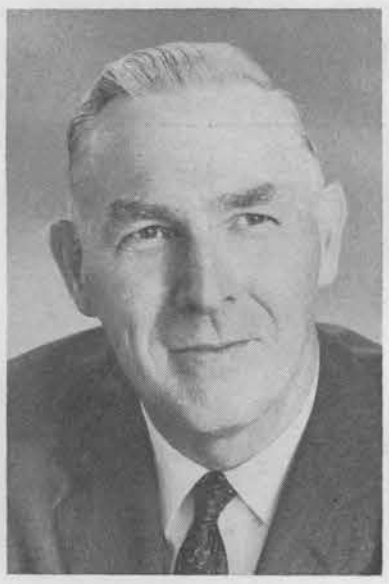
sandia corporation

lab news

albuquerque · livermore

VOL. 16, NO. 1 | Published every other Friday for the employees of Sandia Corporation, contractor to the Atomic Energy Commission | JANUARY 3, 1964

Paul A. Gorman
—President, Western Electric Co.—



H. I. Romnes
—Vice Chairman, Board of Dir.— American Tel. and Tel. Co.

P. A. Gorman New President Of Western Electric Company

Paul A. Gorman, formerly Executive Vice President of The American Telephone and Telegraph Company, became President of Western Electric Company on Jan. 1, succeeding H. I. Romnes, who was elected a Director and Vice Chairman of the Board of A. T. & T. Mr. Romnes succeeds William C. Bolenius, who will retire, bringing to a close a 42-year career with the Bell System.

Mr. Gorman has been Executive Vice President of A. T. & T. since 1959, but spent most of his Bell System career with Western Electric. He came into the Bell System in 1929 at WE's Hawthorne Works, and subsequently held various positions at Hawthorne, at the Buffalo Plant, at Headquarters, and in Chicago. In 1952, he was appointed Personnel Director at Headquarters.

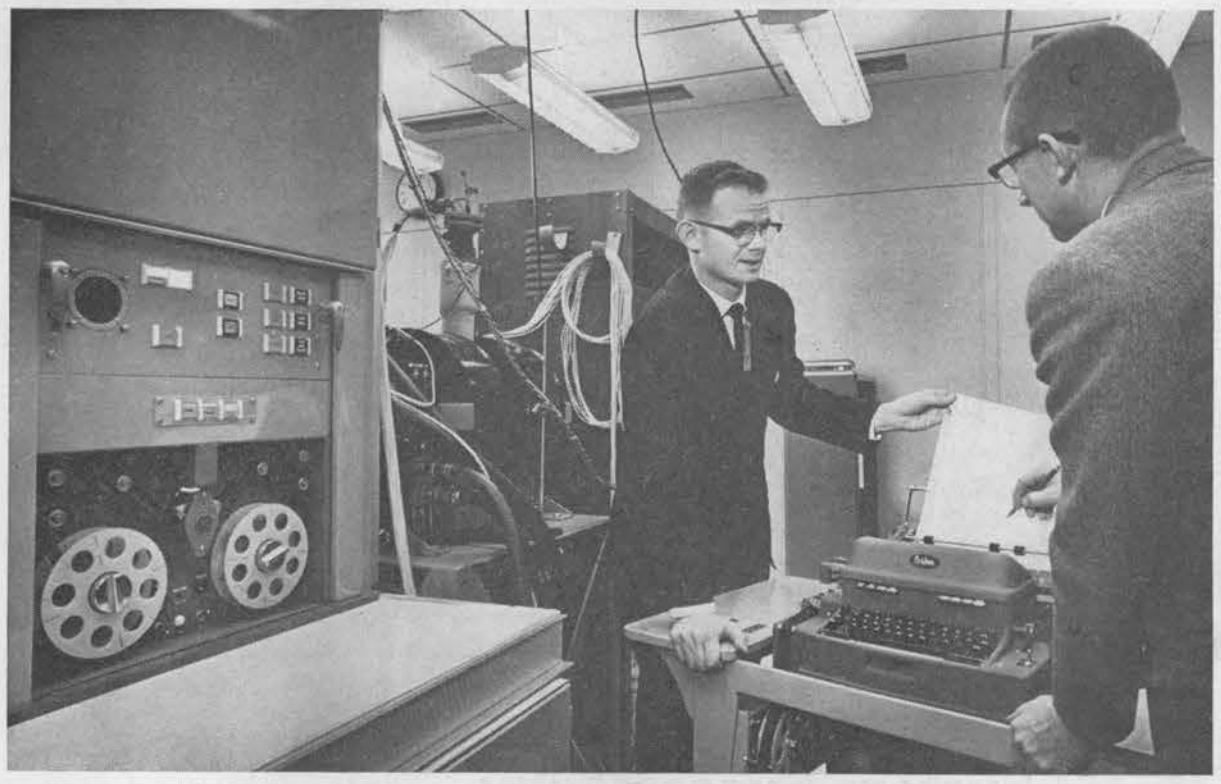
Shortly thereafter, Mr. Gorman was named Assistant Vice President in the Personnel Relations Department at A. T. & T. In 1954, he came back to Western Electric as Vice President, Defense Projects. He also was WE's Vice President, Finance; Vice President, Manufacturing; a WE Director, and a member of WE's Executive Committee.

In 1958, Mr. Gorman was elected Vice President, Operations; a Director; and a member of the Executive Committee of New Jersey Bell Telephone Company. In October of the same year, he became President of that company. In April 1959, he was made Executive Vice President of A. T. & T., his most recent position before becoming WE President.

He was a member of the Sandia Corporation Board of Directors and Executive Committee from October 1956 through February 1958.

Mr. Romnes has been President of WE since March 1959. He joined the Bell System in 1928 as a technical employee at Bell Laboratories in New York, and later held several positions with Illinois Bell Telephone Company and A.T.&T.

In December 1950, he was appointed A. T. & T.'s Director of Operations in the Long Lines Department. He re-joined the Operating and Engineering Department in 1952 as Assistant Chief Engineer, becoming Chief Engineer a few months later. He became Vice President of A. T. & T.'s Operating and Engineering Department in 1955, and was named President of Western Electric in March 1959.



APAR - 3G machine is being used by Floyd McIver (5311), right, in a system to test performance of semiconductors prior to irradiation. At left is Bob Moyer, a member of the Section 2422-1 APAR development team. The versatile new APAR has a wide range of production, research, and development applications.

Sandia Laboratory's APAR Shows Third Generation Improvements

Blue Boy has grandchildren.

Blue Boy was the first of Sandia Laboratory's APAR machines. APAR (Automatic Programming and Recording) was originated to reduce the possibility of human error while running performance tests on components. The first development model APARs provided a means of automatically programming a test on electrical components and automatically recording the resultant data. The operator of this system was thus relieved of the tedious task of manually recording test data.

The second-generation APARs held to the same basic idea. Called the 1901/1902 machines, these APARs had greater capacity, provisions for repetitive tests, a more sophisticated computer-like control system, and featured output on paper tape which, in turn, could be fed directly into a computer for data analysis. Twenty-one of these 1901/1902 APARs are still being used on production lines or in development testing. Of these, six are 1901's and 15 are 1902's.

Several Innovations

The APAR-3G (for third generation) retains all these features but offers several innovations. In the first place, the APAR-3G does not come in any standard package—it is assembled from various "building blocks" and can be tailormade for any kind of testing job, production testing or in unique research and development situations.

R. W. Roberts, supervisor of Section 2422-1 of Advanced Data Systems Development Department, says "This system of building blocks results from a logical breakdown of machine functions which are packaged into truly physically and logically modular units. Such a design permits an APAR of practically any capacity to be assembled with off-the-shelf units."

The APAR-3G is described in a Sandia Corporation publication, SC-4944 (RR), which is scheduled for distribution next week. Engineering drawings of the APAR-3G system have been released through the AEC's Civilian Application Program in a package identified as SAND-2A. Prints are available to the public at nominal cost from the Oak Ridge Reproduction Service.

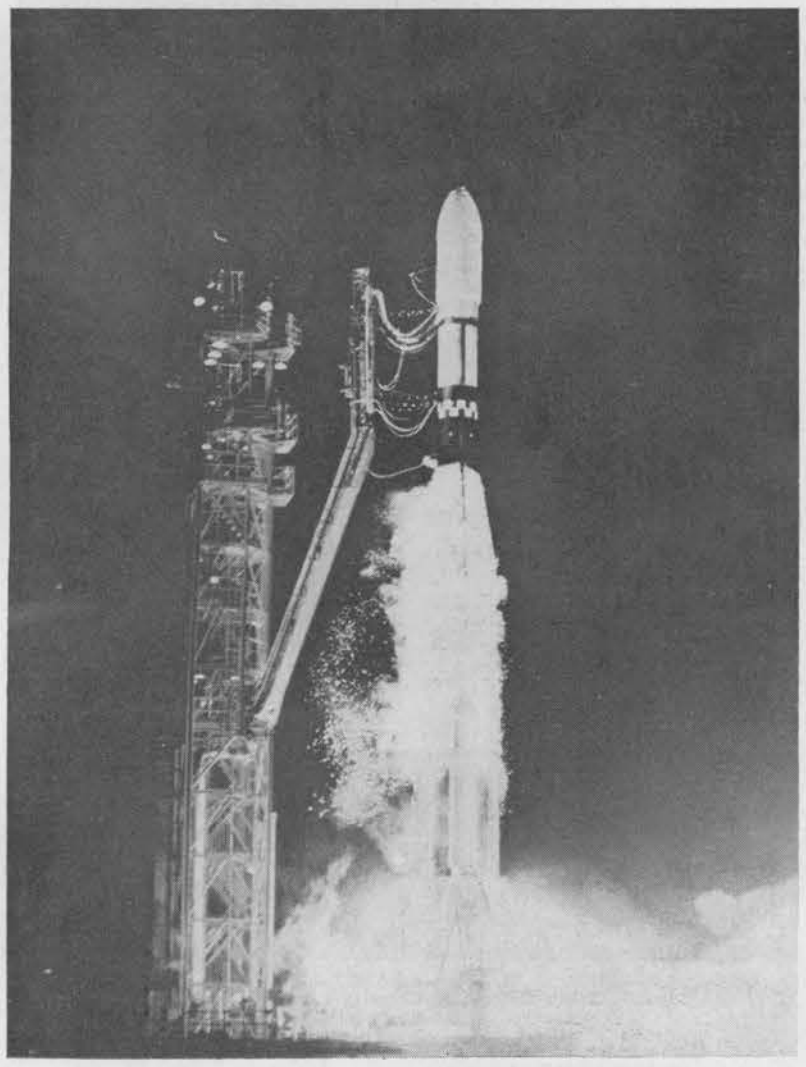
Among the many automatic functions which the new APAR can perform are encoding digital data in a form compatible with available computer equipment, variable sequence controlling of external equipment, accepting analog and digital data from external sources in sequence as desired by the program, and making measurements of analog inputs, voltage, and frequency.

The machine can also automatically perform analog to digital conversion of test signals, compare data against "upper and lower

(Continued on Page Three)

With Sandia-Designed Logics

Detection Satellites Functioning Flawlessly



ROCKET carrying twin satellites was launched successfully about two months ago. Since that time, the satellites have operated as designed. Sandians helped in design of satellite logics systems and data programs.

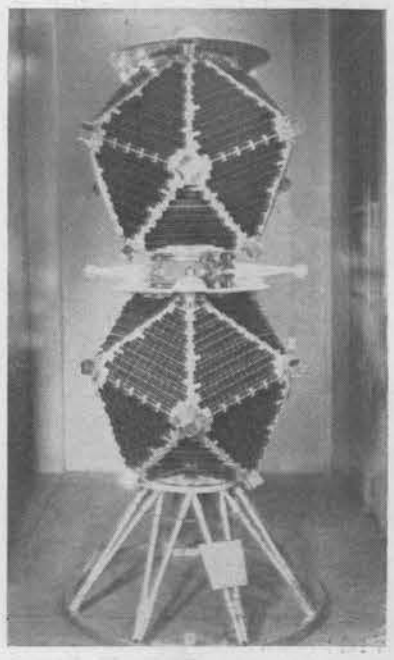
Two months ago, a rocket carrying a matched pair of heavily-instrumented satellites in its nose rumbled into the night. The satellites' purpose was to determine the feasibility of policing space by detecting and recording the possible presence of X-rays, gamma rays, and neutrons originating from clandestine nuclear bursts. Since their launching, the satellites have been working flawlessly.

Sandia Laboratory and Los Alamos Scientific Laboratory were responsible for the development and testing of the payloads for the satellites. This involved activities at Cape Kennedy, in California, and in the South Pacific.

Logics systems for the satellites were designed by personnel of Space Projects Division I, 7432, supervised by W. C. Myre. "Not only the logics systems, but the other systems aboard the satellites are functioning as designed," he comments.

Data from the satellites is being recorded at stations of the Air Force World-Wide Tracking Network. It is then shipped to Sandia Laboratory, where it is converted from analog to digital form using interface equipment designed by John Phelan (7432) and computer programs written by Kelly Montoya (7622). After conversion, it is reduced, using reduction programs written for Sandia's CDC 1604 Computer by Kelly Montoya and Billy Joe Thorne (7622). D. Craig Jones (7622) is also working on computer programs for these satellites, and Fae Parker (7622) is handling information setup. The programming for this system was done by members of Programming Department 7620.

After reduction, the information is sent on to Los Alamos Scientific Laboratory for scientific analysis.



SATELLITES operate with logics systems designed by Sandia Laboratory engineers. Data from the satellites is recorded by the Air Force World-Wide Tracking Service.

AN EGLIN-BASED HELICOPTER was used to drop an RFD-2 system from 10,000 ft. altitude in a test successfully conducted over the Gulf of Mexico last month. Six Sandia Corporation men directed the tests.

RFD-2 System Successfully Completes Air Drop Tests

The first two of a series of daylight drops of the RFD-2 (Reentry Flight Demonstration) system over the Gulf of Mexico were made Dec. 18 from Air Force helicopters. Earlier tests of the 430-lb. package were successfully conducted at Tonopah Test Range, Nev.

The RFD-2 is a reentry vehicle designed by Aerospace Nuclear Safety Department 7410 to test safety aspects of proposed nuclear power supplies of space vehicles and satellites. The RFD-1 was successfully tested last May.

Four more missions, utilizing HH-43B Huskie helicopters of the 48th Air Rescue Squadron at Eglin AFB, Fla., are planned, including three this month and one in February. The purpose of the drops is to acquire fusing sequence and aerodynamic data on the RFD-2 system.

A six-man team from Sandia Corporation directed the tests last month. Included were William H. Everhart, supervisor of Section 7413-1, T. V. Crawley (7413-1), D. R. Wilkinson (7413-1), H. E. Widdows (7424-1), Adam Trujillo (2643-3), and Ray V. Fisher (7412-2).

The primary reason for employing a helicopter rather than an aircraft was to reduce the air speed to 25 knots or less. On the first drop the pilot encountered 40-knot winds at 10,000-ft. altitude. He flew the Huskie into the winds at 55 knots and slowly began to hover over the drop zone about three miles off the northwest Florida coast near Fort Walton Beach. When Mr. Crawley, Sandia's instrumentation engineer, released the RFD-2 system electrically, the helicopter actually was drifting backwards at about 15 knots.

A second mission was held later in the day. Both systems performed as planned.

The package contained a set of spin rockets to give it a spin rate of three revolutions per second, a de-spin mechanism to later decrease the spin to around ½ revolution per second, a dummy rocket motor, and a parachute. After the rocket motor ejection and parachute deployment, a flotation bag filled the void left by the rocket motor, enabling the system to float on the water. Both drops hit on target in waters 50-100 ft. deep and floated.

Helicopter support for the tests was coordinated with the Air Force Special Weapons Center at Kirtland AFB, Albuquerque, and their Air Force Systems Command organization. In addition to collecting and reducing telemetry data, the Eglin Air Proving Ground Center supported the tests with photo theodolite tracking and other photographic support.

Due to the diameter of the package (a maximum of 30 in.), the system and the bomb rack had to be attached after the helicopter touched down on two flatbed trailers. After the mission, the bomb rack was unhooked at the alert pad by crash rescue firefighters before the helicopter set down.

Wilson A. Pleger Died December 24

Wilson A. Pleger, a Sandia employee for nine years, died Dec. 24 at a local hospital after a long illness. He was 45.

Mr. Pleger was a mechanic in Sheet Metal Section 4224-3.

After services here, his body was taken to Arlington National Cemetery for burial. He was a World War II veteran.

Survivors include his widow, a daughter Tamara, age 5, and his father and brother in Oil City, Pa.

D. B. McCarthy Died Dec. 19

Daniel B. McCarthy, a Sandia employee for more than 15 years, died Dec. 19, after a short illness. He was 58.

Mr. McCarthy was a staff member in Employee Processing and Reports Section 3153-2.

Survivors include his widow; a son David; three daughters, Mrs. Sheila K. Borneman of Albuquerque, Mrs. Helen M. Hightower of Placitas, and Deirdre Ann of Corrales; a brother; two sisters; and eight grandchildren.

Supervisory Appointments

JOHN K. MERILLAT to supervisor of Employment Division 3151, Employment and Personnel Department.

During his 15 years at Sandia, Jack has worked mainly in two areas. His first assignments were in Field Testing and as a Technical Department Service Representative. Since 1957 he has been in the Personnel organization and has been supervisor of Staff Employment Section 3151-1 for the past two years. He has been active in recruiting of college graduates for employment at Sandia.

He is a graduate of the University of Arizona with a BS degree in mining engineering.

CARROLL B. McCAMPBELL to manager of Special Devices Department 1310.

Carroll has been with either the Field Testing organization or Electromechanical Component Development organization during his 15 years at Sandia. He was promoted to section supervisor in 1952, and division supervisor two years later.

Prior to coming to Albuquerque, Carroll worked in seismology for Standard Oil of New Jersey for three years, including one year in Egypt.

He was graduated from the University of Colorado with a BS degree in electrical engineering. He is a member of the Institute of Electrical and Electronics Engineers.

From 1942-45 Carroll served in the Marine Corps.

Grafton W. Moses Died Suddenly Dec. 21

Grafton W. Moses, supervisor of Technical Section 7536-2 at Medina Base, San Antonio, Tex., died suddenly Dec. 21. He was 40.

Mr. Moses had been with Sandia Corporation for 11 years and had been a section supervisor in the Surveillance Division since September 1956.

Survivors include his widow.

Service Awards

15 Year Pins

L. E. Hake
7257
Jan. 3, 1949

Walter A. Maupin
7254
Jan. 4, 1949

M. B. Sanders
4335
Jan. 4, 1949

Geronimo Alexander
4514
Jan. 5, 1949

Leo Chavez
4221
Jan. 5, 1949

L. G. Spohr
4411
Jan. 5, 1949

Marshall W. Denish
4542
Jan. 10, 1949

Tom H. Takahashi
7257
Jan. 10, 1949

Alan R. Bolles
7435
Jan. 11, 1949

O. D. Chapman
4613
Jan. 11, 1949

Frank C. Irwin
1422
Jan. 13, 1949

J. M. Luna
2542
Jan. 14, 1949

G. L. Hutchinson
4624
Jan. 15, 1949

Carroll McCampbell
1310
Jan. 14, 1949

James P. Brock
8225
Jan. 17, 1949

R. M. Elder
1331
Jan. 17, 1949

Edward W. Fisher
7213
Jan. 17, 1949

P. H. Kolb
1322
Jan. 17, 1949

A. F. Nelson
4234
Jan. 17, 1949

O. A. Phelps
7215
Jan. 17, 1949

Author Finds 'Gold' In Writing Article About Ghost Town

"Thar's gold in the telling, as well as the digging," says Dick Dickson (8233-1), whose story on a gold mining ghost town appears in the January issue of **Ford Times**, a monthly magazine published by the Ford Motor Company.

The article, entitled "All in Golden Glitters," describes the town of Golden, near Albuquerque, N. Mex. Once a town of 5000 people, 15 saloons, and one church, Golden now has only 80 residents and one store. The town stands over one of the richest deposits of the purest gold in the country, but it cannot be mined profitably without water, and water is hard to find in that mountain country.

Dick admits that he didn't find the mother lode when he was researching the story, but added that his reward came later when he sold the story.

Diana Pompeo (2643)

Need Lab News Copies

The Lab News is badly in need of copies of Vol. 15, No. 16, dated Aug. 2, 1963, and Vol. 15, No. 22, dated Oct. 25, 1963. Please send these issues of the Lab News to Division 3142, Bldg. 610.

Take a Memo, Please

Make sure that "safety at all times" is one of your New Year's resolutions.

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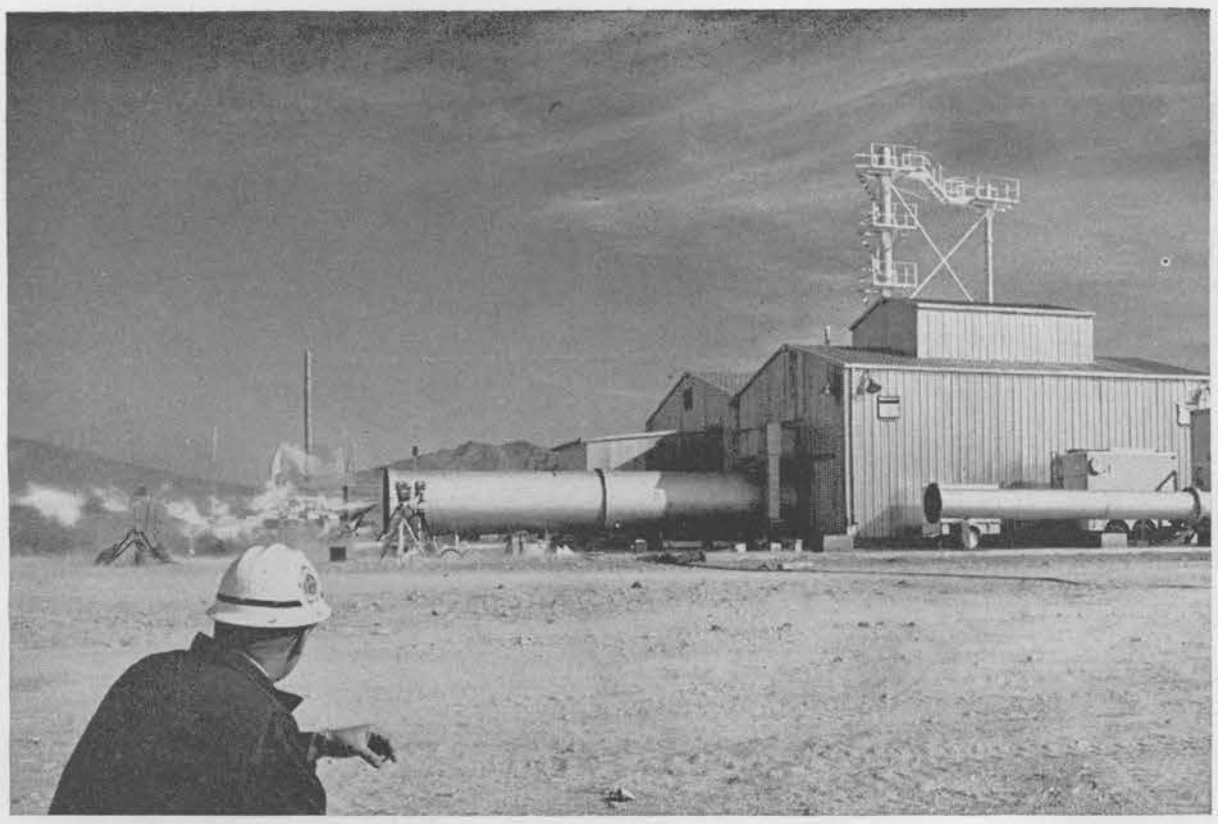


SHOCK TUBE belches a sheet of flame at moment of detonation of high-explosive charge during acceleration test in Area Y. Bob Allison (7423-2) observes the test from a safe distance. Movie cameras near mouth of tube record impact of shock wave on acceleration model (not visible in this photo) at instant of blast.

Scientists Studying Models In Area Y Shock Tube Tests

A group of Sandia Laboratory engineers and aerodynamicists are using the Air Force Shock Tube Facility located in Area Y for a series of pressure loading experiments and acceleration tests.

The shock tube enables researchers to subject test models to overpressure as high as 100 psi. Pressure loading as high as 250 psi inflicted by such overpressure is recorded on magnetic tape in the Sandia instrumentation trailer located at the shock tube site.

Six ft. in diameter and some 246 ft. long, the tube is one of the largest such devices in the world. "We're using the facility under contract with the Air Force," Roger Abbott (7215), field test project engineer for the project, explains. "It's operated under contract by the University of New Mexico."

In pressure-loading tests, the test model is placed and securely anchored at the open end of the shock tube. At the other end, a high-explosive charge consisting of 728 ft. of 400 grain/ft. primacord, weighing approximately 41 lbs., is strung on ropes. When the charge is fired, an extremely strong shock wave is produced. High-speed cameras and other instruments record the effect of the wave as it strikes the test model mounted at the other end of the tube.

"In acceleration tests, the test model is allowed to 'blow away' from the end of the tube as it is struck by the shock wave," Roger continues. "In such tests, a similar 41-lb. charge of explosive is detonated to produce the shock wave, and instrumentation records the acceleration of the model as it's struck by the shock wave."

Roger is assisted by Tom Stevenson (7215). Duane Randall (7421) is project aerodynamicist. Acceleration models are designed by George Adkins (7423), and pressure models, by Joe Suazo (7423). Ed Rightly, Bob Allison, and Jim Gallagher (all 7423-2) are handling setup and installation for the project. Technical photography is provided by members of Local Technical Photography Section 7244-1: Bill Foy, L. W. Paulson, and E. C. Saxton. A. A. Netz of Special Projects Section 7241-3 is providing data reduction for the project.

Sandia Speakers

Following is a list of speakers, titles, and places of presentation for recent talks by members of Sandia Corporation.

A. C. Littleford (2442), "Design Analysis: An Effective Reliability Tool," 10th National Symposium on Reliability and Quality Control, Jan. 7-9, Washington, D.C.

C. F. Bild (1100), "Failure from a Materials Point of View," 10th National Symposium on Reliability and Quality Control, Jan. 7-9, Washington, D.C.

Alan Swain (1443-2), "Human Factors in Design of Reliable Systems," 10th National Symposium on Reliability and Quality Control, Jan. 7-9, Washington, D.C.

D. G. Kitzinger (7412-1), "M-151 Three-Dimensional Surface Fit," Western Region 1620 Users Group Winter Meeting, Dec. 11, Tempe, Ariz.

H. H. Baxter, Jr. (4543), "Suggested Design Criteria for Standards Laboratories," Western Electric Annual Interworks Conference, Nov. 12-14, Kearny, N.J. Mr. Baxter and I. N. Humble (4541) also made brief presentations during three workshop sessions.

Records Management Division (3428), "Records Management at Sandia Corporation," Record Management Seminar of the American Management Association, Dec. 16-18, Los Angeles, Calif. C. J. Puglisi (3428) made the presentation.

Promotions

Julene A. Hunt (3113) to Secretarial Steno
Lorna F. Peterson (3000) to Secretarial Assistant
Eddie S. Garcia (7324) to Laboratory Assistant
Janet H. Lovell (8231) to Staff Assistant Administrative
Joseph G. Woodley (3462) to Reproduction Equipment Operator
Jose S. Dominguez (4621) to Stockkeeper
Jacob C. Bernal (4624) to Packer
Larry L. Ream (3421) to File Clerk
Marilyn A. Overton (3453) to Record Clerk
Cecille A. Brown (8161) to Secretarial Typist
Martha E. Hodges (8212) to Service Clerk
Linda L. Anderson (8123) to Data Reduction Clerk
James M. Kimberling (8115) to Laboratory Assistant
Bill M. Casias (4413) to Draftsman

Supervisory Lateral Transfers

E. A. Aas from 8158 to 8168
H. R. Sheppard from 8151 to 8152
R. G. Clem from 8141-3 to 8152-1
D. A. Skinrood from 8123 to 8151
W. A. Little from 8122 to 8123
J. D. Benton from 8124 to 8122
F. J. Maloney from 7257 to 8124
W. C. Scrivner from 3400 to 7600
L. E. Mahuron from 3450 to 7610
C. E. Katzenberger from 3452 to 7611
J. E. Wesbrook from 3452-1 to 7611-1
C. E. Howard from 3452-2 to 7611-2
D. E. Riggs from 3452-3 to 7611-3
C. M. Clendenin from 7242-2 to 7612-1
E. L. Garman from 3452-5 to 7612-2
A. S. Buchanan from 3452-4 to 7612-3
R. Lynes from 3453 to 7613
M. D. Hodge from 3453-1 to 7613-1
J. P. Stark from 3453-2 to 7613-2
G. D. Horne, Jr. from 3455 to 7614
K. Patterson from 3455-2 to 7614-1
A. R. Iacoletti from 7242-2 to 7622-1
R. M. Allan from 3451 to 7623
L. E. West from 3451-2 to 7623-1
D. M. Fuller from 3451-3 to 7623-2
D. K. Robbins from 3454 to 7624
P. M. Alarid from 4361-1 to 4314-3
L. D. Patterson from 3423-5 to 3411-1
A. E. Jones from 3428 to 3413
J. H. Porter from 3428-1 to 3413-1
R. C. Smelich from 3427-3 to 3413-2
N. V. Tarnawsky from 3427-2 to 3413-3
J. G. Marsh from 3422 to 3414
L. C. Guynes from 3425 to 3415
F. E. Bell from Administrative Assistant (3000) to 3417
B. W. Scott from 3429 to 3418
D. M. McKnight from 3424 to 3419
J. L. Fife from 3427 to 3428
M. G. Randle from 3421-3 to 3428-1
C. Sproul from 3421-4 to 3428-2
W. K. Cox from 3427-1 to 3428-3
K. E. Finders from 8221-1 to 8221-3
C. W. Jennings from 1124 to 1113
R. H. Dungan from 1124-2 to 1113-3
D. E. Munson from 1113-3 to 1124-2
J. W. Hughes from 3243 to 4362
A. M. Granum from 4362 to 4363
P. Wyly II from 3244 to 3212
K. E. Sutton, Jr. from 3151 to 3244
J. N. Timmons from 3244-1 to 3245-1
T. B. Hanna from 3243-1 to 3244-1

W. H. Chandler Will Lead Discussion at AMA Meet Jan. 6-8

W. H. Chandler, supervisor of Job Evaluation Division 3111, will be a discussion leader for a seminar on Job Evaluation during the American Management Association conference in New York City Jan. 6-8.

Sandia Authors

Current or forthcoming articles by Sandia authors in technical journals include the following.

R. J. Everett and R. O. Mills (both 3311), "The Control of Beryllium Hazards in a Fire Test Series," November-December issue, the **Journal of American Industrial Hygiene.**

Ruth E. Whan and H. J. Stein (both 5311), "Oxygen-Defect Complexes in Germanium," Nov. 15 issue, **Applied Physics Letters.**

Bruno Morosin and Katheryn Lawson (both 5151), "The Configuration and Electronic Absorption Spectra of Tetrachloro- and Tetrabromocuprate Ions," January issue, the **Journal of Chemical Physics.**

1963 Payroll Totals $72.4 Million, 8,060 Employees on Company Roll

Sandia Corporation's payroll for the calendar year 1963 at the Laboratories — Albuquerque and Livermore—amounted to approximately $72.4 million. The actual figures for 1962 were $70.1 million.

During 1963, the number of persons on roll averaged 8060. This compares with the 1962 average of 7930.

Assets of the Atomic Energy Commission's installations operated by Sandia Corporation totaled about $148.6 million at the end of 1963, compared to $128.8 million for 1962. These figures represent undepreciated values of buildings and facilities at Sandia Laboratory, the Sandia Livermore Laboratory, and Tonopah Test Range in Nevada.

Results of Project Shoal Shot Being Studied; Drilling Nears End

Drilling operations over the site of the Project Shoal nuclear detonation, which took place near Fallon, Nev., Oct. 26, are nearing completion. Project Shoal was an experiment to improve ways of distinguishing earthquakes from underground nuclear explosions by comparing their signals.

Some 25 Sandia Laboratory personnel participated in the Shoal experiment. Sandia technical activities at Shoal included free field particle motion, stress and strain near source; seismic net; hydrodynamic yield measurement; device support, assembly, emplacement, stemming, and arming; yield measurement; reentry safety monitoring; cavity collapse; radiation monitors; reentry parties; and technical construction coordination.

Results of the drilling demonstrated that, despite theories that a large cavity had been left intact in the granite of the shot point after the detonation, no such cavity exists. Scientists believe that a great volume of rock was crushed by the detonation and fell into the cavity within seconds after the detonation. It is possible that large blocks of rock may have supported the roof of the rubble-filled cavity in such a way as to prevent the formation of a high "chimney" of fallen rock above the cavity.

Apparently the cavity collapsed immediately following the detonation, so that instrumentation detected only detonation which concealed noise of the collapse and erroneously indicated the cavity remained intact.

During drilling in the detonation zone, temperatures of about 600 degrees F. and radiation levels estimated at up to 40 roentgens per hour were encountered near the shot point, 1220 ft. below the surface. There was no accidental release of radiation into the atmosphere by the Shoal detonation.

Continued from page one . . .

Third Generation APAR

limits," record test identification information and transfer it to the output data records.

Output Controls

The new system can provide from 20 to 1000 programmed output controls in the form of relay-contact closures. The outputs can be used to control actions of external devices.

Input instructions are fed into the machine on punched paper tapes. The rate of input reading can be varied from 10 characters per second up to 60 characters per second. To provide multiple programming and simultaneous subroutine reading of instructions, the APAR-3G can accommodate up to nine paper tape readers.

"In addition to these technical features," Mr. Roberts says, "one of the primary features of the new APAR is economy. With the building block concept, a minimum capacity APAR can be assembled inexpensively for a small testing job. Enough units can also be used to handle very complex and extended testing. Either way, the basic units are reusable for any number of different testing jobs. No 'one-of-a-kind' machines will be built which might not be directly applicable to a new system when the original specific job is finished. This versatility and economy of the new APARs will make many new applications possible and spread the capital investment over a large number of jobs."

For each testing application, additional special devices are needed in the form of a "test head system." This includes a mechanism to hold or position the item to be tested, the data acquisition transducers, and, in some cases, an environmental control.

Currently, two of the new APAR-3G machines are in operation. One has been used for the past four months in a supplier's plant performing development product testing. Another one is being used in Area V by Radiation Physics Division—Fundamentals 5311, to run pre- and post-irradiation tests on semiconductor performance.

A third machine is being assembled to perform testing of relays for Electronic Components Department 1430.

A number of new APAR modules are being built to be made available to Sandia Laboratory organizations on a "check-out" basis.

"Performance of the new APARs so far indicates that we have a reliable and flexible machine which will economically satisfy a wide variety of data acquisition and control problems," Mr. Roberts says.

Members of the team which developed the new APARs are W. E. Boettcher, E. R. Chapman, A. E. Farmer, D. R. Hinds, F. R. Martin, R. D. Moyer, L. G. Welborn, and D. A. Branscombe (all 2422).

Sandia to Mount Micrometeorological System on 1,527-ft. Bren Tower at NTS

Sandia Laboratory will mount a system for continuous digital recording of micrometeorological information on the 1527-ft. Bren Tower at the Nevada Test Site, the Atomic Energy Commission announces. According to Jack W. Reed (5414), scientific director for the project, the system will provide more detailed wind and temperature information for the NTS safety program. Mr. Reed is Chief of the Blast Prediction Unit of the AEC Test Manager's Staff, Nevada Operations Office.

Instrumentation stations to be mounted on the Bren Tower include 13 temperature detectors and nine wind recorders. The system will be linked to the current weather recording instruments on the 500-ft. Yucca Flat weather station. The two towers are six miles apart.

The automatic system will continually record data from both towers and provide readout on paper tape for direct data reduction by computer. The system can be set for readout intervals of one minute, five minutes, 30 minutes or 60 minutes.

Contract Awarded

A contract has been awarded by Sandia Corporation to Missouri Research Laboratories, Inc., for designing, manufacturing, and installing the system. The United States Weather Bureau is associated with Sandia in the project.

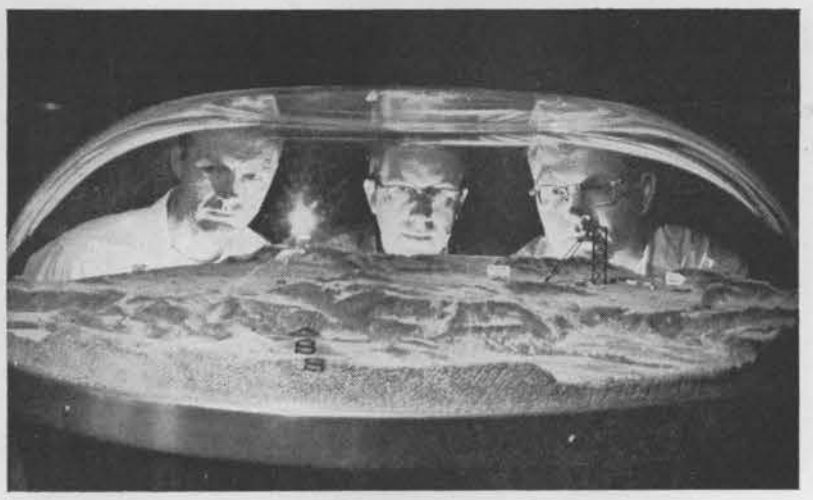
The Bren Tower, which is 55 ft. higher than the Empire State Building, was built at NTS in 1962 in connection with a Civil Defense experiment. The tower is constructed of high tensile steel and is designed to withstand winds greater than 120 miles per hour. Availability of the tower has enabled the weather bureau to conduct intensive monitoring of the winds aloft for the NTS safety program.

The word "Bren" was coined from the 1962 Civil Defense experiment, Bare Reactor Experiment Nevada, which has been completed.

Sandia Corporation

Year 1963 a Momentous One in Retrospect

The year 1963 was a momentous one on both national and international levels. For Sandia Corporation it meant work on projects of varied nature, and creation of two new organizations to better meet demands in the field of aerospace programs and computers. Here is a brief review of the more significant happenings.

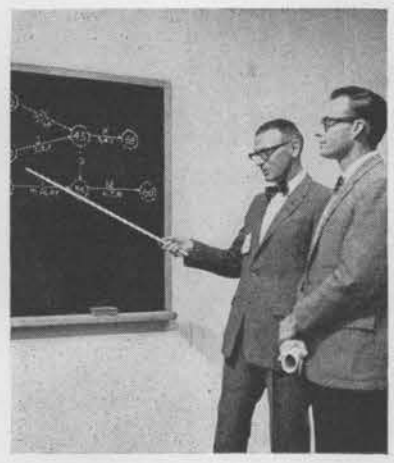


Surface Detail Model of Project Shoal

January

Training started for about 3000 Sandians in the technique of network analysis, also known as PERT. Eventually all weapon programs will be planned and administered along "critical path" lines.

AEC Chairman Glenn T. Seaborg commended Sandia employees for outstanding performance in accomplishing Operations Dominic, Nougat, and Storax I and II.



Training in Network Analysis

February

C. R. Smith, Western Electric Vice President-Defense Activities and member of Sandia Corporation's Board of Directors, retired Feb. 28. He was succeeded by A. P. Clow.

Livermore Laboratory test project group conducted a series of tests at the Tonopah Test Range using two World War II 155mm guns.

—Livermore Laboratory Gun Facility at Tonopah Test Range—

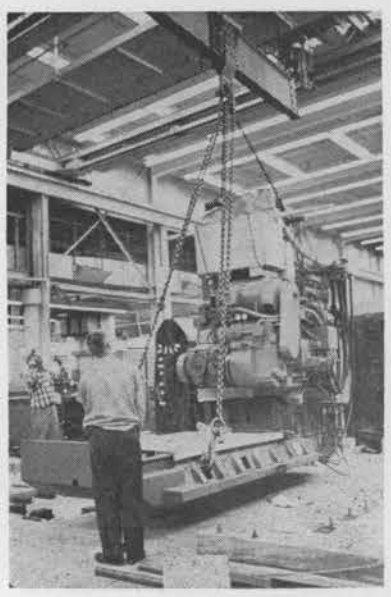
March

Top science students and their teachers from Livermore and Pleasanton high schools toured Livermore Laboratory environmental testing facilities.

Plans were announced for a Sandia-designed reentry vehicle to be carried in a Scout four-stage rocket launched from Wallops Island Va. The safety aspects of the reactor for the SNAP (Systems for Nuclear Auxiliary Power) program are Sandia Corporation's responsibility.

A centrifuge acceleration test was being conducted at Sandia Laboratory to test the reliability of a solar research satellite to be launched in summer on a Thor-Delta rocket from Cape Canaveral.

A numerically-controlled milling machine was installed and is in operation in Mechanical Department 4250.



Numerically-Controlled Milling Machine is Installed

Sandians were assigned a part in a continuing research study of upper atmosphere to be conducted from Barking Sands rocket launch complex in Hawaii.

The Livermore Laboratory fire prevention program took high honors in the 1962 fire prevention contest conducted by the National Fire Protection Association. The Laboratory ranked 12th among 178 entries from the U. S. and Canada in the industrial category.

April

President Kennedy expressed to S. P. Schwartz appreciation for his "excellent briefing on the work being done on the design, development, and testing of bomb and warhead components" during a visit to Albuquerque in December 1962.

Representatives of the Cooperative Weapon Data Indexing Committee, a special library group formed in 1951 at the request of the AEC's Division of Military Application, met for the first time at Livermore Laboratory. The committee discussed methods of improving the retrievability of information in the nuclear weapons program.

May

The first SAND sampler unit arrived. It was to be used to obtain samples of radioactive and inert particles out of the atmosphere at altitudes of 100,000 to 230,000 ft.

Many Sandians assisted in plans and participated on programs for the National Telemetering Conference, held in Albuquerque.

About 125,000 visitors attended the National Science Fair-International. Eight Sandia Laboratory scientists were leaders of sessions of the National Science Seminar, held concurrently. Community Relations Division 3143 helped with Science Fair arrangements.

June

L. E. Hollingsworth was appointed Director of Field Testing 7200, effective June 1. D. B. Shuster transferred from Field Testing to head the new Aerospace Programs organization, 7400.

Flight of RFD-1 from Wallops Island, Va., was termed a success by scientists.

An Award of Merit for working 1,101,540 hours without a disabling injury was presented by the AEC to Livermore Laboratory employees. The award covered the period Aug. 31, 1962 to March 28, 1963.

Sandia Laboratory completed a Department of Defense-sponsored research and exploratory program conducted at the site of two 1951 nuclear detonations at Nevada Test Site. The explorations contributed to the understanding of cratering effects of nuclear explosives.

July

Robert C. Prim of Bell Telephone Laboratories succeeded George C. Dacey on July 31 as Sandia's Vice President, Research, 5000. Mr. Dacey returned to BTL.

Sandia Laboratory payroll totaled $62.4 million for FY 1963 and more than $8 million at Livermore Laboratory.

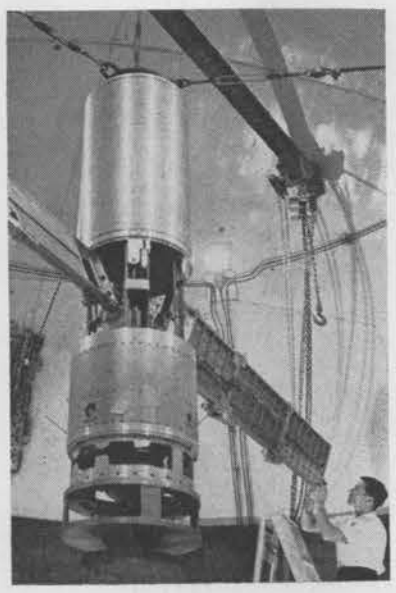
More than 30,000 persons visited the Livermore Laboratory science exhibit at the Alameda County Fair in Pleasanton. The exhibit consisted of a radiation detector rocket, a display panel explaining Sandia's mission, and two displays on telemetry systems.

—Livermore Laboratory County Fair Exhibit—

August

A programmed self-instruction training course on true position dimensioning was being used by an experimental class.

Deputy Secretary of Defense Roswell Gilpatrick reported that Sandia Corporation and other nuclear laboratories will continue to play an important part in "the conduct of comprehensive, aggressive and continuing underground nuclear test programs designed to add to our knowledge and improve our weapons in all areas of significance to the military."



Nuclear Debris Sampler Unit Undergoes Tests

George Mincks (8222) was named chairman of the 1963 United Crusade drive at Livermore Laboratory. Assisting him as vice-chairman was Ray Sheppard (8151). The 1963 goal was $13,000.

September

The first graduate in Sandia's four-year Electronics Apprenticeship Program was John E. Hager (4233-3).

General Services Administration accepted as a Federal standard "Clean Room and Work Station Requirements, Controlled Environment," based on the Whitfield laminar air flow concept developed here. The standard will control all government clean room procurement.

October

The back-to-school movement attracted 1421 Sandia Laboratory employees to out-of-hours courses and 430 to University courses.

Some 25 Sandians participated in Project Shoal at Fallon, Nev., an experiment to improve ways to distinguish natural earthquakes from underground nuclear-caused tremors.

Two new members of Sandia Corporation's Board of Directors, L. Ray Cook, Vice President, Engineering, Western Electric Company, and Harvey G. Mehlhouse, Vice President, Personnel and Public Relations, Western Electric Company, visited Livermore Laboratory for a tour and briefing.

Sandia Laboratory and Los Alamos Scientific Laboratory were responsible for the detection instrument payloads in the tandem satellites launched recently by the Department of Defense.

Components for Logics System of Detector Satellite

November

Busy signals and wrong numbers were commonplace—but only for a short period of time—as all telephone numbers on Sandia Base were changed. The modernization of the system will be completed by mid-February 1964.

Sandia Laboratory continued chemical high explosive tests at Nevada Test Site to study cratering effects of explosions. The test series involved 30 detonations of more than 60,000 lbs. of high explosives.

Final tally of the Sandia Laboratory Employees' Contribution Plan reached $182,599 — a new record.

ECP Committee at Work

W. J. Howard, Director of Systems Development at Livermore Laboratory, received a Presidential appointment as chairman of the Military Liaison Committee and Assistant to the Secretary of Defense for Atomic Energy. Leo Gutierrez was promoted at Livermore Laboratory to replace him as Director of Systems Development 8100.

Max K. Linn was appointed Director of Technical Information and Publications following transfer of W. C. Scrivner to head Sandia's new Computer Organization 7600.

National Science Fair Visitors at the Centrifuge

December

"Operation Santa Claus" projects were underway at both Laboratories to bring food and gifts to less fortunate families.

WE Radio Amateurs Invite Sandians to Join CQ Contest

Sandia radio amateurs are eligible to participate in the fourth annual CQ-WE contest for licensed operators employed by or retired from the Western Electric Company. The contest will be held during January 1964. Host for this year's contest will be WE's Omaha Works.

Contest scoring will be on the basis of two points for each confirmed contact, times the sum of the U.S. call districts and foreign prefixes. The same station can't be counted more than once per weekend. Logs must show GMT, the call of the station worked, his name, location, and WE affiliation.

Time table for the contest is as follows: Phone schedule: Jan. 11, 1964 at 2300 GMT; and Jan. 12 at 0300 GMT (Sat. in USA), 1800 GMT, and 2200 GMT. Frequencies for all four of these sessions are as follows: AM work AM from 7.250 to 7.260, and from 14.240 to 14.250; AM work SSB from 7.240 to 7.250, and from 14.250 to 14.260; SSB work SSB from 7.230 to 7.240, and from 14.260 to 14.270.

CW schedule: Jan. 18, 1964 at 2300 GMT; and Jan. 19 at 0300 GMT (Sat. in USA), 1800 GMT, and 2200 GMT. Frequencies for these four sessions will be from 7.090 to 7.100, and from 14.060 to 14.070.

Novice — RTTY (Teletype) — Technician schedule: Jan. 26, 1964, from 1800 to 2200 GMT. RTTY will operate on 7.040. Novice class: listen on, and just below, the novice band. Technician class: listen at lower end of bands.

Following the contest, logs should be sent to: Fred Kujawa, Department 441-3, Western Electric Company, Inc., Omaha Works, P. O. Box 1400, Peony Park Station, Omaha 14, Nebraska. Logs must reach Mr. Kujawa by Mar. 1, 1964.

ECP Reserve Fund Allocated; Nine Agencies to Receive $1676

The reserve fund of the 1963 Employees' Contribution Plan was allocated last week by members of the ECP Committee. Nine agencies received allocations totaling $1676. In most cases, the money will go for special equipment needed by the agencies which their regular budgets cannot provide.

The Albuquerque Area Council on Alcoholism and the Albuquerque Association for Retarded Children, Inc., both new United Community Fund Agencies this year, will each receive $100 to meet past financial commitments. As new UCF agencies, they did not start receiving UCF funds until this month.

The largest single allotment of the ECP reserve fund—$466—went to the New Mexico Rehabilitation Center for folding parallel bars, a shower chair, and protective helmets.

The Martineztown House of Neighborly Service received $285 for recreation equipment. The Visiting Nursing Service received $215 for various nursing equipment, including a wheelchair.

Christina Kent Day Nursery received $109 for furniture and toys.

A child's X-ray chair will be provided for the Bernalillo County Heart Association with $80 of the ECP reserve fund.

The American Cancer Society requested $118 for four mattresses.

Arthritis and Rheumatism Foundation will receive $202.50 to purchase a wheelchair, crutches, canes, a four-legged walker, and other special equipment.

Sandians Eligible for GED Classes Offered by Sandia Base

Educational opportunities are being offered at Sandia for those of varied educational backgrounds. Many Sandia employees have been hired at the lowest entry grade levels, and through Out-of-Hours courses and other training, have moved into higher levels including semi-professional occupations.

An opportunity for individuals who haven't graduated from high school, but who wish to receive General Educational Development certification, is being offered by the Sandia Base Education Office. "The Base Education Office has invited Sandians who seek such training to enroll for a series of refresher courses in English and mathematics," M. A. McCutchan, supervisor of Technical and Trades Training Division 3132, says. "The eight-week series of courses will be presented in January and February at the Base Education Center in Bldg. 339."

Other courses to be offered in the new series are Auto Mechanics II, Advanced High School Algebra, Beginning French, Electronics, Latin American Nations, Beginning Typewriting, Plane Geometry, Rapid Reading, Slide Rule, Sociology, Real Estate, and Criminology.

The series is one of several training programs carried out in keeping with the government's Equal Opportunities Program. Sandia's Out-of-Hours Program offers a means for enrollees to receive training in semi-professional occupations. Individuals interested in enrolling for the courses, or for Sandia's Out-of-Hours Program should contact Mr. McCutchan (264-3261) or H. R. Shelton (264-6168).

Organization 7400 Conducts Project for Receiving Home

Members of the Aerospace Programs Organization 7400 took up a collection for the All Faiths Receiving Home in lieu of exchanging Christmas cards. A check for $160 was presented to the Home.

Sandia Spends $22.3 Million in State in 1963

Purchases by Sandia Corporation in New Mexico will amount to approximately $22.3 million for the calendar year 1963, based on actual figures for the first 11 months and estimated for December. It does not include purchases from other Atomic Enery Commission contractors. In 1962, purchases in the state amounted to $16.6 million.

Approximately 98 per cent of the amount spent in New Mexico this year, or $21.9 million, went to Albuquerque firms.

New Mexico firms doing business with Sandia Corporation during 1963 numbered about 1034. All but 26 of these are Albuquerque firms.

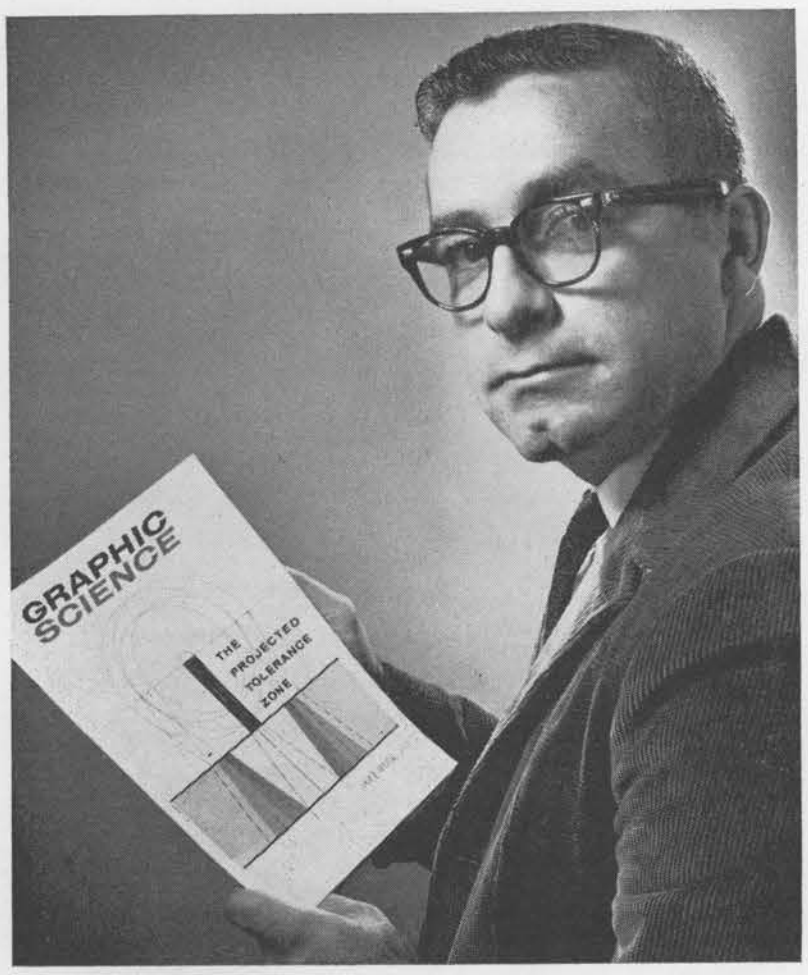
Coronado Ski Club Plans Outing to Sierra Blanca Jan. 25

Reservations are due by Jan. 11 for the Coronado Ski Club's trip to Sierra Blanca Jan. 25-26.

This is the second year the club has sponsored a week-end trip to this new ski area in southern New Mexico, near Ruidoso. Members will get a 10 per cent discount on lift tickets.

Information about accommodations may be obtained from Wayne Cook (7331), home tel. 255-2289, or club president Bill Lemmon (1414), home tel. 299-7513.

The club's next regular meeting will be Monday, Jan. 20, at 7:30 p.m. at the Coronado Club.



COVER ARTIST Bill Wagoner of Commercial and Animation Art Section 3463-2, designed cover on November 1963 issue of **Graphic Science** magazine. Semi-abstract design carried out position tolerancing theme.

Members of Division 1542 Set Education Record of Sorts

The 17 members of Doug Bruce's Structural Analysis Division 1542 can lay claim to being one of the most studious groups around.

During the past three semesters, every person in the division has taken at least one course each semester under Sandia's Out-of-Hours Program. One man is the exception. He attends the University of New Mexico under the Technical Development Program.

In addition this fall: D. J. Chavez, R. L. Dineen, R. D. Hoagland, and Peter Stirbis are taking courses at the University under the Educational Aids Program; Mr. Hoagland and T. G. Priddy are finding time to teach Out-of-Hours courses in Analysis of Structures, and W. A. Sebrell teaches Statics; and B. A. Caskey, C. E. Sisson, and W. A. Von Riesemann are studying Reliability of Statistics in "in-hours" Corporation classes.

Mr. Bruce attributes the great interest in coursework to the fact that the division is actually a specialties group. "We're in an applied mechanics type of work, but many of the men have found that they need extra training in higher mathematics above that normally taken by engineers," Mr. Bruce said. "In other instances they have chosen to take special courses to learn the latest technology in a rapidly changing field."

This surge for knowledge isn't a new thing with members of the division. At one time, the division (then 1282) had the highest attendance at UNM under the Educational Aids Program of the entire 1200 organization. This record was maintained for several semesters.

Among the present courses offered under the Out-of-Hours program, 12 men have completed both Parts 1 and 2 of Survey of Shock and Vibration Analysis and Problems, while eight are currently taking Part 3. In the fall of 1962, five signed up for Analysis of Structures, Part 1; in the spring, nine took Part 2; and four men are presently enrolled in Part 3 of this course.

Other popular subjects include Differential Equations (Engineering Applications), Advanced Engineering Mathematics, Complex Variables, and Numerical Analysis.

Nine of the division members have Master's degrees, and two others will receive their MS in June.

Mr. Bruce has headed the division since he came to Sandia in 1956, and has set an enviable example in enrollment. During the past seven and a half years he has taken 15 in-hours courses, one UNM credit course, 13 UNM Community College courses, and three Sandia Out-of-Hours courses. "I'm not taking any class right now," he said, "because they ran out of courses which appealed to me."

Sandians' Work Featured in Drafting Journal

The cover of the current issue of **Graphic Science**, a technical publication for various drafting organizations throughout the country, carries a cover design by Bill Wagoner of Commercial and Animation Art Section 3463-3, and a feature story on "The Projected Tolerance Zone" by P. A. Nicovich, supervisor of Design Definition Division B, 4412.

Bill's cover is a semi-abstract design which carries out the position tolerancing theme. Final art for the cover was by Nell Norton of Technical Report Illustrations and Presentation Art Section 3463-2.

Mr. Nicovich's article discusses at length the refinement of various applications of true position tolerancing. R. E. Dunlap of Publications Section 3423-1 edited the article.

R. H. McHarney of Graphic Arts Consulting and Programming Section 3462-5 designed a cover for **Graphic Science's** April 1963 issue. He also provided illustrations for an article on microfilm techniques by E. C. Hirt (4432) and J. H. Hockett (4112), which appeared in the April 1963 issue.

Square Dance Class Starting Soon

The Roadrunners Club, a square dancing group, is looking for new members. A square dancing class will be starting soon for new members, according to George Wladika (4422). Frank Cerkleski is the group's caller. Additional information is available by telephoning 255-9166 or 255-9247.

SHOPPING CENTER • SHOPPING CENTER • SHOPPING CENTER • SHOPPING CENTER • SHOPPING CENTER

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 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**

FOR SALE

OVERHEAD GARAGE DOOR w/hardware. Fulmer, AL 6-9037.

GARRARD RC88 record changer, 12" box w/speaker, Heathkit monaural amplifier, all for $45. Reed, AX 9-7425.

ONE ACRE LOT, Ramblewood subdivision seven miles south Route 10, cost $700, will take best offer cash, terms. Wilkes, AX 9-1624.

CARVED SPANISH-STYLE TABLE, 3x8', pine w/massive legs, hand made by George Sandoval, $100. Dunlap, 265-4089.

'59 DODGE station wagon, take over payment $46/mo, $680 balance, take older car for equity. Salazar, 344-8880 after 4 p.m.

TWO LARGE LOTS Tres Pistoles Canyon, $2000 ea.; twenty acres near Torreon, $150 per acre, insured title. Weir AX 9-1160.

APPROXIMATELY ½ acre level lot in Glenwood Hills, make offer on down and assume $36.90 monthly. Hopper 344-7985.

'53 CADILLAC 4-dr., PS, PB, PW. Montano, DI 4-3797.

HEAD STANDARD SKIS 7 ft. medium, Cubco bindings and safety straps, new, $90. Cotter, AL 6-0326.

TYPEWRITER, Royal, portable, quiet deluxe w/carrying case, cost $87.50 new, sell for $50 or best offer. Bushmire, 264-3633.

KENMORE GAS DRYER; Kenmore automatic washer, $75. Laskowski, 256-2053, 425 Truman NE.

NEXT DEADLINE FOR SHOPPING CENTER ADS Friday Noon, Jan. 10

40" ELECTRIC STOVE, $100; 2 beige 9x16' wool carpets, $25 ea.; playpen, $5; chrome high chair, $5; training chair, $3. Glenn, 2832 Dakota NE, AM 5-0647.

HOTPOINT ELECTRIC RANGE, white, $95. Hook, 255-1897 after 4:30 p.m.

ANTIQUE HIGH BACK OFFICE CHAIR, $12; several early frontier guns; Ruger single six .22 revolver, new, $48. Smitha, 299-1096.

DE WALT POWER SAW, radial arm, includes saber saw, jointer cutter head, boring bit set, disc sander, 3 shaper cutters, used blades, $195. Schellenbaum, 299-1005.

FULL LENGTH MINK COAT, large; formals and semi-formals, small; little girl's coats sizes 10 and 12. Paxton, 265-4696.

KEYSTONE F-20 8 mm movie camera, f1.8, fixed focus lens, never used, guaranty included, $15. Hansen, 256-0641.

CUSTOM-MADE lined draw drapes, 8x12½', $75; traverse rod 12-14', $8; 2 matching chaise longues w/cushions, aluminum frames, $18 total. McMaster, 268-8062 after 5:15 p.m.

DX 60 transmitter; '55 Ford V8 4-dr., Tilley, 299-5678 after 5 p.m., Saturday p.m. and Sunday.

SELL OR TRADE: Model 92 Winchester in .357 magnum caliber; Model 1903, 30-06 w/new barrel, want .410 gauge double. Singleton, 299-1613.

STUDIO COUCH, matching chair, beige nylon, $40; upholstered rocker, cover, $5; modern chair, wrought iron frame, gold, $5. Avara, 265-4171.

SADDLE HORSE, black, 1000 lbs., trained for roping or cutting, gentle, 13 yrs. old, $300. McKinley, AM 8-4779.

30-06 SPRINGFIELD, $40; woman's ice skates, $6; 35 mm movie camera, $30. Bland, 268-4913.

12-STRING STELLA guitar, new strings, $35. Eberhart, 268-6943.

'62 STUDE CRUISER, AT, V-8, reclining seat, wsw, tinted glass; '61 DKW 750 Jr., want station wagon. Nelson, ext. 264-5169

TWO adjacent residential lots, near Juan Tabo and Indian School Road. Collins, AM 8-3612.

JEMEZ MOUNTAIN ACRE, lights and water, 2 miles from Jemez Springs. Davis, 299-8698.

FENDER STEEL GUITAR w/case and amplifier. Gustafson, AX 9-3270.

CLIMBING GEAR, telephone lineman; belt, safety sling, spurs, $12.50. Mattox, 268-5554.

'58 INTERNATIONAL ½-ton pickup, A-100, R&H, Positration, engine gages, helper springs, seat belts, $550. Peurifoy, 299-1606.

BICYCLE, girl's 24", $15. Fears, AL 6-3956.

FOR RENT

MODERN FURNISHED insulated Sandia Mt. cottage, suitable for 1 or 2, water and butane paid, carport, car pool available, $45/mo. McMillin, BU 2-3226.

UNFURNISHED 3-bdr. house, stove, water paid, 11108 Indian School NE, $95. Dennis, 298-1323 or 256-0186.

EXTRA LARGE, nice, 2-bdr. duplex, built-in stove and oven, refrigerator and air conditioning. Warnke, 616 Madison NE.

ENJOYING a ride to the Sandia Crest aboard the new Sandia Peak chair-lift are Mr. and Mrs. Bill Lemmon (1414). Bill, president of the Coronado Ski Club, is an active skier.

EIGHTY PAIRS OF SHOES were provided to students of the Riverview Elementary School by the Military Liaison 2300 "Shoes for Kids" project. Jack Underwood (2341), standing, and Al Hachigian (2313) handled arrangements. This was the sixth year for the 2300 project.

Seen on the Sandia Scene

HAPPY NEW YEAR says Billie Hayes (2563) and may 1964 be safe and secure. Sandia's Security Education Section 3244-2 has a few copies of the 1964 Security Monitor Log calendar, available by calling 264-3371.

FRUIT BASKETS — 56 of them — were distributed by Benefits and Services Division 3122 to employees who were on sick leave at Christmastime. Betty Drumm (3126) assisted O. J. Foster (3122) in handing out the gifts to supervisors, who saw that the presents were delivered.

WHITE ELEPHANT SALE conducted during the noon hour Dec. 16 and 17 by members of Sections 3427-1 and 3427-3 featured Ralph Carter (3462) as auctioneer. Sandians donated items for the sale and proceeds benefited the Casa Linda Day School. About $500 was raised which purchased a piano, television set, record player, floor polisher, and provided a tree and Christmas party refreshments for the children.

Sandia's Safety Record

Sandia Laboratory	*Livermore Laboratory*
HAS WORKED	HAS WORKED
840,000 MAN HOURS	1,265,000 MAN HOURS
OR 24 DAYS	OR 246 DAYS
WITHOUT A	WITHOUT A
DISABLING INJURY	DISABLING INJURY