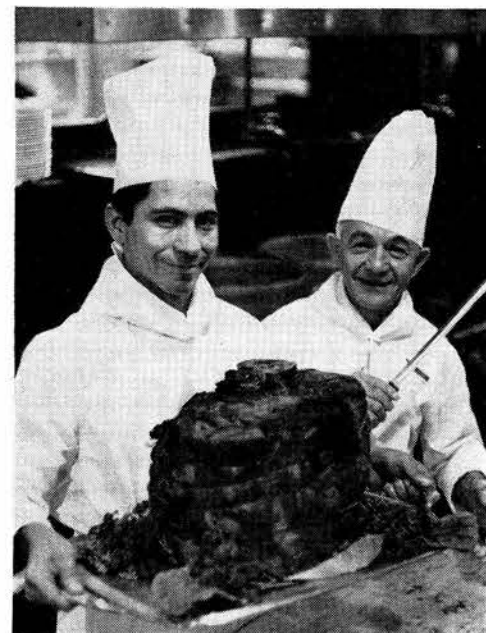
Monthly master point duplicate bridge competition will be held Monday, Feb. 27, at 7 p.m. Ladies bridge will meet at 1:15 p.m. Thursday, March 2. The duplicate bridge group meets Monday, March 6, at 7 p.m.

Ice Skating, Anyone?

The Coronado Club is currently attempting to form an ice skating association. If you have an interest for yourself or your family, call the Club office, tel. 264-4561.

State Bowling Tourney

Coronado Club men bowlers are invited to participate in a roll-off Saturday, March 4, at 2 p.m. at San Mateo Lanes. Five high bowlers (handicap) and one alternate will be picked to represent the Club in state tournament. If interested, contact Jake Gonzales (4251), tel. 298-2164.



PRACTICING—Coronado Club chefs Eddie Blunt, left, and George Marchi display a 45-pound chuckwagon roast beef prepared for Social Hour. Wait 'til you see their "baron of beef" scheduled for March 11. The party starts at 7 p.m.

Swim Club

Winter practice sessions in both swimming and diving are continuing for the Coronado Club swim club. Parents can arrange for their youngsters (starting at age 7) to participate by contacting Jim Stover (7342), tel. 256-2439, for swimming and Bernard Stiefeld (2543), tel. 299-9293 for diving.

The swim group works out at the Sandia Base Olympic Pool four afternoons each week and the diving group practices at the Valley High School diving pool on Sunday afternoons.

Both boy and girl swimmers and divers in all age groups are needed for team positions during the coming summer competitions.

PAGE SIX

FEBRUARY 24, 1967

SANDIA LAB NEWS

Sandia's Safety Scoreboard

Sandia Laboratory:

47 DAYS

1,645,000 MAN HOURS

WITHOUT A

DISABLING INJURY

Livermore Laboratory:

119 DAYS

594,800 MAN HOURS

WITHOUT A

DISABLING INJURY

Sandia Speakers

J. E. Schirber (5151), "Pressure and the Fermi Surface," UNM Engineering Colloquium, Feb. 14.

W. W. Allison (3211), "The Near-Miss High Potential Method of Foreseeing and Preventing Serious Accidents," California Safety Conference, March 1, San Francisco.

O. L. Burchett (1114), "Brittle Fracture Dependence of a Rigid Polyurethane Foam on Strain Rate and Temperature," Sixth International Symposium on High Speed Testing, March 6-7, Boston; "Spall," graduate seminar of Aerospace and Mechanical Engineering students and faculty, University of Oklahoma, Feb. 23, Norman.

E. R. Dunaway (1114), "Dynamic Photo-Instrumentation," University of Wisconsin extension program on Modern Photographic Techniques for Industry, Feb. 23-24, Madison, and Mid-States Industrial

Photographic Group, Feb. 25, Chicago; "Applications of High Speed Photography to Materials Testing Under Dynamic Strain Rates," Sixth International Symposium on High Speed Testing, March 6-7, Boston.

J. A. Guzman (7341), "Light-Beam Velocity Indicator," 12th meeting of the IMOG Subgroup on Environmental Testing, Feb. 8-9, Richland, Wash.

J. D. Patrick (7335), "Motion Data System for Sandia, Albuquerque Test Track," 12th meeting of the IMOG Subgroup on Environmental Testing, Feb. 8-9, Richland, Wash.

R. O. Brooks (7341), "Distortion Effects of Controlled Transient Signals by Shock Monitoring Systems," 12th meeting of the IMOG Subgroup on Environmental Testing, Feb. 8-9, Richland, Wash.

E. R. Julius (7333), "Electromagnetic Radiation Testing at Sandia Laboratory," 12th meeting of the IMOG Subgroup on Environmental Testing, Feb. 8-9, Richland, Wash.

R. D. Robinett (7215), "Tonopah Test Range Operation — Range Mission, Range Users, and Basic and Peripheral Range Facilities," 34th Frequency Coordination Work Group meeting of the Inter-Range Instrumentation Group, Jan. 26, Los Angeles. K. G. Overbury (7261) is the official Sandia representative on the group.

E. H. Beckner (5142), "Behavior of Silicon p-n Devices as Detectors of Intense Fluxes of X-Rays," Southwest meeting of the American Physical Society, Feb. 23-25, Austin, Tex.

R. A. Graham (5133) and R. E. Hutchison (7244), "Pulsed Electron Beam Calorimetry Utilizing Measurements of Radiation Induced Stress Waves," Southwest meeting of the American Physical Society, Feb. 23-25, Austin, Tex.

Patent Assianed

Ultrasonic Energy Used in Metal-Coating Invention

A patent for "Methods of and Apparatus for Metal-Coating Articles" has been assigned to Western Electric Company, Inc., in the name of F. W. Christensen (9221).

Mr. Christensen was employed by WE for 11 years. He became a Sandia employee in July 1965.

Work on the project was performed while Mr. Christensen was with WE's Engineering Research Center in Princeton, N. J. The invention is being used at WE's Merrimac Works, North Andover, Mass., for fabricating high reliability printed circuit boards.

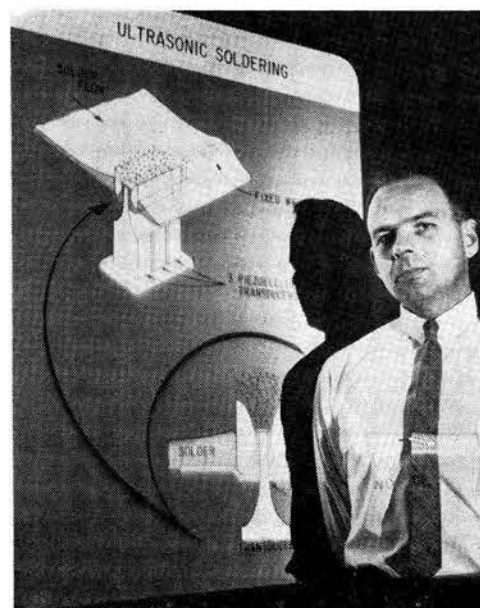
In making printed circuit boards, electrical component leads are frequently connected to the metal circuit paths by passing the board across a trough of molten solder. However, unless the printed circuit board is pre-cleaned and prefluxed, metallic oxides and other contaminants on the metal surfaces of the board and the leads can result in poor and unreliable solder connections.

The method described in this patent employs high level ultrasonic energy to create a spray of micron-size globules of the molten solder. One application is to place an ultrasonic probe under the aforementioned trough of molten solder and pass the board over the spray.

Mr. Christensen notes that any kind of liquid material can be used and the method can be carried out in any environment,

including a vacuum, since the spray is not created by compressed air.

The patent is number 3,277,566.



ULTRASONIC SOLDERING device is explained by inventor F. W. Christensen (9221). The device is used in fabricating high reliability printed circuit boards.

Welcome . . . Newcomers

Jan. 16 - Feb. 17

Albuquerque	
Douglas W. Dugan	5224
Benjamin D. Duggins	7343
*Corliss A. Fenimore	3126
Benjamin E. Foster	4253
Fred D. Gutierrez	9425
Robert L. Manhart	7523
Terry B. Mason	1413
Robert S. Morris	3463
Teresa A. Orona	3154
*Alfredo Pena	3462
*Virginia M. Roherty	3126
Louise A. Shanfeldt	4113
*Harold L. Sherwood	4121
Cecil P. Tafava	3415
Richard P. Toth	5213
Marian L. Van Delinder	3126
Robert C. Varga	2213
Natalie O. Vytalacil	3153
James C. Werker	2213
Curtis M. Wise	9425
Arkansas	
Ragon D. Kinney, Fayetteville	9333
Illinois	
Philip M. Van Traag, Chicago	1411
Dennis J. Vanata, Forest Park	5132
Indiana	
Donald R. Porter, Valparaiso	7332
John J. Loukota, North Judson	7246
Paul E. Pierce, Valparaiso	1413
Charles W. Smith, Jr., Valparaiso	7342
George H. Elkins, West Lafayette	9312
Massachusetts	
Francis M. Roddy, Dedham	1433
Robert G. Webster, Medford	2152
Michigan	
Zigmund E. Piscotty, Jr., Lincoln Park	4114
Missouri	
Randall K. King, Kansas City	2422
Leo R. Hammes, Lee's Summit	7334
Nebraska	
A. Gene Dornhoff, Lincoln	1332
Nevada	
*Arthur J. Ahr, Las Vegas	9414
Texas	
Larry W. Bickel, Austin	7343
George A. Steigerwald, Euless	1425
Curtis H. Cofield, Dallas	7247
Jimmy G. Lee, Hamilton	7342
Clinton N. Waggoner, Houston	9227
Utah	
Richard W. Rohde, Salt Lake City	5133
Virginia	
Leslie Roy Carter, Norfolk	3312
Wisconsin	
J. David Kestly, Appleton	1333



Death

Rodney N. Lord, supervisor of Storage and Stocks Section C 4611-5, died Feb. 13 after a long illness. He was 51.

He had been employed at Sandia since August 1949.

He is survived by his widow, Jan Lord (3421), three daughters, one son, and one grandchild.