

SANDIA LAB NEWS

published every other Friday for the employees of sandia corporation, contractor to the atomic energy commission

Vol. 8, No. 26

ALBUQUERQUE, NEW MEXICO

December 28, 1956

Bow, Arrow Help Sandians Earn Honors in Radio Field Day

Sandians set a new all-time high national record in the Annual Field Day competitions of the American Radio Relay League, Inc., it was announced this month by QST, national publication of the amateur radio operator's organization.

Contact 748 Stations

Gene Bussey 1421-1, John R. Halliday 1411-2, W. E. Petty 5512, and Bruce Butler, son of Gertrude 5211, and Charles Butler 7111, won first place in the one transmitter club category during the 24-hour Field Day. They contacted 748 stations for a net score of 660 contacts. The contest was held last June 23-24.

"We entered this contest to win," John Halliday said, "and we knew we had several severe limitations to overcome if we were to place. The first consideration was our distance from the concentrated stations of the metropolitan areas of the east and west coasts. The contest rules limited us to 30 watts of input power. And we knew we had to equal the 600 contacts of the 1955 winner to win."

Use Engineering Skill

With these obstacles in mind, the group used their combined engineering background plus, as John says, "a few methods borrowed from experience at Sandia Corporation in statistical and quality control."

The problem of low power and distance was solved by building two rhombic antennas to the same specifications as the AT&T Co. commercial antennas. The antennas required more than a mile of wire in their construction.

A spot in the Manzano Mountains near Tajique was selected for the broadcast site for it offered a grove of 125-ft. pine trees to use as a base for the antennas. Gene Bussey tied a length of light string to an arrow and shot it up and over the trees. With the string in place it was easy to pull up the antennas.

Beamed Broadcasts

One of the antennas was beamed toward Chicago and New England. The other was aimed toward Los Angeles to the west and Georgia to the east. Getting

(Continued on Page 5)

Livermore Branch Building Plans Proceed Rapidly

The firm Sverdrup-Parcel, architect-engineers preparing final drawings and specifications for construction of the Sandia-Livermore facility, is working full speed to get construction started as soon as possible.

It is anticipated that the first phase of the construction, the personnel building, will be started about April 1 and that the building will be ready for occupancy by Aug. 1, 1957.

The contract for the personnel building will be awarded before the completion of the final drawings and specifications for the other buildings in order to provide space for increased personnel. Livermore Branch is anticipating by August, 1957.

The anticipated completion date for the final facility is January, 1958.

Staff Additions Made At Livermore Branch

Several additions to the staff at Sandia's Livermore Branch have been announced recently.

W. A. "Bill" Jamieson, 7226, has been transferred to Livermore to handle part of the work now assigned to Art Eiffert who has had five sections reporting to him. The sections will be divided up and Bill and Art will both be division supervisors with Art signing for Ed Baldwin, Administrative Department Manager, 1830, who is still at home following a recent illness.

R. A. "Bob" Knudson, 3164, has been transferred to Livermore to handle various administrative functions in connection with the benefits and public relations program. The transfer is effective Jan. 1. He will report to Walt Dzugan, 1831-3, in his new assignment.

Sandia Engineers Introducing Boys To Science World

Several Sandians have been instrumental in promoting a Science Club for the members of the Albuquerque Boys Club.

Neith Pollard, 1413, assisted in obtaining club support of the activity and Gene Bussey and Billy Ray, both of 5222, have been teaching the youngsters. Dan Fenstermacher, 5221, has provided some equipment for use in the club.

The group was organized in mid-October and now numbers 12 boys between the ages of 13 and 15. They meet every Wednesday with science and engineering the main topic. At the present time the emphasis is on electronics.

Hungarian Relief Gifts Total \$899

Sandia Corporation employees had contributed \$899 to the American Red Cross Hungarian Relief Drive by Dec. 24. A total of 227 employees had contributed that amount.

Technical Services Department 7240, gave \$40 in lieu of exchanging Christmas cards.

Sandia Corporation Purchases in State \$3,500,000 for 1956

Local purchasing by Sandia Corporation in the state of New Mexico will amount to approximately \$3,500,000 by the end of 1956 as compared to \$3,400,000 spent in the state last year. About 95% of the amount spent in New Mexico went to Albuquerque firms. The figures do not include orders placed with other prime contractors of the AEC.

The Corporation placed orders with 480 suppliers in the state during 1956, compared to 374 suppliers last year.

Two Sandians Appear On Tech Supervision Panel Discussion

J. W. McRae, President of Sandia Corporation, and R. W. Henderson, Director of Systems Development, will join other engineers in a panel discussion during the January meeting of the American Institute of Electrical Engineers.

The subject will be "Technical Supervision." The meeting will be held Tuesday, Jan. 8, at 8 p.m. in the UNM Engineering Bldg., Room 201. All persons interested in this subject are invited.

Other members of the panel will be Ervin Dahlund, manager of engineering, ACF Industries, Rex Tynes of Tynes and Loftin, and Frank H. Bridgers of Bridgers and Paxton.

Income Tax Official To Assist Sandians

A representative of the Internal Revenue Service will be at Sandia Base Jan. 3 to meet with employees who owe income tax on travel reimbursement received from Sandia Corporation.

He will be in the conference room of Bldg. 829 from 9 a.m. to 5 p.m. and will assist employees in making arrangements for payment of the tax by installment plan.



Dr. Henry Louderbough — Dr. Maja L. Skaller
—join Sandia medical staff—

Two More Doctors Join Staff of Sandia Corporation Medical Dep't.

Two physicians joined the medical staff of Sandia Corporation this month to assist Dr. S. P. Bliss, Medical Director, 3160. They are Dr. Henry Louderbough of Watertown, Conn., and Dr. Maja L. Skaller, Blytheville, Ark.

Dr. Louderbough is no stranger here as he spent one summer in Albuquerque when he was 17 and then returned several years later as a movie cameraman shooting location shots for western films.

He is a native of Dover, Del., and attended the Hill Preparatory School in Pottstown, Penn. He earned his undergraduate degree from Princeton in 1929.

Was Movie Cameraman

After several years of odd jobs, including his stint as a movie cameraman and wide travels in the west, he entered the Medical School of the University of Vermont and graduated in 1938.

Dr. Louderbough interned at the Flower and Fifth Ave. Hospitals in New York City for two years and then was a resident physician at the Waterbury Hospital in Waterbury, Conn., for one year.

In the fall of 1941, he traveled with a Friends Ambulance Unit, sponsored by the Quaker Church, to China and remained until 1943.

He entered the Navy that year and served as a Medical Officer

with the Fifth Marine Division during training in Hawaii and the assault on Iwo Jima during World War II. He was discharged in 1946 and returned to Watertown where he has practiced medicine for the past 10 years.

Dr. Louderbough has purchased a home at 116 Sigma Chi Rd. NE. He and his wife have four children—Tony, 9, Henry, 12, Ellen, 10, and Dick, 4.

Dr. Skaller comes to Albuquerque from general practice in Blytheville, Ark. The cultural aspects of Albuquerque appealed to him and, as he said, his daughter "likes horses."

Native of Tennessee

He is a native of Memphis, Tenn. He attended Washington University in St. Louis, Mo., and received his undergraduate degree in 1933. He attended the Medical School at the same University and graduated in 1937.

He interned at St. Louis City Hospital for two years and then started his practice in Blytheville where he became a civic leader, holding memberships in many organizations.

Electronics is Dr. Skaller's recreation and hobby. He is the inventor of the "Lectroscope" which is an electronic stethoscope, a compact unit that magnifies the sounds of the heart and respiratory organs. For this invention he is listed in "Who's Who in Medicine" as having made important contributions in the field of medicine.

Just recently Dr. Skaller perfected his second invention, a surgical suturing device.

Dr. and Mrs. Skaller have purchased a home at 5001 Royene Ave. NE. They have a 13-year-old daughter, Joy.

Directors Meet

The Board of Directors of the New Mexico Council of Technical and Scientific Societies will meet Monday, Jan. 7, Larry Snodgrass, 2543, president, announces. The meeting will begin at 7:30 p.m. in the Warehouse Bldg. conference room at the University of New Mexico.



OFFICIAL VISITORS at Sandia Corporation recently were a group of Bell Telephone Laboratories and Western Electric Company officials. L to R: W. C. Tinus, Vice-President, BTL; F. E. Henderson, Works Manager, North Carolina Works, WE; W. A. MacNair, Vice-President, BTL (Mr. MacNair was

at Sandia Corporation for several years as Vice-President, Research); K. F. Morgan, Manager Government Sales, WE; R. R. Hough, Director, Military Electronics Development, BTL; F. R. Lack, Vice-President, Radio Division, WE. This picture was taken prior to a Coronado Club luncheon meeting.



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Speaking of Reporters



Betty Jo Morrow and E. D. Graves

This is another article in a series telling of the volunteer reporters who contribute to the Sandia Lab News.

One of the Sandia Lab News' most regular contributors of both "spot" news and feature ideas is Betty Jo Morrow, who reports for organization 1610.

Here she is shown interviewing E. D. Graves, 1611, for a story on

activities of the Sandia Gun Club. Betty started work for the Corporation in July, 1955, and has been a division secretary for the past year.

Her previous journalistic experience includes serving as a reporter for a bi-weekly publication of the City of Austin, Tex.

Among outside activities Betty enjoys oil painting and is currently taking a course in portrait work at UNM.

Welcome...

Newcomers

Dec. 10 through 20

Table listing newcomers from various locations like Albuquerque, Arkansas, California, Connecticut, Illinois, Indiana, Louisiana, Massachusetts, Missouri, New Mexico, New York, Nevada, North Carolina, Oklahoma, and Texas, with names and phone numbers.

New Home

Jim Gravlin has just moved into a new home complete with swimming pool. The address is 3808 Arlote SE. Jim is Administrative Assistant in Dept. 1610.

Sandia Wives Invited

Sandia Corporation wives are invited to a Newcomers Coffee to be given by the Sandia Base Women's Club Thursday, Jan. 10, at 10 a.m. in the Mesa Lounge of the Officer's Club.

Honored by Boy Scouts

A Sandian has recently been honored for outstanding service to the Boy Scouts of America. Cecil Tolbert, 5142, was awarded the "Silver Beaver" for all-around performance in the organization and the "Wood Badge" for training activities.

Cecil has been in scouting 12 years in Albuquerque and Belen and is presently district commissioner for the Rio Grande district. In this position he has been instrumental in organizing Camporees, round-ups and other scouting activities.

Promoted to Captain

The treats were on Arlie K. Roesener last week when his promotion from first lieutenant to captain in the Air Force was announced. Arlie is AFSWP secretary on the Special Weapons Development Board, and is considered an adopted member of the staff of Org. 7223, where he works closely with the Sandia secretary of SWBDB, A.D. "Pep" Pepmueller.

Sandianotes -

Trip to Europe Takes Place Of Cannons' New Automobile

Bernice Cannon, 2461-5, and her husband, H. E. Cannon, saw the fulfillment of a lifelong dream recently when they boarded the USS United States in New York harbor for a month-long tour of Europe.

Beginning with the changing of the guard at Buckingham Palace in London and ending with an evening visit to Monaco, the Cannons filled their weeks with glimpses of the most famous spots in 11 countries.

Bernice regretted not having time to become acquainted with more Europeans, but she found those she did meet almost invariably friendly.

Savings originally intended for a new car made the vacation trip possible, but the Cannons say the pleasure they received from the view of Europe makes them satisfied with their old car.

Open House for Families

An "open house" was held in Bldgs. 887, 885 and 875, Sunday, Dec. 9, in conjunction with a Coronado Club Christmas party for employees of three departments. Employees in those buildings undertook "Operation Housekeeping" beforehand to prepare the premises for inspection.

Families of employees in Plant Maintenance, Plant Engineering and Supply departments were invited to walk through the buildings, all of which are outside the Tech Area on the east side.

Mi-Chata Big Winner

When Lucy Garcia 4131 and her husband, John 2124-3, returned from vacation recently they had reason to be proud.

At Phoenix they entered their two-year-old female Boxer "Mi-Chata" in the Field and Obedience Club Show and won a third place trophy and a yellow ribbon.

The next day in Tucson at the Old Pueblo Dog Training Club Show, Mi-Chata won a second place trophy and red ribbon in addition to a trophy for highest scoring Boxer in the trials.

A week later Mi-Chata won the first place trophy and blue ribbon plus a trophy for highest scoring Boxer in the Rio Grande Obedience Dog Club Show in El Paso.

The Garcias have raised Mi-Chata from a pup and trained her after attendance at the Sandia Dog Obedience Club classes. John shows the dog in competition.

Superior Performance Award

Irving H. Hart, Defense and Disaster Coordinator for ALO, has been awarded an AEC Superior Performance Award, for planning and coordinating the defense and disaster plans used throughout ALO during this year's nation-wide "Operation Alert 1956."

Mr. Hart has been with the AEC since 1947 in a number of security and storage positions and has had his present assignment since mid-1955.



FOUR GENERATIONS of oldest sons are represented in this picture taken at a holiday family reunion at Spring Lake, Texas. Third from the left is Derrell E. Bridge, a Security Inspector at Sandia Corporation and sitting next to him is his son, Ray.

Quick Thinking Host

A dinner party which could have been disastrous except for quick thinking by the host has been reported by Joe M. Sanchez, 7329.

Joe and his wife were invited to the home of Jose "Andy" Chacon, 7310, for the evening. After they arrived their 11-month-old daughter, Roseanne, went into convulsions and became unconscious. "Andy" took the infant and administered artificial respiration and other emergency aid while his wife called the city fire department.

A police escort helped them to rush the little girl to a hospital and she is now reported much improved.

Ski Club Movie

A thrilling ski movie in color will be featured at the next meeting of the Albuquerque Ski Club, Wednesday, Jan. 9, at 8 p.m. in the Simms Bldg. Restaurant.

Dick Kavet 2553, club president, said business will include plans for a winter carnival and ski ball.

New Year Climb

The annual "slosh" up La Luz Trail to the Sandia Mountains Crest is scheduled Tuesday, Jan. 1, by the New Mexico Mountain Club, Hank Tendall, 1215, reports. Club members will leave from Nob Hill shopping center about 8 a.m., Hank said. Anyone interested in making the climb is invited to call George Hankins, Alb. 4-6444, for further details.



SNOOK FISHING is great, according to Frank Bencotter and his wife who are now living in Florida. Frank retired from the Corporation last July after four and one-half years service mainly in 1222. This catch of fish—the largest weighing nine pounds—was made at Myakka River, located near Venice, Fla.

Get Well Wishes

Get-well wishes are extended to Elsie Willis, 7121-1, who is at home convalescing from a lengthy illness.

2440 Holds Party

Organization 2440 held their Christmas party last Saturday in a private dining room at Leonard's. Activities included dining and dancing.



Mr. and Mrs. Goebel C. Renfro observed their 38th wedding anniversary on Dec. 21. The couple met at an old country barn dance in East Texas. On their seventh anniversary they moved to Albuquerque and Goebel has worked for Sandia Corporation since Feb., 1952, in 2353. Their family consists of four sons and two daughters.

Wedding Anniversary

H. V. Riley, 2711, and his wife celebrated their 15th wedding anniversary on Dec. 20. As is their custom, Mrs. Riley received a bouquet of roses — one for each year of marriage — from her husband.

Weddings-Engagements

It was an early December wedding for Monica Tomczak and Chief Warrant Officer John A. Schmidt, who were married in Santa Fe.

Monica has been with the Corporation since April, 1952, and is secretary to the Director of Research, 5100. Her husband is from Long Beach, Calif., but is presently stationed at Sandia Base.



Mrs. Schmidt Miss Bemis

Mr. and Mrs. Allen Bemis of Albuquerque announce the engagement of their daughter, Florence, to Jerry T. Hall.

Florence has worked in 2442 since August. Her fiance is an Albuquerque resident but about to leave for Navy duty.

The couple plans to be married in the spring.

Congratulations

Born to:

Mr. and Mrs. C. Herman Mauney, 1262-1, a son, Charles Hilbert, on Dec. 12.

Mr. and Mrs. John Dobias, 2231-3, a daughter, Barbara Jean, on Nov. 29.

Mr. and Mrs. Don Graham, 3125-1, a daughter, Deren Wyn, on Dec. 16.

Mr. and Mrs. Stewart Ingham, 2531, a son, Stewart Allen, on Dec. 7.

Mr. and Mrs. J. Cecil Russell, 1621-1, a son, Timothy Michael, on Dec. 14.

Mr. and Mrs. Bill Gallagher, 7122-3, a son, Mark Allen, on Dec. 9.

Mr. and Mrs. John Pennell, 7123-1, a daughter on Nov. 30.

Mr. and Mrs. Randall Maydew, 5141, a daughter on Dec. 14.

Mr. and Mrs. Dulin G. Westfall, 1610, a son, Anthony Dean, on Dec. 3.

Five Sandia Employees Retiring at Close of 1956

As 1956 draws to a close, five more Sandia Corporation employees are retiring, bringing the total number of retirees to 28 — all men.

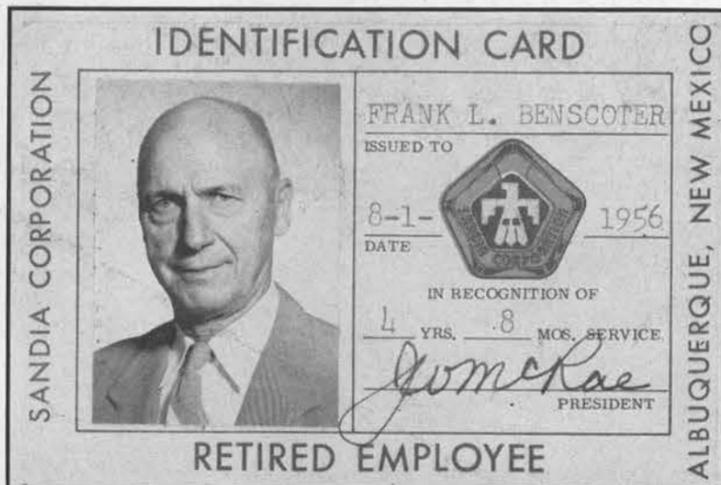
With the total increasing steadily more interest is developing in retirement plans and the Corporation is striving at the same time to make the transition from an eight-hour working day to a more leisurely pace easier for employees.

All except three of the Sandia men now retired are covered under the Corporation's retirement plan, administered by the Prudential Insurance Company. Their annuity is based

upon the amount the employee paid into the plan plus a substantial contribution by the Corporation to the fund.

A new service to retired Sandia employees is an identification card containing a photograph of the individual, personal description, and number of years of service with the Corporation.

Frank Bencoter, a retired employee whose identification card is reproduced here, was instrumental in originating this idea for which later arrangements were made by Employee Service, 3122.



F. W. Thomason is known as "Pop" among his co-workers in 2419-1, where he is supervisor of the Janitor Service Section.



F. W. Thomason

He has been in charge of night-shift janitors almost ever since he came to Sandia in Aug., 1947.

Previously he was an auxiliary military policeman at Culver Aircraft in Wichita, Kans.

"Pop" has definite plans about how he will enjoy his newly acquired leisure time. He intends to open a shop in his garage and practice a year-round trade—in the summer he'll sharpen lawnmowers and in the winter he will sharpen saws.

The Thomasons live at 411 Bledsoe Road NW and have two daughters and four grandchildren.

The first thing W. H. "Shorty" Greaves will do after he retires is to become accustomed to sleeping nights instead of working.

Shorty started with the Corporation five years ago and has been a night-shift janitor all along.

He says, "I'll have to completely reverse my habits."

When spring comes Shorty intends to devote a lot of time to his garden, especially roses which are his specialty.

Shorty and his wife came to Albuquerque 42 years ago from Cincinnati. Before coming to Sandia he was a storekeeper for the city of Albuquerque for 30 years.

He plans to stay close to his home at 1321 Trujillo Road.

Wanderlust is likely to hit Malcolm Price anytime after he retires from Sandia. His future address? Anywhere that pleases his fancy.

Malcolm began to work for the Corporation in July, 1948, first in the warehouse, and is now a tool crib attendant in 2112.

The first stop in Malcolm's travels will likely be 3809 Keoughton Rd., Hampton, Va., the home of his son, who is a senior surgeon at the Veterans Hospital there. A second son is in the Marine Corps, stationed in Naples, Italy. Malcolm's family also includes two grandchildren.

Wales-born Malcolm has lived in Albuquerque nine years. His previous home was in Endicott, New York.

A trip to Alaska—"but I won't stay long enough to get cold"—is among the retirement plans of Albert "Red" Coulter, 2414.

He started with the Corporation in July, 1951, as a janitor and shortly thereafter was transferred to the steam plant as a fireman.

Fishing might also take up a little of his leisure time, but Red figures, "I've already spent \$100 for each fish I've caught in New Mexico."

Originally from Illinois and Kansas, he has been in Albuquerque since 1944.

Mr. and Mrs. Coulter and her mother live at 1908 Lead SE.

Water and weeds will be the main worry of Jerry S. Bass after he retires from Sandia Corporation. He intends to farm the acreage around his home.

Jerry has been with the Corporation since Aug., 1949, and is a receiving clerk in 2353.

The Bass family moved to Albuquerque 10 years ago from Corsicana, Tex., and now lives at 1642 Del Norte SW.

Jerry and his wife have a son and two daughters and seven grandchildren, all living in Albuquerque.

If things get dull, Jerry says he might help his son, who is in the contracting business.

PROMOTIONS

CHARLES WINTER to supervisor of Section A 1811-1, Project Division, at Livermore Branch of Sandia Corporation.



Charles has been with Sandia Corporation four and one-half years and has worked on design and development projects. Since February, 1956, he has been at the Livermore Branch.

For four years prior he was in the fuel and lubricants laboratory of the Texas Oil Co. in Beacon, N. Y.

Also, while in New York State, Charles worked six months for Electrol, Inc. in Kingston in design of aircraft hydraulic systems.

He has a Master's degree in Mechanical Engineering from Harvard and is a member of the American Society for Mechanical Engineers.

He served one and one-half years in the Army Corps of Engineers and one year in Military Government in Germany.

CHARLES M. CLENDENIN to supervisor of Digital Computer Section 5242-1, Mathematical Services Division.

Charles has been working with digital computers since July, 1952, when he started at Sandia Corporation.

Previously he did machine computing in St. Louis for three years.

Charles served 21 months in the Air Force, including some time in the European Theater.

He was educated in St. Louis public schools and has taken several IBM courses.

LEN E. MAHURON to supervisor of EDPM Division 4114, Business Methods Department.



Len has been at Sandia since Dec., 1948, in field test working with computers.

Immediately prior he was a commercial pilot for two years on local charter flights out of Amarillo, Tex. He served five years in the Army as an instrument training instructor on Link trainers.

His Bachelor's degree in Mathematics is from Hardin-Simmons University. Len is a member of the Mathematical Association of America and the Association for Computing Machines.

ROBERT M. BETZ to Patent Manager, 6010.

He will succeed Donald MacKenzie, who is retiring Jan. 1, 1957. Mr. MacKenzie will continue as a consultant for Sandia Corporation for some time.

Bob came to the Corporation's patent department in January, 1953, direct from the Sandia Base Legal Office. He became a registered patent attorney in May, 1955.

A 1943 graduate of Harvard University with a BS in Engineering, he then entered the Air Force for four years.

After military service Bob entered the University of Missouri Law School and received an LLB degree in 1950.

Later the same year he was recalled to active duty with the Air Force and was stationed in Albuquerque.

He is a member of the State Bar of Missouri.

LASITER M. SPIVEY to supervisor of Engineering Section 1811-2, Project Division, at Livermore Branch of Sandia Corporation.



"Mac" has been in project division development work since he joined the Corporation staff four years ago.

His previous work experience includes a year and one-half in the gas engineering department of the Memphis Light, Gas and Water Company and a shorter period with Fisher-Memphis Aircraft Division.

Mac has a Bachelor's degree in Mechanical Engineering from Tennessee Polytechnic Institute at Cookeville. He also attended graduate school at the University of Alabama. He is a member of Kappa Mu Epsilon, honorary mathematical society.

During World War II Mac served four years in the Air Force as an aircraft power turret maintenance specialist.

HOWARD T. STUMP, JR. to supervisor of Health Services Division 3164.

During his four years at Sandia, Howard has been in professional employment and training work. For more than a year he has been supervisor of Staff Personnel Section 3152-1. He came to Albuquerque after seven years as a supervisor for the National Security Agency in Washington, D. C. He also spent four years in public relations work for the Baltimore Gas and Electric Co.

Howard served three and one-half years with the Navy. He holds a Navy reserve commission as a lieutenant.

He has studied Business Administration at Johns-Hopkins University in Baltimore and at the University of Hawaii.

At the present time he is president of the board of directors for the Albuquerque Civic Symphony Association.

Elliot Harris Ends Six Months As Lab News Photographer

Happy Christmases Assured Needy by Generous Sandians

Christmas aid to needy families by Sandia Corporation organizations was deemed highly successful this year with Employee Services supplying the names of more than 35 worthy families to various groups in the Corporation.

The Albuquerque Council of Social Agencies made available to the Corporation a list of names of families in need of assistance and also worthy charities.

Different organizations throughout the Corporation decided to donate food, clothes, toys and money to unfortunate families rather than exchange Christmas cards among individual employees.

Most of the families to receive aid had a large number of children and inadequate living conditions. Seven of the families had 51 children.

Organization 2510 furnished food for a mother and her eight children.

Another woman and her six children were "adopted" by organization 5510. The family lives in a two-room shack containing a double bed and single cot with only a cook stove for heat. One Sandian donated 30 pounds of frozen meat. Another, a heating stove. The organization collected more than \$150 to purchase staples in large quantities. Clothing and toys were also donated. Members of 5510 cooperated 100% in the plan.

Department 1610 decided to contribute to the Boys' Ranch of New Mexico instead of exchanging Christmas cards.

The security guards in 2452 filled a huge box with food and goodies for a family.

Food baskets were provided by 2451, 5512 and 2232-3, in addition to the many organizations previously mentioned in the Lab News as furnishing staples.

Department 1220 contributed \$93.50 to the Salvation Army.

Elliot "Tiny" Harris, 2462, ends a six-month assignment with the Sandia Lab News this issue. He has been special photographer for the Lab News and most of the pictures appearing during that period were his work.

He will return to work on other assignments with the Photo and Reproduction division.

Tiny started with Sandia Corporation in January, 1952, in



Elliot Harris

the Photo and Reproduction Division. He claims both New York and New Jersey as his native states. He began his photographic career in a vocational photography school in Essex County, N. J.

He enlisted in the Navy during WW II and continued with photographic assignments including a stint as a photographer instructor at the Potomac River Naval Command, Washington, D.C.

After his discharge, Tiny operated his own commercial photography business for two years. Then he was an assistant newsreel photographer for station WPIX-TV in New York for another year before enrolling in the University of New Mexico in 1950.

Assuming photographic duties for the Sandia Lab News for the next six months will be Oscar Goodwin of the Photographic and Reproduction Division.

Sandia HI-LIGHTS of 56



FLYING SAUCERS?

SANDIA'S CAPTIVE BALLOONS, USED FOR TESTING INSTRUMENTS AND WIND VELOCITY, LOOKED LIKE FLYING SAUCERS TO RESIDENTS OF LOS LUNAS AND BELEN. "SAUCERS" WERE SENT UP BY DEPARTMENTS 5230 AND 2400



FIELD OPERATIONS PEOPLE SAW THEIR BUSIEST DROP DAY OUT AT SALTON SEA IN 1956

EVERYBODY LIKED SANDIA'S EXHIBIT AT THE NEW MEXICO STATE FAIR

250th ANNIVERSARY



SANDIANS WENT ALL OUT IN CELEBRATION OF ALBUQUERQUE'S 250TH BIRTHDAY

SHARE-THE-RIDE



EMPLOYEE SERVICES INSTITUTES A LISTING SERVICE FOR RIDES AND CAR POOLS

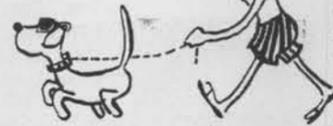
PHONE 2-6149

"REDWING"

MORE THAN 100 SANDIA EMPLOYEES TOOK PART IN SUCCESSFUL REDWING OPERATION AT PACIFIC TEST SITE. "NO. 1 BOY" JAMES McRAE WENT OUT AND TOOK A LOOK

LIVERMORE

SANDIA'S BRANCH IN SUNNY CALIFORNIA...



...WILL BECOME OUR LARGEST SATELLITE

VITAL STATISTICS:

CORPORATION'S GOT 6000 EMPLOYEES ... CREDIT UNION'S GOT 2 MILLION... WE GAVE A BIG \$63,943.17 TO UNITED FUND

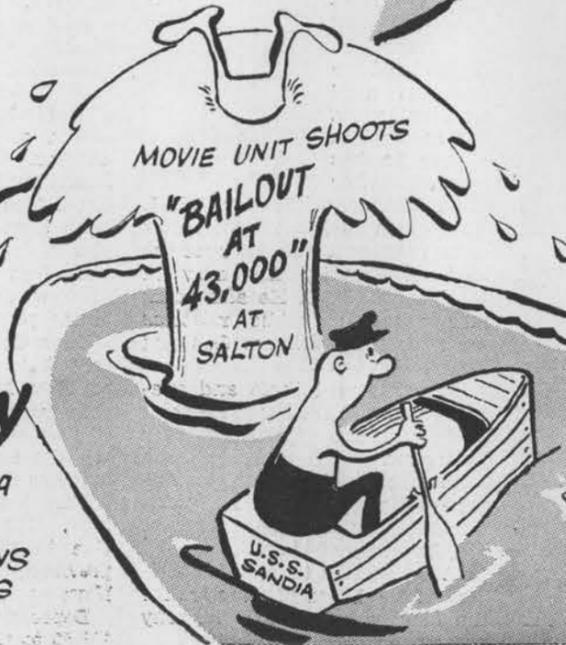
NEW LOOK FOR SANDIA

ALL TEMPORARY BUILDINGS WILL BE REPLACED BY NEW PERMANENT STRUCTURES OVER NEXT FOUR YEARS

DROP TOWER

WE BUILT A DROP TOWER 300 FEET HIGH FOR TESTING PURPOSES

MOVIE UNIT SHOOTS "BAILOUT AT 43,000" AT SALTON



SALTON SEA NAVY

SANDIA'S "NAVY" AT SALTON SEA IS A PROUD ORGANIZATION - CONDUCTING TEST OPERATIONS AND OCCASIONALLY RESCUING A CASTAWAY DUCK HUNTER

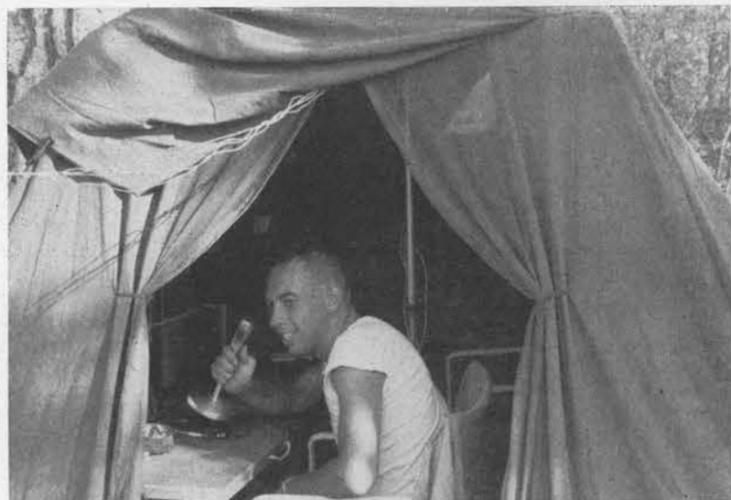
REMEMBER THAT BLIZZARD? IT WAS WED., FEBRUARY 1st

Carl Kinney



RECORD SMASHING winners of the Annual Field Day competitions of the American Radio Relay League are L to R: John Halliday 1411-2, W. E.

Petty 5512, and Gene Bussey 1421-1. This picture, snapped during the contest, shows the group's broadcast site in the Manzano Mts. near Tajique.



RADIO TENT used during the Field Day exercise is shown here with Bruce Butler, son of Gertrude, 5211, and Charles Butler, 7111, operating the station. The group contacted 748 stations for a net score of 660 contacts, setting a new competition record.

(Continued from Page One)

Radio Field Day Honors

them set just right required some careful calculating, Gene said. The antennas stretched to a height of 80 ft. with about 400 ft. in each leg.

"All our contacts reported our signal was loud and clear," Halliday said, "even station VK2TN in Sydney, Australia."

Statistical and quality control was the method used for assuring the group the necessary 600 contacts to place in the contest.

"We tackled the problem scientifically," Gene said. "We knew we had to average five contacts every 12 minutes of the 24-hour period. So we prepared our log in advance already marked into these divisions. During the contest time, we maintained a constant check on our progress. Only three calls in 12 minutes was a danger signal—we either redoubled our efforts or changed operators."

The group averaged 28 contacts per hour and once achieved 44 contacts in a single hour. Purpose of the national contest was to prepare equipment and personnel among the nation's ham operators for communications work in case of a national emergency.

W5EKK was the call the Sandians used during the Field Day. It is Gene Bussey's regularly assigned call. The group used a Viking Ranger transmitter running on reduced power of 28 watts. A National receiver NC173 was used. Power was supplied by an Onan motor generator producing 1½ KW at 110 volts, 60 cycles.

"We're happy about our winning," John said, "for it was the first time that a New Mexico group has placed in any national contest such as this."

"And we're already making plans for next year's competition," Gene added.

"Inside Sandia"

Researchers Study Strange Tribes To Reveal Tale of Mystery, Intrigue

Editor's Note: The following excerpts from a scientific treatise, which came into our hands through underground channels, will be of interest to all who have ever wondered what the original Americans might have thought of the atomic age.

"First let us consider the New Sandia Pueblo Indians, who live in communal tranquility at the foot of the Sandia Mountains in central New Mexico on one of the many Government Reservations. These Indians are virtually inaccessible to the casual traveler.

"Contrary to the normal custom of other pueblos, the New Sandians guard the entrance to their pueblo with young warriors, who are tattooed with cabalistic symbols of 'MP,' and who constantly execute various ceremonial gestures.

"There seem to be three branches of the tribe—related primarily through a common dialect known as Governmentese. First there are the Afswepps, who are easily recognizable by the uniformity of their tribal costumes; next the A-ee-cees, whose rituals are the most secret; and lastly the New Sandians, who run the trading posts.

Friendly Tribes

"The three tribes are distinctly friendly, and often join in common ceremonies. The Lassels, distant cousins of these groups, live on a high mesa to the north, and supply the New Sandians with special drums that have a unique sound. Once a year, all the medicine men of each branch of the tribe gather in some remote place, sometimes in Nevada and sometimes in the Pacific Islands, and conduct highly secret rituals with these drums.

"Many of the New Sandia Indians live within the sacred enclosure of the Pueblo—their hogans are identical except in color. Half of them face east and half west—the reason for which is obscure, but it is believed to be of religious origin.

"Shortly after dawn each morning, the warriors issue from their hogans and file slowly into a sacred red Kiva in the center of the Pueblo where secret ceremonies are held all day. As is the custom in many pueblos, no pictures are allowed.

Great Winged Machines

"The Afswepps and a related group, the Afswickcs, are particularly famous for their training of great winged machines to do their bidding—some even make sky paintings that consist of two or three parallel white streaks that by some ritualistic magic are made to disappear entirely.

"Most of the mechanical birds are silver colored, but a few smaller reddish birds, known as Carcos, are used as carrier pigeons to the Lassel Pueblo to the north.

"Leaving the New Sandia Pueblo, a narrow dangerous trail leads westward through a neon jungle, dotted with trading posts, to the older civilization of the Albuquerque Pueblo.

"The first hogans found along this trail are those of the Lobos. Here scholars gather in great kivas and young men sit at the feet of the elders who instruct them in tribal lore. Weird dances involving ceremonial leather balls take place in the spring and fall.

Seasonal Dances

"The spring dance is performed on a diamond shaped plaza where the young men pass a small round ball from hand to hand, occasionally striking it with a sacred stick. The fall dance is done by members of opposing kivas who pass an oval ball back and forth—but striking is forbidden and only kicking is allowed. No squaws are permitted to participate in these dances.

"The earliest Albuquerque Indians were dependent on agriculture in the Rio Grande drainage, and today there are many elaborate hogans and down the Valley that show a high degree of civilization.

"In the city section of the Pueblo are the Businessmakers—Indians devoted to all the arts of trade—and subdivided into various traditional secret societies, with their own special chants and dances and kivas.

"One of the salient characteristics of the Albuquerque Pueblo is its friendliness to the New Sandia Pueblo. In fact, many of the New Sandians have left their Reservation and moved into the Albuquerque Pueblo—and intermarriage is constantly taking place."

* * *

The author? No latter-day Coronado, but Sandia's own genial general attorney, Kimball Prince, in collaboration with his wife Gretta, "working on a government grant," they explained. Their finds were reported to their many friends in a Christmas letter, which has become a tradition with them.

In closing, the Princes forecast a long and happy relationship for the New Sandia and Old Albuquerque pueblos.

"It may well be," they said, "that in the future the whole civilization of this era will be symbolized by the now famous artifact in the Smithsonian Institute—the so-called Nuclear Age Bowl, whose intricate and beautiful design shows the clasped Naja of friendship, interlaced with a field of white glazed contrails, and surrounded by a border of atomic mushrooms."

EMPLOYEE BASKETBALL LEAGUE RESULTS

| | | | |
|--------|----|-----------|---------|
| 7400 | 52 | 1200 | 37 |
| 1600 | 51 | 7200-11 | 19 |
| 7200-1 | 54 | 2300 | 28 |
| 7100 | 59 | 2200 | 36 |
| 5500 | 2 | 2500 | Forfeit |
| 5200 | 39 | 3100-4100 | 29 |
| 7400 | 56 | 7200-11 | 23 |
| 2100 | 49 | 1400-1 | 37 |
| 5500 | 31 | 1200 | 26 |
| 5200 | 36 | 2200 | 26 |
| 1600 | 2 | 2500 | Forfeit |

IRE Groups Plan Meetings Jan. 9-10

Two professional groups of the Institute of Radio Engineers will be meeting in the next two weeks, John McLay, 1455, group coordinator, reports.

Nuclear Science

The Professional Group of Nuclear Science will meet Wednesday, Jan. 9, at 7:30 p.m. in Rm. 217 of the Electrical Engineering Bldg., UNM. L. C. Beavis, 1414, will discuss "Favorable and Unfavorable Effects of Radiation on Materials."

Information Theory

The Professional Group on Information theory will meet Thursday, Jan. 10, at 8 p.m. in Rm. 217 of the Electrical Engineering Bldg., UNM. C. S. Williams, Jr., 1454, will present a talk on the subject, "The Gibbs Phenomena."

R. L. Schellenbaum to Read Technical Paper Before Physical Society

R. L. Schellenbaum, 5112, is in Monterey, Calif., today attending a meeting of the American Physical Society. He will read a technical paper at the conference entitled "Triple-Point Loci From Spherical Shocks Impinging on a Wedge."

The paper presents a phase of shock studies performed in Area III activities of Sandia Corporation.

Mr. Schellenbaum has been at the Corporation for three years. Previously he was employed by the China Lake Naval Ordnance Station at Inyokern, Calif.

He received his Bachelor's degree from Concordia College, Moorhead, Minn., with a major in physics and math in 1950. He earned his MS in 1951 from the University of North Dakota.

SHOPPING CENTER

CLASSIFIED ADVERTISING

Deadline: Friday noon prior to week of publication.

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

Next Deadline: Noon, Jan. 4

FOR RENT

2 BR. HOME, total price \$4,850, equity \$1,060, \$49 per month on balance. Chavez, 1608 Gerald SE. Alb. 2-1791.

SHOPPING CENTER

CAR BED, \$5. Underwood Sunstrand electric adding machine, reconditioned, \$100. Curtin, 8024 Snow Rd. NE, Alb. 9-2143.

2 BR. HOUSE, den, hardwood floors, gas stove, room conditioner, \$11,500. 3930 Simms Ave SE. Astin, Kirtland Ext. 2341. WEBSTER TAPE RECORDER, \$160; bar bell set, \$15; record player, large portable, \$20. Ashby, 2909 Texas NE, Alb. 9-5451.

'53 PONTIAC 2 dr. Chieftain deluxe, RH, hydro, \$800. Kovaschetz, 305 Nara Visa NW. Alb. 4-6368.

IRONER, Deluxe Speed Queen, will bargain, \$170 original price when new. Sandin, 3516 Anderson Ave. SE, Alb. 6-8015.

HOUSE TRAILER, 27 ft., 1951 model, modern, \$1,750. Montoya, 301 Indian School Rd. NW, Alb. 6-5434.

'50 ENGLISH MORRIS MINOR, 5-passenger convertible. Priced to sell. Kelly, 2729 Rio Grande Blvd. NW, Alb. 4-5542.

'50 FORD, fair shape, take up payments \$28 mo., approx. \$150 balance. Tichenor, Alb. 5-5183.

ACCORDION, 120 Base Bonlilli, Italian made w/case, 3 yrs. old, used—very little, \$150 or trade. Denish, Alb. 6-1559.

SHOPPING CENTER

'49 CHEVROLET tudor, excellent motor, \$295. Cannon, Alb. 9-1148 after 6 p.m.

REFRIGERATOR, Coldspot, 9.4 cu. ft., \$75, terms if desired. Berger, 202 San Pablo SE, Alb. 5-0265.

'39 BUICK, 4-dr. sedan, heater, \$75 or best offer. Lopez, Alb. 3-8550.

'50 HARLEY DAVIDSON, Model "45", \$225 or will trade. Connolly, Alb. 2-6008.

WALL FURNACE, 50,000 PLG Utility; buffet dressers, antique make bed table, lamps, antique wardrobe needs reworked. Silva, Alb. 3-0191.

'49 HARLEY DAVIDSON 74 OHV, lots of extras, or trade for jeep, jeep pickup or station-wagon. Ankeny, Alb. 9-5320.

CHILD'S GLIDERIDE, for small child, \$8. West, 9301 Alta Monte NE, Alb. 9-1878.

'50 CHEVROLET PICKUP, deluxe cab, 3-speed transmission. Brooks, Alb. 9-5679 after 5:30 p.m.

WRIST WATCH, Hamilton guardsman, luminous dial, sweep second hand, expansion band, \$70. Mays, Ext. 2-0149.

DINING TABLE, seats 8, Duncan Phyfe mahogany, \$40. Kuhn, Alb. 9-1898 after Jan. 1.

'55 FORD V-8 ranchwagon, RH, straight shift. Colp, Alb. 6-8035.

SHOPPING CENTER

DINING ROOM SET, table, buffet, 4 chairs, \$45 or trade. Samuelson, Alb. 5-8243.

RANGE, electric, apartment size, Kenmore, new, \$100. McGarvie, Ext. 2-9241.

HIDE-A-BED, Futarian, rose upholstery, \$170 cash or take over payments. Original cost, \$330. Hethcoat, Alb. 5-0033 after 6 p.m.

'51 MERCURY CONVERTIBLE, new overhaul, power seat and windows, RHO. Smith, Alb. 2-3475.

'51 DODGE, 4 door, clean, good tires; '48 Chev. panel, 4 speed trans, rebuilt motor, \$150. Underwood, Alb. 6-7709.

3 BR. HOUSE, Mankin, 804 Florida SE, attached garage, hardwood floors, block wall, landscaped, \$12,500. Fullerton, Alb. 5-7092 after 5:30.

MIX-MASTER w/juicer and bowls, white Sunbeam, \$20; 2 children's record albums, 1½ hour play, \$5. Janus, Alb. 5-8228.

FOR RENT

WOMEN'S DORMITORY ROOMS, furnished; kitchen, laundry facilities, linen, maid service, television, walking distance to work, \$45/mo. Base Housing Office, 2-1154.

SHOPPING CENTER

APARTMENT for employed gentleman, 1450 Ridgecrest Dr. SE. Utilities paid. Judd, Alb. 6-8029.

LOST AND FOUND

LOST—Tie clasp; button, overcoat; pin, w/"A"; gloves, black leather, men's; keys, 4 on chain; keys on wire key holder; watch, Benrus white gold; pen, Shaeffer, blk. & gold; earring, silver flower; pin, SC 5 yr.; book, English. Lost and Found, Ext. 26149.

FOUND—Earring w/crescent; key, GM; earring, copper triangle. Lost and Found, Ext. 26149.

WANTED

TO MATE Boston Terrier with pedigreed male. Kodel, Alb. 6-0096.

MEMBERS FOR NEW FLYING CLUB, for those interested in learning to fly. Ouellette, Ext. 22132.

'54 CHEVROLET station wagon, 4 dr. Moak, Ext. 4-2250 or 2-4155.

WOMAN TO SHARE HOME with mother and teenage daughter. Cosstick, 424 Dallas NE, Ext. 4-1144.

Operation Redwing Helped Study of Ozonosphere

Sandia Corporation's Microbarograph responsibilities during Operation Redwing in the Pacific this year are the subject of this article prepared by Robert E. Dunlap, Technical Information Division, 7223. Mr. Dunlap spent some time at the Eniwetok Proving Grounds during the tests and writes from first-hand knowledge on this one phase of Sandia Corporation's work in the Pacific.

—Editor's Note.



MICROBAROGRAPH "head" site on a lonely stretch of Ronjerik beach. Plastic tubes and fittings filter out the sound of the surf.

For most of the men at the Eniwetok Proving Grounds, Shot Cherokee was over when the brilliant glow of this megaton range detonation at Bikini had faded away. For the members of the microbarograph project however, the interesting part of this spectacle was not to come until some minutes later when the sound would arrive at various remotely located instrument stations in a series of bangs, thuds, and rattles.

Confused as these sounds might have appeared to the lay observer, they carried information of great scientific interest. To Jack Reed, research meteorologist in 5111, the record of their passage would reveal, following some complex interpretation, new information on the structure of the earth's atmosphere up to 150,000 feet and, possibly, as high as 400,000 feet.

Jack explains that weather balloons regularly ascend to 50,000 feet and occasionally to 125,000 feet. Above this altitude even such elementary measurements as temperature are not certainly known—the researchers differ by as much as 100 degrees Fahrenheit on the ozonosphere, a hot, ozone-rich layer of air at about 150,000 feet. Although rockets can go through this layer, their speed makes data obtained from them questionable.

Started in Nevada

Sandia participation in upper atmosphere research grew out of a project to minimize blast damage such as window breakage in Las Vegas and other towns around the Nevada Test Site. The damage prevention program undertaken at NTS required collection of data on movement of sound waves away from an atomic blast in order to predict the paths they follow and where they return to the earth. After successful development of delicate microbarograph instruments and accurate methods of predicting sound travel, the possibilities of atomic blasts as sound sources for research become clearer. Thus, during the 1955 series of tests in Nevada, data on the upper atmosphere, over the western United States was being gathered along with studies aimed at preventing sound, or blast wave damage.

The Pacific tests provided an opportunity to extend the research

by obtaining data for a different part of the world. In the Pacific, though, damage to native shacks on the widely scattered islands was highly unlikely and the microbarograph project was set up to gather upper atmosphere data only.

Others Cooperate

Cooperating on this program were Weapons Effects Department 5110 headed then by Dr. E. F. Cox, and the Full-Scale Test Department, 5230 under the direction of Don Shuster, who was in charge of all Sandia Corporation activities in the PPG. Department 5111 conceived and designed the experiment, specifying the data desired, and the stations needed. Division 5232 set up the stations, procured equipment and personnel, made necessary surveys, and obtained the data. Following the shot tests, data was supplied to Jack Reed for reduction and interpretation.

Jack explains the theory as follows:

Studies of the atmosphere at high altitudes utilizing blast or sound waves depend on the fact that sound waves entering a layer of air warmer than the air below it are bent back toward the earth. Sound, moreover, varies in velocity with air temperature. Thus, from the time at which the sound from a blast returns to the earth and the angle at which it strikes, the altitude and the temperature of the warm layer can be deduced.

The ozonosphere is such a layer. Sound refracted, or bent, by this layer, returns to the earth about 100 miles from the site of the atomic blast.

For Redwing, microbarograph sites were selected as near to this distance as possible. In all, five sites were used, Bikini, Eniwetok, and the other Marshall Island atolls of Ronjerik, Ujelang, and Wothe.

Crew of Two

Two Sandia teams manned each site. They were supported at the latter three atolls by a housekeeping crew of two men from Holmes and Narver, the construction and housekeeping contractor to AEC in the Pacific, and a military communications crew of four men. Sandia people were headed by W. A. Gustafson and Tom Takahashi of 5232 whose association with development and operation of microbarograph equipment goes back to the first blast studies in Nevada.

The microbarograph operators were selected by Gus from a long list of eager volunteers. The winners were James Ashcraft, 2113-1, Neilan Botsford, 1223, Bob Burgess, 5213-2, Garrett Drummond, 7241, Joe Lazarr, 5216-1, Adolfo Martinez, 5215, Leo Martinez, 5241-1, Ren Moore, 1283, Robert Neiman, 5133, Robert Pace, 5232, Gene Palmer, 5242-1, Dick Rudolph, 5215, Raymon Stevens, 2545-3, Frank Takahashi, 2541-2, Connie Taylor, 5213, Jim Taylor, 2124, Eldon Upchurch, 2124, Dulin Westfall, 1611-1.

All men were trained in the theory and operation of the equipment in a week-long class taught last winter by Tom Takahashi and Bob Pace. While preparation of equipment and training of men was going on, Gus made several trips to the Marshalls to select the physical location of the camp on each of the atolls chosen. At each camp, Holmes and Narver set up tents, water distillation plants, freezer units, and a cookshack. In mid-April the crews left for the Pacific and in the interval before the first test, set up the equipment.

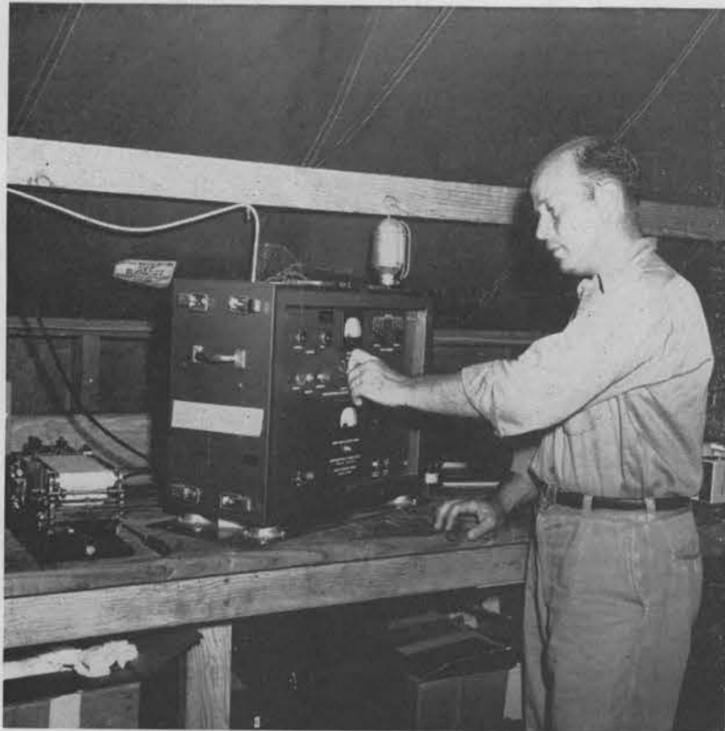
Surveying Task

Major task during this period was accurately surveying the position of the microbarograph heads, the

instruments used to pick up the minute changes of atmospheric pressure that constitute the sound of blast waves. To determine the angle of approach of a wave, two such heads were placed some distance apart at each location, with their positions exactly plotted. A wave travelling on an exact horizontal plane thus would be timed at the precise speed of sound as it passed from the head nearest the blast to the other. The angle of approach of a wave descending from some point above the horizontal would be indicated by calculating the time interval less than the speed of sound that it took the wave to be registered between the two points. The delicate job of surveying positions of the microbarographs was undertaken by Burt Snow, 5211; Tom Takahashi, Bob Pace and Guy Willis, 5213; Ren Moore, Dick Rudolph, Bob Burgess and Jim Taylor.

At the head, an acoustic filter minimized the effect of wind and local noises such as surf by rejecting all pressure waves above five cycles per second. Pressure variations getting through the filter into the head moved a small iron bar placed in an electrical field and unbalanced the field in proportion to the amount of pressure. At the laboratory area, a microbarograph amplifier, to which the head was connected by cable, detected the unbalance of the field and responded by increasing or decreasing current to the head. This change in current deflected the pens of moving paper-strip recorders.

Thus, energy from the atom helped write the story of the atmosphere, a story at least for those who know the language.



EQUIPMENT TEST—Gus Gustafson, formerly of 5232, checks the microbarograph amplifier and recorder at the station on Ujelung.



BURT SNOW, 5211, signals to the rodman. They are surveying microbarograph heads on Ronjerik atoll.

Service Anniversaries

TEN
YEAR
PINS



Elsworth P. Hubbs
5523
Dec. 30



Donald E. Hurt
2111
Dec. 31



Bernard C. Brown
2124
Jan. 6

FIVE YEAR PINS

Dec. 28-Jan. 3

Shirley Meloche 2471, Frances Meloy 5532, Hazel Smeltzer 2462, George Neufeld 2483, Martin Hansen 2721, Stanley Urevitch 2111, James McGriff 7311, Wallace Mitcham 2411, Emil Steinkraus 7411.

Dale Easton 2413, Dorothy Wall 2461, Albert Bender 2713, Maurice Chavez 4131, Lonnie Johnson 2223, Georgia M. Howard 2471, C. L. Carpenter 1241, Carlton Whitcomb 2443, Paul Pewe 2611, John Piri 2711.

Ellen Foster 2461, Marie Terry 7225, Joseph Bunch 1651, Roscoe Brooks 2113, Richard Lujan 2221, Robert Knudson 3160, Bernard Hussey 2451, Paul Miller 2533, Hilman Frock 2452 and Ruth Wood 7225.

TWO YEAR CERTIFICATES

Dec. 28-Jan. 3

Mary Placek 7225, Elmo Whitmore 7411, John Wood 2122, Louis Joseph 7231, Paul Luers 7322, John Lynn 2122, H. E. Montgomery 1621, Jacob Bernal 2461, Raymond Kollman 4152, Loyd Keller, Jr. 2723.

John Morgan 2531, L. B. DeSaulniers 7123, George Roberts 7422, Donald Bush 1461, Joan Lent 2461, Roy Wilcox 7411, M. Katherine Weston 5121, Robert Crouse 7321, Owen Lockwood 2711 and E. Jane Lord 7225.