New $2 Million Drilling Projects Now at Labs

Four new projects funded at more than $2 million are underway in Drilling Research Division 5735 under Max Newsom. Three of the projects are funded by ERDA's Division of Fossil Energy, and the fourth by the Division of Geothermal Energy.

Project engineer for the fossil energy projects is Charlie Huff. The projects are:

1. **Hard surfaces for drill bits** — Applications of new hard surface materials, such as GE's diamond Compax, to drill bits will be investigated. A central problem is the bonding of the Compax to mounting studs. The program is being conducted cooperatively with GE and one or more drill bit companies yet to be selected.

2. **Drilling fluid (mud) test equipment** — Test equipment to measure drilling fluid properties under high temperature and pressure will be designed and developed. Equipment design will be preceded by studies to learn exactly what factors — viscosity, flow properties, etc. — need to be measured to characterize mud degradation in deep oil and gas and geothermal drilling. This program is being conducted with Mud Tek Laboratories, Houston, Texas.

3. **High temperature materials studies** — The effect of high temperature, pressure and corrosive environments on steels, elastomers

(Continued on Page Two)

Sandia Developing New Guidance System

SITAN: it's not a new cough medicine, but rather the acronym for the Sandia Inertial Terrain-Aided Navigation system. SITAN is a new terrain-sensing guidance system that utilizes radar-derived topographical data to update an inertial navigational system (INS). Rather than taking discrete position fixes, as do similar terrain-guidance systems, SITAN operates continuously and guides a weapon system right up to its target.

Larry Hostetler of System Studies Division 1313 has performed much of the theoretical work for SITAN. “Results have been very encouraging,” Larry reports. “Last fall, Exploratory Systems Division 1322 under Ron Andreas put together a breadboard SITAN and tested it aboard an aircraft over Sandia's Edgewood Test Site. The overall final error at the target was only 19 metres. It was a convincing demonstration of SITAN's potential.”

The unique part of SITAN is a set of computer algorithms developed by Larry which continuously corrects errors in the inertial navigation system. Inertial systems are found in practically all navigation and missile guidance systems nowadays. The heart of the INS is several gyros (like children's spinning tops) and other motion sensing devices which enable the airplane, ship or missile to locate itself in “inertial space.” Unfortunately, the INS — like a top will drift and thereby create errors in navigation.

Even with a perfect INS, there is another source of error. If an INS is started at, say, position A when in reality it was located at position B, the final error, if not corrected, will generally be greater than that initial error. SITAN accommodates and solves both of these problems.

An example of the latter problem is when a pilot must launch a stand-off missile in bad weather or at night, when conditions of poor visibility make identification of the launch point difficult. With SITAN, features of the terrain along a pre-planned path from the launch point to the target are memorized by the system prior to the mission. The path can be many kilometres long and take any course — curved, zig-zag, etc. The missile is then launched near the memorized path and the INS is signaled that it is exactly at the planned launch point although in reality it isn't.

SITAN, employing a radar altimeter, immediately begins to compare the terrain features below with those in its memory, and makes appropriate course corrections. The program is being conducted with Mud Tek Laboratories, Houston, Texas.

Drilling fluid (mud) test equipment — Test equipment to measure drilling fluid properties under high temperature and pressure will be designed and developed. Equipment design will be preceded by studies to learn exactly what factors — viscosity, flow properties, etc. — need to be measured to characterize mud degradation in deep oil and gas and geothermal drilling. This program is being conducted with Mud Tek Laboratories, Houston, Texas.

High temperature materials studies — The effect of high temperature, pressure and corrosive environments on steels, elastomers

(Continued on Page Two)
Profit & loss (cont.)—The 802 book stand thing has taken another turn. Last issue we reported the anonymous donation of $100 to cover our ripoff losses. Now we have another handsome donation, $50, from an equally anonymous source. The donor's note concludes: "Please see that the enclosed amount benefits our poor brothers and sisters on Highway 18..." We will, friend, we will.

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Macho & motorcycles—Visiting Sandia Livermore last week, I was struck—really appalled—by the number of helmetless motorcycle riders one sees in California. In fact, the majority wear no helmets. This could be dismissed as simple asinity, but there's another dimension and it demonstrates the curious result that can arise from the efforts of well-intentioned law-makers. In the great helmet controversy, California riders raised such a ruckus that a proposed helmet law was defeated (not so here in New Mexico). But by drawing so much attention to the subject the helmet is now a Symbol: wear one and you're chicken, go without and you're a free, untrammeled spirit whose daring is manifest. Very few men, especially young men, have the courage to show that they have more concern for sense than for a display of what passes for manhood, so off they go, helmetless. Given the frantic California traffic, their motorcycle casualty statistics must make grim reading. (Cycle riders: no angry notes, please. After 15 years on bikes I've concluded that those who question the wearing of a helmet probably still believe in the Good Fairy and the Easter Bunny.)

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Strictly kosher—Happy birthday cakegram, from oldest son residing in Israel. Found its way here though there must have been some head-scratching: Albogvergve.

***

Thoughts from a great creative writer—"I had grown up among engineers, and I could remember the engineers of the twenties very well indeed: their open, shining intellects, their free and gentle humor, their agility and breadth of thought, the ease with which they shifted from social concerns and art. Then, too, they personified good manners and delicacy of taste; well-bred speech that flowed evenly and was free of uncultured words; one of them might play a musical instrument, another dabble in painting; and their faces always bore a spiritual imprint..."—Aleksandr Solzhenitsyn

* * *

Sympathy

To Russ Dietzel (2514) on the death of his mother in Jefferson City, Mo., May 17.

Continued from Page One

New $2 Million Drilling Projects Now at Labs

and other materials used in borehole drilling will be investigated. These environmental conditions adversely affect bits, pipe, and tools, particularly hardware containing elastomer seals.

The project funded by the Geothermal Division calls for development of high temperature borehole instrumentation—logging truck and tools—for logging geothermal wells. Lynn Baker (5735) is project engineer. An advisory committee will determine what tools would be most useful to the geothermal well drilling industry. This program will be conducted in cooperation with well logging service companies.

A number of Sandia organizations will participate, primarily Departments 5810, 5820, 5830, 2320, 2110, 2130 and 2150.

These projects complement projects already underway to develop spark, chain and terra drilling bits. The hard surface drill bit program supplants existing development of a downhole replaceable bit.

Congratulations

Mr. and Mrs. James W. Hole (2326), a daughter, Kelly, May 19.

Mr. and Mrs. John D. Rupe (2326), a son, Gabriel, May 16.
Family Day At Sandia Livermore

Over 2800 Sandians and their guests enjoyed Family Day '76 at SLL.
President Ford has recommended to the Congress that ERDA continue to handle defense-related programs. Consideration had been earlier given to transferring these programs, chiefly dealing with nuclear weapons, to DOD. Here is the full text of the President's message to the Congress:

THE WHITE HOUSE

TO THE CONGRESS OF THE UNITED STATES:

In response to the requirements of Section 307(b) of the Energy Reorganization Act of 1974, I am pleased to transmit a comprehensive report concerning the desirability and feasibility of transferring ERDA’s defense-related programs to the Department of Defense or other federal agencies. The recommendations of the Secretary of Defense and the Administrator of the Energy Research and Development Administration are also included with the report.

I agree with the judgments of the Administrator and the Secretary and support their recommendations that ERDA retain its current responsibilities for funding and management of the defense-related programs. I have noted the recommendations with respect to the establishment of separate budget planning ceilings for ERDA energy and defense-related activities. I will consider these recommendations in developing my future budgets.

I agree with the recommendations of the Administrator and the Secretary that the Department of Defense should revise its nuclear weapons budget and cost reporting submissions to Congress to specify separately the ERDA costs associated with each new nuclear weapon or nuclear weapons system.

This segregation of costs will make clear to the Congress and to the public the total requirements for national defense purposes. I also agree that it is desirable to review the funding and management arrangements for the ERDA defense-related programs after two or three years of experience to see whether additional changes should be considered.

Gerald R. Ford

Guatemala Recovery Work

The Church World Service has selected 13 New Mexicans for a Guatemala recovery work project. Two of these volunteers are Gabby Gabaldon (4311) and his wife Pauline. The group leaves Albuquerque this Sunday.

Last February the earthquake that devastated Guatemala registered 7.5 on the Richter scale, and the major shock area encompassed 3530 square miles. A second quake followed two days later. Twenty-three thousand people were killed and 77,000 injured; more than a million, one of every five Guatemalans, are now homeless. Because most casualties resulted from collapsing roofs and adobe walls, the Guatemalan government is now urging reconstruction with some lighter material such as pumice blocks for walls and aluminum roofing.

“Our original plans,” Gabby says, “were to help the villagers make pumice blocks, but it’s the rainy season there now. Instead, we’ll put up shelters with posts and aluminum roofing. After the rains stop, other crews will add the walls and complete the construction.”

The New Mexico group will spend two months building these shelters in various villages. Gabby is the team leader for a group of five people who will do reconstruction in three villages. They’ll be living in tents and anticipate rugged conditions, “I know we’ll be doing a lot of mud-slogging,” Gabby says.

Local churches are their sponsors. Gabby and Pauline are sponsored by the Aquinas Newman Center. Sponsorship includes expenses for transportation plus cost of building materials. To assure that building materials get to their intended destination, the volunteers will travel by train with the materials. The train trip takes a week.

While Gabby is constructing shelters, Pauline, a dental technician, will assist a dentist who is also from Albuquerque. “I’m sure there is much to do,” Gabby says. “In one village of 1200 before the quake, there are now 780 orphans. When we return home on July 30, we’ll leave behind everything except the clothes we’ll be wearing — the tents, food, clothing, sleeping bags — the Guatemalans need them more than we do.”

Laser Institute Sets Organizational Meeting

The New Mexico Chapter of the Laser Institute of America will hold an organizational meeting Thursday, June 3, at the Four Seasons Motor Hotel starting at 6 p.m.

Following dinner at 7, Dr. Reed Jensen, LASL alternate leader for laser isotope separation, will discuss LASL’s laser research program directed toward simplification of the isotope separation process.

The Laser Institute is a professional organization for those involved in laser technology. Eric Jones (5214) is a member of the organizational committee.

Reservations for the meeting should be made before June 1. Call Eric, 4-8752.
Q. When will an "official" list of 1976 holidays be released? And how will Nov. 26th, and Christmas and New Years Day be handled? Will there be a Christmas shut-down again?

A. Although plans for a Christmas shutdown for 1976 have not been fully formulated, present planning is that, if there is a shutdown, it will be the week of December 27 through January 2. This would be accomplished by moving Christmas Day which falls on Saturday this year to the following Monday and New Year's Day which also falls on Saturday to the preceding Friday.

Whether the Friday after Thanksgiving (November 26) will be observed as a holiday again this year in lieu of the observance of Veterans Day has not been determined. If we do not observe November 26 as a holiday, we do plan to declare it a nonoperational day as we did in 1974 with work provided for those employees who do not wish to take that day as a day of vacation or as their 1976 "designated holiday."

The announcement on the finalization of any Friday after Thanksgiving or Christmas shutdown plans will not be made until July or August as the outcome of our forthcoming union negotiations which begin in May can have some influence on our ultimate decision.

R. J. Edelman - 4200

Q. I am drafting a last will and testament. I understand this service is available from a local banking firm or surely through an attorney, but my question is:

Could this service be made available as part of the Sandia Laboratories Employee Benefits Program?

A. Sandia Laboratories policy precludes providing legal advice to its employees.

The complexities and personal evaluations involved in the preparation of a will can best be served by an individual's own attorney.

R. J. Edelman - 4200

Q. My bank says Sandia is habitually late in sending the payroll computer tapes to them. Is this true?

A. It has always been Sandia's policy to handcarry our payroll to all local banks prior to payday. This deadline has never been missed. If you wish to give us further details, we will check out this claim. It is quite likely that your bank processes all its in-and-out transactions at the end of the day (or at night), so that your pay is not in your account although in the bank's custody all day on payday.

C. R. Barncord - 3200

Q. The latest issue of the Lab News carried an article on the alcoholism program at SLL. Does SLA have a similar program? If so, how can I find out about it?

A. The SLL Alcoholism Program is an integral part of the total Sandia Laboratories Program administered by Dr. R. J. Edelman under the direction of the Medical Department at Albuquerque.

At its inception in August 1972, a policy statement was issued to all employees and, subsequent to that, two Lab News articles were published. The Medical Department has plans to develop a brochure which will be available to all employees. Until this is available, please contact Mr. R. J. Edelman.

Sheldon P. Bliss, M.D. - 3300

Q. On looking at my personal benefits statement, I noticed that Sandia pays at least $1000 per $1000 coverage per month on both the basic and first supplemental life insurance policies. On the second supplemental policy, people in my age bracket pay only 20¢ per $1000 per month, and nobody pays more than 60¢. Why the large difference?

A. The premium paid by Sandia for the Basic and First Supplemental policies includes amounts for active employees' coverage as well as funding to provide coverage under these policies for retired employees.

The Second Supplemental coverage is limited to active and retired employees under age 60. This coverage terminates at age 60 whether the employee retires or remains on roll.

Therefore, the cost of the Basic and First Supplemental is more expensive because of the high cost of funding the retirement coverage.

R. J. Edelman

Bringing Brahms, Bach & Beethoven To New Mexico

We have a new symphony orchestra in town or, more accurately, a newly named symphony — the New Mexico Symphony Orchestra, neé the Albuquerque Symphony. Dick Schooebel (5820), a director of the musical group, explained that the new title seemed a more accurate reflection of the orchestra's activities.

"Last season about half of the orchestra's performances — 119 — were out of town. They went all over — Grants, Hobbs, Silver City, Taos and many others. Eleven special programs for children were given at places like Carlsbad, the Navajo Reservation, and Deming. It's a unique group of musicians doing something unique for the entire state — so let's call it the New Mexico Symphony."

Add to this some 116 performances in Albuquerque, and it becomes clear that the orchestra is a hyperactive cultural force.

Dick and other orchestra directors are after money. They need $135 thousand. Ticket sales cover only about half the expense. "We'd like to put some of the key musicians on salary," he says. "Now they get paid per performance and must moonlight elsewhere to get by."

Classical music may or may not be your thing. But you can add a little tone to New Mexico by sending Dick your check made out to the New Mexico Symphony Orchestra (it's tax deductible).
In New Mexico you seldom need travel far to put yourself into the past. Petroglyph Park, for example, is just a few miles from the I-40/Coors interchange. And it's peaceful, quiet, scenic — steeped with a sense of history. Disregard the tourists (it's seldom crowded) and the lizards, and you'll have little difficulty in imagining yourself a part of another time, another place.

Many of the black lava rocks, strewn along the hillside like a bored child's toys, show no sign of the human hand. But others contain a petroglyph, or two, or several. Each is a challenge — what is it? why was it carved here? what was the urge in the mind that steadied the hand that laboriously scratched that design?

PETROGLYPHS are scattered along hillside. Trails make most of them easily accessible. In the foreground, a bird, probably a parrot or macaw (according to the sign), and a second bird in a cage.

A COAT OF ARMS perhaps? Or a story inside a frame? Note the recent scar to the left of the design — vandals see petroglyphs as targets for their pleasure.

THE SIGN is near a picnic shelter at the foot of one trail. Several other shelters (and water) are available. The City furnishes an attendant to oversee the 85-acre park and to answer questions.

DOWNTOWN ALBUQUERQUE lies just across the mesa and the river from the park. Go north on Coors from I-40 to Atrisco (left at the 7-11) and follow Atrisco to the park.
COURSES AND COLLOQUIA. Latest addition to the Tech Library is a Video Center for listening and viewing anytime, in- or out-of-hours. Videotapes now on hand include courses in Statistical Analysis and Materials Technology; colloquium presentations by Ted Taylor, Allen Hynek, and Don Shuster (1950); and half a dozen tapes showing good (and bad) ways to make a presentation. Here Gladys Rowe (3114) adjusts the volume for Bob Steary (1235). Members of the Education and Training Department 4250 assisted in setting up the Center in Room 5.

T.A. ALLEN (3683-1) was happy about his recent reclassification to staff member/section supervisor, and his counterpart looked just as gleeful. Highlight of the breakfast party was this replica of T.A. created by Dolores Aragon (3623-1). Dolores and a friend decorated the cake without the aid of a picture; Dolores described T.A. as they worked (note reclassification to staff member/section supervisor).

Inks." RTI Meeting, April 29, SLA.
G.J. Simmons (1210), "When is a Sequence Random," Rocky Mt. Regional meeting of the Mathematical Association of America, April 30, Durango, Colo.
R.L. Ward (5441), "Inactivation of Poliovirus in Digested Sledge," Annual Meeting of American Society of Microbiologists, May 2-7, Atlantic City, N.J.
Dick Marmon, supervisor of Electronics Fabrication Section 3616-2, has been with the Labs 28 years. Dick is a Laguna Indian. He moved to Albuquerque from the pueblo in 1946 to attend UNM under the G.I. Bill. After two years, his wife’s illness led him to leave the university because not enough income was being realized.

His interest in education and ties with his pueblo are just as strong today as they were in 1946. About 20 years ago, Laguna people living in Albuquerque (currently 280) organized a club (Laguna Colony) to raise money to help educate their needy young people. Dick is treasurer of the fund-raise committee. "We can grant full scholarships," Dick says, "but our money is limited so we often supplement other funds. Our purpose is to help those who want to help themselves. We’ve paid expenses for older people to attend TVI, paid for tuition and books for part-time students and even helped out for a couple of months if someone is ill, loses a job, or has some other difficulty."

The club fields only one fund-raising event and it’s extremely popular — a booth (Laguna Colony) to raise money to help educate their needy young people. Dick is treasurer of the fund-raising committee. "We can grant full scholarships," Dick says, "but our money is limited so we often supplement other funds. Our purpose is to help those who want to help themselves. We’ve paid expenses for older people to attend TVI, paid for tuition and books for part-time students and even helped out for a couple of months if someone is ill, loses a job, or has some other difficulty."

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"Our most popular monthly meeting is when the pueblo treasurer reports on investments of our uranium royalties," Dick says. "Then, we have a full house." The Jackpile uranium mine is operating on its second 20-year lease from the pueblo. A portion of the mine lies on land given to Laguna by the Spanish owners of the Cebolleta Grant, in appreciation for protection against Navajo raiders in the late 1800’s. Dick’s grandfather had organized a local militia to fight marauding Navajos and Apaches, and the unexpected gift of land has since provided financial stability for the tribe.

Dick’s mother still maintains the family home at Laguna. He has good memories of growing up in the Pueblo. "Before my grandfather died in 1933, my brother and I hunted him for stories." Dick’s grandfather came to New Mexico Territory from Ohio in 1872. He was looking for his brother “somewhere in the West.” Grandfather Marmon (Robert) ran out of money in Trinidad, Colo., so he pawned his gold watch to Fred Harvey and rode the stage to Albuquerque.

Fortunately, the postmaster knew that Robert’s brother was surveying near Laguna. A message was sent and the brother arrived to take Robert back to Laguna. The Rio Grande was in flood and with some difficulty they managed to get a boat to ferry them across. Robert was a greenhorn, and when they stopped to water the horses, he wasn’t able to get back on his horse. A buckboard finally arrived to carry him into the pueblo.

Both brothers married Laguna girls, and Robert was accepted into the tribe as a full blood brother. In fact, he served as Governor of the pueblo during 1982-83.

One of Dick’s favorite recollections concerns the woman in the pueblo who never forgot him and his brother when she made bread. "She always made us a loaf of bread shaped like a rabbit — an oval loaf for the body with a little ball of dough for the tail and a couple of ears; she marked the eyes with colored Indian corn. No matter where we happened to be, we always knew when that bread would be coming out of the oven!"

Dick attended elementary school at the pueblo and high school in Grants. "It was a 70-mile round-trip by school bus each day," he says, “but now the Laguna-Acoma High School (part of the Grants school system) is quite near.”

Dick has four children — Polly Ann, a graduate of U of A and a teacher in the Albuquerque Montessori School; Richard, a UNM graduate, married, has a son and lives in Albuquerque; Jimmy, attending UNM and currently Park Ranger at Coronado State Monument; and Marguerite, a student at the University of Albuquerque who plans a career in social work.

"I keep thinking about that homemade bread," Dick sighs. "One of these days I’m going to bring someone over from the pueblo and build me an horno in our back yard."
ELEANOR KELLY (4213) mailed more than 1500 invitations to retirees last week to attend the 1976 annual retiree picnic. The event is set for Wednesday, June 2, starting at 4 p.m. at the Coronado Club. Last year, 854 retirees attended.

HIGHEST HONOR of the Society for Information Display went to Cecil Land (5133) "for pioneering and continued outstanding contributions in the area of ferroelectric ceramic materials applied to optical memory and image display devices." The award was presented during an international symposium of SID held recently in Los Angeles.

WAYNE TRUMP (4231) realized the ultimate in golfing recently when he shot a hole-in-one on the fourth hole at Arroyo del Oso — 173 yards down the green and neatly into the cup. Naturally, Wayne took affidavits from witnesses and bought the beer.

“TRES PETIT” observes Monsieur M. Piquemal as he inspects circuit board from nuclear burst detector system held by Dean Thornbrough (1245). The visitor, a representative of the French atomic energy agency (CEA), was here for a bilateral data exchange on nuclear radiation survey instruments and nuclear burst detection systems. Glenn Fowler (VP-100) is on right.
Eight Miles, You, Me & 6998 Others

Couple of Sundays ago, the Lab NEWS editor run in San Francisco's annual Bay to Breakers race across the city from the bay to the ocean, some eight miles. With 7000 entries, it is the nation's most populous track event. Here are notes from his log of the event.

Minus 1 hr. — Start area, Howard and Main, already congested. Runners, non-runners, photographers, police. Drift to rear, maybe 2000 ahead.

Minus 30' — Cold, windy, overcast, great for runners running, not so great standing around. Sit on pavement, warmer, vista of many hairy legs.

Minus 5' — Pack now 3 blocks long, solid, wall-to-wall, good humored but restless.

Minus 4' — We're moving, premature start but the ocean, some eight miles. With 7000 entries, it is the nation's most populous track event. The editor ran in Sandia's annual Bicycle Tour of the Rio Grande Valley. After 50 miles, he still felt reasonably fresh but decided to call it a day. Fifty miles is a pretty good bike ride.

Minus 1' — We're running, not walking, as the wind is blowing too hard but restive.

Plus 2' — Little more space, runners jogging. From runners yelling, others do same, soon whole pack yowling.

Plus 5' — Well up Howard St. Passed by youngish man in wheelchair. Step over VW car keys. Runners are conglomerate — some in 60's, kids tagging after Dad, fat, thin, college types in clusters, dignified citizens, cloths, about one in four female.

Plus 15' — Civic Center, cross Van Ness Ave. Traffic cordoned off by SF police over entire route.

Plus 20' — Hayes Ave. Moment of truth, formidable hill. 5 blocks, looks like Al's Run with pavement. Run half way, pass wheel chair guy, decide to walk. Arrive at summit breathing hard but vital signs ok.


Plus 36' — Golden Gate Park — halfway mark and mostly downhill. Lovely winding route through deep forest.

Plus 50' — GG Park. Cheers behind, here comes wheel chair, runners clip, make way, going at least 10 mph.

Plus 60' — See breeze, salty smell. Must be close. Many walking, some flaked out alongside. Pass many youngsters very satisfying.

Scuba/Skindiving — At 7:30 on June 14 Dennis Schalles (3644) will discuss "The Underwater World" at the Coronado Club. Free admission to all Sandia/ERDA employees.

All Heart

A Success Story

Back in '57 when he was only thirty-three, Lew Larson (2522) suffered a totally unexpected heart attack. He was despondent even though it was fairly clear he was recovering, because he remembered the not-so-old timer in his Dakota home town who, having suffered a heart attack, spent the remainder of his life in a rocking chair on the front porch. And Lew had always been physically active.

Fortunately, Lew's doctor belonged to that breed who believed more in activity than passivity for victims of coronaries. He urged Lew to pursue some moderate physical activity on a frequent basis, like jogging every other day. The important point was frequency — Lew shouldn't go out and work up a sweat just once a week.

So Lew dutifully jogged and kept at it until the mid-60's. "It was drudgery, pure drudgery, and I could come up with all sorts of excuses not to do it," he recalls. "Then one day I realized I could get the right kind and the right amount of exercise simply by riding a bike to work. And I've been doing that now for 10 years, day in, day out, winter, summer. Passed the 10 thousand mile mark several years back." (His round trip distance is about 15 miles.)

A few weekends ago, Lew was one of 19 Sandians in the annual Bicycle Tour of the Rio Grande Valley. After 50 miles, he still felt reasonably fresh but decided to call it a day. Fifty miles is a pretty good bike ride.

Another remarkable rider in the Tour was Don Bliss (9623). Don felt good after the first fifty, so elected to make it a century ride. A hundred miles is also a pretty good bike ride, especially when the biker is in his early 60's.

To prospective but hesitant bikers, Lew and Don agree on this advice: "It's work only at first and then it's fun — give it a try."

Recreation Notes

FUN & GAMES

Skating — Gwen Cyrus (wife of Jack, 5715) and Miriam Schroeder (wife of Don, 2542) are recruiting candidates for the Sandia Peak Ski Patrol. Requirements: good skiing ability and first aid training. Especially needed are people who ski weekdays since the Patrol covers the hill seven days a week. Call Gwen, 998-4038, or Miriam, 344-1011, for more details.

Softball — The Thunderbirds, Sandia's women's softball team, placed second in the Southwestern Indian Polytechnic Institute's Open Invitational Tournament on May 8 and 15. Named to the All-Tournament Team were Pitcher Jenny Cordova (2326), Shortstop Beany Hall (9711), and Catcher Dora Montoya (5410). Other team members in the tournament: Rena Blaine (5000), Vanessa Brown (3153), Donna Bunten (2000), Andree Cole (3616), Marjorie Gaddy (1000), J. Hughes (1000), Edwina Kiro (5241), Judy Loving (3647), Pam Morenus (2516), Yvonne Straseina (9536), and Bonnie Vigil (1223). James Cordova (3616) coaches the team; they're currently undefeated in league play.

Horseshoes — The Labs Horseshoe Pitchers Ass'n. will hold their annual meeting June 11 at the C-Club at 4:45 p.m. Horseshoe pitching, refreshments and a short business meeting to set tournament dates are scheduled. Members and others interested are urged to attend.
**Gas Filter Invented by Ed Johnson**

What appears to be a solid chunk of metal is actually a filter which vents gas. The device, invented by Ed Johnson (9512), recently resulted in a patent for ERDA.

Originally conceived for use in a radioisotopic thermoelectric generator to vent helium while retaining small radioactive fuel particles within the system, the filter can be adapted to a number of applications. It is made from thin layers of metal bonded by means of a controlled diffusion technique. Complete metallurgical diffusion bonds result in what is called mass transfer bonding across the bond interface. Key to the novel filter is the formation of small gas escape channels because of incomplete or partial metallurgical bonding between the thin metal sheets. This process produces a capillary-like network between the layers which allows passage of gas.

**Watch your p's and q's**

*Carol Kaemper Earns Graphoanalyst Certification*

Carol Kaemper (5240) has recently completed an 18-month extension course in the techniques of scientific handwriting analysis and has been recognized by the International Graphoanalysis Society as a Certified Graphoanalyst. The course was in addition to two years of private instruction.

Carol's interest in handwriting analysis relates to her college studies. She is working towards a psychology degree and feels this skill can be used as an adjunct to her studies and to later professional activities.

"Many people think that handwriting analysis is part of the occult," Carol says. "I've often been asked to do a palm reading. Graphoanalysis is simply a scientific system of identifying and assessing the character and personality of individuals through a study of their handwriting. We are trained to recognize and identify strokes in handwriting, to relate those strokes to specific personality traits and finally, to evaluate all the elements. No single graphic sign can identify a trait of personality. An analyst uses a combination of these techniques to outline a personality pattern.

"Sometimes I have fun with what I call a 'cocktail party analysis.' Where I analyze a couple of lines of handwriting. There are six basic strokes in handwriting and the letter t is one of the best signposts. It has at least three strokes and sometimes five. For instance, the combination of determination (a strong down stroke in a y or g) with ambition (the height of the t crossing) indicates a real 'go-getter.' A sense of humor shows up in a gentle or graceful down stroke in the letters m or n. The letter p reveals whether you are argumentative and to what degree, and also your involvement with physical activity. An f can show if you possess organizational ability. In a quick analysis we always look for successful traits. Of course, these quick assessments are just for fun," Carol says, "It isn't fair to make an analysis based on just a few lines of handwriting."

"A complete analysis requires many pages of handwriting and about six to eight hours of the analyst's time. We are trained to give our clients as true a picture as we can, so we specify negative traits as well as positive ones. Most people are aware of their shortcomings, I find. What surprises them are their good or positive traits."

"Sometimes the initial analysis turns into a counseling session where the analyst is asked for advice or is taken into the confidence of the client because the client wants to talk things out. Most handwriting analysts feel pretty strongly about the seriousness of their work, and we adhere to a code of ethics that we feel is a necessary part of our profession."

**Mended Hearts Group Works To Help Others Facing Open Heart Surgery**

Frank Francis (5814) and Bill Thomas (9512) are a couple of Sandians who feel very good about the business of living. Both have recovered fully from open heart surgery. They belong to a group known as Mended Hearts of New Mexico. Members, like Frank and Bill, are walking testimonials to the skill of heart surgeons and modern medical techniques.

"Testimonial" is the key element in the organization. The group counsels people who are scheduled for heart surgery. The fact that members are alive, well and living, and probably feeling better than ever, is the message anyone facing such an ordeal wants to hear.

Members of Mended Hearts receive training for their work. In Albuquerque a surgical nurse provides the training. The group also works with doctors and hospital organizations.

There are a couple of rules in the game. Never visit without the physician's approval. No sympathy to the patient. Self-pity is a destructive emotion. A member doesn't show his incision scars or dwell on his own illness. Positive aspects of recovery are stressed. Frank and Bill find that patients often ask them questions that they would hesitate to ask a doctor.

"Just listening as a patient expresses his fears seems to help," Bill says. "We assure them that full recovery can be expected. They will be able to walk up stairs and lift heavy objects, and their only restrictions will be those that they impose."

Anyone interested in additional information about the group is invited to contact either Frank, 881-1473, or Bill, 268-2565.
Retiring

Chuck Boal (2622)

Art Youtz (2514)

Tony Repetti (2355)

Henry Sellers (3644)

High Efficiencies Possible

Reactor-Pumped Laser Patented

A patent on the first laser pumped by a nuclear reactor was issued recently to ERDA. Inventors are Dave McArthur (5423) and Phil Tollefsrud (5230A).

The newly-patented laser is simple in construction, consisting basically of a metal cylinder lined with a thin coating of enriched uranium (U-235) and filled with carbon monoxide. Mirrors are located at both ends of the cylinder, which is placed in an open container of liquid nitrogen to keep the laser gas at a temperature of about minus 335°F (-204°C).

The container, with the cylinder inside, is positioned adjacent to the core of a fast burst reactor. When the reactor is pulsed, neutrons emerge from the core and strike the cylinder. Within the cylinder, the neutrons collide with nuclei in the uranium atoms, splitting each atom into two high energy atoms which then strike the molecules of carbon monoxide.

The collision of atoms and molecules elevates the molecules to an excited energy state, and when these excited molecules decay back to their normal ground state they emit their excess energy as photons which constitute the laser light.

The original laser produced only two to six watts of power and was quite inefficient, with beam energy being less than one percent of the energy deposited in the gas by the fission fragments. In subsequent experiments with a more complex laser system, power has been increased to 100 watts, and research is continuing to determine if higher power and greater efficiencies up to 50 percent might be possible.

Big advantage of using a reactor to produce laser beams is that very large amounts of energy can be delivered to large volumes of a lasing medium. In addition, energy stored in the nucleus of an atom can be released more simply and efficiently than can the energy in complex power supplies being developed to pump large, conventionally-excited lasers.
**Take Note**

Keep your two-through-twelve-year-olds busy this summer. Enroll them in one of Kirtland’s Child Care Centers. For two-through-five-year-olds, arts and crafts classes twice a week. For six-through-twelve-year-olds, swimming, bowling, baseball, playground games, picnics, movies, field trips, etc. Call either center for more info: East (4-2314) or West (4-9496).

June 6 is your last chance to hear the Moving Spirit Singers this season. The last of 35 performances of “Alleluia,” an award-winning musical drama based on the life of Christ, will be at the San Jose Church, 2401 Broadway SE, at 7:30 p.m. Four Sandians are in the chorus: Dora Lovato (2625), Rudy Armiijo (2521), Del Guiterrez (9713), and Robert Chavez (2351).

Dean Irvin (4210) is the new president of the state-wide Reserve Officers Association. The Association has a national membership of over 100,000, with 465 in New Mexico. Dean recently retired as an Army Reserve Colonel with more than 33 years of service. Last week he arranged and hosted MLC Chairman Don Cotter during his visit here to speak in observance of Armed Forces Day. Dean hopes to increase state ROA membership during his period of office.

The Museum of New Mexico announces the opening of an exhibit, “Tiwa Art Before The Conquest,” on June 5 at Coronado State Monument. The exhibit consists of the original, multicolored frescoes recovered from the kiva at the Monument in the 1930’s. The murals, which depict animal and human life forms, are interpreted by Leonard Archuleta of Taos Pueblo. The exhibit is in the newly renovated museum. Coronado State Monument is located one mile from Bernalillo on State Highway 44, and is open 9-5, Thursday through Monday.

Today is the last day to win a year’s bus pass by guessing the date and time the first new City bus will arrive. Forms are available in the LAB NEWS office, Bldg. 814.

**Credit Union**

**REPORTER**

By Otis Cox, Chairman Education Committee

**Student Loan Program**

At the May 19th meeting the Board of Directors approved a new student loan program to replace the Federally Insured Student Loan Program which was suspended by the Board last month. Under the new program loans will be made to student members with member parents or guardians acting as cosamkers. Interest only will be payable during the in-school period. For further information contact the Credit Union.

**Safe Deposit Boxes**

A member of the Board recently received a letter from one of Albuquerque’s major banks announcing an increase in fees for safe deposit boxes. Their new rates are approximately 75% more than those of your Credit Union. If you need a safe deposit box, and most people do, see your Credit Union for a real bargain.

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**NEW TOOL** proving valuable in Area III is this Iron-Oxy Lance shown here melting a tunnel through a concrete block. The Lance, fueled by oxygen, develops up to 10,000°F, at its tip (compared to an acetylene torch’s 2800°F). It’s been used to split boulders for easy removal, to remove steel embedded in concrete, and in several Safeguards experiments. Left, operator Steve Zdunek of the Remote Areas Maintenance Division 971. Note the rods inside the steel pipe which combine with the oxygen to produce heat; Lance consumes itself in the process.

**Death**

John Stenovee of Instrument Repair, Calibration, Electronic Inspection and Testing Division 3617 died May 16 after a long illness. He was 49.

Survivors include his widow and four children. He had worked at Sandia since March 1968.

**On Patrol in the Parking Lots**

The early bird commuters begin arriving about 7:15. They park in neat rows in the outlying areas of the parking lots. After the big surge at 7:45, most of the slots are filled except those near the gates. They remain vacant for the last-minute types who arrive at 7:58, park in the slots next to the gates, and dash inside to be ready for the duties of the day at 8 sharp.

Fantasy! Of course. “The real parking lot world is somewhat less considerate,” says Bill Martin, Manager of Security Standards and Operations Department 8550. “But we’re now supplementing the monitoring done by individual employees with a Security Inspector, and we expect to reduce the misuse.”

Sandia has six types of restricted parking areas: spaces set aside for visitors, for those on official business, for second shift employees, for department managers and staff, for car poolers, and for those with medical restrictions.

“Security will help to check lots most working days,” says Paul Pewe (9551). “We’ll put tickets on unauthorized vehicles in second shift lots, in car pool slots, and in visitor lots. We’ll chalk tires in the Official Business Only zones. We’re even going to check out ownership of cars without decals in the visitor lots. But we’re still dependent on cooperation by the majority of Sandians who park properly.”

While unauthorized parking in car pool slots is infrequent, complaints are all too frequent — “slots are unused,” “lots are misused,” etc. For that reason, the security inspector will assist in checking slots during the morning rush hour for apparent singles. Vacant slots will also be checked out.

“The biggest single cause of vacancy is that some legitimate car pools use more than one parking space. These pools include employees who work in different geographical locations around the Labs. Each day the specified driver parks near his own location. This means that on some days the pool’s reserved slot is used and on other days the pool uses open parking. To preclude the possibility of each member applying for and receiving a reserved space near his own geographical location, we are carefully reviewing the records.”

“One final point: people have suggested that slots vacant after, say, 8:30 be regarded as open parking. That sounds good until you consider the consequences — problems with poolers on official business who return to find their slot occupied, for example. Even worse, we’d soon develop a cadre of 8:25 arrivals waiting for the stroke of 8:30 to pounce on a slot. All in all, in spite of the hassle, we’re proud of our car pool parking program. The slots take up 18 percent of our 4000 paved parking slots but serve over 30 percent of our employees. That’s wise use for prime space.”
Friday. They're great, but they're not the only reason to make Happy Hour: sauerbraten, knockwurst, sauerkraut, German potato salad - gorge yourself royally. Then welcome the Prisoners. They get time on (the bandstand) for good behavior. (Pools are open till 9.)

Cheap - season football tickets for all the Lobo home games are still on sale at the Club, thanks to Wolfpack.

AS - Monday is a holiday, the Club is closed. But pools and patio are wide open spaces.

One - brand new item on the Club's calendar: it's a Picnic Night, a time to get a group of friends or family together with a basket of goodies and enjoy them all on the patio. It's June 9 and every Wednesday evening after that, it's free, and it's very important that you don't bring any glassware into the patio.

IF - you have your tickets, then tomorrow night is the Big Night of the month: Greek food, Greek belly dancing (to professional oud player Peter Koury and drummer friend), Greek fun. (I don't know, what's a Grecian urn?)

THE - Club's Annual Luau is June 12. Roast pig, fried shrimp, mahi-mahi, and more. Like mai-tais. And Hawaiian dances by the Lum Lungs. Tickets by the fifth.

Two - kinds of German beer lead off the Drink-of-the-Week schedule for June: Heineken Light and Lowenbrau Dark. Beginning the 7th, Mai Tais.

ARE - you feeling inundated? Don't fight it. Learn to enjoy the "Underwater World" at Outdoors Indoors on the 14th at 7:30. Dennis Schalles is the scuba and skin diver who will make the slide presentation. It's free to all Sandians and ERDAns.

Parents - with aquatically oriented youngsters are invited to the swim meet at the Club on the 11th at 4 p.m. and/or the 12th at 8 a.m. Different strokes for different folks, and different races for different faces.

And - a diving match is on the boards too. It's at 6 p.m. on the 4th. You'll see every dive that can be done from a one-metre board, and maybe a few that can't.

The - Twin Pools will be closed for the entire swimming meet and for the Retiree Picnic on the 2nd at 4 p.m. The Club Annex Pool will be open for business (or pleasure) as usual.

One - of the reasons to visit Variety Night is Die Polka Schlingels; the other is Jimmy Cagney. He stars in a 1942 classic, Yankee Doodle Dandy. It's a musical biography of George M. Cohan who wrote great patriotic songs that will give you great patriotic lumps in your throat.

Is - it your secret wish to make it to Mazatlan someday? Then sneak to the Club on June 1 and sign up for one of those fantastic package deals. Or check out the Athens Adventure or the Caribbean Cruise. But do it soon.

A - champagne-tea for the Sanado membership comes up June 8 from 2 to 5 at Sue Meyer's home. New and old (that is, current and past) presidents do - and get - the honors.

Teenager - and adult alike benefit from the Commonwealth discount movie tickets. Those now on sale are good through June 30.