



## A. Y. Pope Named To Head New Sandia Directorate

Alan Y. Pope has been named Director of a new organization, comprising the Aerospace Nuclear Safety Department and the Aero-Thermodynamics Department, effective Jan. 1.

Mr. Pope has been with Sandia Corporation since June 1951. He was promoted to division supervisor in 1952, and department manager in 1957. All of his work at Sandia Laboratory has been in the field of aero- or thermodynamics.

Prior to coming here, Mr. Pope was a professor in the Aerodynamics Department at Georgia Institute of Technology. While teaching and also since arriving at Sandia, he has had numerous technical books published.

Mr. Pope received both his Bachelor's and Master's degrees in Aeronautical Engineering at Georgia Tech.

He worked one year for the National Advisory Committee for Aeronautics at Langley Field, Va.

He is an associate fellow of the Institute of Aeronautical Sciences.



## SANDIA CORPORATION

PRIME CONTRACTOR TO THE ATOMIC ENERGY COMMISSION

ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

# LAB NEWS

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## H. I. Romnes Takes Office Today as AT&T President



H. I. Romnes

H. I. Romnes took office today as president of AT&T, succeeding Eugene J. McNeely, president of the company since 1961.

Mr. McNeely retired as an officer but will remain as a member of the board of directors. His career in the Bell System spans more than 42 years.

Mr. Romnes was president of Western Electric Company from 1959 until his election as vice chairman of AT&T's board in early 1964. An engineer by training, he joined Bell Telephone Laboratories in 1928. He became general manager of the Long Lines Department of AT&T in 1950, chief engineer of the company in 1952, and vice president in charge of operations and engineering in 1955, before going to Western Electric. He was on Sandia Corporation's board of directors from 1959 to January 1964.

Frederick R. Kappel, chairman of the board, continues as chief executive officer.

## E. R. Wood Innovates Safe Handling System for Laboratory Bell Jars

E. R. Wood of Physical Electronics Section, Electronics and Standards Department, has innovated an improved safety system for the moving and storage of the large glass bell jars used in vacuum systems.

Previously, the jars were shipped and moved about the laboratory in cardboard cartons with cardboard packing. After several weeks use in a vacuum system, the jars are moved to Sandia's Scientific Glass Section, placed in an oven, and heated to annealing temperature. This is a safety requirement.

The jars are subjected to high vacuums. If a strain develops in the glass, the jar could implode or crush into itself. Anyone in the vicinity would be exposed to flying glass. Annealing restores the strength of the jar.

Mr. Wood figured that ordinary handling in the cardboard cartons subjected the bell jars to possible strain or minute cracking. The bulky cartons are moved by fork lifts and shifted around store rooms by hand.

To prevent undue shocks, he adapted a 50-gal. A/N can to facilitate easy handling of the jars. Wheels, with locks, and a handle were added to the outside of the can. Inside, foam bumpers cradle the jar. The jar is completely protected and a web belt harness enables one man to remove or place the jar in position easily. An added feature of the container is that it tilts on its side so that the jar can be cleaned without removing it.

Mr. Wood has had three units built in

Sandia's Sheet Metal Shop. The plans are available to other Sandia organizations who regularly use a number of bell jars in their laboratories.



E. R. WOOD of Physical Electronics Section displays his new safety system for moving and handling large, glass, laboratory bell jars. Converted A/N can has wheels, handle, and foam cradle inside.

## ECP Distributes \$182,659 in 1964; Reserve Fund Allocations Made

The Sandia Laboratory Employees' Contribution Plan closed the year 1964 last week with distribution of the November checks and allocation of the reserve fund.

A total of \$182,659.68 was contributed by Sandia Laboratory employees to the United Community Fund and the seven other participating national agencies. The reserve fund, a total of \$1681.11, was allocated among 11 agencies to meet specific needs. The allocation was as follows:

Arthritis Foundation of America received \$113.42 to purchase two portable paraffin bath units to be used in out-patient care.

Bernalillo County Heart Association received \$110.70 for an otopscope, ophthalmoscope, and an infant tyco (Aneroid).

New Mexico Society for Crippled Children and Adults received \$184 for a wheelchair and a walker.

Play-therapy equipment will be purchased by the Albuquerque Child Guidance Center with its \$76.25 allocation from the ECP reserve fund.

The Visiting Nursing Service, Inc., received \$65 for special syringes.

Muscular Dystrophy Association of America received \$120.38 for a wheelchair.

Folding chairs and a used piano will be purchased with the \$200 reserve fund allocation to the Martineztown House of Neighborly Service.

The National Multiple Sclerosis Society will use its \$150 reserve fund allocation to establish a multiple sclerosis clinic at Bataan Hospital.

Christina Kent Day Nursery will use \$50 for miscellaneous instructional supplies.

Albuquerque Hearing Society will use \$340.84 for an amplification desk, capable of operating a total of six Acousta desks, and an Acousta headset.

The Special Education Center will use \$50 for 10 school desks.

The Albuquerque Boys Club will use \$220.52 for the replacement of windows in its bus.

Total 1964 distribution of ECP funds was as follows:

United Community Fund	\$148,204.23
American Cancer Society	9,161.76
Bernalillo County Heart Association	7,561.93
Arthritis Foundation	2,379.97
N. Mex. Society for Crippled Children and Adults	6,740.79
National Multiple Sclerosis Society	2,379.97
Cerebral Palsy Association	1,273.75
Muscular Dystrophy Association	2,553.48
Reserve	1,681.11

## Sandia '64 Payroll \$76 Million; Spends \$23 Million in State

Sandia Corporation's payroll for the calendar year 1964 amounted to approximately \$76.6 million, including the \$8.8 million payroll at Sandia Livermore Laboratory in California. For 1963 the figures were \$72.6 million and \$8.5 million respectively.

During 1964, the number of persons on roll at Sandia Corporation averaged about 8125, including 985 at Livermore Laboratory. This compares with the 1963 average of 8070, including 995 at Livermore.

Assets of the Atomic Energy Commission's installations operated by Sandia Corporation totaled about \$167.1 million at the end of 1964, compared to \$149.4 million last year. These figures represent undepreciated values of buildings and facilities at Sandia Laboratory, the Sandia Livermore Laboratory, and Tonopah Test Range in Nevada. All of the plant assets are the property of the AEC.

Purchases by Sandia Corporation in the State of New Mexico will amount to approximately \$23.1 million for the calendar year 1964, based on actual figures for the first eleven months and estimated for December. The figure does not include purchases from other AEC contractors. In 1963, purchases in the state amounted to about \$22.3 million.

Approximately 98 per cent of the amount spent in New Mexico this year, or \$22.5 million, went to Albuquerque firms.

New Mexico firms doing business with Sandia Corporation during 1964 numbered about 1100. All but 24 of these are Albuquerque firms.



MATH TEACHERS from parochial schools in Albuquerque visited Sandia's 7090/3600 computer facility Dec. 15. Richard Young (left) of Data Center Division was on hand to answer questions.

## (Editorial Comment)

### Why Get Involved?

A friend reported that recently his automobile broke down about a mile from work and he walked to his office along the roadside, through a cold day, with hundreds of cars passing. No one offered him a ride.

This brought to mind news reports of persons in deep trouble who were refused aid by onlookers. A woman gives birth to a child while lying on the sidewalk because a taxi driver would not take her to a hospital. A young woman is attacked on a city street. No one wants to get involved so she gets no help and is killed. There have been other reports of such instances.

Now comes a reassuring report. This concerns a Sandia couple driving home in the rain. A youngster riding a motor bike was struck by a car. The couple stopped, instructed someone to call an ambulance and the police, took off their coats and covered the boy who lay on the pavement, and gave him what help they could. By the time the ambulance arrived they were soaked and cold. And they were involved. They directed the driver to the nearest hospital. Later, when they learned of the consequences of the accident they went to the police and made their report.

Their attitude is "What else could we do?"

They could have refused to become involved. That's what others have done. But they chose to become involved and do what they could to ease a tragic situation.

Involvement is not always the easiest way, but frequently it is the most humane.

## Three Years Work in Building Adobe Home; It's Still Unfinished

"An adobe house, especially one that you build yourself, seems never complete," says Bernice Sanders, senior clerk in Personnel Processing and Reports Division. "You are always adding decoration or changing the furniture or painting the plaster. It's easier to paint the walls than clean them."

Bernice and her husband Jim began construction of their adobe home in Tomé (30 miles south of Albuquerque, near Belen) three years ago. They started building in September. In the meantime they sold their house in Albuquerque sooner than expected and moved into their uncompleted adobe in January.

"It was cold," Bernice said. "We had walls and a roof. The windows were in but the doors were just placed in position. We had lights and a water well with a hand pump. For about a month, until the rest of the utilities were completed, we roughed it."

Those days are gone forever. "Comfortable" describes their home now. Four large rooms are complete and fully furnished primarily with handcrafted contemporary Mexican furniture. Bernice's extensive collection of Indian baskets decorate the walls and Indian rugs complement the polished brick floors. Modern Mexican glass and Indian pottery are displayed along with original oils painted by her brother.

"He designed the house, too," Bernice says, "since he is an architect. More than that, he built the three fireplaces in the

house and helped lay the brick floors."

The architect's touch is evident in several places—the curved fireplace wall that separates the kitchen from the dining room, another curved wall which provides an inside planter area, and sculptured niches in the thick adobe walls to hold decorative pieces.

Another unique touch in the construction of the house is the lack of a concrete foundation. A trench was dug instead and filled with water. As soon as the water seeped into the earth, the first row of adobes was laid inside the trench below the surface. "This is the way the early Spaniards built adobe houses," Bernice says, "and there are many 200-year-old houses still standing."

Provisions were made in the design of the house for adding an upstairs bedroom and balcony. Another large room will be added to form a new living room.

"We have much work to do," Bernice says. "But there's no hurry now with the present section complete. We plan to pave the front with flagstones, add a high wall in the back to form a small courtyard, and landscape the area."

Bernice and Jim enjoy living in Tomé. They appreciate the unhampered view of the Sandia and Manzano mountains, the spread of the Rio Grande Valley to the south, and the clear view of the volcanoes and Mt. Taylor to the west. In the summer they plant a large garden and have a 13-

CONTEMPORARY HANDCRAFTED Mexican furniture and Indian rugs provide comfortable surroundings in the present main living and dining area of the Sanders' adobe home. Another living room will be built in the future.



## Sandia Authors

J. W. Guthrie of Tube Development Division, "Mass Spectrographic Analysis of Erbium, Cerium, and Lutetium Metal," December issue, *Journal of the Less-Common Metals* (published in The Netherlands).

A. D. Swain of Development and Systems Division, "Some Problems in the Measurement of Human Performance in Man-Machine Systems," December issue, *Human Factors*.

D. H. Killpatrick of Applied Research Division, "Pressure-Temperature Phase Diagrams for Nb<sub>3</sub>In and Nb<sub>3</sub>Bi," November issue, *Journal of Physics and Chemistry of Solids*; "High-Pressure High-Temperature Synthesis of a New Beta-Wolfram Compound, Mo<sub>3</sub>Sn," December issue, *Journal of Physics and Chemistry of Solids*.

R. R. Prairie of Statistics and Components Division, and W. J. Zimmer of Statistical Research Division, "Factorial Experiments with the Factors Applied Sequentially," December issue, *Journal of the American Statistical Association*.

R. A. Hill of Plasmas and Kinetics Research Division, "Tables of Electron Density as a Function of the Halfwidth of Stark Broadened Hydrogen Lines," November-December issue, *Journal of Quantitative Spectroscopy and Radiative Transfer*.

### Bids Sought for Modification of Tech Area Building

Bids were invited recently for construction of a storage addition to Bldg. 864, according to an announcement by the Atomic Energy Commission. The storage addition, approximately 40 ft. long, 20 ft. wide, and 12 ft. high, will serve Static and Centrifuge Section of Environmental Research and Operations Department.

The project will include providing heating and sprinkler systems for the addition, electrical lighting, power and intrusion alarm, and modifications to street lighting and circuits. Work is to be completed within 75 days after the contractor receives notice to proceed from the AEC.

R. G. Piper is the Plant Engineering Department project engineer.

### Take Note . . .

During recent "Open House" events at Sandia Laboratory's Sphere of Science, many of the visitors, relatives of employees, were from out-of-state. Some 46 visitors represented 17 states other than New Mexico.

R. P. Gall of Sandia's Public Information Division has been elected president of the New Mexico chapter of the Public Relations Society of America.

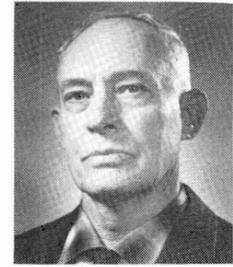
acre field of alfalfa and a pasture for a couple of cows and calves.

"I guess I'm just a country girl," Bernice says. "Nowadays, a trip to downtown Albuquerque is a visit to the big city."



ANCIENT COTTONWOOD TREES on the site were retained when Bernice Sanders and her husband started building their adobe home in Tomé. Construction was traditional adobe with many modern touches. They performed much of the work themselves, had help with the walls and roof.

## T. L. Forcum Retires After 12 Sandia Years



T. L. Forcum retired from Sandia Corporation in December after more than 12 years' employment here.

He was a machinist in the Machine Shop Division.

Mr. and Mrs. Forcum and one son reside at 2903 San Mateo NE. They have other children living in Oregon and Oklahoma.

Outdoor recreation particularly appeals to Mr. Forcum.

## Sandia Speakers

E. G. Thuman of Administrative Programs Division, "Computers and Medicine," Bernalillo County Medical Association, Dec. 4, Albuquerque.

J. G. King of Advanced Manufacturing Development Division, "A Year's Experience with Federal Standard 209," Third Western Contamination Control Congress, Dec. 9-11, Long Beach, Calif.

C. J. McGarr, Director of Service Operations, "Management Science in an Inventory Control System," U. S. Civil Service Commission career development program, Jan. 19, Washington, D.C.

A. T. Fromhold and Albert Narath, both of Physical Sciences Research Department, "Nuclear Spin-Lattice Relaxation of Cr<sup>53</sup> in Antiferromagnetic and Ferromagnetic CrCl<sub>3</sub>," American Physical Society Meeting, Dec. 21-23, Berkeley, Calif. Mr. Fromhold will make the presentation.

Albert Narath of Physical Sciences Research Department and D. W. Alderman (a Sandia summer hire), "Chlorine NMR in Paramagnetic and Antiferromagnetic CoCl<sub>2</sub>·2H<sub>2</sub>O," American Physical Society Meeting, Dec. 21-23, Berkeley. Mr. Narath will make the presentation.

## Congratulations

Mr. and Mrs. Cecil S. Sonnier (1531), a son, Stephen Anthony, Dec. 5.

Mr. and Mrs. D. L. Bonk (5154), a son, Eric John, Dec. 8.

Mr. and Mrs. C. E. Robertson (7226), a son, Michael Damon, Dec. 9.

## Sympathy

To Donald Green (4252) for the death of his mother in Albuquerque, Dec. 8.

To Lorin Furrow (4574) for the death of his mother in Albuquerque, Dec. 9.

To C. W. Allen (2313) for the death of his father-in-law on Nov. 30.

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LAB NEWS

JANUARY 1, 1965

SANDIA CORPORATION

LAB NEWS



ALBUQUERQUE, NEW MEXICO • LIVERMORE, CALIFORNIA

Editor: Robert S. Gillespie  
Sandia Corporation, Albuquerque, New Mexico

Editorial Offices  
Sandia Laboratory  
Albuquerque, New Mexico

Employee Publications  
Bldg. 800  
Room 112  
Tel: 264-1053

Livermore Laboratory  
Livermore, California  
Public Information  
Bldg. 912  
Tel: Hilltop 7-5100, Ext. 2395

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## Small Employee Group Makes Biggest Use of Sickness Absence Benefits

Sandia Corporation's sickness absence plan is designed to provide wage continuance in the event of sickness or injury off the job. It ranks high among established plans throughout industry.

Employees accrue one and one-half days of sick leave per month of employment to a maximum of 125 work days. These days can be invaluable in the event of major illness. There is a waiting period of two days before charging time to sick leave. If, however, the absence extends to 10 calendar days, the first two days are paid for as sick leave. Payment for sick leave is made at full salary.

Twenty-five per cent of Sandia employees took no sickness absence in 1963. This figure was compiled as part of a study of sickness absence at Sandia Corporation which examined attendance records from 1957. The study was performed by Medical Administration Division under Sam Mancuso.

"The sickness absence data were programmed for computer processing to enable the identification of that small segment of the employee population which contributes disproportionate percentage of days lost," Sam said. "This, of course, is not peculiar to Sandia Corporation since many studies of industries throughout the country have shown that a small per-

## Optical Systems Working Group Meets at Tonopah, Tours Sandia Test Range

The Optical Systems Working Group (OSWG) of the Inter-Range Instrumentation Group - Range Commander's Council held its annual meeting at Tonopah, Nev., in early December.

R. L. Levesque, Sandia representative, attended the conference sessions with the 23 members and associates and conducted the group on a tour of Tonopah Test Range for inspection of some of Sandia's optical facility developments there.

National and service ranges represented at the meeting were: White Sands Missile Range, Pacific Missile Range, Air Force Eastern Test Range, Air Force Western Test Range, Naval Ordnance Test Station, Air Proving Ground Center, Air Force Flight Test Center, and National Bureau of Standards.

The purpose of OSWG meetings is to coordinate efforts between ranges in research development standardization and purchasing of specialized optical instruments.

TONOPAH TEST RANGE played host to the Optical Systems Working Group of the Inter-Range Instrumentation Group in December. Those touring Sandia's facilities included: (front row, l to r) Joseph Lee, USAEPG; Charles A. Clement, AFETR; William E. Peterson, Dugway Proving Ground; Wesley R. Lambert, NMC, Ft. Mugu; Jack Clemente, PMR; Dan Parsons, Sandia; Myron L. Curtner II, NASA/MSC. (Back row) Jose Llamas, Sandia; Jurgen R. Meyer-Arendt, NBS, Boulder, Colo.; William Pabst, Jr., WSMR; Peter Ktansenburg, Hill AFB; Floyd Kinder, NOTS; K. H. Crumbly, NASA/LRC; G. B. Timko, PMR; Reid Gilland, Vitro/Eglin AFB; Albert E. Taylor, AFFTC; Keith G. Markham, AFFTC; Guy E. Spooner, 1369th Photo Sq., Vandenberg AFB; Olaf E. W. Heimdahl, USNOTS; D. A. Greenwell, Sandia; William C. Russell, WSMR; and R. L. Levesque, Sandia.

centage of an employee group is responsible for a large proportion of illness absence."

The Sandia study showed approximately the same result for all the years since 1957—about 10 per cent of the employees account for 50 per cent of the sickness absence. The study also showed that, generally, sickness absence is increasing at Sandia Corporation.

In an introductory statement in the "Sickness Absenteeism Control Guide for Supervisors" issued last month, S. P. Schwartz, Sandia Corporation President, wrote:

"We expect each employee to maintain reasonable health standards by taking intelligent precautions against illness or accident and by not permitting minor indispositions to keep them away from the job."

The guide listed attendance responsibilities of each employee. They are as follows:

Be on the job each day possible when scheduled to work.

Seek proper medical attention when the need for such attention becomes obvious.

Adopt good health and safety habits both on and off the job.

Participate in Corporation-sponsored programs or other activities designed to promote good health.

Understand that poor attendance adversely affects fellow employees.

Realize that regular attendance contributes greatly to job satisfaction and personal advancement within the Corporation.

"Responsibilities of the Medical Organization in this area," Sam said, "include insuring that newly-hired employees are qualified from a health standpoint and assisting all employees in maintaining good health through their careers at Sandia. The Medical Organization does not take the place of either their personal physician or of supervision. Rather, it works with both to help individual employees enjoy good health and meet their responsibilities for good attendance."

## Take Note . . .

G. L. Morter, Aerospace Nuclear Safety Division IV, is the newly-elected president of the Sandia Laboratory Employees Golf Association. Other 1965 officers include J. P. Ford, Timers and Special Devices Division, vice president; and J. E. Stang, Technical Training Division; W. E. Nelson, Budget Division; and Michael Zownir, Machine Shop Division; board members.

W. P. Brooks, Explosive Facility Division, was appointed secretary-treasurer and handicap chairman of the league.

Members of Mathematical Research Department donated \$76 during the holiday season to be used by the PALs organization for the benefit of the Los Lunas Hospital and Training School.

Military Liaison Organization's Shoes for Kids drive last month received a check from a surprise source. Ed Latimer, who is retired from Sandia and now living in Long Beach, Calif., wrote that he would like to continue to contribute to the Christmas project and sent along a donation.



TIME FOR A TUNE? Jack Suttman, supervisor of Commercial and Animation Art Section, displays a guitar he designed and built. Admiring his work (l to r) are co-workers Raymond Chavez, Annabelle Fink, and Gail Ward. The beautiful workmanship in the instrument is considered as practice work by Jack because he is now planning the process of making another guitar; one even more elaborate.

## A Suttman Creation . . .

# It Takes Unique Skill to Build Tone-Perfect Guitar - Jack Has It

Curiosity combined with guitar lessons has taken care of Jack Suttman's leisure time during the past month. The result: a handmade classical Spanish guitar.

Jack, who is supervisor of Commercial and Animation Art Section, started taking guitar-playing lessons several months ago. After purchasing a relatively inexpensive guitar, he got to wondering about the difference between a custom-made instrument and a commercially-made guitar.

"Instructions for making a guitar are virtually non-existent, so I copied the pattern of the box from my other guitar, haunted the music stores, and combined the ideas of others," he said.

The fingerboard is walnut, the top of the box is spruce, and the sides and bottom are mahogany with walnut trim. He purchased the frets and tuning pegs.

The intricate system of ribbing on the underside of the top and the compound curve of the bottom of the box are the most difficult parts. "Thickness is very important," Jack added, "as the thinner the wood, the better the tone." He used hand tools throughout and made his own clamps.

In his next guitar construction project he will use French walnut, German spruce, and maple or mahogany for the bottom.

## Winter Weather Accident Downs Sandia Laboratory Safety Record Recently

Sandia Laboratory's safety record dropped to zero last week when an employee was a victim of winter weather.

During the snowstorm on Dec. 18, an employee slipped on the ice and fell, striking his head on the sidewalk and twisting his right leg under his body. His right knee was injured.

He was taken immediately to Sandia Medical by a security inspector where he was examined and then sent by Corporation ambulance to a local hospital for further examination and treatment. The employee is expected back to work this week.

## Welcome Newcomers

Dec. 1-25

Albuquerque	
Phyllis C. Armijo	3126
Nancy Barnes	3126
Lewis R. Blackman	4574
Martha R. Bruno	3126
Janie A. Bryan	3126
*Linda M. Bureau	3126
Silviano Candelaria, Jr.	3413
Norma C. Carrier	3126
Gene A. Chacon	3413
Harry M. Corcoran	3462
*Sheila J. Fuller	3153
Raymond J. Giese, Jr.	3413
*Dixie W. Gotchnauer	3428
George E. Hiett	4574
*Warner H. Jones	3413
James E. Lyons	3413
Mary F. Malone	3126
*Rita V. Montoya	4342
Bernadette A. Rardin	4212
Theodore R. Schmidt	3413
*Bernadine H. Sillivan	4152
*Denotes retired	



VISITING SANDIA Laboratory's Sphere of Science recently were 43 members of Father Flannagan's Boys Town Choir, Omaha, Nebr. A few of the group are shown here admiring a rocket sled at the entrance to the Sphere. The young musicians were on a national tour and presented a program at the Civic Auditorium.

# F. R. Kappel Discusses 'The Honest Job'

A.T.&T. Board Chairman Fredrick R. Kappel spoke recently on "The Honest Job" at a meeting of the 39th Annual General Assembly Meeting of the Telephone Pioneers of America in Chicago.

His subject has attracted widespread attention. The message is appropriate for all persons in the business world. Portions of his talk are printed here.

I would like to say a few things about ethics — integrity — morality. Corporate ethics and personal ethics, both, because they go together. You can't have one without the other. And I'll begin with a look outside the business, a look at the general moral climate of the world we live in.

I think we have a lot to be concerned about. You don't need to be a puritan to sense that moral standards have slackened.

None of us is so naive as to think that corruption is something new. There have always been corrupt elements in society. There have always been weak people. There have always been crooks and con-men. There have always been assorted characters whose main idea in life was to get their hands in and out of other people's pockets without being caught.

Nevertheless, it is hard to escape the feeling that things are worse than they used to be. The crime statistics keep going up. Disrespect for law and order is widely apparent. But these are only part of the story. They are symptoms of deeper social currents.

When most people have rigorous standards of good conduct, that keeps the number of lawbreakers down—almost by definition, you might say. On the other hand, when crime and disrespect for law go up, this means the conditions that favor them are flourishing. And it isn't just poverty and narcotics and racial tensions that generate all the trouble. There are many other factors as well.

#### Other Factors

I would say these include, for example, a weakening of religious belief and training; the idea that society owes everyone a living, so if you don't get yours in the normal way, there's not much harm in finagling it; and to a great extent nowadays, people simply seem to take misbehavior in stride. They don't get up in arms about it. They don't get upset about it. They shrug their shoulders and condone it. A bad actor isn't really bad, he just makes mistakes because his childhood was unhappy. He doesn't need punishment, he needs a psychiatrist. And so on and so on.

Attitudes of this sort have tremendous influence. The way laws and contracts are sometimes interpreted also tends, I think, to weaken the sense of responsibility. Some judges are so concerned to protect the rights of individuals that the freedom to get away with murder (at least in the figurative sense) is strongly encouraged. In this atmosphere, too many people get to thinking that if they don't see a hands-off sign on the cash box, they are invited to dip in.

What I am coming to is this:

This business has been built on old-fashioned virtues and old-fashioned discipline, not on new-fangled laxness, expediency, and what's-in-it-for-me.

We participate (and there is our theme-word) in every aspect of the life around us. We serve all kinds of people all over the continent. We deal with private citizens and public servants, bankers and bureaucrats, preachers and policemen. We handle nickels and dimes and millions and billions. We are responsible for protecting and conserving assets that belong to a whole multitude of people who put their trust in us. We are charged to render service that communities and nations can depend on without question. It is our job to maintain the privacy of communications, to improve the quality of communications, to increase the efficiency of communications, to spread the usefulness of communications. And every minute of every day we are exposed to alternatives of right and wrong. We must choose between the good job and the poor job, the excellent job and the so-so job, the taut job and the slack job, the honest job and the kind of job that ought to go and hide its face.

#### No Choice

But—what I am really saying here is that we do not have any choice. We have no choice at all. There is only one way

for us and that is the way of integrity and quality. Caesar's wife had nothing on us. We must be above suspicion. And when I say "we" I mean every individual, every person in the business, man or woman, management or non-management, newcomer or old-timer. This responsibility we all share, every last one of us, and no exceptions can be tolerated.

Please note that I said integrity and quality. The point is that ethical business conduct — plain, unvarnished, one-hundred-cents-on-the-dollar honesty — is the necessary foundation for a quality job. How can you do good work if you have any sort of deception on your mind? Honesty is not limited to keeping your fingers out of the cash register. There are more ways to cut corners than you and I could count if we stayed up all night. The person who has cheating on his mind will use any method that comes handy—expense accounts, time reports, records of results, how he uses his time—anything at all.

Now, I didn't pick this subject to talk about because I think telephone people are all of a sudden losing their grip ethically. I do not think this is so. Nor is it any intention of mine to read a lecture. Far from it. This is the group that has known for the longest time, from many years of experience in the business, that integrity is the absolute requirement. We know too that when we bring out integrity to the business, the business gives just as much back to us. I mean, we can be proud of the good reputation of the business, proud of our associates, proud of being telephone people. The reputation we build for the business as a whole—this rubs off on us individually. It gives us a personal asset that we prize and cherish.

No people are more keenly aware of this than we are. No people can do more to increase and spread this mutual benefit than you can, by your understanding, your influence, and the example of your personal conduct. It is for this very reason that I seek your help in making clear where we stand.

#### Eternal Vigilance

I do not think we are losing our ethical grip—but I do think eternal vigilance is the price of keeping it.

I think this all the more because the general moral atmosphere, as I've said, leaves a lot to be desired.

Every now and then we get some public evidence of an individual in the telephone company falling a victim to temptation, and when that happens it gives the whole business a black eye.

This has occurred recently, and there is no doubt that the black eye hurts. Much more important, however, the event demonstrates again that we will not be proof against temptations small or large unless we arm ourselves against them.

So how is this done? You could probably answer as well as I, but I will say it here and count on you to say it later, to yourselves and to others.

First of all, it must be accepted as a fact that this is a management responsibility. It cannot be ignored, avoided, or shifted. Management at every level is responsible, from foreman to president.

Second, the responsible manager leaves no doubt in anybody's mind as to what he expects of every employee. He lays it on the line. He lets people know, and gets them to understand, that he looks for a strictly honest job in every respect and that nothing else will be tolerated.

Third, competent management proceeds on the basis of taking realistic, positive, continuous action to prevent unethical, shoddy, questionable or imprudent practices. This has several aspects.

For example, you are careful whom you hire—but no matter how fine a group of people you are able to employ, you do not put temptation in their path. You organize the odds against wrong-doing. You minimize the opportunities for making missteps. You set things up so that the right course is attractive and the wrong one is forbidding.

And this is not a one-time procedure. The good manager knows that he must follow through. He must be alert to what goes on, day in and day out. He must develop reliable controls and reliable sources of information, and keep these to himself. If and when he suspects something is wrong, he must track it down and make sure, enlisting whatever expert help may be needed to ascertain the facts.

In our business, then, we expect the

good manager to pursue a continuous program of checking, inspecting, and verifying that people are doing their work accurately and as called for. In addition, there are two activities that can help him and I want to say that in my view both of them are very important. One is internal auditing. The other important need is for an alert, heads-up security organization that can effectively stimulate and coordinate effort to prevent fraud against the company of any kind, whether it be attempted by members of the public or by a misguided employee.

Let me emphasize a few points about both the auditing and security jobs.

First, their purpose is to help each of us fulfill our responsibility—not to take the responsibility over. Nothing the auditors or security people do should ever be thought of as taking the place of what you and I ought to be doing.

#### Preventive Management

Second, the function of the security organization is only partly to nail the wrong-doer and his wrong-doing. Naturally it is essential to do everything possible to apprehend individuals who break the rules and break the law. The principal job of the security people, however, is to strengthen what has been well-called preventive management. As I said earlier, we need to eliminate situations or practices that can potentially cause trouble. We must organize the odds against temptation. This is every good manager's continuous assignment, but alert security people can give a lot of help and their ability to do this is the first test of their value to the business.

As to auditing, in the last few years we have begun to hear a new term that I think—and hope—will be even more significant in the future. This is "operational auditing," which to me means making sure we do the job right as well as keep the money straight.

#### Operational Auditing

It means, for example, when we buy goods or services that we require good answers to many questions about the specific transaction. Did we get what we paid for? Was it in good condition and used as planned? Was it reasonably charged and correctly billed? Operational auditing insists on answers to these and many other questions.

Or take an installation or construction job. Operational auditing wants to determine, through first-hand inspection, that service was installed to the customer's satisfaction — that the workmanship was good—that the job was done in good time and was properly reported. If it was a construction job, was it well engineered—and was it then carried out according to specifications? Were time and materials reported accurately? Was the job cleaned up as it should have been on completion?

There are many more details but now is not the time for them. I mention these few for a reason: they emphasize again that the state of our ethics and the quality of our service are two sides of the same thing. Good ethics means pushing for the best in everything, from cash-drawer conscience to trying with all your might to give your customer everything he is paying for and a little bit more.

Let's be clear about this. In most countries communication service was long ago taken over by governments. In our part of the world however it is still entrusted

to private effort and enterprise. The reason is that the effort has been stand-out effort, the service is stand-out service, and the ethical attitude has been what it needed to be to produce this kind of performance. And as sure as death and taxes, this is the combination we need for the future too. I am not talking about a holier-than-thou attitude. I am saying that an old-time-religion feeling for an honest, top-grade job is the very life of this business and always will be.

## Int'l Symposium Sessions Planned Here Jan. 12-15

About 350 U.S. and foreign participants are expected to attend the International Symposium on Packaging and Transportation of Radioactive Materials in Albuquerque Jan. 12-15.

Jointly sponsored by AEC and Sandia, symposium sessions will be held at Western Skies Motor Hotel with a day-long program of environmental test demonstrations at Sandia Laboratory.

Thirty-seven unclassified technical papers on transporting and handling radioactive materials, which are of interest to personnel in the fields of packaging, regulation, traffic, container design and insurance, will be presented during the four-day event. A similar symposium was conducted by the AEC in Washington, D.C., in December 1962.

James A. Sisler of Hazardous Materials Packaging Section is chairman of the symposium committee. Other committee members are L. A. Faw, supervisor of Hazardous Materials Packaging Section; V. C. Vespe, director of Operational Safety Division, AEC-ALO; and D. C. Costello, Division of Reactor Development, AEC, Washington, D.C.

Representing Sandia Corporation on the program will be L. A. Dunn and R. C. Gauerke, who will serve as chairmen of the morning and afternoon sessions on Jan. 12. B. E. Bader of Dynamics Analysis Division will present a paper entitled "Heat Transfer in Liquid Hydrocarbon Fuel Fires" and J. A. Sisler will make a presentation on "Radioactive Materials Shipping Container Development."

On Jan. 13, a one-hour petroleum fire test demonstration is scheduled to be conducted in Coyote Canyon test field about 7 a.m. This will be followed by a 30-ft. drop test of a two-ton insulated container in Area III and a demonstration of tie-down techniques in a rail car hump test. The movie "Environmental Testing at Sandia" will also be shown to the group.

Sandians serving on the symposium subcommittee are L. A. Faw, program; J. O. Davis, entertainment; D. E. Grim, transportation; M. B. Gens, registration; and F. E. Diebold, publicity.

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LAB NEWS

JANUARY 1, 1965

VISITS SANDIA LABORATORY—During a visit here last week, Morris Tanenbaum, right, Director of Research and Development, Western Electric Company Engineering Center, Princeton, N.J., discussed programs with R. C. Fletcher, left, Sandia Corporation's Vice President, Research.





WHITE, WOODEN FENCE protects only grave on Tonopah Test Range. Grave is that of Josephine Tait, who died in 1913. D. A. Mayfield, Range Security Section, helped arrange for fence at request of Mrs. Tait's daughter, who visited grave in 1963.

## Something Old, Something New Can Be Found at Tonopah Test Range

Nowhere do the past and present contrast more sharply than at Tonopah Test Range where Sandia employees need only to look about them to observe a slice of Nevada life as it appeared 40, 50, or 60 years ago.

Within a mile or two of the radar and tracking telescopes scattered around the range is a different world—one of abandoned mines, deserted houses, broken down cars, and half obscured trails.

The range is now off limits to prospectors, but in the first two or three decades of the century, the landscape was alive with miners looking for and occasionally removing silver and gold from the low-lying mountains of the area.

The remains of all this activity, far from any town and protected in recent years by range security, are largely untouched.

There's the old Urania silver mine, its narrow shaft, only half covered, dropping away abruptly hundreds of feet beneath the surface. Long abandoned, it was the source of ore so rich that several years ago someone entered the area and removed several loads of tailings—refined leftovers which still contained valuable ore.

Not far away is the only grave on the range. Buried there, facing the morning sun as she requested, is the wife of a one-time supply station proprietor at nearby Cactus Springs, once a watering point on the way to Tonopah and Goldfield. The gravestone, which bears the inscription, "Mother, Josephine Tait, 1877-1913," was placed on the grave in 1927 by Mrs. Tait's daughter, Mrs. Selma Phillips.

Around the grave is a white, wooden fence, erected last January by Sandia at the request of Mrs. Phillips, who visited her mother's grave in November 1963 for the first time since 1927.

Further along is Jim Thompson's old 20th

Century mine where Thompson, spurred on by visions of a rich silver lode just a few feet ahead, spent 30 years, on and off, blasting a horizontal shaft for more than a quarter of a mile into a mountain of solid granite.

The engine which provided power for the operation still stands at the head of the shaft and in the foreground, topped by a set of rails, are the hundreds of tons of rock removed from the tunnel during half a lifetime of digging.

Not too far away is a mine of a different sort—a turquoise mine where, as Mrs. Phillips recalled during her visit a year ago, a man named George Keller mined high quality turquoise and shipped it direct to Tiffanys in New York. He left before 1920, sealing the mine forever with a charge of powder.

Scattered around these mines are the houses and sheds which sheltered the miners and their families. Rusty stoves and two or three junked cars spot the landscape.

The desert air has treated most of the houses kindly. The walls and floors are still solid and the litter inside is well preserved. A 1931 issue of Hearst's **International Cosmopolitan** sports the bylines of such stalwarts as Kathleen Norris, Peter B. Kyne, Steve Hannagan, Faith Baldwin, Damon Runyon, and Irvin S. Cobb. Titles like "Men are So Dumb," "150 Pounds of Football Genius," and "Nevada—Last Frontier," catch the eye.

The genuine Western atmosphere of the Tonopah area—and all of Nevada has appealed to Sandia employees working at the Range. There are still several openings at the Range for qualified personnel; needed is a staff member electrical and several staff assistants electrical. Employees interested in lateral transfers to Tonopah Test Range should contact their supervisors.

THIS OLD HOUSE is one of several still standing at various points on Tonopah Test Range. Once the home of miners, it has been vacant since depression days.

## Medical Identification Can Save Lives by Alerting First Aiders

By S. P. Bliss, M. D.  
Sandia Corporation Medical Director

It was late in the evening and the car was weaving down the street—the driver slouched over the wheel. At one point the car ran up over the curb and back down. Two blocks farther on it ran into a utility pole.

Police, who were several blocks behind, saw the whole thing. When they reached the car the driver had staggered out of the car—flush-faced and glassy-eyed. He babbled incoherently and collapsed in the arms of the policeman.

Pitching the man into the rear of the patrol car, police filled out their reports and called for a tow truck before proceeding to the station. At the station they administered a test to determine the amount of alcohol on the driver's breath. To their surprise the man had not been drinking.

The driver had now lapsed into a coma, and police, suspecting for the first time that something else might be wrong, rushed him to a nearby clinic. There doctors pronounced him a diabetic in insulin shock, a critical condition which because of physical appearance is easily confused with drunkenness.

Such cases are not unusual. They happen repeatedly throughout the country as people with hidden medical problems and dangerous allergies are given incorrect emergency care. It's a problem that not only worries doctors, but police, firemen, disaster teams, and others who are often called on to administer First Aid.

Every year many of North America's two and a half million diabetics are locked up in jail as drunks—some of them dying in jail for lack of treatment. Still other people allergic to penicillin, aspirin, codeine, sulfa, anti-tetanus and other drugs are given emergency treatment that does more harm than good. Even those with cerebral palsy, heart trouble, and epilepsy have sometimes been administered the wrong treatment.

### A New Symbol to Alert First Aiders

To alleviate problems like these, many medical authorities are now recommending that persons with hidden medical problems wear identification tags, or at least carry an Emergency Medical Identification Card in their wallets, calling attention to their special conditions in case they are unable to do so themselves.

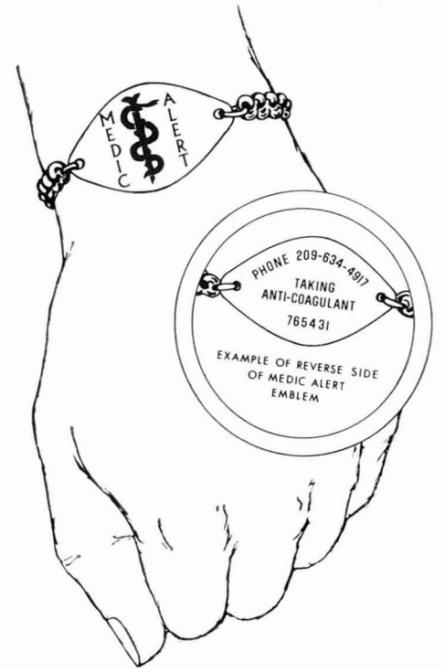
Doctors, nurses and persons qualified to administer First Aid are being educated to look for these identification tags or cards and to take whatever precautionary measures are necessary.

The tags, which are by far the best approach to identifying a hidden medical problem, come in several forms—usually to be worn about the wrist or neck. As such, they are suitable for necklaces, bracelets, or charms.

To further illustrate the need of emergency medical identification of hidden medical problems, consider the following facts about a few of the over two hundred known reasons for wearing medical problem identification.

### Epilepsy

Epilepsy is a condition in which convulsions occur suddenly and repeatedly, which last for several minutes, and then are followed by a variable period of unconsciousness and/or mental confusion. Unconsciousness or period of mental confusion has, like



a diabetic, been frequently mistaken for acute alcoholism or drug addiction, and resulted in the person so afflicted spending several hours in jail.

Should the person be taken directly to the hospital, there is the difficult job of determining the cause of the mental confusion or unconsciousness. The emergency medical identification device simplifies the diagnosis, and saves the person the expense, as well as the multiple needle punctures for blood examinations, etc., that would otherwise be required.

There is also the condition of "Status Epilepticus" in which one convulsion rapidly follows another and is often fatal unless certain drugs are given intravenously early in the condition.

### Blood Type

Blood transfusions in case of accident and emergency are lifesaving measures. Receiving the wrong type of blood frequently proves fatal. Consequently, your blood and donor's blood must be typed and cross-matched. The first procedure takes about 15 or 20 minutes which could be saved if the medical identification device gave the blood type.

### Allergic Conditions

Allergic conditions mean an abnormal sensitivity to certain things such as foods, medications, etc. In other words, these foods or drugs act as a poison to the person who is allergic to them and can prove fatal. Fatal result or not, the person who is allergic to certain drugs such as penicillin, horse serum, etc., does not want an injection of one.

### Contact Lenses

A great many people throughout the United States are wearing contact lenses. These are seldom noticed by doctors, nurses, or others. It is recommended procedure to remove contact lenses when sleeping or when unconscious because of the very real possibility of a painful corneal abrasion.

Corneal abrasions, as a rule, heal completely without a trace, but if they become infected this could result in permanent scarring of the cornea with a resultant impairment in vision and in extreme cases, possibly blindness.

### Special Medications

**Antabuse** is a tablet taken daily by alcoholics. Even a small amount of alcohol will make the person violently ill if he is taking this drug. If alcohol is given to such a person who is ill or suffering from the effects of an accident, it might well prove fatal.

**Cortisone** and like preparations are given widely for various types of arthritis, bursitis, allergies, some types of cancer, etc. This drug is not curative. Within two days of stopping it the condition it is being given for recurs, often worse than it was originally.

**Digitalis** is a medication given which regulates the heart, and many persons with heart trouble can live a relatively normal existence while taking it. If it is stopped, heart failure might occur.

In the very near future, the Medical Organization will distribute to all employees, via an Employee Bulletin, an American Medical Association "Emergency Medical Identification Card," and more detailed information useful in coping with the problem of medical identification.

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LAB NEWS  
JANUARY 1, 1965



BARBED WIRE FENCE adds to bleakness of Tonopah Test Range scene where miner's shack stands deserted.

# Supervisory Appointments



**RANDALL C. MAYDEU** to manager of Aero-Thermodynamics Department.

A Sandia employee since May 1952, Randall has worked in full scale field testing, aerodynamics experiments, and wind tunnel tests. He has been supervisor of Experimental Aerodynamics Division since 1957.

From 1949-52, he was with the National Advisory Committee for Aeronautics, Ames Aeronautical Laboratory, Moffett Field, Calif., where his concern was with supersonic wind tunnel testing and aerodynamic heating.

He has Bachelor's and Master's degrees in aeronautical engineering from the University of Colorado and also attended Kansas State College.

During World War II, he served three years in the Air Force.



**CARTER D. BROYLES** to manager of High Altitude Nuclear Burst Physics Department.

Since coming to Sandia in August 1952, Carter has worked in weapons effects and in radiation physics. He was promoted to division supervisor in August 1957.

Previously he was at Vanderbilt University in Nashville, Tenn., where he had a research fellowship and a teaching fellowship.

Carter has a Bachelor's degree in physics from the University of Chattanooga, and a PhD degree from Vanderbilt.

He is a member of Sigma Xi, honorary society, the American Association of Physics Teachers, and is a fellow of the American Physical Society.



**CLIFFORD M. POTTHOFF** to supervisor of Test Operations Division 8121 at Livermore Laboratory.

Cliff began work at Livermore Laboratory in June 1957 following his graduation from South Dakota State College, where he received his Bachelor's degree in electrical engineering.

From 1951 to 1952, Cliff served in the U. S. Air Force, stationed in Tennessee.

He is a member of Sigma Tau honorary engineering fraternity, Phi Kappa Phi honorary scholastic society, and Kappa Nu electrical engineering honorary.

## New Addition to Gamma Irradiation Facility Planned For Sandia Laboratory

The Atomic Energy Commission announced this week plans for a 2100-sq.-ft. laboratory addition to Sandia Laboratory's Gamma Irradiation Facility in Bldg. 6588. The new laboratory will be used by the Radiation Physics organization for radiation effects research.

Bids will be invited about Jan. 8, according to the AEC, and opened about Feb. 3. The project will include construction of a new reinforced concrete and hollow-masonry structure; pertinent demolition and remodeling work; extension of heating, lighting, and ventilating systems; and exterior site work. Work is to be completed within 120 days after the contractor receives notice to proceed.

John C. Snowdon is the Plant Engineering Department project engineer.

## CQ-WE Radio Contest Set for Jan. 9-10, 16-17

Fifth annual CQ-WE contest for licensed amateur operators will be held the weekends of Jan. 9-10, and Jan. 16-17, according to E. G. Stewart of Plant Systems Division, Sandia Laboratory contest coordinator. The contest is open to all active or retired Sandia Corporation, Western Electric, and Bell Telephone Laboratories employees.

Dates for Both Weekends	Starting Time Two-Hour Sessions		
	PST	MST	GMT
Sat., Jan. 9, 1965	3pm	4pm	2300
Sat., Jan. 16, 1965			
Sat., Jan. 9, 1965	7pm	8pm	0300 (Sun)
Sat., Jan. 16, 1965			
Sun., Jan. 10, 1965	noon	1pm	2000
Sun., Jan. 17, 1965			

Suggested Frequencies for Short-Wave Bands Sessions

Radiophone  
 20 Mtr: 14.240 to 14.270  
 40 Mtr: 7.230 to 7.260  
 80 Mtr: 3.870 to 3.900

CW  
 20 Mtr: 14.060 to 14.070  
 40 Mtr: 7.090 to 7.110  
 80 Mtr: 3.680 to 3.690

Novice - VHF - RTTY Schedule  
 Sunday, Jan. 24, 1964, four-hour continuous operating session  
 9am to 1pm PST  
 10am to 2pm MST  
 1700 to 2100 GMT

Novice: Listen on your frequency.  
 VHF: Low end of the bands.  
 RTTY: 7.040 MC.

Contest scoring will be on the basis of two points for each confirmed two-way contact (except contacts involving novices which count four points), times the sum of all the different U. S. call districts and foreign prefixes. The same station cannot be counted more than once for each mode of operation. CW contacts count only when made in the CW portions of the bands. Logs submitted are to show date, GMT time, call of the station worked, operator's name, the mode, and WE or BTL unit or location to which he belongs, or from which he retired.

Official log sheets are available from Mr. Stewart, tel. 256-9290, or from Ed Bales, treasurer of the Amateur Radio Club, tel. 264-6139.

At Livermore Laboratory, the local coordinator is A. L. Pearson of Plant Maintenance Division, ext. 2562.



**WILLIAM L. STEVENS** to manager of Advanced Systems Research Department III.

Bill has been with Sandia since 1957 and was promoted to section supervisor or nearly five years ago. In August 1961 he was promoted to supervisor of Fuzing Systems Division, and has since been assigned to the Advanced Systems Studies staff.

Previously he was with Esso Standard Oil for six years as a refinery engineer in the Baton Rouge, La., plant.

He received his BS degree in electrical engineering at Virginia Polytechnic Institute and has completed all of his course work toward a Master's degree in business administration at the University of New Mexico.

From 1951-53 he served in the Army Signal Corps doing special weapons work at Sandia Base.

He is a member of Eta Kappa Nu, Tau Beta Phi, and Phi Kappa Phi, honorary societies, and is a registered professional engineer in Louisiana.



**GLENN H. MILLER** to division supervisor, High Altitude Nuclear Burst Physics Department.

Glenn joined Sandia Laboratory in September 1961 and has been engaged in surface phenomena studies and nuclear burst research. He had spent two years with the Denver Research Institute as Assistant Director, Physics Division, before joining Sandia. Prior to this post, for four years he was Assistant Director of the University of Virginia's Research Laboratory for the Engineering Sciences. For the eight previous years, he was Assistant Professor of Physics at Iowa State University and a research scientist in the Ames Laboratory of the AEC.

Glenn earned his PhD degree in physics from Cornell University in 1947 and his BS degree in physics from Wake Forest College in 1942.



**CARL R. CARLSON** to manager of Advanced Systems Research Department II.

Carl has headed a division in the Advanced Systems Studies organization since he rejoined Sandia in September 1963 after three years with Dikewood Corporation.

He first joined Sandia in March 1953 while working on a doctorate from Purdue University. He holds Master's and Bachelor's degrees in physics from Purdue.

Originally in systems analysis and new weapons studies at Sandia, Carl took a special leave of absence to serve a year and a half as special weapons consultant with the Heidelberg, Ger., Field Office of the Operations Research Office, Johns Hopkins University.

He returned to Sandia in September 1956 and continued in research and systems analysis studies. In March 1957, he was promoted to section supervisor in Systems Engineering and promoted to division supervisor in September 1957.

## 10 Years

Dec. 19 - Jan. 1  
 Albert N. Murphey 7256, F. Arthur Hasenkamp 5323, Dolores A. Carlson 7330, Philip B. Higgins 7252, Francis J. Macek 2121, Juan A. Doyen 8114, Mary E. Placek 2450, John W. Wood 4632, Paul E. Luers 8122, H. E. Montgomery 1111, A. L. Johnson, Jr. 2512, Raymond L. Kollman 4136, and Jacob C. Bernal 4624.

Jan. 1-14  
 Donald M. Bush 1323, Loyd L. Keller, Jr. 1523, Robert J. Crouse 2113, John H. Morgan 2544, George B. Roberts 4422, M. Katherine Weston 5426, Roy J. Wilcox 8114, Frank Alden 2541, Earlene W. Brinegar 3421, Ernestine G. Riggs 4360, M. L. Heister 7332, M. Elizabeth White 4151, Helen P. Anderson 4431, John D. Coleman 2442, Frank D. Alexander 2512, George O. Hawley 2514, Alexander G. Beck 4411, Charles E. Champe 4543, Myron S. Pilat 2511, William M. Bray 1411, and Fred I. Magee 7613.



James J. Kane  
 1511  
 Dec. 27, 1949



Marie C. Ryan  
 3462  
 Dec. 27, 1949

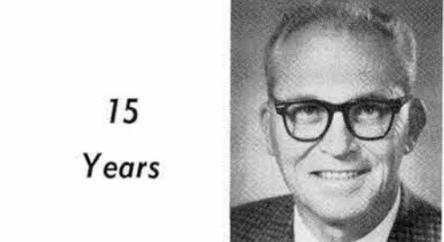


John E. Miller  
 8214  
 Jan. 3, 1950



Joseph C. Connell  
 2112  
 Jan. 4, 1950

## 15 Years



C. Harold Goddard  
 1443  
 Dec. 19, 1949



Julian Silva  
 4614  
 Dec. 27, 1949



Cleo Lee Gommel  
 7243  
 Dec. 28, 1949



George D. Andrews  
 4614  
 Jan. 5, 1950



Ronald E. George  
 4513  
 Jan. 10, 1950



## 20 Years

Richard A. Bice  
 2000  
 Jan. 3, 1945



Harold A. Walters  
 2525  
 Dec. 19, 1949



Ralph O. Pena  
 4623  
 Dec. 19, 1949



Ralph S. Wilson  
 1520  
 Jan. 3, 1950



Royal V. Winter  
 2411  
 Jan. 3, 1950



John P. Cavanaugh  
 4131  
 Jan. 12, 1950



John D. England  
 3411  
 Jan. 13, 1950

# ASQC Section Teaches Quality to Junior Achievement Organization

## 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.

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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

- SKI BOOTS, man's size 9E, Swiss-made Henke, \$15. Burns, 242-2407 weekday evenings.
- '63 VOLKSWAGEN station wagon, converts to camper, 15,000 miles, 30 mpg. Jacoby, 298-0527 after 5.
- MAPLE TWIN BEDS: headboards, footboards, extra long sideboards, \$40; adjustable load leveling trailer hitch, \$15; registered 3/4 Arabian. Galbreath, 898-0644.
- UPRIGHT PIANO, ivory white, \$175. Everett, 299-6057.
- AUTOMATIC WASHING MACHINE, Norge, large tub, deluxe model, top loading, \$40. McIntire, 298-6145.
- BUTANE TANKS: 150, 300, 500 gal., 1/2 price. Shoemaker, 865-7564, Los Lunas.
- 2-BDR, SE, carpeted, a/c, landscaped, walled, low down payment, assume \$88/mo. payments, consider selling furnished, slightly higher. Flower, 298-7943 after 5.
- '58 CHEVROLET Bel Air HT, V8, all extras, AC, \$550. Freshman, 299-9263.
- HI FI SPEAKERS and cabinets, 17 speakers in unfinished cabinet, \$20; 3 speakers in base reflex mahogany cabinet, \$25. Tassia, 511 Utah SE.
- WINCHESTER CARBINE, lever action .32 special, slim and box of shells included. Evans, 298-7816.
- LOT, 75x120, R-1 in NE Heights: washer; baby bed; lawn mower. Dunaway, 299-1422.
- 3-BDR, 1 1/2 baths, family room, 4 3/4% GI loan, \$14,200, assume or refinance, 11317 Mahlon Ave. NE. Precit, 299-3438.
- TRUNDLE BUNK BEDS w/mattresses, one foam rubber, \$35. Kochmann, 299-5133.
- SMALL BEETLE BOMB motor scooter, 3 1/4 HP, 20" high, driven 100 miles, \$95. Villella, 299-6261.
- LIONEL .027 TRAIN SET, 4 engines, 6 switches, lots of track, many accessories, whole works \$25; 21" TV. Willers, 243-7494 after 5.
- TIRE CHAINS, NEW, 6.50x13; new tailpipe for '57 Ford; Trade lenal size safe, AEC type w/3-combination lock for equivalent in letter size. Arquette, 298-2872.
- '58 CORVETTE, yellow, 283 cu. in., 3-speed, w/HT, \$1550; '61 VW sedan, sunroof, \$1050. Moore, 268-3514.
- ONE PAIR clothes line poles, \$12. Jones, 268-5236.
- FULL SIZE BOX SPRINGS and mattress, \$30; unfinished 4-drawer chest, \$15; chrome kitchen table, \$8. DeRuyver, 2412 Britt NE, 299-0396.
- TV, 21" Magnavox table model, 2-yr.-old picture tube, \$40. Lisotto, 298-6211.
- GENERAL ELECTRIC CLOTHES DRYER, heat control, new timer, \$45. Gustafson, 299-3270.
- '64 FORD XL 500, 2-dr. HT, PS, PB, 9500 miles, \$2800. Malley, 256-0833 after 5.
- '64 CORVAIR MONZA, 1-yr. warranty, low mileage, below book price. Denison, 255-3535.
- 243 MEDIUM WEIGHT match rifle. Marksman stock, less sights, NRA excellent, \$90; 22 r.f. Remington 513 match rifle, w/o sights, NRA new, \$50. Milton, 299-4586.
- AQUARIUM, pump, filter, hood, tropical fish; pr. brown lined drapes, floral pattern, 8'x20". Coter, 298-3820.
- 3-BDR., 1 1/2 bath, den, patio, below FHA, \$13,600; '55 Jeep Stn. wagon, 4-wd., R & H, new tires-hubs, \$450. Wilken, 299-7515.
- OAK DINING TABLE, 4 chairs; maple 5-pc., bedroom suite; Motorola console TV; '63 Corvair Spyder Sport coupe. Jarvis, 298-1113.
- '64 CHEV. IMPALA, 2-dr. HT, AT, PS, PB, AC. Bourne, 256-3230 after 5:30.

## FOR RENT

- NEW 3-bdr. unfurnished apartment, 1 1/2 baths, electric kitchen, CFA heat, a/c, carpeted, garage, yard, \$135. Stone, 298-4620.
- 3-BDR., 1 1/2 bath, a/c, all schools walking distance, large corner lot, Hoffmantown area, near shopping center. Herrmann, 299-5598.
- 3-BDR. HOUSE, near Los Altos Park, stove and ref. furnished, nice yards, front - back. Baldwin, 299-4838.

## WANTED

- JOIN CAR POOL from Bosque Park to 880, will alternate driving. Przystas, 865-9229.
- BABYSITTING in my home, excellent care and facilities for any age, near Eubank and Indian School Rd. Morrow, 298-1762.
- DOUBLE TENSION CONCERT SNARE DRUM, case and stand desirable. Van Vickle, 299-1240.

## LOST AND FOUND

- LOST—lady's beige knit gloves with leather palms; car keys for Metropolitan; Parker ballpoint; safety prescription glasses in black case; GM car keys on ring. Lost and Found, tel. 264-2757.
- FOUND—GM car keys in blue case; single Chicago lock key; one gold cuff link; one GM car key. Lost and Found, tel. 264-2757.

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LAB NEWS

JANUARY 1, 1965

The December issue of *Industrial Quality Control* has high praise for participation in a Junior Achievement project undertaken by the Joplin-Springfield (Mo.) Section of the American Society for Quality Control through its chairman Roy G. Allison.

Mr. Allison is a field representative for Sandia's Field Acceptance and Extension Standards Laboratories Division.

After suggesting the undertaking, Mr. Allison was named to a three-man committee to develop the program. The program emphasized to Junior Achievement groups the need for quality as essential to their free enterprise, miniature companies.

The program included a booklet on quality control and talk on the same subject presented to each Junior Achievement company. In addition, each company was to appoint a Quality Manager who would draw up a program to improve their product and would attend each regular meeting of the ASQC section.

The section plans to award an achievement plaque next May to the Junior Achievement company with the outstanding program.

Junior Achievement projects are set up in many cities throughout the country to provide a way for high school youngsters to find out first hand how businesses function. A local firm, frequently a large manufacturer, helps sponsor the project and gives assistance in determining the product to be made by the students. The Junior Achievement company has its own officers, sells stock, and handles sales of its own product. At the end of the school year the company is dissolved and the profits (if any) are distributed to stockholders.

## AEC to Remodel Special Devices Dep't Building in Area II

Construction should start this month on a modification project to Bldg. 922 in Area II, according to John C. Snowden, Plant Engineering Department project engineer. The AEC announced last week that the Jack B. Henderson Construction Company of Albuquerque is the apparent low bidder for the project. The firm bid \$68,851. The building houses the Special Devices Department.

The project will include removal of existing structural, mechanical, and electrical systems; construction of new partitions, ceilings, and flooring to provide static-free areas; and modifications to building utility, power, and control systems. Fencing, grading, and other site work also is included.

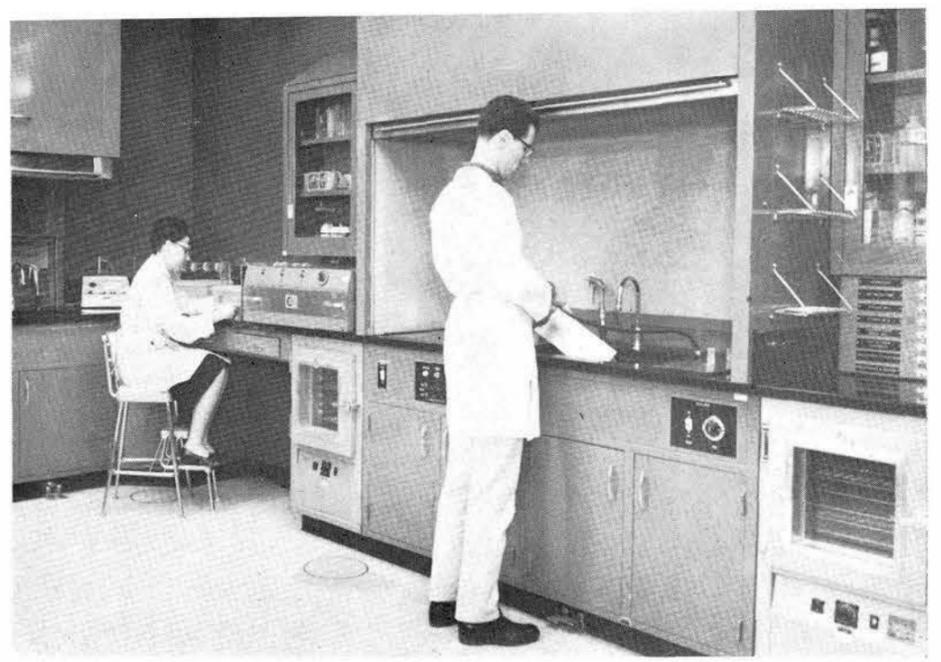
One-hundred calendar days will be required for construction after the contractor receives notice to proceed from the AEC.

## Thanksgiving Outing Results with Feature In National Magazine

*Sports Illustrated* magazine (Dec. 14 issue) contained a feature article on a recent trip of Los Huajolotes Boating Club to Lake Mojave, Ariz. Club members, including six Sandians and their families, camped several days at the lake where they water skied and cruised their boats 70 miles up the lake, to within five miles of Hoover Dam.

Walt Westman, supervisor of Reliability and Engineering Design Practices Division, is commodore of the club. "Two staff members of *Sports Illustrated* accompanied us and seemed to enjoy the trip," he reports. "The conditions for cruising were perfect but the 56° water was about 20° cooler than usual for water skiing. In fact the group of us that water skied was christened by the other club members as the 'Polar Bears'."

A future trip to Lake Powell in Utah is now being planned by the club.



HIGH PRODUCTION WITH LOW COST. Two Livermore Laboratory technicians can easily handle most workloads, and usually only one is necessary. For a "crash" job, as many as six people can be stationed at points along the process route. Shown here are technicians Jessie Slusser (left) and Jeff Ambrose.

## SCLL Circuit Board Lab Completed; Significant Asset to R&D Efforts

In 1956, printed circuit boards, or more properly, etched wiring boards, were considered a priority development item, not only by Sandia but by the electronics industry generally. Today, they represent an established means of packaging electronic circuits.

### Period of Growth

At Livermore Laboratory, development of this packaging technique initially was restricted to experimental bread-board circuitry and the prototype circuit board. Soon, however, engineering requirements at SCLL imposed the need for a printed circuit board facility.

The first such facility consisted of a small sink, photographic developing trays, a floodlight, and a device for agitating the chemical solutions. As engineering needs increased, a small-scale but relatively complete laboratory was put together, which for a time handled SCLL requirements.

This, too, was soon outgrown as the development workload continued to increase and was coupled with a need for very limited production of some types of boards. The printed circuit board lab was enlarged by the acquisition of a double-sided exposure table, a spray etcher, a special drill unit (developed at SCLL), a degreaser, and an ultrasonic cleaner.

### The Lab Today

The present laboratory was put into operation following two years of careful planning and evaluation of many proposals. It was based on requirements that the facility:

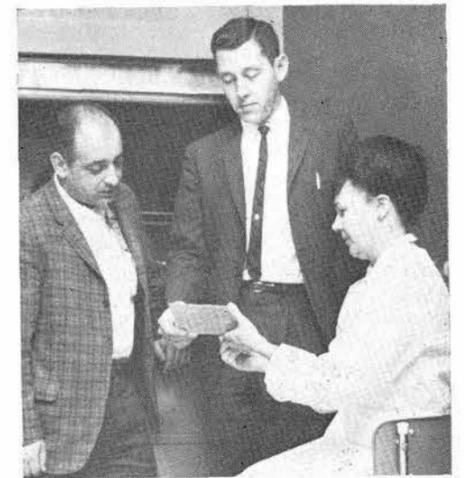
1. Have the capability of handling a varying workload;
2. Be compact, with a premium on space-saving devices;
3. Require as few technician-operators as possible;
4. Control corrosive fumes to prevent detrimental effects on other nearby facilities; and
5. Be safe and easy to clean and maintain.

In November 1964, the lab was moved into permanent quarters in the new wing of Building 913. The new lab is perhaps the most advanced of its kind in the West, according to Ernie Alford, supervisor of Electronic Fabrication Section. Capable of limited production of large or very small printed circuit board patterns, the facility contains equipment that permits the greatest output from the fewest people, and incorporates the latest safety features available.

The lab, occupying about 600 sq. ft., is U-shaped to permit efficient and continuous work flow. It is equipped with foot valves, safety switches, timers, alarms, automatic cutoff equipment, and a central power control station. One technician can follow the work from station to station, and with the aid of timers and alarms, can maintain a flow of several jobs. Personnel can be placed at stations along the process line to expedite the flow when a "crash job" is in the lab.

### Process Modules

The lab consists of several process modules. The first module contains the vapor degreaser, ultrasonic cleaner, scrub station, hydrochloric-acid bath, copper-strike tank, a rinsing sink, and the resist coating enclosure. Within this module the materials undergo the initial cleaning and are coated with photo-resist, a light-sensitive, acid-resistant, non-conducting



THE FINISHED PRODUCT. Arnie Andrade, Ernie Alford (supervisor), and Jessie Slusser (l. to r.) check one of the first printed circuit boards completed after the Livermore printed circuit board lab was permanently installed in Bldg. 913. The lab has produced circuit boards ranging in length from 3/8 in. to 24 in.

material used to protect desired portions of a wiring pattern from the action of the "etchant" and plating solutions.

The second module consists of the pH meter, immersion copper tanks, the double-sided printer, and the first-stage curing oven. The resist-coated materials are cured in the first-stage oven and exposed within the printer. The immersion copper tanks are used in conjunction with materials requiring plated-through holes.

In the third module are a double-sided spray developer, the hot water bath, the spray-stripper tank, and a rinse tank. The materials, after the exposure process, are developed and cleaned within this module.

The fourth module is the inspection and touch-up station. It contains the microscope, a vue-frame, the second-stage curing oven, and the central power panel. Here the materials are inspected, touched-up and cured for further processing.

The last module has the two etching and rinsing stations and the final cleaning station. The stations contain two vertical oscillating spray etchers, two spray rinse tanks, an oakite bath, and a sink. The boards are etched and receive their final cleaning.

At the open end of the "U" are an oscillating spray etcher and a blacklight inspection box. Precision etching to very close tolerances and visual inspection for the removal of resist from certain areas of the boards are accomplished here.

### Results of Careful Planning

Ernie Alford was responsible for most of the original thought on the development of the lab. However, putting the lab into operational reality was the achievement of Arnie Andrade.

"Arnie carried out the key leg work, researching equipment, techniques, and fabrication problems so that as we expanded we did so with a definite plan in mind," said Ernie. "Arnie nursed the lab through-out all its changes, problems, and processes, until it was put into operation."

The lab has provided an accelerated work flow, improved the accuracy and quality of printed circuit boards, and reduced space and manpower requirements.

# A Bit of Sandia History, 1964 Style

Another year (Sandia Corporation's 15th) has closed and true to custom this page is devoted to retrospect. Here the topic is history; history of a busy, progress-filled year. But for the most part, this publication will continue to point to the days yet to come and not merely mirror the past.

## January

Logics systems, designed by Sandia personnel, and other systems aboard the Vela Detection Satellites were reported functioning as desired.

Four Nike-Apache rockets were launched from Barking Sands in the Hawaiian Islands to altitudes of 300,000-500,000 ft. where they injected glowing clouds into the atmosphere as an aid in studying flow patterns of upper altitude winds.

## February

The AEC announced that construction projects totaling nearly \$9 million were either in progress or scheduled to begin soon at Sandia Laboratory.

## March

Nearing completion was an underground centrifuge in Area III designed to rotate an eight-ton specimen to 100 G's for testing purposes. It is the largest centrifuge in the free world in terms of dynamic load capacity.

Six additional men graduated from Sandia's four-year Electronics Technician Apprenticeship Program. This was the second class.



NEW underground centrifuge.

## April

Livermore Laboratory co-hosted with LRL the annual meeting of the Interagency Mechanical Operations Group (IMOG). About 150 representatives of contractors in the atomic weapons complex attended the three-day meeting.

Representatives of agencies using and producing information about atomic weapons attended the Cooperative Weapon Data Indexing Committee meeting at Sandia Laboratory.

## May

The first workshop in Value Engineering was completed. Project teams applied Value Engineering disciplines to various pieces of Sandia hardware in an effort to achieve economy in the cost without compromising reliability, quality, or safety.

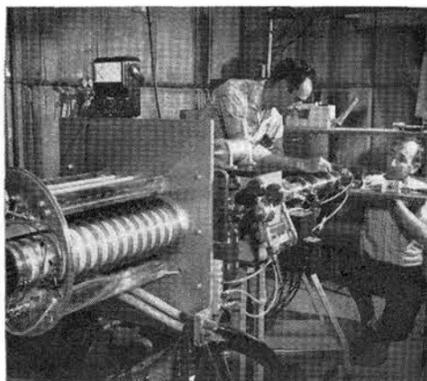
Sandia Corporation was presented with the POLARIS Team Flag at Livermore Laboratory. Flags were presented to contractors associated with the POLARIS weapon program for their contribution in meeting or surpassing the demanding POLARIS schedules. A similar presentation ceremony was held at Sandia Laboratory in December.



POLARIS team flag awarded.

Some 2800 employees in Albuquerque reported voluntarily to the Medical Organization to participate in a screening program to detect high blood pressure and diabetes.

The new Group Alerting and Dispatching System successfully passed its first widespread testing at Sandia Laboratory. It provides an immediate way to transmit simultaneously by some 380 regular tele-



NEUTRON generator at Livermore.

phone instruments information of emergency nature. Dispatching centers are in the offices of top management, patrol division, and Area III administration office.

## June

The AEC signed a five-year extension of its contract with Western Electric Company and Sandia Corporation for operation of Sandia Laboratory and its supporting facilities. The contract runs through Dec. 31, 1968. President S. P. Schwartz stated in an open letter to Sandia employees, "I look to Sandia's future with confidence, for I know our staff will meet all future requirements with the same high performance demonstrated in meeting past commitments."

Forty-nine employees completed two years of advanced work at the University of New Mexico under Sandia's Technical Development Program. The men divided their time between work assignments at Sandia Laboratory and classes at UNM.

## July

Installation of the 14-mev neutron generator was completed and the unit placed in full operation at Sandia Corporation Livermore Laboratory. The neutron generator is used principally for testing and improving neutron detectors for use in telemetry systems.

High explosive tests conducted in Coyote Canyon were being evaluated to determine the feasibility of constructing earth dams by simultaneous detonation of two parallel rows of charges. The Australian Atomic Energy Commission expressed interest in the possibility of using explosives to build dams across wide-shallow valleys.

A \$3-million prototype of the Orbiting Geophysical Observatory (OGO) underwent centrifuge acceleration testing at Sandia Laboratory. Space Technology Laboratories, who designed and built the research satellite, made arrangements through the AEC and NASA for use of the Sandia facility.

## August

Assistance was given Los Alamos Scientific Laboratory in its Kiwi reactor development program. Sandia's 300-ft. sled track was used for a series of tests to help determine what would happen if a nuclear powered rocket fell tail first into the ocean during a launch abort.

The AEC called for bids for construction of a three-story development laboratory building to adjoin the existing Bldg. 805-806 complex. Estimates ranged from \$2,250,000-\$2,350,000.

## September

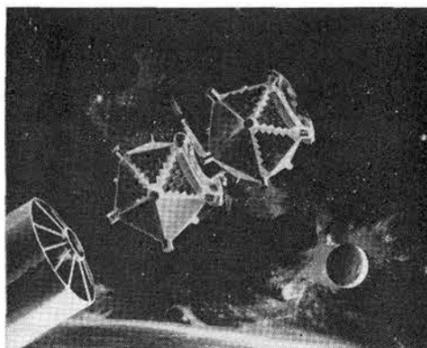
Glenn A. Fowler, Vice President, Development, discussed "Aerospace Safety of Isotopic and Reactor Power Sources" at the Third United Nations International Conference on the Peaceful Uses of Atomic Energy. The conference was in Geneva, Switzerland.

The first woman to enter Sandia's Technical Development Program began classes at the University of New Mexico with her 44 male classmates, who are also Sandia employees.

## October

The Salmon five-kiloton nuclear device was detonated 2700-ft. deep in the Tatum salt dome near Hattiesburg, Miss. Sandia Laboratory's participation in Project Dribble included arming the nuclear device, recording free-field particle motion underground and on the surface, and providing a specially-designed television camera to inspect the drilled holes before and after the detonation.

The suborbital flight of a non-radioac-



DETECTION satellites operate with Sandia logics systems.

tive mockup of a nuclear isotopic generator (RFD-2) was termed "completely successful." The Scout rocket was launched from Wallops Island, Va., and the impact area was southeast of Bermuda. This was the second of a series of operational safety flights of Systems for Nuclear Auxiliary Power (SNAP) units conducted by Sandia.

Four orbiting Vela Detection Satellites (carrying Sandia-designed logics systems) continued to set new performance records.

This fall, 342 company employees registered for college and university courses for credit under the Educational Aids Program.

Sandia joined hundreds of other leading businesses and educational institutions in voluntarily undertaking a "Plan for Progress" program to demonstrate its continuing adherence to the principal of merit employment and the policy of nondiscrimination in employment.

## November

The Department of Defense authorized Sandia to design, construct, test and evaluate a prototype Unmanned Seismological Observatory, capable of continuous recording for 90 days. Extensive testing of the system's components in Sandia's environmental test facilities was anticipated.

Meetings for supervisors were held to implement objectives called for in Sandia's Plan for Progress.

All-time donations through the Sandia Laboratory Employees' Contribution Plan topped one million dollars. The 1964 drive alone totaled \$218,313, a new record.

Sandia Laboratory became eligible for the Award of Honor from both the National Safety Council and the AEC when employees completed 91 days without a reportable disabling injury. The record was made possible through the combined efforts of every employee.

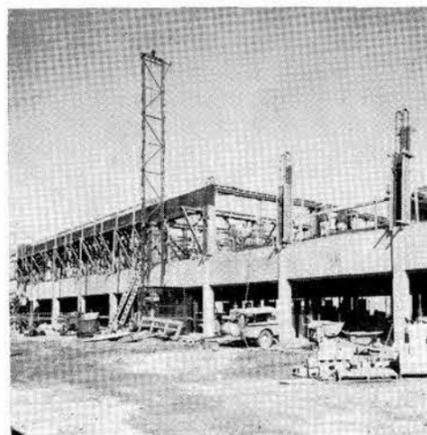
Preliminary testing of Area III's new \$570 thousand water jet catapult was underway. The water jet provides velocities up to 400-ft. per second on 3000-lb. test units. The facility simulates various shocks a weapon might encounter during handling or delivery.

## December

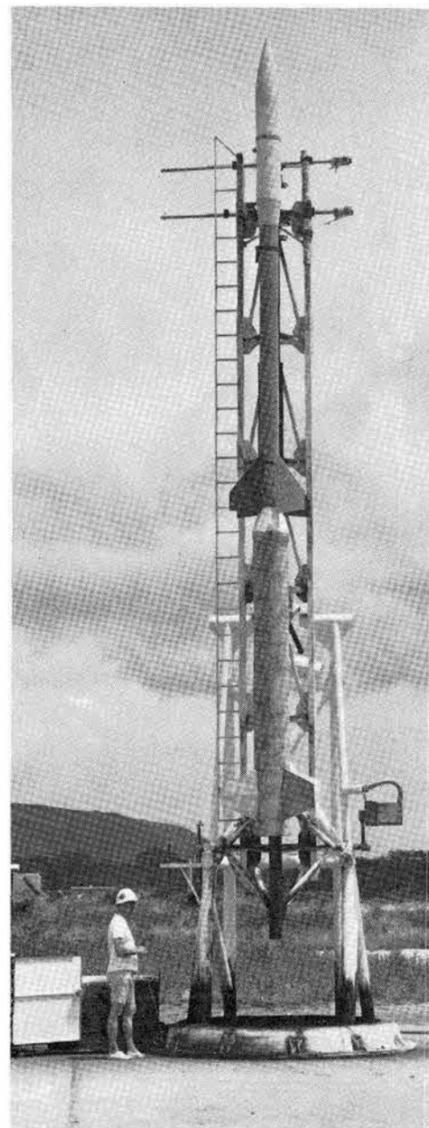
Announcement was made that Sandia Corporation will provide technical assistance to Joint Task Force-2, which will direct and evaluate low level capabilities tests of tactical and strategic aircraft weapons systems and defense against such systems.

Christmas charity plans were again underway by members of many Sandia organizations. Money, food, gifts, and clothing generally comprised the contributions which benefit needy families and worthy charitable agencies.

Livermore Laboratory completed major building construction and began moving or rearranging about 90 per cent of its lab and office spaces. Several months will be required to make the moves.



MAJOR construction at Livermore.



NIKE-TOMAHAWK ready for upper atmosphere tests.



MILLIONTH dollar contributed through Employees' Contribution Plan.

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LAB NEWS  
JANUARY 1, 1965

## Sandia's Safety Scoreboard

### Sandia Laboratory:

11 DAYS  
385,000 MAN HOURS  
WITHOUT A  
DISABLING INJURY

### Livermore Laboratory:

131 DAYS  
669,000 MAN HOURS  
WITHOUT A  
DISABLING INJURY