



ARMY OV1 MOHAWK stops at Tonopah airport for a quick change of the instrumentation pod. At left is H. W. Pumphrey of Test Operations and Facilities Division, one of the operations project leaders.

SANDIA
CORPORATION

LAB NEWS

PRIME CONTRACTOR TO THE ATOMIC ENERGY COMMISSION / ALBUQUERQUE, NEW MEXICO / LIVERMORE, CALIFORNIA



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JTF-2 Completes 172 Flights at Tonopah; 300 More Scheduled

Last week, after 13 days of concentrated effort, Sandians assigned to the Joint Task Force Two mission took a breather. They had completed their role in 172 successful flight tests across the 150-mile marked course at the Tonopah Test Range. Flights of OV1, A1E, and A4E aircraft had flown the low level tests.

Back at Sandia after assignments at Fallon Naval Auxiliary Air Station, Nellis AFB, and the EG&G computer facility at Las Vegas, some 40 Sandians of Systems Evaluation Department and various computing organizations were looking at the forthcoming schedule. Several Sandians are continuing assignments in Nevada.

More than 300 additional flights will be conducted before the end of July. Aircraft scheduled to fly the course in coming weeks include the A6, F105, F4, B52 and B58. Flights will be staged from Nellis AFB in Nevada, Beale AFB in California, Little Rock AFB in Arkansas, and Fallon NAAS in Nevada.

Directed by the Joint Chiefs of Staff, the JTF-2 program is evaluating the low level capabilities of tactical and strategic aircraft weapon systems and the defense against such systems. Sandia provides

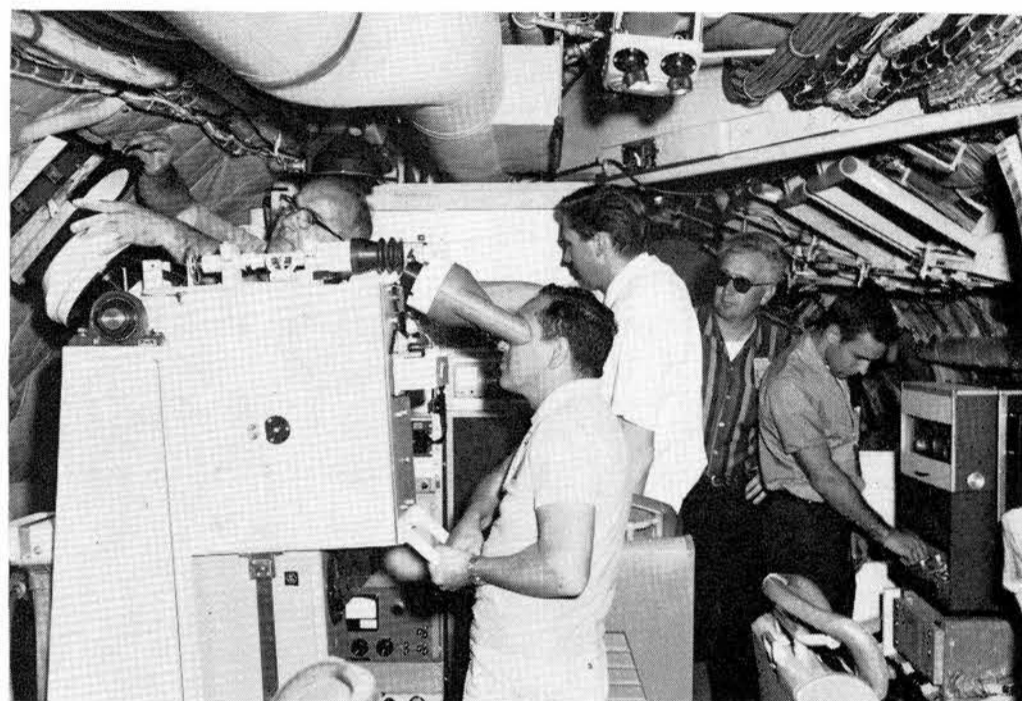
scientific and technical assistance to the JTF-2 organization, which is headquartered on Sandia Base.

Support by Sandia includes general systems engineering and analysis in the preparation of test plans; designing instrumentation systems for use in aircraft and ground equipment at ranges and other test sites; procurement, installation, and maintenance of the equipment; on-site monitoring and observation of data; data processing, analysis, and interpretation of data; and assistance in preparation and publishing of reports.

The aircraft fly as low as safety permits over the course at Tonopah. Each plane carries an instrumentation pod designed by Instrumentation Systems Division under T. A. Sellers. This pod transmits several signals. One signal, part of a DME (Distance Measuring Equipment) system, is received by two C-130 aircraft circling at high altitudes at each end of the course. The C-130 DME equipment also obtains a position fix from six transponder stations on the ground along the flight path.

The pod also contains a highly-accurate radar system which continually measures

(Continued on Page 5)



INSIDE FLYING LABORATORY, Sandians perform last-minute check on equipment before departing for Pago Pago to conduct eclipse experiments. From left are J. J. Kuruczvich, J. S. Llamas, L. K. Porter, M. M. Robertson, and P. D. Stang. Kuruczvich and Llamas are adjusting a manual tracking spectrograph and related television readout equipment. Stang is working with a wide-band tape recording device connected with the television equipment. The spectrograph was developed by Range Optics Division and Aerospace Nuclear Safety Division III.

After May 30 Eclipse Experiments

Sandia Flying Laboratory Used for Cosmic Ray Study Near South Pole

After conducting experiments during the solar eclipse in the South Pacific May 30, Sandians aboard an NC-135A flying laboratory made a second expedition to study cosmic rays near the south magnetic pole.

For the eclipse, the aircraft operated out of Tafuna airport near Pago Pago on American Samoa and intercepted the shadow of the eclipse about 1500 miles south of Honolulu. For four and one-half minutes, optical and electronic equipment on board the NC-135A measured and recorded various events of the eclipse.

Developed by Range Optics Division and Range Electronics Division, the instrumentation included cameras for photo-

graphing the visible region of the coronal spectrum for streamers; photometers for measuring pre-chosen spectral line intensities and background intensities at various wavelengths; an ultra-violet camera system which recorded magnetic field direction and white light densities; event cameras for sequence coverage; and a TV spectrograph able to detect faint line intensities in the infra-red region.

Other experiments included investigation of the twinkling layer in the atmosphere, air glow, and polarization and surface brightness measurements.

Another group of Sandians operating on the island of Rarotonga fired several rockets to about 200 miles altitude during the eclipse. These rockets carried Los Alamos Scientific Laboratory instrumentation which measured segments of the x-ray spectrum from the sun's corona.

After the eclipse, the flying laboratory returned to Tafuna. On June 1, the aircraft departed for Avalon Air Force Station near Melbourne, Australia. Yesterday the plane left Australia and flew east to 170° longitude, turned south toward Antarctica to about 75° latitude, turned toward the south magnetic pole, then returned to Australia.

Purpose of this 2400-mile non-stop flight was to study the latitude effects on cosmic ray penetration to the earth. Cosmic-ray-induced fast neutron fluxes were measured at 30,000 feet as a function of latitude.

The experimental apparatus for these measurements consisted of two B¹⁰ enriched BF₃ proportional counters and associated moderators, shields, and electronics. This apparatus, weighing about 1500 pounds, was furnished by Prof. J. A. Simpson of the University of Chicago. J. E. Keith of Aerospace Sciences Division was the Sandia experimenter for the project.

The aircraft is scheduled to return to Albuquerque tomorrow. Sandians who handled the rocket firings from Rarotonga are scheduled to return June 7 and 8. A forthcoming issue of the LAB NEWS will report on data collected from the eclipse and cosmic ray experiments.

Mach 5.7 Record Set by 22-ft. Sandia Rocket Sled

A Sandia Corporation rocket sled set a new record at the 35,000-foot track at Holloman Air Force Base last Friday.

The 22-foot sled achieved a velocity of 6200 feet per second, four and a half seconds after launch.

The 6200 feet per second is equivalent to 4700 miles per hour, or 5.7 times the speed of sound.

Never before had a sled met test objectives beyond speeds of 5400 feet per second.

In this instance, the sled relayed telemetry information to nearby ground stations. The data was fed from pressure taps in a probe—a scale-model aerodynamic design — mounted on the nose of the sled.

The slender (nine inches in diameter) sled was launched by a Gila III rocket with 30,000 pounds of thrust. Three seconds and 3000 feet later, a "G" switch triggered into action a Recruit rocket with 40,000 pounds of thrust, and the sled reached its top speed about 9000 feet from the launch point.

Function of the "G" switch was to sense the moment when the rate of acceleration from the Gila dropped. Simultaneously, it caused the second stage engine to cut in.

Propelled by the Recruit, the sled covered 6000 feet of track in just one and a half seconds.

Although the primary purpose of the run was to gather pressure measurements for Aero- and Thermodynamics Department, the operation had a second objective which D. C. Bickel, Track, Rocket Launcher & Guns Division, referred to as "advancing the state of the rocket sled art."

In other words, it was another in a continuing series of test runs in a research and development program dating back to 1963. Previously, nine sleds of varying design had met with random success, using

several different slipper designs to grip the railheads.

The sled used on the second run last week was a monorail device, which relied upon steel to keep it from becoming airborne.

Ultimate aim of the research efforts is to achieve 10,000 feet per second with a sled on available tracks, Mr. Bickel said. As in the past, data achieved on the latest run will be applied to new configurations.



KICKOFF MEETING for the Sandia Savings Bond Drive featured L. E. Lamkin, Director of Environmental Testing. He discussed the advantages of Savings Bond investment programs for college education of children and Savings Bonds conversion for supplemental retirement income. See editorial on page two.

Editorial Comment

During the past two weeks Sandia employees have been attending meetings which have discussed the dollars and sense of U.S. Savings Bonds as a sound part of an investment and savings program.

This approach to a Savings Bonds program is reasonable and valid particularly in light of planning for retirement, for the children's college education, and for secure savings.

Also, let's not forget our duty as citizens. A duty to help strengthen the financial structure of our government and our economy.

Our 18 per cent enrollment in the payroll savings plan for Bonds is disappointing especially in comparison with participation found in American Industry. Here are figures of a few typical industries:

Lockheed Aircraft Corp. ..91%	Martin Marietta Corp.82%
Kennecott Copper Corp. ..86%	Radio Corp. of America ..82%
Republic Aviation Corp. ..83%	General Motors Corp.75%

Of course comparisons are not the important thing, but we would hope that Sandia's participation might more adequately reflect our allegiance and respect for our nation.

Payroll deduction cards may still be obtained from your division secretary.



TOURING SANDIA LABORATORY last week, representatives of the All-Pueblo Council, Mescalero and Jicarilla Apache Tribes, and the Navajo Tribe visited the Sphere of Science where S. P. Schwartz, Sandia Corporation President, welcomed the group. Here, he discusses a satellite model with Abie Jojolla of Machine Shop Division and former governor of Isleta Pueblo, left; Jose Loretto, Lt. Gov. of Jemez Pueblo, second from left; and Gov. Abel Sando of Jemez Pueblo. They also visited Development Shops and Reactor Area V.



TONY CHAVES of Evaluation Division A, Metal Trades Council representative on the Sandia Savings Bond committee, discusses details of Savings Bond investing with members of Test and Evaluation Department. Tony was one of many Sandians who carried the Savings Bond message to group meetings of employees.

Coronado Club Noon Hour Fashion Models Named

Sandia women modeling daytime and sports apparel at the Coronado Club during forthcoming Wednesday noon hours are:

June 9—Peggy Wheeler of Solid State and Thin Film Devices Division.

June 16—Barbara Mitchell of Technical Information Distribution Section.

Women Bridge Players Soundly Trounce the Men At Coronado Club Tourney

"The Battle of the Sexes," a new type of tournament for the Coronado Bridge Club, attracted 37 pairs on May 17. Only three pairs of men placed in the top 10.

Two Sandia wives, Gloria Kramm and Alberta Finch, won first place honors, followed closely by George Arnot, Electronic Development Division, and Tom Laney, Test Data Division. In third place were Alma Mischke and Evelyn Hughey, both of Cost & Accounting Department.

On June 7, the Club's individual championship bridge tournament will get underway at 7 p. m. "This is one of our five annual championship play-offs," said Bill Mottern of Area I Laboratory, bridge club president. Since this particular event calls for individual players to move from table to table, the exact number of participants must be known in advance.

The tournament is restricted to Club members, and those wishing to enter should register with the Club office (264-4561) by noon on June. 7.

Practice Underway for Coronado Swimming Team

Now is the time for prospective members of the Coronado Club swimming team to sign up with Coach Jim Rhudy.

Exercise sessions are held Monday through Friday from 5:30-6 p.m., followed by swimming practice from 6-7:30 p.m.

The team expects to participate in a full schedule of meets in New Mexico and El Paso. The first competition will be on June 5 in Santa Fe.

Indian Officials Tour Sandia Lab, Receive Briefing on Corp. Activities

Twenty-six officials of the All-Pueblo Council, Mescalero and Jicarilla Apache Tribes, and the Navajo Tribe visited Sandia Laboratory May 28.

Purpose of the special program was to brief the Indian officials on the nature of Sandia's work and employment opportunities and practices at the laboratory.

The group visited exhibits in Sandia's Sphere of Science, attended a briefing session by Mr. Schwartz, viewed "The Sandia Story," and toured reactor facilities and development shops in the morning.

Following a luncheon with Mr. Schwartz

and Sandia officials at the Coronado Club, the group continued the tour of facilities. They returned to the Sphere of Science in midafternoon for a briefing on Sandia's employment, personnel and community relations activities.

Golden Nugget Night Set for June 12

Golden Nugget Night, when the Coronado Club is transformed into a bit of the Old West, highlights the Club's program for the coming two weeks.

The special activity is slated for June 12 from 9 p.m. to 1 a.m., and will feature Western music. Western attire is suggested for members and their guests. The nominal cost for the big evening is \$1 members, \$2 guests.

Tonight's Social Hour will be followed by a Mexican buffet (\$1.25 adults, \$1 children), and George Davis' combo will play for dancing. On June 11, the popular seafood buffet will be served (same prices as above) and Don Lesman's combo will provide the music.

Club Auctions Game Equipment

The Coronado Club has announced that sealed bids will be accepted from Club members until midnight June 9 for the purchase of one snooker and two pool tables (including balls and cues), and a bowling ball polisher.

The bids will be opened June 10 with items sold to the highest bidder.

Bowling balls, shoes, furniture from the basement rooms, etc., will be auctioned off to Club members at a later date. For further information, call the Club Office, 264-4561.

HAWAIIAN DECORATIONS for the Coronado Club's luau June 26 receive smiles of approval from Directors' secretaries Barbara Rush (left) and Ann Morrow, who were in Honolulu last fall.



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LAB NEWS

JUNE 4, 1965

SANDIA CORPORATION

LAB NEWS



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SNOW AND WIND plagued the marking of the JTF-2 flight path at Tonopah Test Range in recent months. Still, contractor crews of Reynolds Electrical and Engineering Company positioned 6000 brightly-painted barrels over 150 miles of Nevada desert and mountains. Much of the work was aided by use of Army CH 3C helicopters.

'The Desert Drumrunners' Mark JTF-2 Flight Path in Record Time

Mark 150 miles of flight path across Nevada desert and mountains. That was the assignment and time was short. Aircraft were scheduled to start flying low level penetration tests for Joint Task Force Two in mid-April.

D. G. Beatson, then of Field Test Engineering and Construction Division, H. L. Cary, and R. L. "Mike" Levesque, Jr., of Optical Measurements Division at Tonopah Test Range, were given the job in late February. Six weeks later, using 6000 50-gal. barrels and 3000 gals. of paint, the job was

finished; the course was marked; the "desert drumrunners" had come and gone.

From the air, the course is easily visible. Flame red barrels are positioned every 1000 feet along the course. Every 10,000 feet, an additional pylon is positioned at each side of the flight path. Over rough terrain (and there is plenty of it), both red and white drums mark the course.

The course is in three 50-mile "legs" forming a giant "S" pattern. At each end of each leg, sheets of plywood (painted, staked, and sandbagged to the ground) are used to form a huge number which designates that particular leg of the course. In addition, a circle of 50 barrels and a parallel double row of 75 barrels mark these "gates" of the flight path.

Barrels were chosen as markers, Mike reports, because they are comparatively light, transportable, and economical. The 6000 barrels, procured from government surplus, had to be cleaned, sealed, painted and positioned. The pylons were made by welding together six barrels—three for a base, two in the middle, and one on top.

The flight path had been surveyed by a Sandia contractor working with D. G. Beatson, now of Test Operations and Facilities Division. Stakes and flags marked the course. JTF-2 requirements called for a course over flat terrain, moderately rough terrain, and rough terrain. Positioning the drums over the flat terrain was easy—a pickup hauled the drums along the course, and a crew of men filled them with sand to hold them in place.

The rough terrain required a more novel solution—helicopters.

The military provided a squadron of big CH 3C helicopters which could carry 50 barrels and six people. The barrels were trucked as far into the mountains as the vehicle could go and various staging areas were established. The helicopters flew to these areas to be loaded. Flying the course at slow speed and low levels, crewmen dropped barrels out of the helicopter at flag-marked intervals along the course.

Other smaller helicopters, provided by a civilian contractor, carried crews to the sites to fill the barrels with sand and place them in position. As many as 10 helicopters and 60 men were working on the project at one time.

"To begin with," Mike says, "weather was terrible. Wind and snow plagued us every day. At one time in April, we had 11 consecutive days of snow."

Still the men made the deadline. Mike practically lived at the Range, heading the ordering, scheduling, and operations activities.

"Real credit for getting the job done," Mike says, "goes to REECO (Reynolds Electrical and Engineering Company, support services contractor at Tonopah Test Range), particularly to J. L. Robbins, REECO construction supervisor."



AIR FORCE A1E attack aircraft flies the JTF-2 marked course across the Tonopah Test Range. Pilots are instructed to fly as low as safety permits.

Continued from Page One . . . JTF-2 Flight Tests

the distance of the aircraft from the ground. A camera in the pod takes photos of the terrain at the rate of one frame per second.

The instruments provide a complete flight profile of the test aircraft to compare against the known-terrain profile.

Data from each flight is recorded by the C-130 equipment. The data tapes return with the C-130 aircraft to Nellis AFB. The tapes are taken directly to Las Vegas for a format conversion by 160A computers which are in two Sandia trailers near the EG&G computer facility at McCarran Field. The conversion produces two sets of tapes. One is processed immediately by a 1604 computer at the EG&G facility, and the second is flown to Sandia Laboratory for final reduction by the 3600 computer.

The early readout by the 1604 computer at Las Vegas provides a quick check of key data quantities, enabling immediate corrective action should instrumentation or operational difficulties be revealed.

Statistical Research Division under G. P. Steck performs analysis of the data. During the 13 days of JTF-2 flights last month, an average of 70 instrumentation tapes per day were recorded.

Providing for the gathering of this data was no easy task. Men of Test Operations and Facilities Division under J. J. Miller and contractor personnel of EG&G were up before dawn at Fallon AFB and Nellis AFB mounting and checking out the pods and readying the C-130 equipment. The test aircraft left Fallon around 5 a.m. and started their runs over the marked course about daybreak. A crew of Sandians flew from Fallon to Nye County Airport near Tonopah where some of the JTF-2 planes would refuel after their runs. During refueling, the Sandians checked the pods, changed the tail section of the pods which contained the power supplies, reloaded the cameras, and radioed operations information to the JTF-2 flight control center.

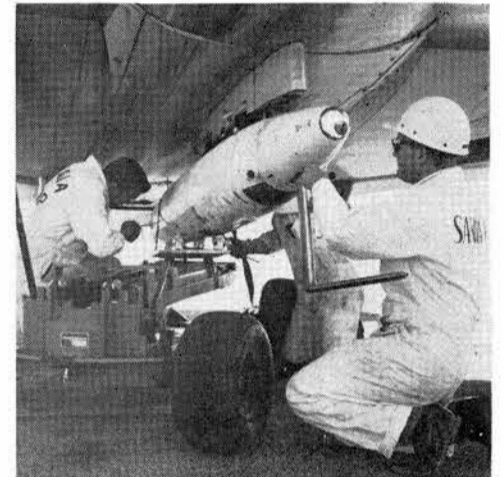
Sandia has 15 instrumentation pods. Crews working at Fallon NAAS loaded, unloaded, and reloaded the pods on the planes making the test flights. The record for this operation stands at two minutes and 10 seconds.

Meanwhile, back at Tonopah Test Range, Sandians were providing a number of support activities including communications, calibration, and operations assistance. Earlier, Range personnel had supervised marking the flight path—three 50-mile "legs" in a giant "S" pattern. (See accompanying LAB NEWS article.)

Purpose of the current JTF-2 flight tests is to acquire basic data which will establish a relationship between aircraft speed and terrain clearance. Operational aircraft

and crews from the Air Force, Army, Navy, and Marine Corps are participating in the testing.

Ultimately, JTF-2 flights will provide statistically valid operational data on the low-level penetration capabilities of tactical and strategic aircraft and ground-to-air defense systems.

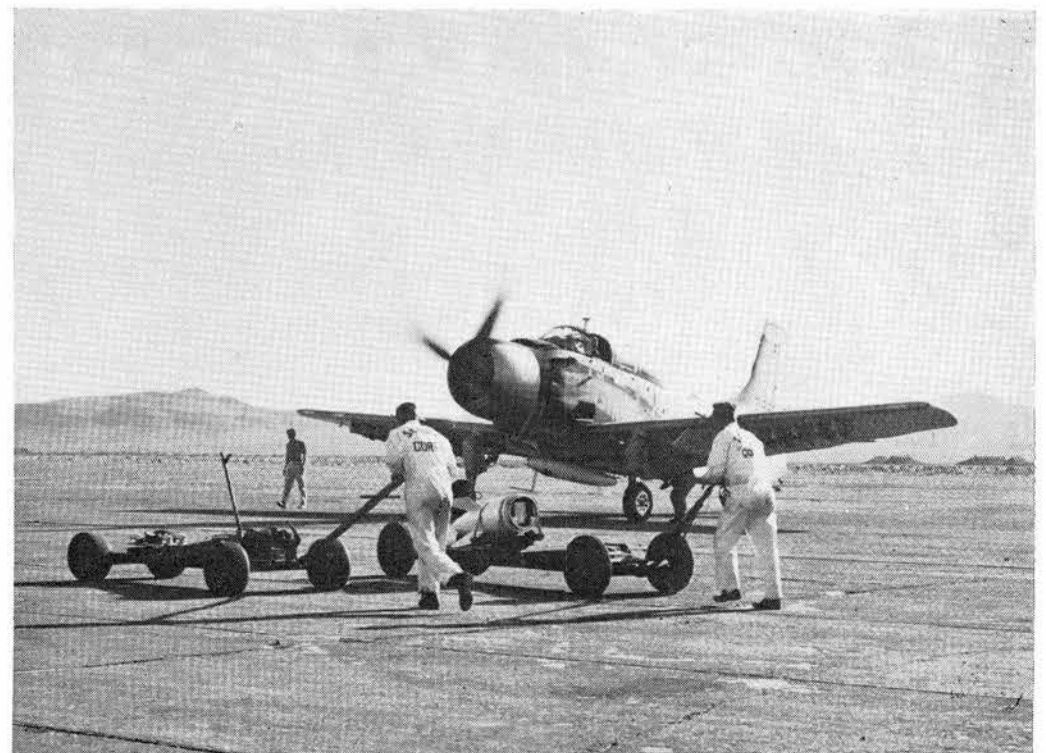


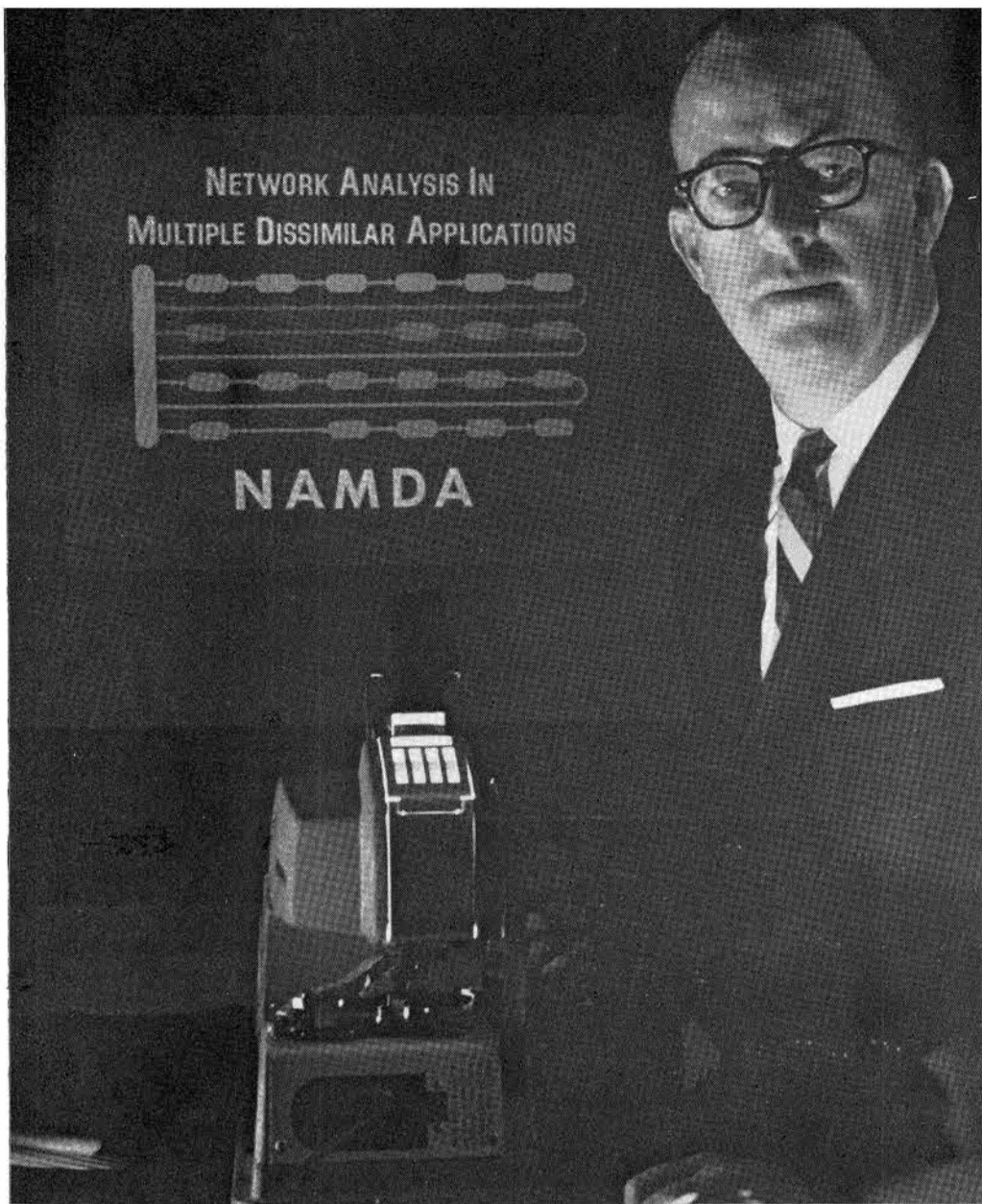
INSTRUMENTATION POD, designed by Instrumentation Systems Division, underneath the JTF-2 aircraft transmits signal which fixes the plane's position, speed, and altitude during low level runs over the 150-mile marked course at Tonopah Test Range.



UNDERNEATH A1E, Sandians switch power supply and load new film in the instrumentation pod. Fifteen pods are available for the JTF-2 flights.

LANDING at Tonopah airport, this A1E will refuel for another run over the JTF-2 course. Richard J. Schaefer and Mel N. Pliner wheel a new power supply into position to replace the one in the instrumentation pod carried under the aircraft.





PERT-TYPE CONTROL SYSTEM, effective in estimating completion times for design and fabrication of product testers, has been described in several illustrated talks by G. L. Morrisroe of Facilities and Supplier Evaluation Engineering Division.

Network Analysis of Product Testers Helps Schedule Diversified Hardware

"Dear Bill," the report began. "According to the PERT report with a date of 30 Apr. 65, some product testers are falling behind schedule." Detailed information on a wide variety of hardware followed. The report ended courteously, "Yours truly, IBM 7090."

The recipient of this semi-monthly report is William E. Caldes, manager of Component Test Equipment Development Department. Data on development of product testers is provided by Programming Department I.

This report is part of a new computerized control procedure called Network Analysis in Multiple and Dissimilar Applications (NAMDA) and was developed by Facilities and Supplier Evaluation Engineering Division, supervised by G. L. Morrisroe. A report on NAMDA was presented by Mr. Morrisroe at the annual convention of the American Society of Tool and Manufacturing Engineers, held this spring in Cleveland, Ohio.

Nuclear weapon sub-assemblies undergo testing during manufacture, after manufacture, after assembly, and during stockpile life. The design of product testers (PT's) begins almost as soon as the design of a component is started, and development continues practically simultaneously. When a change is made in the component, the design of the tester may also have to be altered.

The "Dear Bill" letter is a summary of jobs that are behind schedule. Letters are also sent to persons responsible for drafting, fabrication, and equipment qualification notifying them of possible failure of specific PT's to meet expected completion times.

Programming by conventional methods is difficult because of the variety of dissimilar products on a one-of-a-kind or short-run basis (only a few testers of each design are required). As many as 200 testers are frequently in process at one time: about 150 new designs and 50 changed designs. Priorities are important yet difficult to maintain due to frequent changes.

"Our problem," said Mr. Morrisroe, "is to schedule the testers in a consolidated report so that each responsible organization knows the status of each PT."

The first PT status reports, programmed in tabulated form, appeared in January 1962. Previously the reports were typed but were so complex they required a month to prepare—and that was only after lengthy meetings with concerned functional groups to up-date the master report.

The following year, five standard steps for the development of these PT's were established to make NAMDA compatible with

PERT (Program Evaluation and Review Technique), which was already in use at Sandia. After initial assignment, the standardized activities in tester development are design, drafting, fabrication, design audit (engineering review of the prototype to assure compliance with design intent); and equipment qualification (a check-out of the tester by the user's representative and others to functionally verify the calibration and operating procedures).

As in PERT, each step carries an estimated completion time expressed in terms of "optimistic," "most likely," and "pessimistic." Using these estimates in a formula, the computer arrives at an expected completion date. Each tester is treated as a separate network and the resulting reports indicate slack times and work loads at each stage of development.

To make the system work, reliable input of information is necessary. An hour-long meeting is held once a week to discuss new items or trouble spots. Information comes from three design groups, two drafting groups, two fabrication groups, an equipment qualification group, and the ordering group which reports on subcontracted jobs.

Printouts from the IBM 7090 computer are tailored strictly to the needs of the receiving organization.

"As more realistic estimates are received," Mr. Morrisroe noted, "more accurate delivery dates are possible. The jobs take just as long to do, but because of the general awareness of the total workload at all stations, work can be subcontracted when it becomes evident that the backlog is too great."

To date the program has resulted in a more orderly flow of product testers to the user, PT quality is improved, and the design engineer has a greater opportunity to prepare a better and more sophisticated design.

Welcome Newcomers

May 14 - 28

Albuquerque	
Charlotte A. Knapp	3126
Wanda M. Maes	3126
* Kathryn D. Walter	3126
* Fredericka L. Weber	3126
Arizona	
* William B. Bickford, Tucson	5251
California	
Lawrence D. Posey, Berkeley	5222
Michigan	
* John W. Heyt, Ann Arbor	1422
New Mexico	
* Murphy J. Landry, Las Cruces	9232
Oklahoma	
* Robert H. Tinnen, Stillwater	1432
* Rehired	
* Summer employee	

Supervisory Appointments



ROMEO L. LEVESQUE, JR., to supervisor of Optical Measurements Division, Tonopah Range Operations Department, effective June 1.

"Mike" has been at the Tonopah Test Range since January 1963, transferring there from the Nevada Test Site where he spent a year with the Nuclear Test Department.

Mike has been with Sandia for seven years, working at first with Engineering and Meteorology Section. Previously, he was a forecaster with the U.S. Weather Bureau in Albuquerque.

He attended the University of New Mexico for two years and graduated from Pennsylvania State University with a BS degree in meteorology. He is a member of Tau Beta Pi, honorary society, the American Meteorology Society, and the Society of Photographic Instrumentation Engineers.



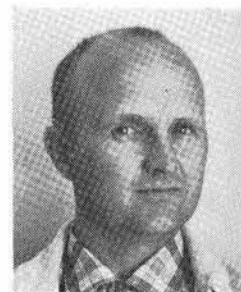
ROBERT A. ERICKSON to supervisor of Physical Standards Division, Measurement Standards Development Department, effective May 16.

"Eric" has worked in electromechanical component development since he came to Sandia in January 1955.

Previously, he was with Atlantic Refining Company's production research labs in Dallas, Tex., for three and a half years. He also worked as a physicist for Naval Ordnance Test Station, China Lake, Calif.

Eric received both his BS degree in engineering physics and his MS degree in physics from the University of Oklahoma.

He is a member of Phi Eta Sigma, Sigma Pi Sigma and Sigma Xi, honorary societies.



RUSH D. ROBNETT, JR., to supervisor of Electronic Measurements Division, Tonopah Range Operations Department, effective June 1.

Rush has been assigned to Tonopah Test Range for the past two years performing activities in operations and electronics. He has been with Sandia for 12 years, primarily in Field Testing and Systems Development.

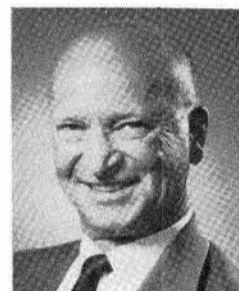
Before joining Sandia, Rush worked almost two years for General Electric at Pittsfield, Mass., and Lockland, Ohio, as a test engineer. He also worked for a year in Lubbock, Tex., as a junior construction engineer.

Rush earned his BS degree in electrical engineering from Texas Technological College, where he was a member of Phi Eta Sigma, Kappa Mu Epsilon, Alpha Chi, and Tau Beta Pi, honorary societies. He also belongs to the American Institute of Electrical and Electronics Engineers.

He served a year in the Navy and a year on active duty as an Army reservist.

Service Awards

20 Years



Lowell W. Stouder
4251
June 9, 1945

15 Years



Duane J. Hillard
4122
June 14, 1950

Confucius Say . . .

Boy Who Fly Rocket Not Get Off Ground In Grammar Class

Phyllis Swartz, whose job in the Public Information Division involves the handling of inquiry letters, gets a kick out of dealing with the public—especially when they're fourth graders.

The case in point concerns a youngster in Page, Ariz., who was so intrigued with things that fly that he built a rocket of his own.

Then, to help satisfy his thirst for knowledge about rockets, he wrote to Sandia Laboratory for more information. Here's what the young fellow had to say:

"I'm in forth grade me and my freind are studying rockets and How they work we made our own rocket and flew it. And if you could please send me some informatoin on some rockets, space capsules.

"We used alchole and air it went out of sight but thene we seen the parachute. so please send some information on rockets, Thank you."

Commented Phyllis, good-naturedly, "That fourth grader's knowledge of rockets certainly outweighed his interest in English."

After deciphering the message, she complied with the lad's request. He was sent a booklet describing Sandia Corporation tests which utilized rockets, along with two photographs of the Chaff and Doorknob rockets.

Congratulations

Mr. and Mrs. Robert W. Durkee (7262), a son, William H., May 12.

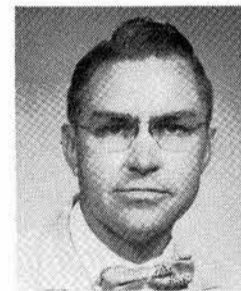
Mr. and Mrs. S. S. Baca (4614), a daughter, May 14.

Mr. and Mrs. J. A. Guzman (7325), a daughter, Laura Marie, Apr. 25.

Sympathy

To Lillie B. Padilla (4575-1) for the death of his mother in Belen, May 20.

To A. E. Giddings (2544) for the death of his daughter, Lori, May 20.



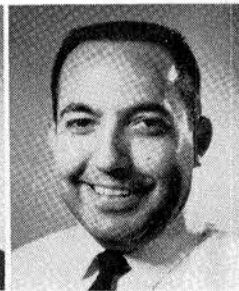
Robert S. Cox
4152
June 5, 1950



William Schmedding
8223
June 13, 1950



Dean E. Irvin
3121
June 12, 1950



Dennis S. Chavez
2523
June 13, 1950

10 Years

June 5 - 18

W. D. Ulrich, Jr. 1531, Joseph Danclovic 3131, Jack A. Barber 7323, Leslie A. Shope 1413, Walter E. Kappus 1423, Donald E. Cole 2123.
Abram C. Grose 4221, Gordon W. McClure 5121, Nemesio Martinez 4212, Frank J. Tuffs 4541, W. Daril Gutscher 7222, Roy M. Tidwell 7266, and David G. Sample 7322.

LIVERMORE NEWS



DISCUSSION OF THE FUTURE—A lot of thought goes into planning the growth of the ranch. Cyril and Barbara have some very specific ideas about the future of the ranch and how it relates to the future of the Livermore Valley.



IT'S A CINCH, ONCE YOU KNOW HOW! Cyril takes up the cinch on Barbara's palomino quarterhorse before she brings in some of the other Moy stock. Barbara took quickly to riding and now gives most of the horses a regular workout.

Cyril and Barbara Moy Help Keep Western Living Tradition Active

Cyril Moy, Administrative Services Department, and his wife, Barbara, enjoy a way of life that truly characterizes Western living, but which is actually experienced by only a very small segment of the Livermore population. They have one of the few real ranches in the Livermore Valley, complete with cattle and horses.

The Moy ranch located on Tesla Road, about six miles from Livermore, has been a landmark in this area for many years. It was purchased in 1939 by Cyril's parents, Cy and Katie Moy. At that time the ranch consisted of a small home already some 40 years old, a barn, a chicken house, and some make-shift corrals, all located on 100 acres of rolling hills. There were few conveniences of note. Tesla Road at that point was mostly gravel, and there was only one neighbor in the immediate area.

"I remember that some of us rode to and from the one-room Townsend School on horseback," Cyril recalled. "The school, which had a barn for the horses, was about two miles from our ranch."

Today the landscape looks quite different. A modern, ranch-style home has replaced the old house, and there are many conveniences, including a swimming pool. The ranch has always been used to graze a few steers and horses, but this activity has increased with the addition of new cor-

als, stables, and buildings. There soon will be boarding facilities for about 25 horses, and Cyril plans to keep a small herd of cattle for both roping practice and for marketing.

In spite of some almost overwhelming one-man work projects, there is still time for an active social life. Summer weekends are a combination of work, swimming, horseback riding, and entertaining, plus an occasional visit to a neighboring ranch. It is not uncommon to find the swimming pool splashing with activity, while some of Livermore's finest cowboys work out in the nearby roping arena.

When Cyril's father died in 1953, Cyril was temporarily unable to continue developing the ranch. However, in recent years he has made improvements that will soon make the ranch self-sustaining again. Katie Moy, a woman of amazing vitality and a most cordial hostess, is a guiding figure in the development of the ranch, and has been able to advise her son of the many pitfalls of ranching.

Cyril and Barbara were married last January, and Barbara, who joined Sandia in 1959, terminated last month. "There's so much that I'll be able to do that I hardly know where to begin," Barbara commented. "Cyril taught me how to ride, and now one of my regular chores is to ride each of the horses to keep them in trim."

It is an exciting and rewarding life for Barbara, who had not been exposed to ranching. Cyril, a rancher since his youth, believes "there is just no other way to live!"

A "HOW TO DO IT" LESSON — The first thing you learn on a ranch is how to feed the stock. Here, Barbara and Cyril make a practical point of this requirement.



Hard-Toe Safety Shoes Displayed at Livermore Laboratory

Safety shoes are currently being exhibited in a three-shelf, lighted case in the main hallway of Bldg. 911. The case will be rotated to other buildings at Livermore Laboratory on a monthly basis. The display is for the convenience of employees who wish to take advantage of this added measure of accident prevention.

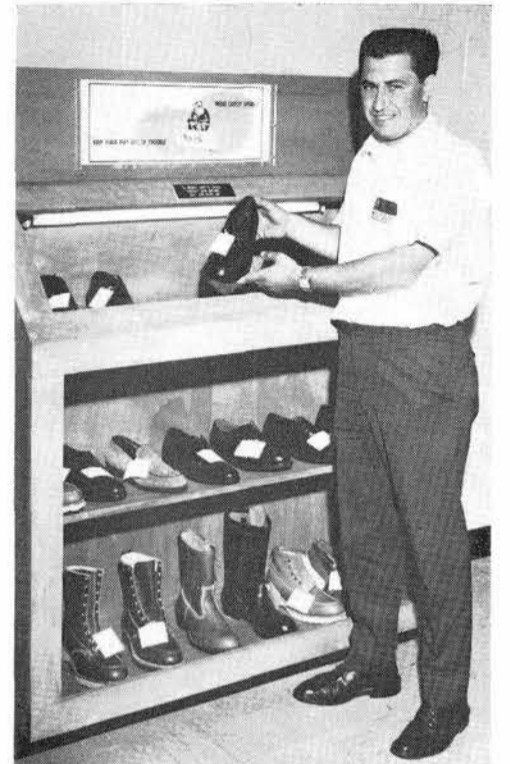
At the present time there are over 50 types of shoes for men. This wide variety includes black and brown dress oxfords, loafer types, engineer boots, and Wellington boots. Some have ripple soles.

Seven styles for women are also available, consisting of white nurses' shoes, and both oxfords and loafers in brown shades and black.

Prices range from \$6.75 to \$15 and all have strong steel toes, which add less than two ounces to the weight of each shoe. Other features are cushion arches and heel pads, as well as "no mark" soles and heels.

According to Robert D. Bryant of Ordering, Expediting and Traffic Section, who is in charge of safety shoe ordering at Livermore Laboratory, shoes may be purchased during regular work hours and payment may be either by cash or through payroll deduction.

Many Sandians have acquired safety shoes through the Company since coming on roll. One employee, David M. Pierce, an engineer in Advanced Development Division, has purchased several pairs since hiring in over four years ago. While spring cleaning his garage on May 15, a piece of lumber he was moving blocked his view and dislodged a 28-pound cinder block from a stacked pile. The block fell edge-wise three and a half feet and struck his left foot. Luckily, Dave was wearing his safety shoes and escaped serious injury. This shows the value of safety shoes at home as well as at work.



STYLES OF SAFETY SHOES available through Ordering, Expediting and Traffic Section in Building 911 are displayed by Bob Bryant. Steel toe is standard.

Welcome Newcomers

May 6 - 21

California	
John J. Tootle, Livermore	8222
Returned from Leave	
Karen C. Yung	8244
Transferred from Albuquerque	
George M. Damoulos	8234

Livermore Notes . . .

Sandians who want some help at home this summer can take advantage of the efforts of the California State Employment Service which is helping high school and college students obtain jobs through the Hire-A-Teen program. Many of the boys placed through the program are employed doing yard work, gardening, and washing cars, while the girls generally work as baby sitters and household helpers.

An employment representative will be at Livermore High School Thursdays from noon to 3:30 p. m. for the remainder of the school year, and at Granada High Monday through Friday for the same periods during the summer. The representative will take employment applications from students who want summer work, and from residents who need summer help.

The annual Blood Bank Drive at Livermore Laboratory on May 12 yielded 55 pints, according to drive coordinator Jim Henderson of Employee Benefits. Added to the 55 pints in the bank from the supplementary drive last September, this brings the total Laboratory fund to 110 pints.

The Blood Bank is operated by the non-profit Alameda-Contra Costa Medical Association and makes blood available for a nominal administrative cost to all Livermore Laboratory employees and their dependents.

Gary Beeler of Advanced Development Division won the first place trophy in the second annual Sandia Thunderbird Golf Tournament, sponsored by the Sandia Employees Golf Club. He finished with a net low score of 61.

More than \$150 in prizes was awarded in the tournament, which took place May 15 at the Hillview Golf Course, San Jose. Fifty-eight players, divided into two flights, participated. The first flight included those with a handicap of 23 or less, while the second flight was made up of those with handicaps from 24 to 36. Walt Dzugan, Administrative Services Department, was the top winner of the first flight with a net score of 62, and Gary won the second flight with his 61. A special award went to Elmer Smith, Acceptance Equipment Division, for coming closest to the pin at the No. 4 hole.

Congratulations

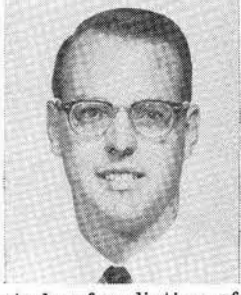
Mr. and Mrs. James Perkowski (7241), a daughter, Patricia Lynn, May 13.

Mr. and Mrs. Phil Prickett (8252), a daughter, Lynelle Dawn, May 15.



THROWING OUT THE FIRST BALL to open the 1965 Livermore Babe Ruth Baseball League season is Don Gregson (right) of Preliminary Analysis Division. Durwood Green of Material Services Division (left) umpired the exhibition game between Babe Ruth League all-stars and their coaches and managers on May 16. Carl Holmes of the Test Development Division is president of the eight-team Livermore league this season. Other Sandians who are working officially with the league include Paul Coronado, Mike Lovato, and Ray Newton, team managers; Ron League, coach, Jesse Floyd and John Rogers, umpires; and Bob Chappell and George Dawson, Babe Ruth League representatives.

R. K. Traeger Earns Doctoral Degree at University of New Mexico



Richard K. Traeger of Polymer Chemistry Division will be awarded his ScD degree in engineering during commencement exercises at the University of New Mexico today.

His doctoral dissertation was a study of radiation effects on polymers.

Mr. Traeger received his BS degree in chemical engineering from the University of Wisconsin and his MS in chemical engineering from Case Institute of Technology. He has been at Sandia almost two years.

Sandia Authors

K. J. Craswell of Statistical Research Division, "Density Estimation in a Topological Group," June issue, *ANNALS OF MATHEMATICAL STATISTICS*.

M. D. Bennett of Aerodynamic Research Division, "A Fluid-Metering Device for Measuring Dive Rate of a Vehicle Traveling in Water," March issue, *ASME JOURNAL OF BASIC ENGINEERING*.

K. J. Touryan of Re-entry Studies Division, "A Hypersonic Plasma Power Generator," April issue, *AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS JOURNAL*.

G. A. Samara of Physics and Solids Division, "Pressure Dependence of Ferroelectric Properties of Rochelle Salt," Vol. 26, 1965, pages 121-131, *JOURNAL OF PHYSICS AND CHEMISTRY OF SOLIDS*.

R. E. Cuthrell of Surface and Chemistry Adhesives Division, "Reflecting Microscope Design for Infrared Multireflectance Spectrophotometry," June issue, *APPLIED OPTICS*.

D. F. Warnke of Aerospace Nuclear Safety Division I, D. L. Hester (on educational leave-of-absence at Duke University), and D. D. Glower (former Sandian now with Ohio State University), "Changes in the Ferroelectric Properties of Lead Zirconate Titanate Due to Radiation-Induced Damage Centers," June issue, *JOURNAL OF THE AMERICAN CERAMIC SOCIETY*.

D. P. Brautigam of Maintenance Control Division, "Use of Project Planning Network at the First Line Foreman Level," June issue, *TECHNIQUES OF PLANT ENGINEERING AND MAINTENANCE*.

P. E. Waltman of Applied Mathematics Division, M. S. Tierney of Statistical Research Division, and G. M. Wing (former Sandian now with the University of Colorado), "On Some Problems in the Optimal Design of Shields and Reflectors in Particle and Wave Physics," January issue, *SIAM REVIEW*.

W. V. McGuire and C. S. Wolowicz, both of Drafting Division, Livermore Laboratory, "Ground Rules for Numerical Control Dimensioning and Tolerancing," May issue, *GRAPHIC SCIENCE*.

J. W. Hughes, Senior Buyer, Contract and Purchase Service, "The Sandia Automated Purchasing System," May issue, *THE SOUTHWESTERN PURCHASER*.

Play Chess By Mail

Expert or novice. Active or retired Sandia employee. It makes no difference, because all are invited to take part in the 19th annual Bell System Postal Chess Tournament.

Entry blanks may be obtained by writing to C. F. Anderson, Rm. 131, 222 Broadway, New York, N. Y. 10038. They must be submitted no later than July 15.

In postal chess, players can relax and spend an hour—or a minute—on each move. There is no pressure, no nights away from home, no need to sit and wait for an opponent to make his move.

All it takes to win are postcards. The tourney works this way:

Players from different Bell System companies are grouped into sections of relatively the same skill. Each player in a section simultaneously competes against all the other members of his section.

A Victory Certificate is awarded in each section, and a point system is used so players may progress to a higher rated section.

The top category is known as the champion section, and the winner of this play-off becomes Bell System champion. A trophy will be awarded.

Employees Receive Bachelor's, Master's Degrees at University of New Mexico and St. Joseph's College

Master's Degrees . . .

A number of Sandia Laboratory employees will receive Bachelor's and Master's degrees during commencement exercises at the University of New Mexico today. Several others were awarded their Bachelor's degrees at the College of St. Joseph on May 31.

The majority of the student-employees received assistance from Sandia's Educational Aids Program.

Those receiving Master's degrees include: Dale P. Brautigam of Maintenance Control Section, Master's degree in business administration. He has a Bachelor's degree in liberal arts from Albion College and a BS degree in industrial engineering from Washington University.

Ralph L. Brown of Component Development Division, Master's degree in electrical engineering. His Bachelor's degree in EE was from Michigan State University.

George W. Buddrius of Electromechanical and Explosive Components Division, MA degree in mathematics. His Bachelor's in mathematics and physics was from Whitman College.

Kenneth E. Builta of Systems Division I, Master's degree in electrical engineering. His Bachelor's degree in EE was from the University of Texas.

Kay Collins of Technical Libraries Division, MA degree in history. Her Bachelor's degree in history was also from the University of New Mexico.

Johnny L. Duncan of Electronic Components Division, Master's degree in electrical engineering. His Bachelor's degree in EE was from Oklahoma State University.

Robert D. Fellerhoff of Magneto Physics Research Division, MS degree in mechanical engineering. His Bachelor's degree in EE was from Montana State College.

John T. Finger of Facility Engineering Division, MS degree in mechanical engineering. His Bachelor's degree in ME was from Mississippi State College.

Donald J. Hosterman of Military Manuals Division, Master's degree in speech. His Bachelor's degree in philosophy was from Niagara University.

Walter Joseph of Aerospace Nuclear Safety Division IV, Master's degree in industrial administration. He has a Bachelor's degree from Drexel Institute of Technology and a Master's degree from the University of New Mexico, both in mechanical engineering.

David Kendall of Electrical Standards Division, Master's degree in electrical engineering. His Bachelor's degree in EE was from the State University of Iowa.

Thomas H. Martin of Advanced Development Division, Master's degree in mechanical engineering.

Third Award of Excellence Won by Local Chapter Of Industrial Engineers

At the recent national conference of the American Institute of Industrial Engineers held in Chicago, the New Mexico Area Chapter received its third consecutive Chapter Award of Excellence. The award is made on the basis of Chapter activities, membership, and accomplishment of the aims of the Society.

John C. Borg of Product Data and Quality Reports Division heads the organization as president for the 1965-66 season. Also elected recently were W. F. Stinnett of Value Engineering, Cost Reduction, and Supplier Evaluation Division, vice president; and Lee Toliver, supervisor of Operations Planning and Quality Control Division, secretary.

Jerry D. Ramsey of Value Engineering, Cost Reduction, and Supplier Evaluation Division, as immediate past president, will serve on the Board of Directors for the coming year.

Universities Set Registration Date

Registration for summer school students will be June 9 at both the University of New Mexico and the College of St. Joseph, according to Sandia's University Relations Division. Classes at the schools are scheduled to begin June 10.

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LAB NEWS

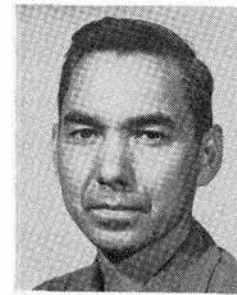
JUNE 4, 1965



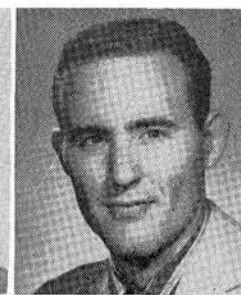
Dale Brautigam



Ralph L. Brown



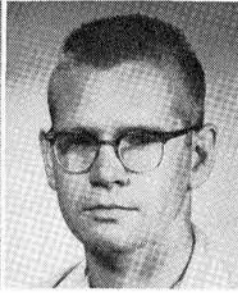
George Buddrius



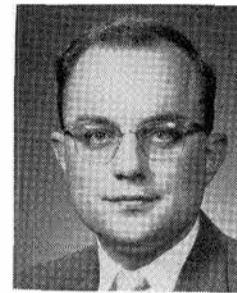
Kenneth E. Builta



Kay Collins



Johnny L. Duncan



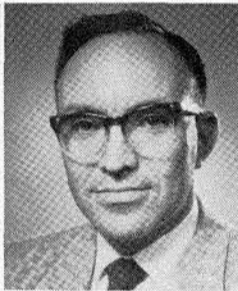
Robert Fellerhoff



John T. Finger



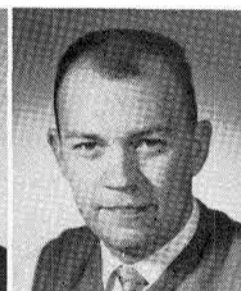
Donald Hosterman



Walter Joseph



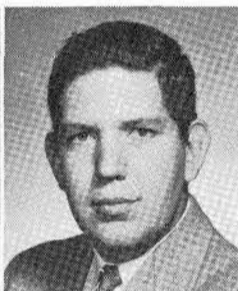
David Kendall



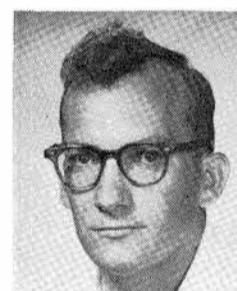
Thomas H. Martin



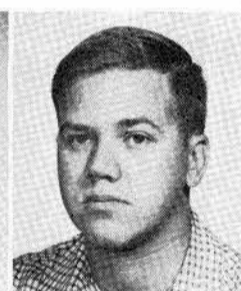
William J. Patterson



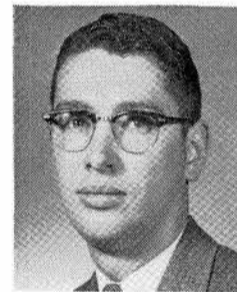
Horace M. Poteet



George Schnetzer



David Skogmo



Harold R. Spahr



Sherrill Woodall

William J. Patterson of Carrier Development Division, Master's degree in mechanical engineering. His Bachelor's degree in ME was from Auburn University.

Horace M. Poteet of Advanced Systems Research Department II, Master's degree in electrical engineering. He also has both BS and MS degrees in physics from North Texas State University.

George Schnetzer of Electronic Components Division, Master's degree in electrical engineering. His Bachelor's degree in EE was from the University of Missouri.

David Skogmo of Solid State and Thin Film Devices Division, Master's degree in electrical engineering. His Bachelor's degree in EE was from the University of Kentucky.

Harold R. Spahr of Aerospace Nuclear Safety Division II, Master's degree in mechanical engineering. His BS degree in aeronautical engineering was from Wichita State University.

Sherrill O. Woodall of Information Processing Division, Master's degree in business administration. His Bachelor's degree in business administration was also from the University of New Mexico.

Bachelor's degrees will be conferred upon Joe A. Chavez of Evaluation Division A, business administration; William D. Harwood of Electronic Components Division, electrical engineering; Dennis B. Hayes of Underground Physics Division, physics; Helen B. Hutton of Technical Art Division, fine arts; Lawrence H. Ivy of Test Data Division, mathematics; Eugene J. Meyer of Experimental Aerodynamics Division, mathematics; Andrew H. Stark of Advanced Development Division, chemistry.

At the College of St. Joseph, Bachelor's degrees were awarded to Bill E. Hickerson of Drawing Reproduction and Distribution Section, administration; N. J. Pezzillo of Microfilming Section, sociology; Steve Trujillo, Jr., of Administrative Support Division, business administration; and Robert Velasquez of Polymer Chemistry Division, business administration.

June 14 Is Occasion To Fly American Flag; Scouts, Legion Help

Flag Day on June 14 will mark the 188th anniversary of adoption of the U. S. flag. Displaying the flag during national observances reflects our regard for both flag and country.

Two local groups are helping to promote this idea.

The Manzano, Sandia, and Rio Grande Districts of the Boy Scouts of America have pamphlets which point to the flag as a symbol of our American heritage and which list the national holidays upon which the flag should be flown. These free pamphlets will be distributed to homes throughout Albuquerque by Boy Scouts on June 12.

Throughout the month, members of Carlisle-Bennet American Legion Post 13 are selling American flags of suitable size for home use. A number of Sandians who are members of this group are assisting in the drive. Flags may be ordered by calling the post, tel. 243-1901.

Patriotic holidays include Lincoln's birthday, Feb. 12; Washington's birthday, Feb. 22; Memorial Day, May 30; Flag Day, June 14; Independence Day, July 4; Constitution Day, Sept. 17; Columbus Day, Oct. 12; and Veterans Day, Nov. 11.

There Are Roses, Roses, Roses In Max Newsom's Backyard

May is a busy time for any gardener, but for local rose fanciers it also means preparations for showing their flowers in competition. Both the Council of Albuquerque Garden Clubs and the Albuquerque Rose Society sponsor flower shows this month.

Max M. Newsom, division supervisor in Advanced Systems Development, has been highly successful in recent years in winning ribbons, mainly for his roses. In fact, during four years of competition, his flowers have received some 600 awards. This seems rather unbelievable to the non-gardener, but there are at least nine flower shows in Albuquerque each year and the horticulture categories for roses alone may be broken down into as many as 150 individual classes.

"My next-door neighbor got me started entering the shows. The first time I exhibited I won three ribbons — that was enough to spur me on," Max said. He also joined the Albuquerque Rose Society about the same time and attributes much of his success to information and expert help received from members of that group.

At the present time, he has 155 rose bushes, mainly hybrid teas, floribundas, and grandifloras. There are a few hybrid perpetuals and miniature roses. He explained, "I buy many patented roses when they are first introduced, and also grow trial roses for a large grower while they are still being tested for color, growing characteristics, resistance to disease, and general strength."

Max prefers to plant his roses during their dormant period (bare root) and uses large plastic bags to protect the bushes until leaf growth starts. About half of his roses are purchased from local nurseries, and the balance from out-of-state specialty rose growers.

With established roses, he waits until April (later than most local gardeners) to prune the canes rather severely in the hope the blooms will be at their prime for the annual spring rose show.

Growing season care includes twice weekly deep irrigation of the beds, spraying for aphids as needed, feeding the bushes often, and mulching with grass clippings. "Roses," Max says, "probably grow better here than in many parts of the



MAX NEWSOM holds a handful of blue ribbons won at last fall's State Fair, plus a special rosette award.

country, mainly because there is no problem with black spot."

Few people merely visiting a flower show have any idea of the advance work that has gone into making the event a success. Last year Max entered about 250 roses in the various shows. This meant cutting the flowers as much as a week in advance, storing them in a spare "wine and roses" refrigerator, and being able to correctly identify each bloom by its patented name.

Max was in charge of horticulture placement for the 16th annual Rose Show, held May 22-23 at the Floriculture Building, State Fair Grounds, and was grand sweepstakes runner-up. In addition to sponsoring this spring event, members of the Albuquerque Rose Society help plant and maintain the Prospect Park Public Rose Garden (west of the Prospect Park Library) where more than 600 modern and old fashioned roses may be viewed. "Membership in the society is open to anyone who has an interest in roses," Max notes.

Henderson Construction Co. Bids \$16,812 on Area 1 Job

Apparent low bidder for modifications and repairs to Bldg. 803 at Sandia Laboratory is the Jack B. Henderson Construction Company of Albuquerque.

The Henderson bid of \$16,812 was the lowest of four opened last month in the Albuquerque Operations Office of the Atomic Energy Commission.

The project includes installation of new doorways and movable partitions; repair and painting of ceilings, floors, and walls; and modifications to utility systems. Bldg. 803 is a laboratory building used by the Nuclear Burst Physics and Mathematical Research organization.

Completion of the job is expected by Aug. 9. R. F. Armstrong, Building and Facilities Design Division II, is project engineer.

AIAA Elects Sandians

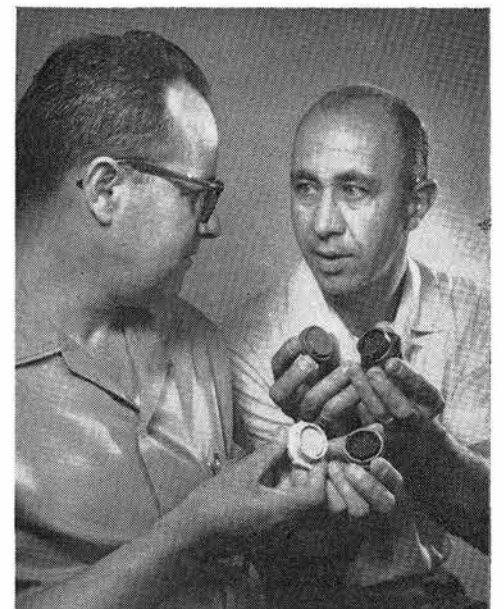
Three Sandians have been elected as officers of the Albuquerque Chapter of the American Institute of Aeronautics and Astronautics for the year 1965-66. They are A. C. Bustamante of Aerodynamic Research Division, chairman; K. J. Touryan of Re-entry Studies Division, vice chairman (membership); G. G. Wilson of Rocket and Recovery Systems Division, secretary-treasurer.

ECP Members Give \$96,979 to Agencies

Members of the Employees' Contribution Plan have given a total of \$96,979 to the United Community Fund and seven other agencies since last December. As the April checks — totaling \$17,719 — were mailed recently, the following distribution had been made:

	April	Year-to-Date
United Community Fund	\$14,529	\$79,019
American Cancer Society	850	4,654
Bernalillo County Heart Association	744	4,058
National Arthritis and Rheumatism Foundation	265	1,452
N. Mex. Society for Crippled Children & Adults	531	2,906
National Multiple Sclerosis Society	230	1,293
Cerebral Palsy Association of Bernalillo County	141	773
Muscular Dystrophy Association of America	248	1,344
Reserve Fund	177	960
	\$17,719	\$96,979*

*This total includes the cash contributions and specific donations made at the beginning of this year's ECP drive. During 1964, Sandia Laboratory employees contributed \$182,428 to ECP agencies.



DEVICES to protect electrical connector pins are displayed by inventors Ralph O. Work (left) and Francis X. Daut, both of Electronic Components Division.

Connector Pin Protectors Invented by Sandians Granted U.S. Patent

A patent for "Protection of Electrical Connector Pins" has been assigned to the Atomic Energy Commission in the names of Francis X. Daut and Ralph O. Work, both of Electronic Components Division.

The principal objective of the device is to provide protection and means to maintain proper alignment of connector contact pins from the origin of the connector (in manufacture), through subsequent handling, storage, and processing to ultimate use of the connector.

Improperly handled connectors have been a growing concern in the electronics industry. Such a condition may cause the failure or decrease the reliability of an entire electronics system.

The patent is No. 3,182,280.

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LAB NEWS

JUNE 4, 1965

SHOPPING CENTER

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

- CUSTOM BUILT, 1/2 acre, 3-bdr., 2 1/2 baths, 2 fireplaces, landscaped, North Valley, many extras. Eiffert, 898-0324.
- DOG HOUSE, new, tempered masonite over 2"x2" fir frame, 2'x3'x3', \$10. Greulich, 299-8102 after 5.
- OLDS AMBASSADOR trombone, B-Flat, \$60. Gorney, 299-8901.
- AUTOMATIC DISHWASHER; four white iron patio chairs w/matching table and umbrella; two bar stools. Moriarty, 255-8196.
- 1700 SQ. FT., 3-bdr., 1 1/2 bath, den, dbl. garage, cash to loan \$3200, price \$20,700, 51.6 Hillview Ct. NE. Watkins, 298-3667.
- ROBERSON 3-bdr., den, sprinklers, new carpet, drapes, AC, fireplace, electric kitchen, dishwasher, dbl. garage, 4 1/2% GI loan, \$18,500. Taylor, 298-0426.
- UPRIGHT PIANO, \$100. Navritil, 299-3355.
- CRAFTSMAN 12" bandsaw w/stand and 1/2 HP motor, \$75; Sear's 21" TV, reconditioned w/new picture tube, \$50. Oliver, 299-8855.
- HOLLYWOOD BED FRAME and headboard, best offer. Frenkel, 299-3258.
- 3-BDR., custom built brick, 2000 sq. ft., paneled den, covered patio, 2-car garage, landscaped, AC, \$26,500. Adams, 299-0454.
- MOUNTAIN RETREAT in secluded Manzano area, nice cabin on one acre, terms; also residential lot in exclusive NE area. Kane, 299-4026.
- COMPACT 6-piece kitchenette set, round walnut table, leaf, slide-under chairs; hide-a-bed couch, matching tables, make offer. Lang, 265-0250 after 6.
- '58 CHEV. 1/2-ton pickup, standard box, 4-speed, \$450. Glauner, 299-0277.
- 2-BDR. HOUSE, beam ceiling, garage, walled, landscaped, Westinghouse appliances, near shopping and swimming, Princess Jeanne Park, \$10,900. Yager, 299-3659.
- FREE long haired kittens, male or female, will deliver. Lambert, 344-9012.
- CABIN SITE on Conejos River, Colo., heavily forested, restricted area, 138' river frontage, excellent fishing, \$1400, cash only. Mafit, 247-9729.

SHOPPING CENTER

- RECEIVER, Mohawk RX-1, \$150 cash. Wood, 299-7455.
- '59 FORD 2-dr. sedan, 6-cyl., \$295. Krahe, 282-3414.
- 3 WASHING MACHINES, 1 small refrigerator. Dunaway, 299-1422.
- PORTABLE air conditioner, 3-speed, 2 blowers w/directional, 3-gal. capacity, leatherette cover, cost \$60, sell \$20. Cano, 255-0211.
- REFRIGERATOR, 7 1/2 cu. ft., \$35; gas stove, \$25; sell both for \$50; 16" hand lawn mower, \$7. Causey, 299-0089.
- 3-BDR. MARBERRY, 1 1/4 bath, walled yard, attached garage, GI 4 1/2%, \$300 down, 10120 Los Arboles NE. McGraw, KAFB ext. 3367.
- PUPPIES, miniature bred Dachshunds, 6 wks. old June 2, \$25. Wistor, 298-0871.
- SELL OR RENT, 4-bdr., 1 1/4 bath, den w/tp, walled backyard, dbl. garage, sprinklers, 10820 Cordova NE. Burns, 242-2407 evenings.
- CHILD'S bed, chest-of-drawers, potty-chair, high-chair/table combination, electric car (T-Bird); vacuum sweeper; double bed; carpeting. Want aquarium. Chandler, 298-1114 after 5.
- '64 T-BIRD convert., black w/white leather interior, loaded, take over payments. Moyer, 255-2728.
- PIONEER 80-watt stereo tube amplifier w/AM/FM, retail \$270, sell \$150. Earl, 298-3954.
- DINETTE w/8 chairs, 2 Merussum end tables and 1 round coffee table, Roeder, 265-4963.
- RANGER TRANSMITTER 65 watts AM, 75 watts CW 160 meters-10 meters, Navy surplus, HRO receiver w/coils. Bouttingham, 298-3458.
- ROLLAWAY BED w/mattress, \$6; Bilt-Rite carriage, converts to car bed, \$18; Thayer chrome stroller w/canopy, \$10. Espenshade, 299-1331.
- 18' w/7' beam Commodore boat, 50 hp Evinrude, heavy duty trailer w/spare tire, convertible top, side curtains. Vander Laan, 255-3093, 299-9191.
- TWO HEAVY DUTY COTS, \$3/ea.; 1 gal. weather-proofing compound, \$2.50; Jerry can w/spout, \$3; Science fiction books. Costello, 256-9702.
- '56 BUICK 2-dr. HT, all power and factory air, new brakes and shocks. Anderson, 344-8919.
- 250 LB. FREEZER, chest type, \$75 or best offer. Uhl, 268-1855.
- GMC TRUCK and pickup maintenance manual for '60 and '61 models; 3/4-ton window air conditioner; used refrigerator. Fisher, 299-9235.
- GIRL'S BICYCLE, 24" wheels, \$20; auto air cooler, Sear's floor type, 12 volt, \$20. Mattina, 299-7060.
- ARGUS C4 camera, 35mm, \$25. Souder, 282-3121.
- '57 FORD 4-dr., T-Bird engine, PS. Workman, 298-3604.
- 6-YR. CRIB w/mattress, \$15. Boyer, 298-3893.
- DUO-DIVAN Englander, new, 2 innerspring mattresses, use as double, twins, single, \$69.50. Graff, 268-5291.
- 3-BDR., study, or 4th bdr., den, hw/floors, enclosed patio, sprinklers, landscaped; corner, brick, \$28,800. Makal, 299-9013.

SHOPPING CENTER

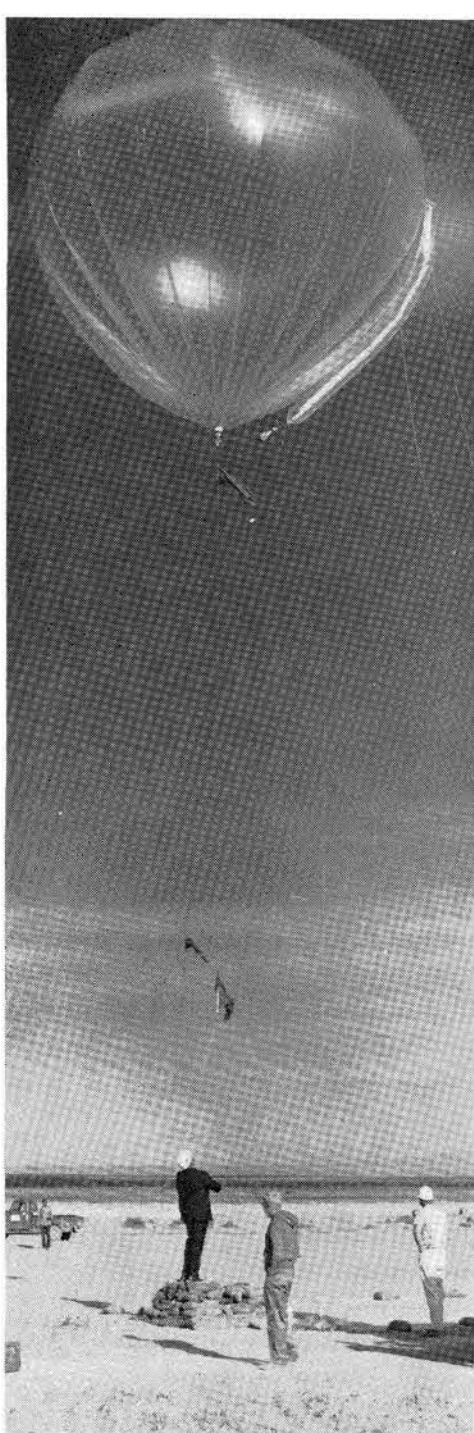
- 3-BDR., 1 1/2 bath, AC, carpet, walled, \$10,500 FHA appraisal, sell \$575, \$75/mo. NE near Madison Jr. High. Smith, 256-0375.
- FREE KITTENS, part Angora. Kelly, 255-7226.
- SCREEN DOOR, 36" std. size, wooden frame w/hardware and closer, \$6. Saavedra, 268-6945.
- ENCYCLOPEDIA WORLD BOOK ARISTOCRAT, 20-vol. cost \$190, sell \$170; '57 Dodge SW, WW, PB, PS, AT, R&H, Pwr. back window, \$475. Jenkins, 898-1507.
- DETECTO BABY SCALE, \$5 or best offer; 1/4" drill, \$2; either or both items would be traded for clothesline poles. Kotoski, 298-1732.
- 3-BDR., 1 1/4 bath, carpet, built-ins, 444 San Pablo SE. MacDowell, 268-2184.
- CHILD'S swing set, 7' high; screen door, 32x80; steel framed casement window, 52x50 w/2 hinged panes. Worden, 256-9594.
- SHEPHERD, well trained, w/shots, to good home off base w/running room. Martin, 264-2487.
- CABIN CRAFT arclan area rug w/fringe, color-tawny beige, \$60, size-8'-octagon. Balok, 299-4394.
- ELECTROLUX tank type vacuum cleaner w/attachments, \$15 Bear, 298-2744.
- 22 ACRES, 12 miles South of Belen. Apodaca, 877-4537.
- BED FRAMES, four twin-size, light oak, wagon wheel design, can be made into bunk beds. Phelps, 344-0441.
- 2 GO-CART TIRES, new, 4.10/3.50x5, \$7.50; bicycle training wheels, new, \$2; bicycle rear basket, \$2. Newman, 299-2729 after 5.
- RAY-BAN sun glasses, man's, \$5. Arming 256-9229.
- '51 PONTIAC 4-dr. sedan, \$75; Sear's Craftsman hand lawn mower w/catcher, \$5. Peterson, 299-4714.
- '56 MUSTANG motor cycle, \$100. Singleton, 299-1613.
- EVAP. COOLERS: 3000 CFM squirrel cage, window type, no pump, \$15; 2000 CFM, fan type, var. speed, no pump, \$10; electric lawn mower, rotary, \$10. Mast, 41' steel, telescope type, \$5. Merrit, 299-6630.
- FOUR HILLS, tri-level, 3-bdr. upstairs, 1 bdr., den downstairs, storage room, over-sized double garage, drapes, landscaped, 2200 sq. ft. Law, 298-0287.
- 15' BOAT Merc. 500 motor, 15" wheel trailer; complete camping equipment, come see, talk price. Bertholomey, 7315 Trumbull SE, 255-5238.
- HIGGINS camping trailer, new tires, sleeps 4, \$235. Schmierer, 299-2352.
- NYLON RUG and rubber pad, 12'x15', lavender color, \$45. Duvall, 299-8744.
- '65 DODGE Coronet 440, big engine, 4-speed, less than 10,000 miles, \$2700. Stoker, 268-2650.
- MATTRESS, Franciscan Jenny Lind innerspring, double bed, \$25. Baker, 299-3403.
- '56 MERCURY Monterey, \$225. Gilbert, 898-3061.

SHOPPING CENTER

- CHILDREN'S swing set, 3 swings, glider and slide. Payne, 268-3184.
- CAMPING OUTFIT: 10'x12' umbrella tent, stove, toilet, metal folding table, \$50; '54 Cadillac, needs rings, make offer. Hueter, 242-1620.
- '53 CHEVROLET 2-dr.; trailer hitch for 1962-63 F-85 Olds, or Tempest. Perusich, 298-4870.
- TENT, 9x18 exterior frame, best offer over \$60; table saw, 6", \$8; car top carrier, \$4; work table, 4x8, \$5. Stixrud, 298-0478.
- '63 VW deluxe, sunroof, R&H, seat belts, has had all VW servicing. Ludwick, 114 Mesa SE, 243-6544.
- 26" BOY'S bike, thornproof tires and tubes, \$15; large solid oak knick knock shelf, white on black silver fox finish, \$10. Murphy, 344-3124.
- 10-GAL. PEMCO aquarium, reflector, aerator, filter, \$15. Reinhardt, 299-5778.
- BOY'S GIRL'S 26" English bicycles, \$35/ea.; 5-pc. maple dinette, \$85; card table, 4 chairs, \$35; J-66 Polaroid, \$60. Crumley, 299-5293.
- '64 VOLKSWAGEN sedan, low mileage, \$1450, no trades. Waltman, 298-7091.
- UTILITY TRAILER, 4'x6 1/2' bed, safety chain, '65 license, \$40. Davis, 255-8441.
- DOG HOUSE, 20"x40", suitable for a large dog. Hanson, 298-0637.
- ROBERSON 3-bdr., family rm., fireplace, 1 1/4 bath, heated double garage, 12x24 patio, AC, CFA, carpeted, drapes, Kimball, 2104 Gretta NE, 299-2015.
- AQUARIUM, 10-gal., pump, heater, reflector, filter, etc., \$20 fish included. Schowers, 255-9279.
- 2 LADDERBACK CHAIRS, maple gateleg table, \$40; 4 w/ tubless VW tires, \$40; Singer sewing machine w/table, \$55. Ogden, 242-8351.
- LAWN MOWER, push type, extra sharp, \$5; Crosley short wave radio, \$5. Hammons, 1042 Claudine NE, 296-1142.
- INEZ BRICK 3-bdr., 1 1/4 bath, carpet throughout, terraced backyard, off street parking, quiet street, \$16,500. Lane, 299-9329.
- AQUARIUMS: 5 gal. w/reflector, filter fish trap and gag valves, \$10; 3 gal. same, \$6; 3 gal. reflector, \$2. Conrad, 299-5316.
- SUPER .38 cal. automatic w/.22 conversion kit, \$80; Excel 20 gauge single shotgun, full choke, \$10. Mueller, 298-3406.
- 4/5 CARAT DIAMOND RING, Marquis cut, Fogg's appraisal \$625, sell for \$500. Flower, 298-7943.
- COLLIE PUPPIES, sable/white, AKC, excellent pedigree, 4 wks. old, deposit will hold. Baggett, 299-0652.
- '61 FALCON station wagon, 4-dr., stick shift, R&H, sell at NADA wholesale book \$600. Berger, 298-4234.
- '60 CADILLAC 4-dr. HT, all power w/air; '52 Cadillac 40, all power; 9x9 Wenzel tent; 2-burner Coleman camp stove w/stand. Naumann, 298-3559.
- '58 NOMAD CHEVROLET station wagon, 4-dr., AT, PS, V8, one owner, \$495. Jarrell, 865-7283.

SHOPPING CENTER

- '56 CHEVY 1963-283, 1963 4-speed Hurst, Sun tach, gauges, '64 bucket seats, new interior, chrome wheels. Campbell, 299-4830.
- NEW GOLF bag, \$10. Nelson, 255-2364.
- '56 BLUE CADILLAC, AC, full power, can be seen on base anytime, \$450 or best offer; apt. refrigerator, \$25. Browne, 344-9675.
- '59 FOUR DOOR PONTIAC, new upholstery, clutch and brakes, \$650. McGarr, 243-4324.
- TENT, 7'x7', sleeps two, exterior frame, \$25; tape recorder. Wollensak 1515-4, \$110. Holzhauser, 242-7131.
- '60 FORD F-100 pickup, 4-speed; amplifier/PA system, sell or trade. Cooper, 877-4674.
- AIR CONDITIONER, Carrier Roomette, refrigerated type, \$75, may be seen after 5:30. Summer, 1115 Morris NE, 299-1912.
- ROBERSON 3-bdr., 1 1/4 bath, den, pitched roof, landscaped, VA loan. Coonce, 296-1089.
- 3-BDR., large kitchen and LR, 1 1/4 bath, separate DR, carpeted, AC, double garage, sprinklers, landscaped, sell FHA appraisal \$15,000. Stewart, 298-6246.
- WANTED**
- RIIDE, lady in Bldg. 800 needs ride from Eubank Menaul area, 10133 Propps Dr. NE. Randolph, 299-2057.
- SMALL refrigerated air conditioner, 110-115v. Hueter, 242-1620.
- BARBELL-DUMBBELL set. Summers, 299-4674.
- 8x10 RUG, cannot pay more than \$10. Jones, 255-3390, evenings.
- TRADE: 32 automatic w/pearl handles for .22 pistol. Pritchard, 268-9618.
- HOMES for kittens, grey and white, 7 wks old 2 males, 1 female. Lynes, 268-0144.
- LADY to share apartment expenses with young woman with child. Ludi, 256-2626, 5-8 p.m.
- WHEEL CHAIR for invalid, reasonable. Sanchez, 242-4556 after 5.
- HOMES FOR FOUR kittens. Waggoner, 7423 Leah, NE, 299-9014.
- FOR RENT**
- 2-BDR. unfurnished apt., built-in range, refrigerator, carpeting, drapes, AC, walled back yard, water-garage paid, 1428 Vassar NE. Imrisha, 256-9063.
- TRI-PLEX, 2-bdr. unit, AC, carpeted, drapes, fireplace, electric kitchen, washer, dryer, garage, \$120/mo. utilities included. Roehrig, 256-2015.
- UNFURNISHED 2-bdr. apt. near Indian School and Eubank. Scott, 255-6231.
- UNFURNISHED 3-bdr., carpeting, draperies, range, oven, dishwasher, AC, fireplace, patio, sprinklers, double garage, utility room. Seay, 298-7227.
- LOST AND FOUND**
- LOST—Prescription safety glasses, bolo tie, crochet work in shoe box, ring-watch, sunglasses, keys in gink case. LOST AND FOUND, tel. 264-2757.
- FOUND—Two keys, GM/Ford keys, 2 keys, electronic tools in zippered case. LOST AND FOUND, tel. 264-2757.



SUSPENDED from a 23-foot helium balloon are instruments to collect data during an underground explosion of 1280 pounds of conventional high explosives.

Balloon Used To Gather Data From TNT Detonation

A helium-filled balloon hung 485 feet above ground zero last week during a cratering experiment in the Coyote Canyon test field.

At 7:15 a. m., five 256-pound spheres of TNT, 10 feet underground, were simultaneously detonated.

Suspended from the balloon were vertical strings of instrumentation devices needed to gather information on how the shock wave moved symmetrically upward and outward from the detonation point.

The data obtained from the balloon's array will have applications in the Atomic Energy Commission's Plowshare Program.

B. C. Benjamin, supervisor of Blast and Earth Motion Division, said the positioning of the balloon and related array was calculated by J. W. Reed, Underground Physics Division, for getting pressure pattern measurements. The information will be used in determining air pressure distribution differences between surface and underground explosions.

The polyethylene balloon, 23 feet in diameter, was tethered into position over ground zero with three 1/8th-inch cables. The lines also served as supports for the pressure recording instruments, which were clipped to the cables at regular intervals.

Some of the data gathered in this test will be used to determine instrument altitudes for similar studies in the future.

Promotions

Ruth E. Randolph (4361) to Steno Clerk
 Rosanna C. McClellan (3122) to Administrative Clerk
 Marion E. Houk (8253) to Document Clerk
 Barbara M. Netherton (8250) to Secretary
 Marion L. Sliwinski (2230) to Secretary
 Charlotte M. R. Cast (4110) to Secretary
 Mildred A. Kostedt (7210) to Secretary
 Frank Garcia, Jr. (4631) to Technician
 Alice L. Collier (3126) to Steno Clerk
 Kathryn W. Uren (3126) to Steno Clerk
 Katherine K. Reilly (3126) to Secretarial Steno
 Jo Ann M. Titman (3126) to Secretarial Steno
 Canuta C. Ortiz (2231) to Record Clerk
 Bernardo Gallegos (4212) to Stock Analyst
 Erwin F. Borkowski (4363) to Traffic Analyst
 Hubert C. Fox (4363) to Traffic Analyst
 Jeffri M. Ambrose (8223) to Assembler
 Tonni B. Nunley (8211) to Secretarial Typist
 Barbara P. Clough (8232) to Library Assistant
 Martelle G. Reid (8232) to Library Assistant

Discarded Glasses, Odd Bits of Jewelry Sought by Pioneers

Sandia Laboratory is supporting a nationwide "New Eyes for the Needy" campaign to provide eye glasses for those who cannot afford them.

Donations of odd bits of jewelry, discarded eye glasses, and gold and silver scrap will be collected and sent to New Eyes for the Needy, Inc., a non-profit charitable organization. Collection boxes will be placed at each Tech Area gate for next week's drive by the Sandia Pioneers, a group of persons having 21 or more years service with the Bell System. Assisting the Sandia Pioneers in this drive are Public Relations Department and Security Standards and Operations Department.

Comptroller R. G. Luckey, a Pioneer, said New Eyes for the Needy, Inc., sends the collected items to a refinery where the metals are reclaimed and redeemed for cash. Income from the source is used to furnish glasses to the needy.

In addition, any good plastic frames which are donated are reused, and simple non-astigmatic glasses are sent to medical missions throughout the world.

Mr. Luckey said the flow of glasses to New Eyes for the Needy has undergone a marked decline, and help is needed on many fronts to keep the activity alive. In addition to serviceable frames and complete glasses, they urgently need contributions of items containing bits of gold, silver, or any precious metal—old bridgework, dentures, and old jewelry are good sources. Other usable items include commercial safety glasses, cataract glasses, reading and sun glasses.

Since its founding in 1932, New Eyes for the Needy has helped more than 400,000 people. The work of sorting, testing, packaging, and acknowledging the thousands of glasses received annually is carried on by a volunteer staff.

Distribution of the glasses is arranged through hospitals and welfare agencies. Any deserving individual also may apply directly to New Eyes for the Needy.

Avoids Duplicate Testing

IDEP Program Receiving New Emphasis at Sandia Laboratory

The Interservice Data Exchange Program (IDEP) received new emphasis at Sandia Laboratory at a meeting of technical supervisors and staff last week.

E. H. Draper, Sandia Vice President, emphasized the value of Sandia-originated test information to other government agencies and the savings the Corporation could realize by using IDEP services.

The IDEP program is designed to avoid repetition of costly tests of commercial items used in government programs. Most of the 164 participating companies are prime or major sub-contractors engaged in missile, space, and related programs. Like Sandia Corporation, the agencies are parts "users" rather than parts manufacturers or vendors.

W. W. Westman, supervisor of Test Equipment Reliability and Engineering Design Practices Division, is the Sandia IDEP Data Coordinator. At last week's meeting, Walt explained the procedures for reporting information to IDEP. He emphasized that Sandia test engineers need only to fill out an IDEP summary sheet in addition to their regular test report. This IDEP summary sheet enables the test report to become part of the IDEP system which provides an indexing service and micro-filmed copies to all IDEP agencies. The test report itself needs no special format, Walt said. At Sandia, the IDEP reports are maintained by the Specifications Branch Library in Bldg. 828 where a microfilm reader-printer is available.

L. F. Parman, manager of Technical Libraries Department and alternate IDEP Data Coordinator, discussed the value of IDEP reporting within Sandia Laboratory. He pointed out that many different Sandia organizations have interests in the same "families" of commercial components. Having a complete file of all of San-

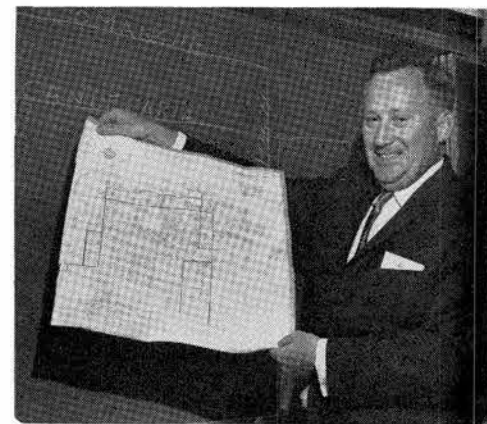
dia's testing and evaluations of these items is useful to all concerned, he said.

J. P. Shoup, manager of Electronic Components Department, related the experience of his group in using IDEP information. He discussed the technical aspects and areas where IDEP information is most effective, pointing out some data verification procedures.

"IDEP has already proved its value to Sandia," Walt said. "There have been several instances where the use of IDEP data has saved thousands of dollars in projected test programs."

Goal of the current IDEP campaign is to make the IDEP services and advantages fully known to all Sandia engineers. In addition to an IDEP movie, a new slide presentation describing IDEP was shown at the meeting. This 11-minute slide presentation, prepared by Technical Information Division and the Graphic Arts Department, is available for showing to any Sandia engineering or testing group. Call Walt (264-7063) to arrange a showing.

"Sandians have contributed some 85 test reports to the IDEP system during the past two years," Walt said. "In addition, we know of several other testing programs now underway which will be fully reported soon. This information is proving extremely valuable within Sandia and to the other agencies. In years to come, the IDEP program should save taxpayers millions of dollars."



"BUS POOL" ROUTES—Thomas Burke, director of public transportation for the Albuquerque Bus Company, mapped out two "bus pool" routes which were placed in operation through the Northeast Heights Tuesday on a one-month trial basis. If the plan works out, additional "bus pool" service may be made available to Sandia Corporation employees living in other sections of the city.

Take Note . . .

All former residents of Pennsylvania are invited to attend the second annual Pennsylvania Day Reunion on June 19 at the F.O.P. Park (2800 Decker Rd. NW). The day-long activities will start at 9 a.m.

For further information and registration call John J. Sarkis, 877-4146.



Norma Connally (4373)

Take A Memo, Please

Make your own list of summer dangers, but be sure it includes power mowers, firecrackers, poisonous insects and weeds, and food poisoning.

Adolfo Maes, Composition Division, was awarded an arm patch from the Albuquerque Bowling Association after rolling 30 closed frames in the first annual Sandia Laboratory Handicap Bowling Tournament. Thirty closed frames indicates Al bowled three successive games without a miss. He finished the tournament with 635 scratch and 686 handicap series.

G. L. Morrisroe, supervisor of Facilities and Supplier Evaluation Engineering Division, served last month as a member of an ad hoc committee of the American Society of Tool and Manufacturing Engineers. The eight committee members met in Dearborn, Mich. They discussed and made recommendations on the establishment of ASTME's manufacturing systems technical division.

Classes in beginning horsemanship will begin June 7 and continue through the summer months at the Sandia Base riding stables. Intermediate and advanced horsemanship classes will be added to the schedule in July.

The course costs \$10 and consists of 10 hours of instruction. The age groups are up to 12 years, 13-16 years, and 17 years and older. Sandia Corporation employees and their dependents may enroll in these courses. For further information call 264-8377.

C. J. McGarr, Director of Service Operations, will present a talk entitled "Service Operating System" before the Oregon Society of Management Analysts in Salem, Oregon, June 16.

Retiring . . .



Jacobo P. Peralta, a Sandia employee for more than 14 years, retired May 18.

He was a truck driver in Handling Section.

Mr. and Mrs. Peralta and one of their children live at 1407 Third St. SW; however, they plan to visit a married daughter in California, possibly for several months.

Sandia's Safety Scoreboard

Sandia Laboratory:

109 DAYS
 4,100,000 MAN HOURS
 WITHOUT A
 DISABLING INJURY

Livermore Laboratory:

286 DAYS
 1,469,000 MAN HOURS
 WITHOUT A
 DISABLING INJURY