

Fellow Sandians:

We have successfully managed a tough fiscal year, and I want to thank all of you for your help and cooperation. It was a year which severely tested our ability to adjust to budget pressures and to changes in program direction. The preceding year — FY 74 — had seen an increase in our advanced development work, but just as FY 75 started we had to accommodate the expensive hardware requirements of several new weapon programs. At the same time, our budget was cut, further reducing our ability to do advanced development projects — the very work we had expected to increase.

We coped with the net effect of this — a problem of about 10 million dollars — by a combination of measures. The Special Early Retirement Plan was offered to eligible employees, a vacation schedule different from the usual was adopted, and purchases were essentially frozen for several months. Restraint was necessary, and Sandians rose to the challenge. Thanks to your help, the record shows that we finished FY 75 right on target.



HANS BETHE walks with Everet Beckner (5200) toward Sandia's auditorium where he is about to deliver a talk on the nation's energy problems and how nuclear reactors offer a solution, at least in part, to those problems. The Nobel laureate, a professor of theoretical physics at Cornell, is touring the country on, as he describes it, "a one-man campaign for increasing our energy sources other than oil and gas." Professor Bethe is a strong advocate of increased use of coal as well as of nuclear energy.

'United Way' Doesn't Affect Sandia's 'ECP'

Recent change of the name of the United Community Fund of Albuquerque to United Way of Greater Albuquerque does not affect Sandia's Employees Contribution Plan (ECP) in any way, reports Joe Laval (3163), ECP executive secretary.

"There is still some confusion about the names," Joe says, "but ECP remains the same — it is a plan whereby Sandia employees may contribute each month through payroll deduction to 34 local health and welfare agencies of the United Way plus eight national agencies.

The plan is administered by a committee of employees who conduct Sandia's drive annually in October and allocate the funds. Traditionally, about 85 percent of the money goes to United Way agencies, with the rest divided among the eight national agencies, based on a formula reflecting fund raising records in the community.

"Since ECP was organized in 1957," Joe says, "it has been highly successful, with about 85 percent participation by employees. Through the years, Sandians have set an impressive record of community support. This year alone employees will give \$413,845 to ECP, an average gift of \$83.60 per contributor."

In changing the name of UCF to United Way, the organization joins most communities throughout the country. The name change will result in considerable economies in promotional materials.

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LAB NEWS

VOL. 27, NO. 14

JULY 11, 1975

SANDIA LABORATORIES • ALBUQUERQUE NEW MEXICO • LIVERMORE CALIFORNIA • TONOPAH NEVADA

New Drills Designed at Labs

Sandia Laboratories is developing four new drill bits designed to speed the cutting of drill holes, thus reducing the costs of tapping underground mineral and energy resources.

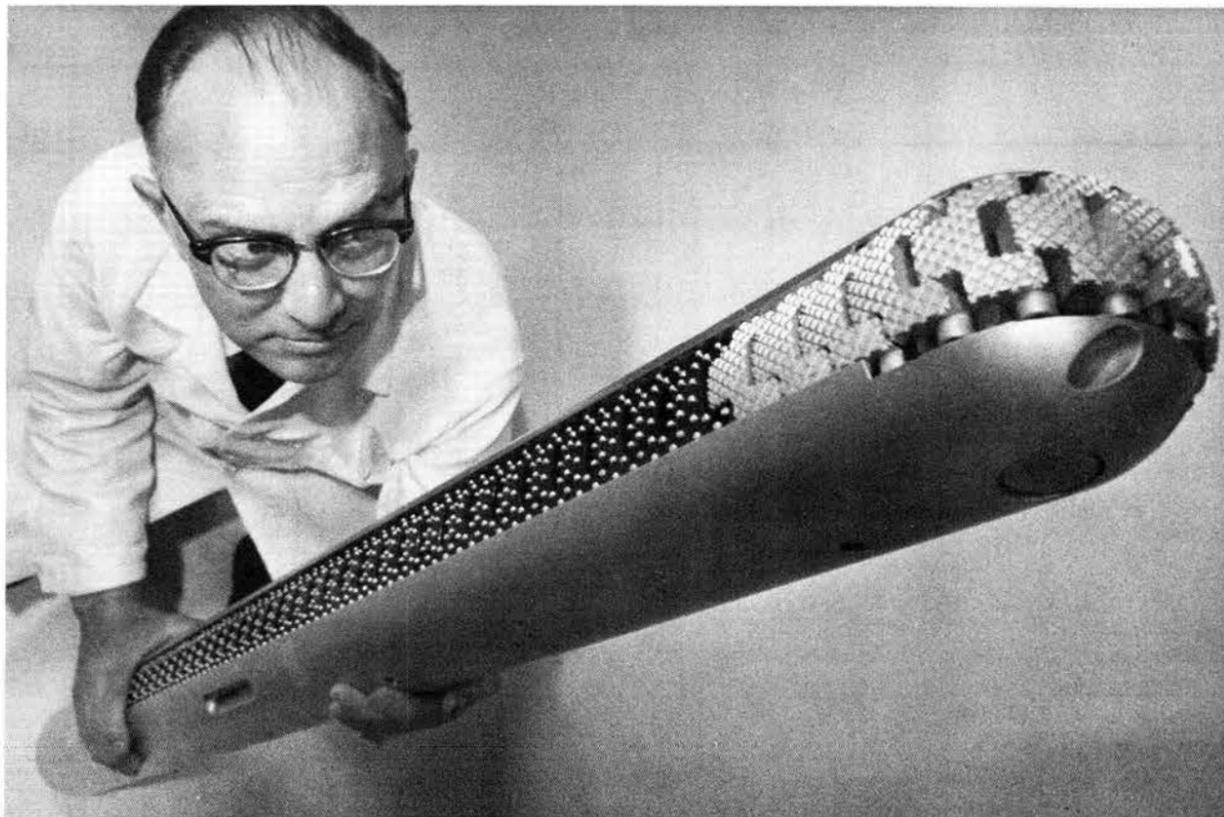
Two of the drills — one which chips rock with high voltage spark discharges, and another which fires small projectiles into the rock in advance of a regular roller bit — are designed to increase both penetration rates and downhole bit life.

The other two systems aim at increasing bit life. One of these systems permits a roller-cone bit to be folded and removed while another bit is cycled into place from a magazine containing 10 to 12 new bits. The other system has its cutting surface on a chain which is advanced to bring new cutting surfaces into position.

If development efforts are successful, the bits would have particular impact on deep well drilling, where an appreciable amount of time and cost is expended in pulling thousands of feet of pipe to replace a dulled bit.

Improved bit life would also be an important factor in drilling geothermal wells. Geothermal energy sources are often located in rocks which are much harder than the

(Continued on Page Five)



MODEL of experimental continuous chain bit, here held by Dick Ashmore (2325), shows cutting surface located on face of the chain, which is advanced to bring a new cutting surface into position. As the bit is rotated in the drill hole, the cutting surface scrapes the bottom and sides of the hole, gradually deepening it.

Afterthoughts

Minor annoyance #342--New types of cash registers are appearing. They don't clunk or go bong, they simply hiss, but most disturbing is their absence of a window on the customer's side. So when that clerk with the vacant expression is tallying your purchases, you have no way to double-check whether he/she put in 89¢ or, perhaps, 98¢. The store will no doubt blandly state that the clerk calls out the price (most don't) and that you, the customer, have the receipt with which you can make a post-sale item-by-item check (a tedious procedure at best). I've concluded that the omission of the customer-side window followed careful deliberation and is an exercise in one-upmanship.

* * *

High opera, low comedy--Along with reduced pollution and aid for starving children, we are resolutely for culture, and it was this that prompted us to turn into the parking lot of the Santa Fe Opera late in the afternoon a week or so ago. You can see the dramatic architecture of the theater from the parking lot, and there's a nice view to the north, so we decided to have our picnic lunch. Alas, it was not to be. A young man, who seemed to be embarrassed by it all, informed us unequivocally that the Santa Fe Opera parking lot is verboten territory and that we should take off. Which we finally did, after futile reminders of our love of culture, music, opera and all those meritorious things. We've learned to live with the expulsion though. After all, how many can claim the distinction of being tossed out of such a high-class parking lot?

* * *

"Laughter, n. An interior convulsion, producing a distortion of the features and accompanied by inarticulate noises. It is infectious and, though intermittent, incurable. Liability to attacks of laughter is one of the characteristics distinguishing man from the animals--these being not only inaccessible to the provocation of his example, but impregnable to the microbes having original jurisdiction in bestowal of the disease."
The Devil's Dictionary, Ambrose Bierce *js

Continued from Page One

'United Way' and 'ECP'

In the meantime, Sandia's ECP committee is planning for next year's drive. Members of the committee are Art Clark (9320), chairman; Jim Kenagy (3640), deputy chairman; George Samara (5130), deputy chairman; Bob Garcia (200), past chairman; Ralph Bonner (4010), treasurer; Frank Dean (1114), 1000 representative; Job Abbin (2324), 2000 representative; Mary Woods (3321),

3000 representative; Ruth Bontrager (4252), 4000 representative; Ralph Trujillo (5251), 5000 representative; Geri Becker (9631), 9000 representative; Jane Lord (3141), Office Union; Bill Rappleyea (3644), Metal Trades Council; Gene Romero (9550), Guards union; and Marion Jacot (4256), new hire coordinator.

LAB NEWS

Published every other Friday

SANDIA LABORATORIES

An Equal Opportunity Employer

ALBUQUERQUE, NEW MEXICO
LIVERMORE, CALIFORNIA
TONOPAH, NEVADA

Editorial offices in Albuquerque, N.M.
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&

lorena schneider reports on livermore

REMINDER

**You Have Until
JULY 31
To Complete And
Return Your
Retirement Income Plan
Election Form
To Org. 4210**

ESA Training Program

Job openings are now posted on bulletin boards. Any interested employees may bid.

Take Note

The highest average contribution of any organization in Nevada to the United Way of Las Vegas earned Sandians of Tonopah Test Range Department 9470 a plaque of appreciation. Sherry Smith (9473), drive chairman, and Sam Moore, 9470 manager, accepted the honor for employees. One hundred percent of the people in the group contributed; average gift was \$101.

* * *

Pre-registration period for evening courses at T-VI for the fall trimester is July 21 to Aug. 8. Sandians in courses that are job-related or relate to a Labs job to which the employee may logically aspire, may enroll cost-free. Forms are available from Division 3131 and must be validated before registration. T-VI classes start Sept. 8. Catalogs and additional information may be obtained from Ruth Brooks in Division 3131.

* * *

Dee Ellett (1150) has a story to tell about the perils of drink — soft drinks. He was opening a bottle of Canada Dry club soda which had a screw-on cap. As he loosened the screw cap, it suddenly stripped its threads, shot off the end of the bottle, grazed and cut his head, just missing his eye, and finally flattened itself against the ceiling. Dee's advice: wrap a towel around the top of such a bottle before you unscrew the cap.

* * *

One eternal truth is that fresh vegetables taste better, and a lady in town with a keen appreciation of this is organizing a "Growers Market." Modus operandi is for you and your surplus tomatoes, beans and okra to show up in the parking lot of the Civic Auditorium early Saturday morning the 26th, there to sell your goodies to the hordes clamoring for home-grown tomatoes, beans and okra. Then you can buy some corn, zucchini and black-eyed peas from the gardener next to you. Cost, fees, etc: none. Theo Bird is the name of the organizing lady, she's on 255-2997, and she's anxious to get grower/sellers to the meeting July 16 at 7:45 p.m., where she'll explain further. The meeting is being held at the Osuna and N. 4th branch of Albuquerque Federal.

* * *

Been off the weed six months now? Or longer? Want to help others break the habit? Experienced in working with groups? Have some time?

If you meet all these requirements, then the American Cancer Society is waiting for you to call. They need volunteer group leaders for their free "Helping Smokers Quit" clinics. They'll train you to lead groups of 10-15 smokers for six evening hours a week for a month; the clinic schedules will be announced later.

If you qualify, call 268-4501 for more information. It's a great chance to help smokers get unhooked without getting unhooked.

Sympathy

To Mac Groll (4152) on the death of his wife, June 29.

Congratulations

Mr. and Mrs. Paul McKey (3613), a son, June 15.

Rand German Awarded PhD

Rand German (8312) has been awarded his PhD degree in materials science from the University of California at Davis. Course work was completed through Sandia's Educational Aids Program and UC/Davis educational television classes on site at SLL. Title of his thesis was "The Morphology and Kinetics of Sintering with Special Treatment of Activated Sintering."



Since joining Sandia in Dec. 1969, Rand has done studies in powder metallurgy and developed related test parts and prototypes. He received his BS degree from San Jose State and his MS (in metallurgical engineering) from Ohio State University under Sandia's OYOC program.

Sympathy

To Ray Culy (8183) on the death of his father in Eugene, Ore., June 2.

To Don Gallagher (8161) on the death of his father-in-law in Castro Valley, Calif., June 9.

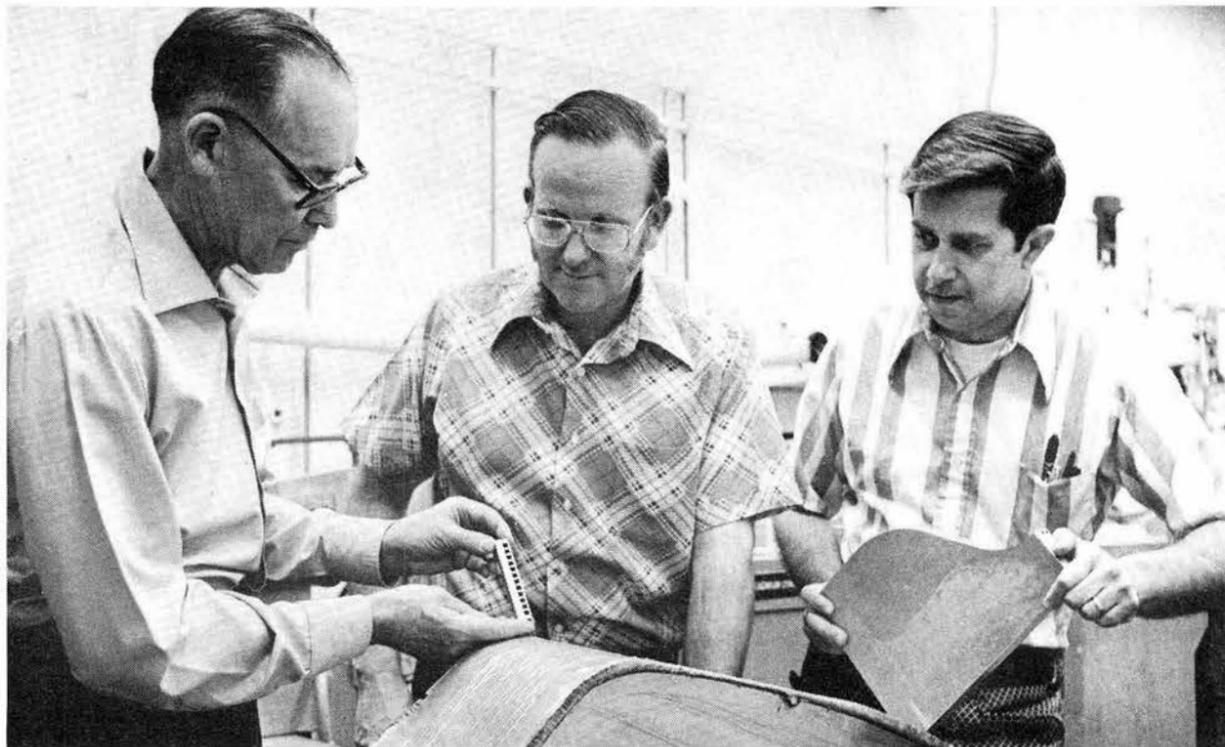
To George Thomas (8313) on the death of his mother in Chicago, Ill., June 8.

LIVERMORE NEWS

VOL. 27, NO. 14

LIVERMORE LABORATORIES

JULY 11, 1975



THE BIG OBJECT is a nozzle. Under its top layer is a series of channels with an end view like the model Dez Brown (left) holds. Rudy Johnson (center) and Jack Dini (all 8312) look on. With John Helms (also 8312). They developed an ingenious technique for nickelplating the stainless steel in the nozzle base. Jack holds a section which was used to prove feasibility of the process.

Keeping NASA's Channels Open

NASA had a perplexing fabrication problem. A large nozzle, used in a combustion facility, had 22 small channels cut along one side. The design called for nickel on the hot gas side to form a closed 22-channel nozzle for passage of cooling water. Brazing the nickel sheet onto the stainless steel base caused it to warp, so they tried electroplating it on. They filled the channels with wax to keep them open while plating the nickel layer. That didn't work — the wax prevented the nickel from adhering properly to the stainless steel base, and the wax was hard to remove completely.

Enter Jack Dini and Rudy Johnson (both 8312). On a reimbursable contract, they came up with a unique solution: aluminum strips pounded into the quarter-inch wide channels before plating. Trials showed that the aluminum was malleable enough to completely bridge the channels even though the depth of each varied from 0.030 to 0.250 inch. The excess could be ground off to leave a smooth surface for plating.

Platers Dez Brown and John Helms (also 8312) helped to solve the problem of plating stainless and aluminum simultaneously: both form a natural oxide which weakens the nickel plate bond, and the commercial solution used to prevent oxidation of the stainless destroys aluminum.

The four developed a new solution which allows adhesion of the nickel to the stainless but doesn't harm (or even adhere to) the aluminum.

Once the nozzle unit is plated, the aluminum is dissolved out of the channels with a caustic solution.

"NASA is satisfied with our new approach," says Jack. "It's not much more expensive, and it works well. We're satisfied to." • bh



ERDA Assistant Administrator for National Security, retired General Alfred Starbird (left), visited Sandia/Livermore recently for a briefing on SLL and its programs by Vice President Tom Cook (8000) and the technical directors. The visit was General Starbird's first since assuming his new ERDA post.



APPRENTICES GRADUATE — Journeymen machinist Tom Reitz (8423), left, and plant technician mechanical Wayne Townes (8257), right, recently completed SLL's apprenticeship programs. Requirements under the program include four years of on-the-job training for Tom, five years for Wayne, plus related academic courses. The two receive congratulations from their respective department managers, Lee Davies (8420) and John Pearce (8250).





Ralph Bonner (4213)



Walt Herrmann (5160)



Derek Snyder (4731) & John Shunny (3162)



Joe Abbott (2112)

Run Dick, Run Jane

Running: It's The Way To Go

Running is chic.

If you had made that declaration, say, 10 years ago, your audience would likely have marked you as a bit daft. Running was something done by skinny teen-agers who couldn't make the football team. Reasonable people did not undertake an activity that was at once boring, solitary, exhausting, even painful.

Then the Kennedy clan made physical activity fashionable but, more important, an Air Force doctor named Kenneth Cooper made the not-altogether-startling discovery that airmen who exercised enjoyed better health than those who didn't. He produced a book, *Aerobics*, whose message was appealingly simple: follow my exercise regimen and you too can have better health.

Millions of copies later, the American landscape on any morning is transfigured by runners/joggers/walkers. The Boston Marathon, the premier 26-mile running contest, has struggled through most of its life with a hundred or so entrants. This year's Boston had 2400 entrants, and sponsors are desperately searching for ways to limit the number — they have too many traffic problems.

Even the drab and humble running shoe has become sexy. The Japanese, with customary business acumen, now turn out glorious foot creations in pastel shades with racy looking stripes that make the most deliberate plodder feel fast. And the grubby grey sweat suit has been replaced by tailored, double-knit "warm-up" suits, trimmed with

piping and elegant enough for most owners to slip into on the slightest pretense. The total effect is one of dash and youth.

The Sandia Runners Association is marking its second anniversary this month and its 80 members were recently polled. Jim Martin (3714), SRA member, conducted the survey and summarized results for LAB NEWS.

"The average Sandia runner is 40 years old, has a resting pulse beat of 58 beats/minute, runs about 18 miles per week, and does it because he feels better and maintains a desired weight." But the "average," Jim notes, doesn't tell the entire story. The Sandians ranged from 29 to 54 in age, had pulse rates from 45 to 70 beats/minute, and ran from 5 to 65 miles per week. Some of their comments on why they run reveal an almost religious fervor:

When I lay off running I feel tense and guilty

It's an intense sensual experience in a gray world

I run for the non-verbal, physiological and moral beauty of it

I look at men in their 50's and those who run look much younger and are much more active

It's kind of fun

My blood pressure was 150/180, now it's 125/65 and I've dropped 12 pounds

Never was a jock in school — now I'm in better condition than 90% of the lettermen of my youth

Running is a psychological bath

I have fewer and less severe illnesses

Took 3 inches off my waist

It slows the aging process

I'm down from 178 to a constant 150 pounds, sleep sounder and better.

One respondent answered with disarming candor: "Beats the hell out of me — I honestly don't know why."

Tomorrow, Saturday the 12th, is the occasion of two major running events. The newly organized Southwest Masters Running Club is sponsoring an aerobic fitness trial for all comers. Any person's level of fitness can be determined by his or her performance in either the 12-minute run or the mile-and-a-half run. Standards are carried in Dr. Cooper's book, *The New Aerobics*. For example, to qualify for the "excellent" category of fitness, a 30-year-old man should run the 1 1/2-miler in less than 11 1/2 minutes. A person should not attempt the fitness test, however, unless he exercises regularly or has his physician's approval.

These fitness trials begin at 10:30 a.m. and are preceded by the Governor's Mini-Marathon, a 13-mile competition that starts at 8 a.m. Governor Apodaca, a pretty fair runner himself, will present certificates to finishers of the mini-marathon and will be named Honorary President of SMRC. Both events take place at Montgomery Park (Comanche NE between San Pedro and San Mateo). If you've wondered about your fitness, or lack of it, turn out for the fitness trials — the test could be the beginning of your return to physical fitness. •js

New Drills Designed at Labs

sedimentary rocks in which oil and gas are usually located.

Each of the new bits is compatible with present rotary drill rig platforms, so that existing rigs can be used in testing and, ultimately, in deploying the bits for commercial purposes.

The Spark Drill

Sandia developers believe the spark drill — first conceived by Russian technologists — has the greatest potential of the four bits for ultimately improving drill performances. However, its mode of operation is the most complex, and the development problems are formidable.

Basically, the drill involves the generation of high voltage sparks between electrode gaps located on the bottom surface of the bit. Sparks are generated around the circumference of the bit to chip — spall — the rock as the bit makes contact with the bottom of the hole.

The spark creates a high pressure shock wave in the drilling fluid (mud) used in the drill hole. This wave is followed by stress release (formation of a bubble in the fluid) and cavitation (collapse of the bubble). It is presently believed that bubble collapse produces a high pressure jet of fluid which further chips the rock.

The spark discharges are produced by a downhole electrical pulse generator which, in its final configuration, will discharge approximately 40 pulses every second. The pulse generator will be energized through a cable from a conventional electrical generator at the surface.

Thus far, only low-energy laboratory models of the spark drill have been operated. For spark energies of 100 to 200 joules — equivalent to 1½ to three horsepower — shock pressures of 2,000 to 10,000 times atmospheric pressure have been measured. The jets produced by bubble collapse are thought to have produced even higher pressures.

In rock and concrete test blocks, the laboratory models have achieved drilling rates as high as 30 feet per hour. At the design objective of 150 horsepower, the bit may drill at rates of more than 100 feet an hour and have the additional advantage of long downhole life, thus reducing the need for pulling the bit from the hole periodically. Sandia designers are aiming for a bit life of at least 100 hours.

The designers hope to have a bit ready for field testing in two years. Present work is concentrated on defining the spark-generated environment, understanding the mechanisms by which the spark fractures the rock, and defining a long-life bit design, using computer simulations and laboratory testing.

The Terra Drill

The terra drill, which involves firing projectiles between the spacings in a standard tri-cone roller bit, utilizes the technology of high speed earth penetration — terradynamics — which has evolved during Sandia's nuclear weapons development work of the past 15 years.

The drill's performance is based on the principle that highly fractured rock can be drilled more rapidly than unfractured, homogeneous rock. Projectiles launched from a magazine located above the roller cones penetrate and weaken the rock ahead of the bit, which then pulverizes the fractured segments and cuts the hole to the proper diameter.

The projectile-firing assembly and the roller bit have not yet been combined into a

single unit. In field tests, a gun-assembly capable of firing three projectiles simultaneously from barrels located 120 degrees apart, was lowered into a hole, the projectiles fired, and the assembly raised from the hole and replaced by a tri-cone bit.

In these tests, the penetration rate was approximately double that achieved when only the tri-cone bit was used. The tests were conducted in limestone, with modified rifle cartridges used to fire the projectiles into the stone at about 3700 feet per second. The projectiles penetrated about 3½ inches.

Future development of the terra drill will focus on determining the synergistic effect, if any, of firing the projectiles simultaneously, sizing and shaping the projectiles for optimum shattering of the rock, and developing cartridges which will float to the surface in the drilling mud.

Continuous Chain Bit

The Sandia chain bit is being developed for slim-hole (4 ¾-inch-diameter) drilling, but could be used to drill larger holes. A long-life, slim-hole bit system would have considerable use in the drilling industry because bit, casing, and drill rig costs could be reduced for exploratory drilling.

The chain bit has a cutting surface located on the face of a continuous chain circulating between two sprockets — one at the bottom of the bit and another several feet distant at the top of the bit. The chain links are studded with tungsten carbide inserts or diamonds.

The hole is cut by that portion of the chain wrapped around the lower half of the bottom sprocket. As the bit is turned in the hole, the inserts scrape the bottom and sides of the hole, gradually deepening it. When the approximately six-inch-long portion of the chain at the bottom of the hole becomes dull, another segment is cycled into place without removing the bit from the hole.

Sandia designers feel that the two sprockets can be located up to 10 feet apart, permitting use of a chain approximately 20 feet long. This would create about 40 separate cutting segments. Assuming each of these bits is only half as efficient as a conventional diamond bit, the new system could still result in a 20-fold improvement over conventional bits in terms of bit life.

Major concerns at this point are whether the bit will drill a straight hole and whether it will penetrate at a rate competitive with

conventional slim-hole bits. Design of the bit is being carried out in conjunction with Maurer Engineering Company, Houston, the Christensen Diamond Bit Company, Salt Lake City. A working model will be ready for laboratory testing this summer; a field test prototype should be ready for tests in 1976.

Downhole Changeable Bit

The changeable bit system would rotate a new roller bit into place at the bottom of the hole without having to pull the drill stem. Both new bits and dulled bits are stored in a magazine located several feet above the bottom of the hole, and are pulled into and out of the cutting position by a chain.

Sliding the new bit and the dulled bit past each other within the confines of the seven-inch-diameter pipe is facilitated by hinging the gage cutters (the portion of the bit which sizes the hole) so they can be folded slightly. Locks maintain the bit in a rigid position once it is on the bottom of the hole.

The major problem with this bit is that the smaller cones required by the bit design will wear faster than the larger cones used in standard roller bits. If this rate of wear is only three or four times that of the larger bits, the new system could still be competitive because up to 12 bits can be stored in the magazine.

Cutter heads for the new system are being designed and built by Reed Tool Company, Houston. These heads will be tested at a Reed test facility. If these drilling-rate tests are encouraging, a prototype system will be completed in FY 1976, and deep drilling field tests will be conducted in FY 1977.

Overall responsibility for the Sandia drill development program is centered in the Drilling Research Division 5718 headed by Max Newsom. Bob Alvis, Charles Huff, Jack St. Clair, Gordon Harvey, Lloyd Faucett and Bob Silva of the Division and Bob White (2315), Buz Milton and Frank Francis (both 5814), and Roger Lawrence (5166) are developing the spark and terra drills. Dick Ashmore and Henry Togami (both 2325) are developing the chain and changeable bit systems.

ERDA has provided about \$500,000 for improved drilling developments through June 30, 1975, and will provide additional funding in FY 1976. Louis Werner and Morris Skalka, Division of Geothermal Energy, are administering the drilling program for ERDA.



JUDY BEGAY (left) and Benneke Gorman are acquiring a presidential explanation by Morgan Sparks on the workings of a computer display panel. The two young people, from the Navajo Community College, spent last month in Computer Consulting Division 2634 under a Kellogg Foundation grant. Natalie Vytlicil of that division was their mentor on computer programming and operations.



FLY HIGH at the C-Club's 25th Birthday Merry-Thon July 21-27. At the Tuesday Sports Night, Jon Ashworth (9553) will offer free hot-air balloon rides so kids can see the view from the top. Kathy Pogna's (ERDA) balloon is appropriate for the festivities, not for the flight.

FRIDAY	SATURDAY
11-HAPPY HOUR LOUISIANA CREOLE Adults \$2.95 Under 12 1.95 <i>Thomas & Marcia</i> PRESS & "66" TRIO	12-Mail The Club A 25th Birthday Card
18-HAPPY HOUR CHUCKWAGON BARBEQUE Adults \$2.95 Under 12 1.95 <i>Tim & Paul</i> THE PRISONERS	19-SOUL SESSION BROWN SUGAR 8:30 - 11:30 Members Free Guests \$1

IT'S — a fantastic week coming up July 21-27 at the Club. Kicking off the Club's 25th Birthday Merry-thon is a 50's Dance sponsored by the Ski Club. Recycled rock & roll, a twist contest, a jitterbug contest — you'll drip with nostalgia (and perspiration). TV-type Dan Smith plus Ernie and the Saints for music. A 50's fashion show too, and prizes for best costumes. Pull in your stomach, pull on your old clothes, and pull up to the Club on Monday night.

NOT — much time left for members to sign up for the Mazatlan trip Nov. 1-8. In fact, today's the last day! Still time for Bahamas trip (Oct. 28-Nov. 4) signups. Members and guests, don't procrastinate.

WHETHER — you're a Wolfpacker or not, the Sports Night Picnic on Tuesday offers you Stars Under the Stars. Bring a picnic dinner and the family, and mingle intimately with Albuquerque athletic greats like Don Perkins, Ira Harge, Jesse Castenada, Bobby Santiago, Bill Mondt, Nancy Neel, Chuck Roberts, Jim Cleary, and the Club's own Kimmy Jones and TV greats Jim Boggio and Neil Murray. Plus a gymnastic show, swimming, diving, and water polo (with players on trained seahorses) exhibitions by the Aquatic Club, joint sponsor with the Pack for the evening. Hot air balloon rides for the kids too.

YOU — have teenagers who'd like to celebrate the Big Birthday too? Steer them to the Swim and Dance Party Thursday afternoon. Warm up, cool off, repeat cycle. Free, with a swim ticket or pass.

WIN — a \$300 jackpot? Shrimp? Beef? Polish your Bingo skills and bring the family Thursday night. Joe Shelby will mastermind the Monte Carlo distributions of letters and numbers. And maybe Person Luck will be on your side.

OR — if a more formal occasion (semi-formal, to be exact) attracts you, try the Sanado-sponsored Official Birthday Cake/Cocktail Party on Wednesday. Pop piano player Tom McCohan, the Hon. Harry Kinney and other dignitaries, cake-cutter Morgan Sparks, and Sanado-approved hors d'oeuvres.

LOSE — your cares (and maybe your mind) at Soul Session on the 19th. Brown

Sugar makes dancing the most exciting thing since diaper service.

Charter Member Memories

IT'S — a Super Happy Hour on Friday the 25th: roast ham, roast beef, lobster Newburg, a giant salad bar. Plus Denny, a graduate of the Julie Hard School of Music, and Together for dancing. Pools are open till 9 for quick cool-offs.

HOW — can you take advantage of the Club's (cheap) travel rates if you're a Sandian from out-of-state? Simple. Effective now, non-New Mexico Sandians can join the Club for only \$3 a year and qualify for the Club's travel bargains. Contact Membership Man Dick Baughman at 4-6337 for more information.

YOU — shouldn't overlook two other Happy Hours just because of the Super Supper on the 25th. Tonight it's beef burgundy, shrimp creole, chicken jambalaya, and more for eating; soft romantic Thomas and Marcia for listening; dance music hot off the Press, with his "66" Trio. And next Friday Chuck Wagon is the featured buffet attraction.

PLACE — to be Sunday the 27th is the Hunt Breakfast. Not to be confused with an Easter Egg contest, you'll dine on scrambled eggs, mixed-up sausages, disjointed (and fried) chicken, beef tacos, green chile stew, and far northern Spanish (i.e., Danish) rolls. And you'll delight to the Mariachi Gala. Der Polka Schlingels German Band too for all the oom-pah-pahs and oom-mah-mahs.

THE — following is an Official Announcement: The Official Annual Meeting of the Club will be held, rain or shine or dust, on August 4th at 7:30. Official elections to the Board of Directors will be conducted.

BLAME — no one but yourself if you forget to join the waiting list for the Big Birthday Ball on the 26th. The original Ink Spots and the original Johnnie Ray, top headliners when the Club was young, are featured in the week's penultimate event. It'll be a night to remember even if Ray doesn't fall down on one of the Ink Spots and become the original Johnnie on the Spot. TV's Jim Wilkerson too.

MORE INFO — 265-6791

JIM PORTER (2633): The Club offered the most attractive social program in town — Sunday buffets, bowling, dances.

ERNIE BOLTON (3732): The new Club was the only thing on this end of town — those were the days when you drove to Nob Hill to get to a supermarket and to North Second for a drive-in movie. Square dancing, with Doc Rhebeck as caller, was a popular activity for those of us who lived on Base. And I remember winning a lawn chair as doorprize in the Club's opening ceremonies.

BOB FLAXBART (9710): The Club was one of the few places in town large enough for big group meetings. Sandia held supervisory dinners there — really helped bring managers closer together.

JOE MUENCH (1222): For people living on Base, the Club's three meals a day were pretty popular — and tasty.

GEORGE HORNE (2634): The new Club was the social center for both the men's and the women's dorms (south of the Club on Wyoming). Those were great years — even if the persistent rumor of a tunnel between the

two dorms never materialized. My most vivid memory — other than meeting my wife Pat at a Club dance — is roaring up to the women's dorm and inviting the whole crowd out for a fried chicken picnic. This was just after several chickens had been stolen from the Club kitchen. The Criminal Investigation Division cleared us only after we found receipts for ours.

ANDY ANDERSON (1223): I remember the French chef's speciality — roast duck flambeau Coronado. And sleeping in the Club lobby when a blizzard struck one night. And some other stuff I'd better not talk about; ask George Horne.

GEORGE HORNE: The new Club was the social center for both the . . .

GLENN FOWLER (1000): I recall the consternation when the bill for the bowling alley's pinsetting equipment came in. Right there on the bill was a healthy charge labeled "kickback." With government funds involved, that seemed pretty blatant. Then we found out that "kickback" was an integral part of the pinsetting apparatus.

Birthday Merry-Thon At A Glance

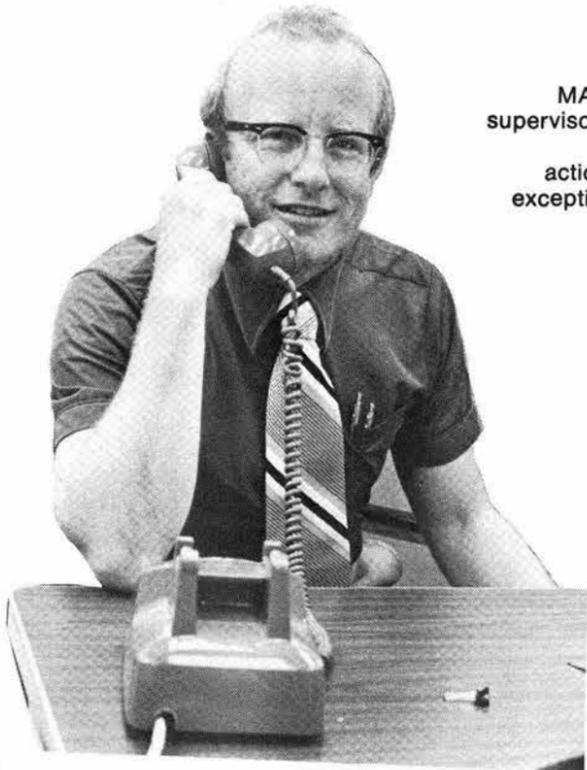
Event	Day and Time	Cost
Fifties Dance	Mon., 8-11	Members Free
Sports Night Picnic	Tues., 6:30-9:30	Members Free
Cake/Cocktail Party	Wed., 7:30-9:30	\$7.50 per couple
Teen Dance/Swim Party	Thurs., 3-6	Free with swim ticket
Bingo	Thurs., 8-11	Free Admission
Super Happy Hour	Fri., 4:30-?	Buffet \$3.40 and \$2.40
Birthday Ball	Sat., 6-?	\$15 per member couple
Mariachi Gala Brunch	Sun., 11-1:30	\$4.50 per person



"LITTLE WHITE CLOUD That Cried" is not a lachrymose Native American. It's the title of one of Johnnie Ray's 50's Hits. He'll sing others (like "Walkin' My Baby Back Home" and "Cry") plus modern songs at the Birthday Ball. Backing Johnnie will be Sol Chavez and the DCB. Add the Ink Spots, and it's a fantastic evening.



1975



MARV TORNEBY, Division 211 supervisor — "Achieving worthwhile goals requires overt action. Equal opportunity is no exception — it materializes as we all do our part."

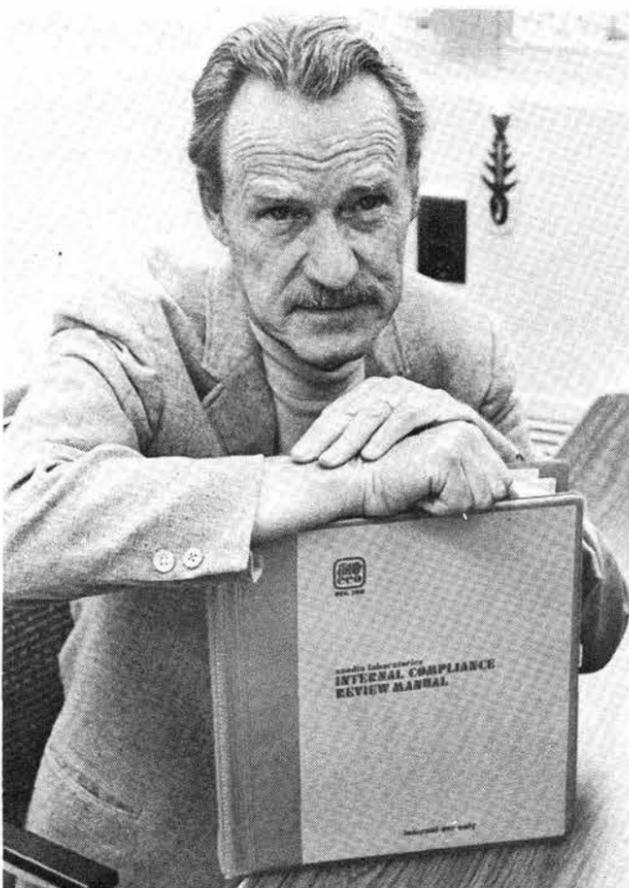
Affirmative ACTION People



BOB GARCIA (200), Special Assistant to the President on Equal Opportunity — "As we approach the national bicentennial, I like to recall that equal opportunity has always been an American goal. The founding fathers put it very nicely in the Bill of Rights."



GEORGE BANOS, Division 212 supervisor — "Our responsibility is to see that all personnel actions are proper and in conformance with policies and regulations."

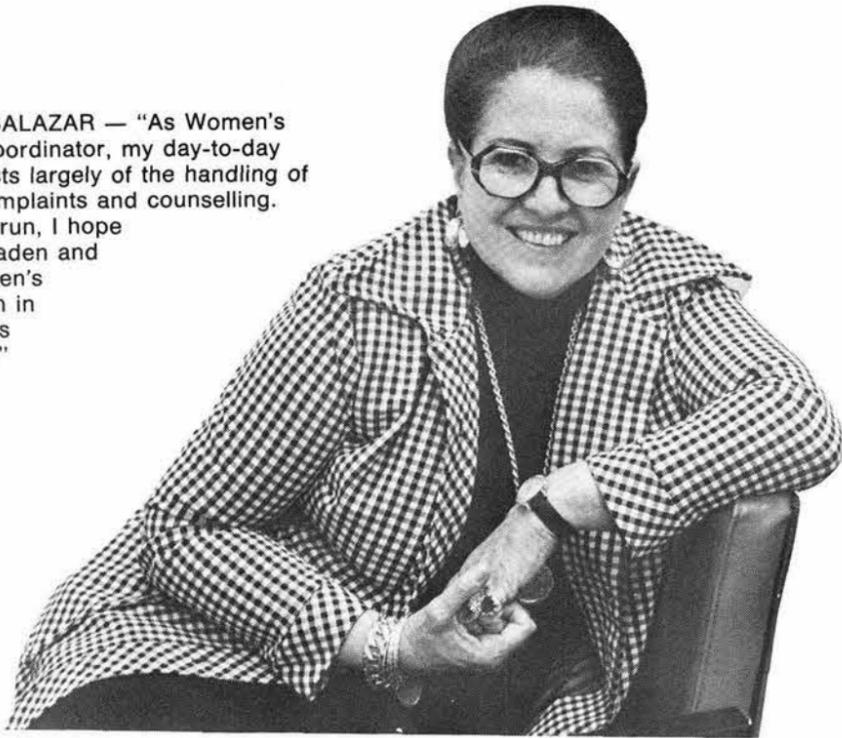


GEORGE THORNE — "I develop and prepare EEO-oriented programs. For example, I wrote the Internal Compliance Review Manual — the guide for reviewing and reporting on EO/AA compliance within the Laboratories."

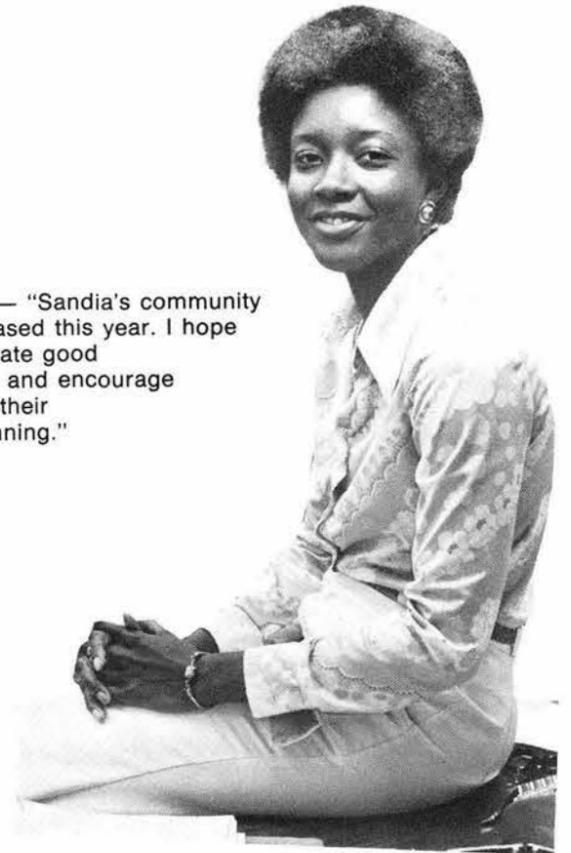


PEGGY BURRELL and LYNN RIGBY — "We are responsible for the selection and application of all personnel tests and for validation of the criteria used in the selection process."

LORELLA SALAZAR — "As Women's Program Coordinator, my day-to-day work consists largely of the handling of informal complaints and counselling. In the long run, I hope to help broaden and enrich women's participation in the business community."



KATRINA PERSON — "Sandia's community activities have increased this year. I hope our contacts will create good community relations and encourage young people to lift their sights in career planning."



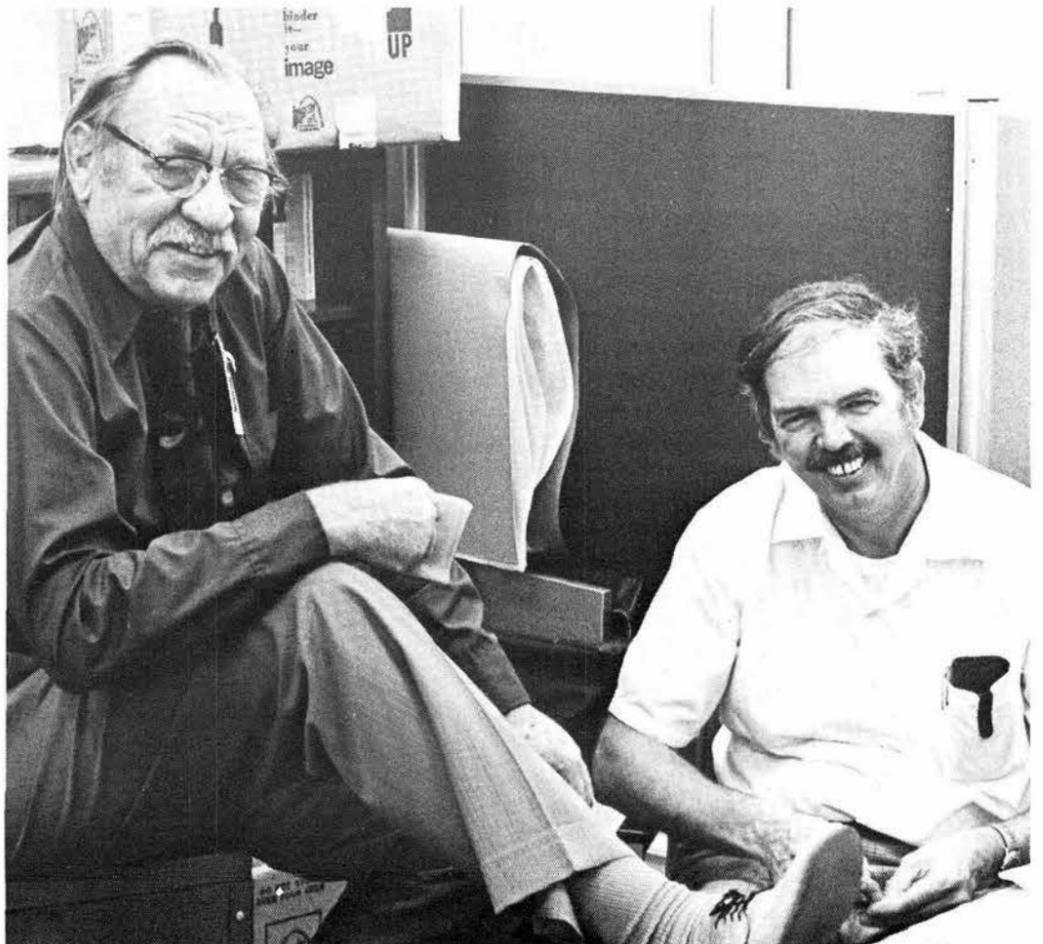
BENNY GARCIA — "I spend most of my time conducting internal compliance reviews and investigating charges."



MOLLIE MILLER — "I conduct internal compliance reviews and work with employees to resolve problems. When employees take complaints to outside agencies, I investigate allegations and make recommendations."



DUANE HUGHES — "I work on the development and preparation of Sandia's Affirmative Action Plan and coordinate data for the ERDA compliance teams that review our status."

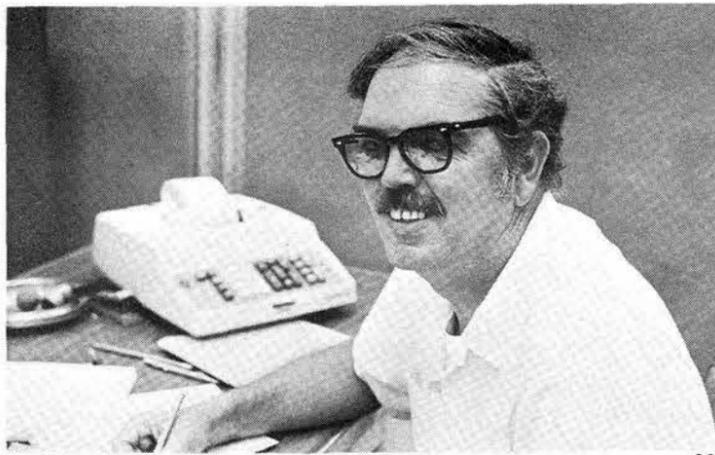


BILL CARSTENS and JOE DANCLOVIC — "The key to equal opportunity at Sandia is honest and realistic communication between employees and supervision. We hope the Supervisory Workshop is a step in this direction."

MILEPOSTS

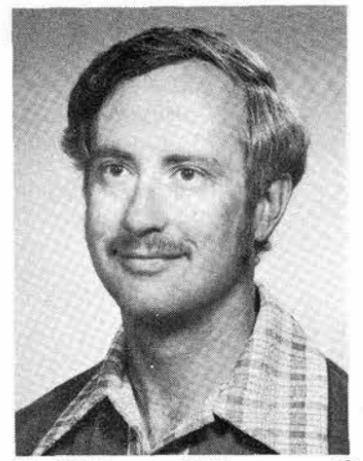
LAB NEWS

July 1975



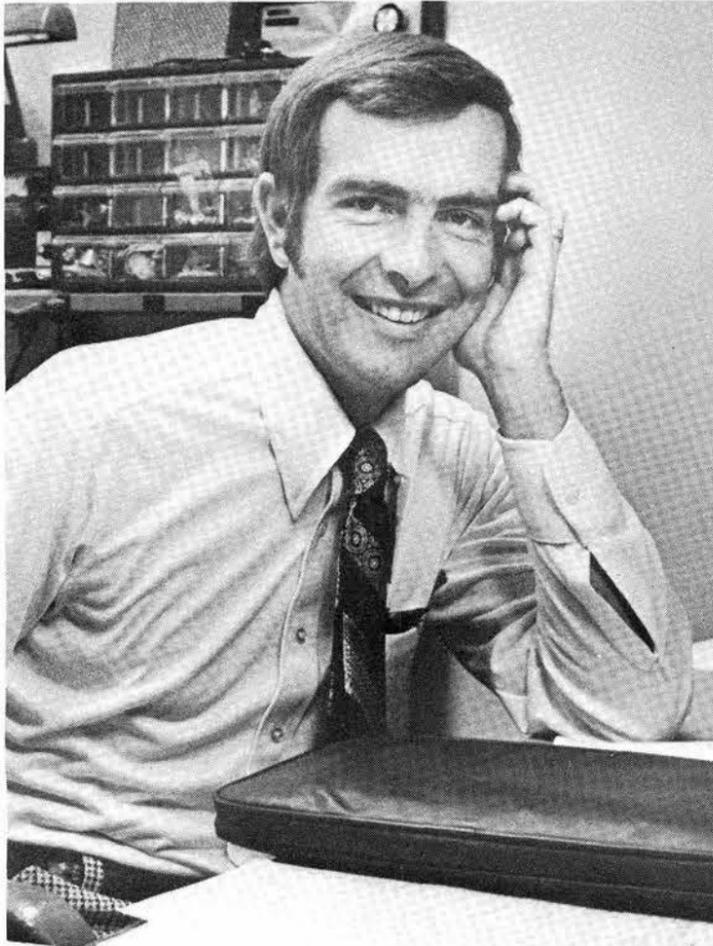
Joe Danlovic - 211

20



David Darsey - 9344

10



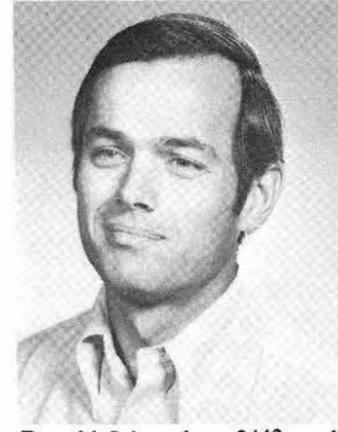
Dick Hay - 1731

10



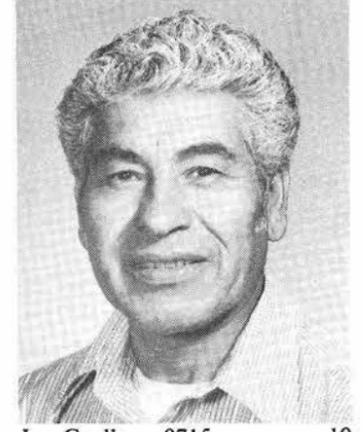
Eugene Cnare - 9321

20



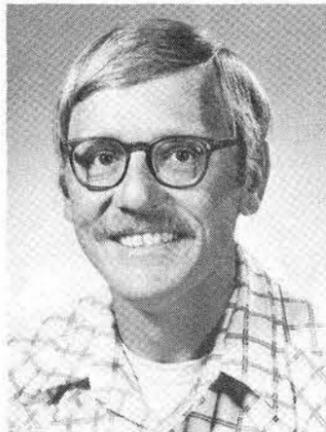
Donald Schroeder - 2442

10



Joe Cuellar - 9715

10



Richard Ashbaugh - 1713

15



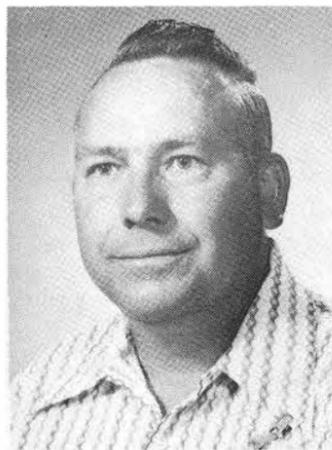
George Horne - 2634

25



Genese Shieler - 9343

20



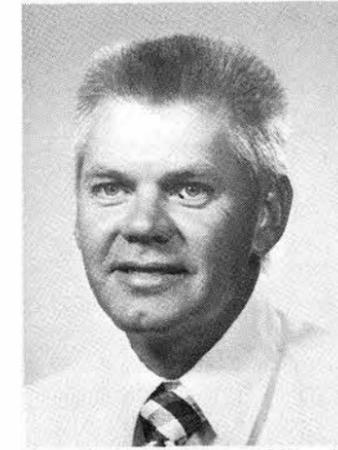
William Gibson - 3645

20



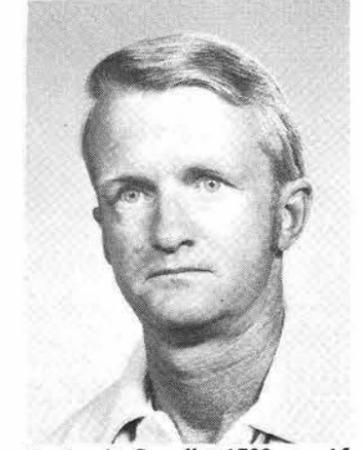
Wayne Sundberg - 5626

10



Donald Gunderson - 1221

15



Benjamin Sewell - 1739

15



Frances Aaron - 3621

20



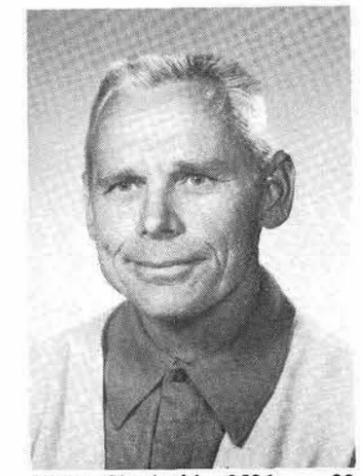
James Park - 2312

20



Robert Luna - 1721

10



Victor Sirwinski - 9526

20

Q. What is Sandia's policy on employees taking vacation? I have heard that some employees have had to forfeit vacation due to job constraints.

A. Sandia's policy with regard to vacation is that all employees are expected to take their vacation during the period the vacation eligibility exists (i.e., employees should take 24 days of vacation each year). Where the requirements of the job preclude the timely taking of vacation, the approval of the Vice President is required to carry that vacation over to the next period. Even where carry-over is properly authorized the employee should plan to take the vacation as soon as reasonably possible.

It is contrary to Sandia's policy to require any employee to forfeit vacation due to job demands.

R.J. Edelman — 4200

Q. For my 25-year service award I selected a lady's watch for my wife. I requested it be engraved with my initials, her initials, and the date (in numbers). I was informed by Division 4256 that the watch could not be engraved as I requested. It must be engraved with my name only. I then asked that the watch not be engraved at all. I was told it could not be left "blank" — it had to be engraved with my name! Since the watch is for my wife, I don't want my name on it.

I can't understand why it's impossible to engrave 6 letters and 5 numbers on the watch;

also why is it impossible to omit the engraving entirely?

A. Service Awards are gifts to employees in recognition of long service at Sandia. Policy is that the gift be engraved with the employee's name, number of years' service and company name to commemorate the occasion. The fact that the employee is privileged to select a gift which can be worn by another does not alter the fact that recognition is to the employee.

R.J. Edelman — 4200

Q. I believe Sandia should have a corporate flag which would feature the Thunderbird design in Sandia turquoise on a white field. The

feed liback

roof of Bldg. 800 now displays the U.S. Flag and a Minuteman Savings Bond Flag. A Sandia Flag could also be displayed there. Our division is developing new instrumentation systems for Nevada Test Site. To properly identify this system as belonging to Sandia we would like to be able to fly an official corporate flag.

A. Your suggestion that a corporate flag be added to the corporate identification criteria is well worth pursuing. We will take the necessary steps to have a flag designed.

We will also establish some guidelines for appropriate use of the flag, but the examples you mentioned seem quite appropriate.

Upon receiving approval of design and appropriate use we will proceed accordingly.

K.A. Smith, 3100

Q. LASL has a program of what is called "casual hires." My daughter terminated from LASL a year ago but retained her badge and is considered "casual." When many people are on vacation or sick, or there is an overflow of work they call her in, and she then works 1/2 days, full-time or whatever best suits her. Why not look into this and perhaps give it a try at Sandia?

A. Thank you for your suggestion. We have considered this approach before and currently use what we term as "Recurrent Employees" in the Medical and Security organizations. We have not extended it beyond these two groups since in many instances we feel the line organizations can cover the secretarial positions for short periods of time during the summer while regular employees are on vacation or when a secretary is out for a short period due to illness.

We will keep your suggestion in mind and if the need develops, we will certainly move in that direction.

R.J. Edelman, 4200

JUNK • GOODIES • TRASH • ANTIQUES • KLUNKERS • CREAM PUFFS • HOUSES • HOVELS • LOST • FOUND • WANTED • & THINGS

CLASSIFIED ADVERTISING
Deadline: Friday noon prior to week of publication unless changed by holiday.

RULES

1. Limit 20 words.
2. One ad per issue per category.
3. Must be submitted in writing.
4. Use home telephone numbers.
5. For Sandia Laboratories and ERDA 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.

MISCELLANEOUS

TIRES 7:14, 12-ply w/rims, 4 for \$150. Granger, 869-2528.

1/2 HP house pump w/tank. Padilla, 877-2116.

BABY bed w/mattress, high chair. Weldon, 299-8507.

GIRL'S Spider bike, \$7; go-cart, \$25. Maydew, 821-0102.

OSCILLOSCOPE, dual beam, Dumont model 322, w/manual, working condition, \$70. Roeske, 296-3946.

CRIB, youth bed, and other furnishings. Brower, 298-2254.

DAY BED, converts to 2 twin beds for sleeping, \$40. Priddy, 298-8912.

SOFA, 2-piece sectional, soft green w/gold & brown flecks & brown trim, \$70. Robertson, 255-6707.

REFRIGERATOR, 1 1/2 yrs. old, \$175; dinette set, \$35; naugahyde chair/ottoman, \$50; credenza, \$200; chest, \$15, other items. Syme, 293-9735.

ABOVE-GROUND pool, 18' dia. by 4' deep, winter cover & all accessories, \$200. Melville, 296-3378.

HI-FI & cabinet, Girard record changer, high chair, training pot, girl's clothes, size 4, Lennox china. Boling, 298-8141.

STOVE & oven, separate built-ins, oven needs rheostat & thermocouple, \$20 for both. Bump, 299-8960.

FLUORESCENT light fixtures, new, in box, 2 tube 8' long w/reflectors, \$15. Ernst, 821-5150.

COLLIES, Father: purebred tri; Mother: collie & shepherd sable, \$25. Terrell, 265-0100.

CHAIN link fence, 4' high w/top rails, regular posts, corner posts, caps, etc., 190 ft., \$190. Schulze, 898-2880.

VW trailer hitch, \$25; Sears lawn-sweeper, \$10; portable room-cooler, \$10; lawn mower, \$5. Banks, 255-2544.

TOPCON Super RE 35mm single lens reflex, f1.4 lens, \$200; Airquip 35mm projector Sprite 35 w/seven round slide holders, \$50. Goddard, 299-6844.

CHEVY truck seat, \$15; skis, \$10 pr. Browne, 344-2358.

BABY walker, round, folds easily for storage. Smith, 299-0082.

FLUTE Yamaha, 1 yr. old, \$100; Coldspot refrigerator, \$50; kingsize bed-spread; 15" wheel from '65 Mustang; swag lamp. Chandler, 296-3323.

WEIGHT-LIFTING set w/bench, \$30. Gammon, 268-1032.

GE built-in oven & range. McRae, 881-7025.

CRAFTSMAN 6" metal lathe, many accessories; '73 Honda 750cc, Windjam-

mer fairing, many extras. Martin, 255-8030 after 5.

COLDSPOT 17 cu. ft. chest type freezer. \$65. Calek, 281-3285.

REGISTERED pinto mare, 3 yrs., 15 hands, knows leads, has been shown. Higgins, 898-0409.

18,500 BTU refrigerated window type AC, Sears Coldspot, best offer. Alexander, 265-2532.

SEARS MARK VII soft top tent trailer w/add-a-room & spare tire, \$350. Harris, 299-6664.

TRANSPORTATION

'65 MUSTANG, HT, 3-spd., stick shift, AC, white w/black interior, 10,000 on rebuilt engine, \$850. Chandler, 296-3323.

'63 CHEVROLET 1/2-ton pickup, 6-cyl., 3-spd. (on the floor), radio, recent new clutch, turquoise, \$450. Griego, 299-0426.

'70 GMC "Jimmy" custom 4-wheel drive, PS, PB, AC, needs some work, body good shape, best offer over \$1100. Bontrager, 877-6596.

'50 CHEV. pickup, std. Garcia, 831-2036.

'71 FORD sta. wgn., fully equipped, low mileage, luggage rack, radial tires, vinyl interior, terms, \$1650. Browne, 881-3772 or 344-2358.

'74 CHEV. van 1/2-ton, 25,000 miles, custom shag carpet, TV, 8-track FM-stereo, 6-cyl., \$3600. Phelps, 881-9843.

BICYCLE, 5-spd., 26", reconditioned, thorn

resistant tubes, \$40. Laursen, 294-0678.

'65 ALFA Romeo 1600 Guilia Spider, new top, carpeting, sound engine, running gear, many spares, \$1600 or offer. Toepfer, 296-6758.

'69 PONTIAC Firebird, 40,000 miles, 350 V-8, AT, PS, AC, vinyl top, \$1500. Sanchez, 821-4035.

'74 CHEVY Nova, 2-dr., 3-spd., R/H, vinyl top, 11,000 miles. Swier, 256-0113.

REAL ESTATE

LOT, Elephant Butte Lake, for travel trailer-boat, has water, sewer, electricity, \$500 below market value, \$2200. DeHaan, 268-6120.

3-BDR. furnished mobile home & 100 x 100 ft. corner lot at Conchas Lake, 1 block to water, mooring and sandy beach. Getz, 299-4865.

FULL acre with 19' travel trailer, barbecue, storage shed, in Manzano Springs, electricity available, \$2250, discount for cash. Clay, 299-1769.

3-BDR., completely carpeted, good location on Sandia Bus Line. Daniel, 268-8335.

20 ACRES in Manzano Mountains, year round stream, ponderosa, meadow, 30 miles from Albuquerque, trade for valley land. Hanchey, 299-8723.

3-BDR. home, dining area, garage, will refinance, FHA, VA, \$20,200. Tormey, 298-5312.

WANTED

HOUSE for visiting faculty member & family, July 15 thru Sept. 1. Snyder, 264-6169.

QUILTING frame w/stand, in usable condition. Gregory, 299-2461.

MOVIE projector, Reg & Super 8, used, cheap. Miller, 255-7716.

QUILTING frame w/clamps. Clark, 256-3404.

RETIRED couple for apartment managers. Littleford, 296-4374.

LARGE gate-leg table (at least 60"). Brinkley, 255-2783.

POWER-KRAFT 1/4" drill (sold by Wards); need old model vintage '60-65, for accessory; also need grinder. Chandler, 296-3323.

USED UNICYCLE, under \$15. Barnaby, 265-4353.

WORK WANTED

YARD and hauling jobs. Pannell, 821-0102.

YARD WORK, lawns kept up for summer, small utility jobs & garage cleaning. Baca, 869-2649.

LOST AND FOUND

LOST — Jade tear drop pendant earring; Portable Page Boy, w/ Xerox Corp. property tag on it, plastic coffee cup (16 oz.) with coffee.

FOUND — Man's brown rim safety glasses; 1 ladies black shoe; white earring; set of keys on Sandia Credit Union ring; Gold dangle earring; Heshi choker. LOST AND FOUND, Bldg. 832, 4-3441.

Our Vacation/Holiday Plan

How It Came To Be

Any Sandian who hires in from business or industry is likely to be pleasantly surprised at Sandia's vacation/holiday plan. Sandians get nine and a half holidays plus 24 days of vacation each year regardless of rank or years of service.

According to one theory, Sandia's (actually LASL's since Sandia was then LASL's Z-Division) vacation plan has its roots in its relationship with the military during and after World War II. The members of the scientific staff and management of the Manhattan Project were, in the main, recruited from universities. The technicians and lower ranks were primarily military. All worked a six-day week.

When it came to vacations, the academic types obviously couldn't argue for a June-to-September break. But they did convince the University of California (UC operates LASL) that they should get a month off each year as their military colleagues did. Four weeks times six days a week meant a 24-day vacation.

A second theory complements the first. The academic people were used to a long summer break. People imported from industry were used to two weeks, but most hailed from the far-away East Coast and needed a month to go "home." And LASL was considered an isolated, almost hardship, post.

A third theory is that one day a month was considered vacation. A second day off each month was to go "down the Hill" (to Santa Fe or Albuquerque) for shopping. That's 24 days off each year.

Whichever theory you prefer, Sandia ended up with 24 days of vacation, about a



quarter of the benefits budget. "Such a plan was unique then," says Vice President Ray Powell (3000). "Today industry is catching up with us, but it's still one of the most liberal vacation plans in the country."

Jean Langston's (4210) research bears this out. "The most popular vacation plan is the 'graduated' one; vacation length depends on length of service. The 'uniform' plan, like Sandia's, is the rarest. In many companies, it would take at least ten years of service, more likely 20, to get 20 days off."

This year all Sandians were asked to use up half this calendar year's allotment (12 days) by June 30. Mandating half a year's vacation by June 30 wasn't a capricious decision. We're locked into an AEC/ERDA-ordained accounting system which charges our organization's case number only for those days we're actually at work; when we're on vacation, no costs are charged to the case number. With all of us taking half our year's vacation by June 30 (the end of the fiscal year), some \$2 million didn't have to be charged to operating costs. Call it an accounting gimmick if you like, but \$2 million is more than pocket change any day.

In contrast to our vacation plan, our holidays are quite typical. Quoting Jean

again: "Over 80 percent of American companies offer between seven and eleven paid holidays. Sandia has nine and a half. That includes the six traditional ones — Christmas, Thanksgiving, Labor Day, July

4th, New Year's and Memorial Day — plus Washington's Birthday, Veteran's Day, and half of Dec. 24.

Sandia used to designate Good Friday as a holiday. But a couple of years ago, employees were offered a choice of "floating" or "designated" holidays — Good Friday, Yom Kippur, Columbus Day, the Friday after Thanksgiving, Martin Luther King's birthday, our service anniversary date, or our birthday.

As of June 27, Sandia officially observes the Friday After Thanksgiving (appropriately acronymed FAT) instead of Veterans Day. And the "floating" holiday can float to whatever workday the employee wishes. Ten percent of our benefits dollar goes toward holidays.

Twenty-four days vacation plus 9½ holidays means 33½ days every year that Sandians aren't at the desk or in the lab. But that doesn't mean that the time off is somehow wasted. For one thing, the vacation/holiday plan helps Sandia attract and hold talented people.

More important, a day or a week or a month spent "relaxing" — even if the time is spent in climbing 18,000-foot Mt. Jatumontepuncu or visiting the in-laws in Iowa — undoubtedly means higher efficiency on the job later. It may be a liberal plan, but for an organization whose job means problem-solving, it's quite a defensible one. •bh



Events Calendar

- July 11-13, 17-20 — Corrales Adobe Theater: "That Championship Season," 8:30 p.m.
- July 13 — NM Mt. Club, Osha Peak-Colorado Canyon in Manzanos, hike 6 miles, 8 a.m., Western Skies.
- July 14 — Albuquerque Children's Theater: "Three Tales from a Broken Fortune Cookie," 12 noon, Free, Downtown YWCA.
- July 14 — Lecture Under The Stars Series: "The Roles People Play," 8 p.m., Central Mall, UNM.
- July 15 — Keller Hall, UNM: Baroque Recital, 8 p.m.
- July 18 — Arts In The Parks: Arts & Crafts Fair, 9-4 p.m., Old Town Plaza.
- July 17-20 — Rio Grande Horse Show, State Fairground.
- July 18-20 — Antique Show and Sale, Convention Center.
- July 19-20 — The Indian Art Collector's Summer Show & Sale: Directors Room, Four Seasons, 10 a.m. - 10 p.m.
- July 21 — Albuquerque Children's Theater: "Way Way Off Broadway," Heights YMCA, 2 p.m.
- July 21 — Lecture Under The Stars Series: Blue Grass Music, 8 p.m. Central Mall, UNM.
- July 20 — NM Mt. Club, Mt. Taylor, hike 8

Retiring



Hazel Bailey (9353)

- miles, 7 a.m., State Police Parking Lot, Carlisle & Menaul.
- July 23 — Arts In The Parks: Parks & Rec. Day, Rio Grande Zoo, 9-4 p.m.
- July 24-25 — Old Town Studio: "The Diary of Anne Frank," 8 p.m.