

The 'Just In Case' Technologies

If — and it's a very large "if" — the US and the USSR ever sign a Comprehensive Nuclear Test Ban treaty, Sandia would be ready to help verify that the terms of the treaty were not circumvented.

Sandia has explored both the real world and the "just in case" world of treaty verification technologies for a couple of decades, so the Labs certainly realizes that, at low levels of weapon testing (below 5 kt, say), a nuclear detonation would be difficult to detect. Nevertheless, higher levels are detectable with current technologies.

Responsibility for these technologies is based in the Systems Studies 300, Instrumentation Systems 5300, and Field Engineering 7100 directorates. Paul Stokes (311) is one of the Sandians who specialize in such technologies, and he recently described some of Sandia's achievements.

Surveillance Satellites

Currently, Sandia helps to monitor provisions of the 1963 Limited Test Ban Treaty, which prohibits all nuclear tests except those far enough underground that no radiation is released into the atmosphere. Sandia's role is to design and provide the "downward-looking" detectors for the surveillance satellites that detect signals from nuclear bursts. [Los Alamos National Lab (LANL) provides the ones that look into space.] Sandia designs the electronics for handling data from both types of detectors.

This arrangement began in 1960, with the VELA satellite program. Twelve VELA satellites were successfully launched. The first four were capable of detecting bursts in space only. Sandia-designed downward-looking sensors were added midway through the program to give the satellites the capability to detect bursts in the atmosphere as well as in space. Similar Sandia sensors have subsequently been flown on a number of other satellites to give added coverage.

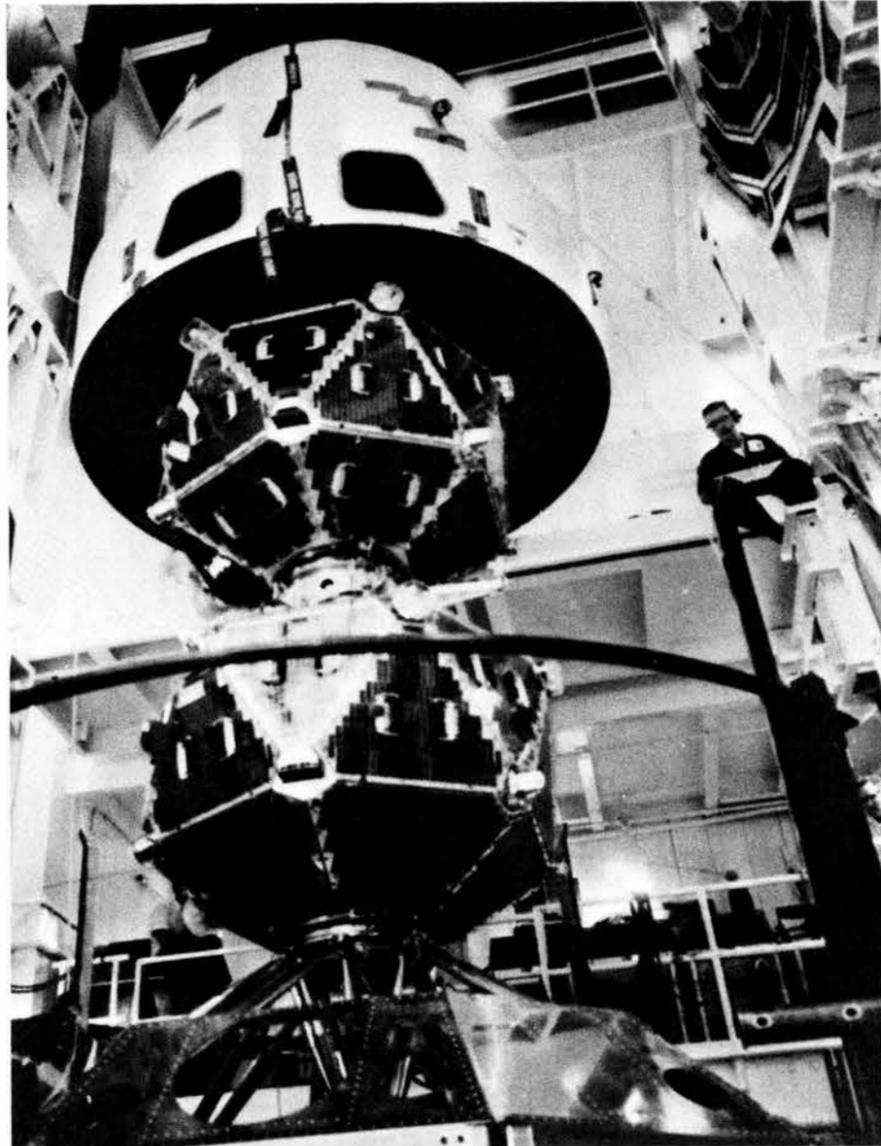
The most recent Global Positioning System (GPS) satellite, launched July 14, 1983, carried a Sandia-designed atmospheric burst detector and a background radiation dosimeter designed by LANL. Both are still working flawlessly, as indicated by Sandia-designed data processing logic. All subsequent GPS satellites are scheduled to carry similar instruments.

National Seismic Stations

One of the earliest verification technologies grew out of a 1963 Pugwash conference proposal for an unattended seismic device that could be placed in countries party to a nuclear test ban treaty to detect and measure underground nuclear detonations. Sandia's satellite groups developed the USO (an Unattended Seismic Observatory) using VELA satellite technology. An alarm system was added to detect entry or tampering with the device.

When President Carter wanted to negotiate a test ban treaty, Sandia was asked to develop unattended regional seismic stations that improved on the USO concept by incorporating recent advances to provide better data fidelity, data authentication,

(Continued on Page Four)



TWO VELA SATELLITES aboard a Titan III-C launch vehicle in 1969.



LAB NEWS

VOL. 36 NO. 8

SANDIA NATIONAL LABORATORIES

APRIL 13, 1984

Bond Drive Starts April 23

Sandia Labs' annual U.S. Savings Bond campaign starts April 23, according to Art Clark (7210), 1984 Sandia Savings Bond committee chairman.

Goal of the drive, Art reports, is to increase Sandia employees' participation in the program to 95 percent. Currently, 90 percent of Sandians are buying U.S. Savings Bonds through payroll deduction.

"More people are buying bonds than ever before," Art says. "The national statistics show that \$761 million in bonds were purchased during the first two months of 1984, up 15 percent over the same period in 1983. Currently, Americans hold more than \$70 billion in Savings Bonds.

"The reason is simple — bonds are a better buy than ever before."

U.S. Savings Bonds now pay a market-based interest rate when held for five years or longer. They receive interest at 85 percent of the average return on five-year marketable Treasury securities. The current return on Savings Bond is 9.38 percent. The rate changes every six months but it is guaranteed never to fall below 7.5 percent.

"Bonds have always had special tax ad-

vantages," Art continues. "Interest earned on Savings Bonds is exempt from state and local taxes. Also, Bonds provide special advantages in saving for the college education of children and for your own retirement."

This year's Savings Bond campaign will be conducted in about the same manner as the drive last year. Directorate coordinators will handle the drive within their organizations. Meetings, film presentations, and individual solicitations will vary within organizations. All employees will receive payroll deduction cards that must be returned to the coordinator. If employees require no changes in the amount of the deduction or in beneficiaries, address, etc., the cards may simply be marked, "no change."

The drive ends May 4, and results will be reported in the LAB NEWS shortly thereafter.

Sandia President George Dacey, who was chairman for the Albuquerque Bond Drive last year, reminds us that we are employees of a laboratory funded by federal dollars and that we should welcome the opportunity to buy U.S. Savings Bonds.

Antojitos

Absolutely Downright Un-American, That's What It Is! One of our far-flung, intrepid, inquiring, investigative news reporters reports news calculated to send shivers down (and back up) the spines of all right-thinking travelers wending their peripatetic ways across this great land of ours. News that it's necessary to mortgage the home-place in order to stay in a decent hotel no longer surprises. News that reasonably priced meals aren't anymore doesn't astound anyone. But learning on good authority that, contrary to the message promulgated by the local AAA, Disney World does not accept charges to a VISA card—now that boggles the billfold as well as the brain. I mean, Disney and VISA are synergistic, almost synonymous, aren't they? And does this portend a return to an almost obsolete medium of exchange called "cash"? Well, that theory does have some currency. We'll keep you posted . . .

* * *

A Riddle SNLA and SNLL never are, but ALO was. DOE and DoD could be but are not. HUD is; HEW never was. ERDA was, but AEC wasn't. AFWL is and LASL was, but LANL isn't and neither are LLNL and BKC. GLCM and ALCM and SLCM all are, but not ICBM. NASA and DARPA are, but not NRC or OMB; VIA and LEAP are, but never ECP. FY isn't, though it could be; TWX is, though you wouldn't think so by looking at it. ASAP isn't, strangely enough, but CAD/CAM is and so are WIPP and VAWT. Then there's CMOS—it's partly. By now, of course, you've figured it out. But just in case you need to prove to a colleague how sharp you are, the answer is tucked away in a box somewhere on a later page.

●BH

* * *

Felix qui potuit rerum cognoscere causas. Latin—Happy the man who has been able to discover the causes of things.

Fun & Games

Square Dancing—SERP is now sponsoring a square dance group that meets the second and fourth Monday of each month at 7 p.m. in the Coronado Club ballroom. To join the group or for more details, call John Lewin (6446), 898-2303, or Marv Plugge (5211), 299-5634.

* * *

Golf—The Sandia Employees Golf Association (SEGA) is holding its "Arroyo Open" at Arroyo del Oso on Saturday, April 28. It's an individual format tourney. To enter, members should sign up with Frank Sieradzki (2364), 292-5049, right away. You can also see Frank to enroll in the SEGA 9-hole evening handicap league. SGA members with a valid handicap may enter as individuals, partial teams, or full four-man teams. Individual and partial entries will be combined to make full teams. Entry deadline is April 20. League play starts the week of April 30.

KAFB is hosting the Greater Albuquerque Chamber of Commerce 5th annual hackers vs duffers golf tournament on Friday, June 1, at Tijeras Arroyo golf course. Entry deadline is May 16. Contact Kevin Linker (6227), 299-5875, for details.

* * *

Racquetball—The Second Annual Sandia Labs Racquetball Tournament is scheduled for May 5 at the Rio Grande Sporting Club on Yale SE. The tournament is open to anyone eligible to participate in SERP activities, and all players, from beginners to advanced, are welcome; players will be matched according to skill level. A free clinic will be held before the tournament for beginners or anyone wanting to brush up on the rules. Refreshments will be served, and prizes (including lunches, court times, and gift certificates) will be awarded. For more information call John Fuller (2345), 836-5201; Steve Breeze (7116), 821-3765; or Tom Lenz, 4-8486.

* * *

Running—Want to challenge those Los Alamos folks on their own turf? The High Altitude KRSN Bandelier Marathon and BB 50 Ultra Marathon are set for May 28 at Los Alamos. Both the 26.2-mile marathon and the 50-mile event begin at 6:30 a.m. Entry fees are \$8 for the short one, \$10 for the long. Awards to top three (or 20 percent) finishers in each age/sex category; T-shirts to the first 100 registrants. Jim Harrison (5111) ran last year and can probably answer questions; he reports that the altitude didn't seem to be a problem for Albuquerqueans. No race-day registration; pick up forms in the LAB NEWS office.

Events Calendar

April 13-14 — Miguel Caro Dance Company in "Bailes Folkloricos," 7:30 p.m., KiMo.

April 13-29 — "Otherwise Engaged," Thurs.-Sat., 8 p.m.; Sun., 2:30 p.m., The Vortex (Buena Vista at Central across from UNM), 247-8600.

April 14 — Annual Spring Garden Fair, plant sale, Council of Albuquerque Garden Clubs, 9 a.m.-5 p.m., Albuquerque Garden Center, 268-7738.

April 14 — Albuquerque Youth Symphonies Combined Concert, 7:30 p.m., Popejoy.

April 14 — Ensemble Pro Musica with members of the NMSO present Rossini's "Stabat Mater," (soloists, chorus, orchestra), First United Methodist Church, 4th & Lead, 8:15 p.m.

Church, 4th & Lead, 8:15 p.m.

April 15 — Film-Slide Lecture, Dan True on Eagles, 7:30 p.m., Popejoy.

April 15 — "Music at the Museum," Jeff and Candace Wood, piano and cello, 3 p.m., Albuquerque Museum auditorium.

April 17 — Cultural Program event, "Some Like it Cole," revue of music by Cole Porter, 8:15 p.m., Popejoy.

April 18 — NM Museum of Natural History: lecture and film — "Tracking the North American Mountain Lion," Maurice Hornocker, head of Cooperative Wildlife Research Station, University of Idaho, 7 p.m., KiMo.

April 20-21 — NM Symphony Orchestra concert, guest artist Julian Patrick, baritone; 8:15 p.m., Popejoy.

April 22 — Easter observances at various Indian Pueblos; check with pueblo tribal offices for details.

April 26 — Cultural Program event, "Joseph and the Amazing Technicolor Dreamcoat" (Tony-award musical), 8:15 p.m., Popejoy.

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Here is a current volunteer opportunity for retirees or family members. If you would like more

information, call Karen Shane (4-3268).

VOLUNTEER SENIOR COMPANIONS are needed to assist the frail elderly. City agency will reimburse volunteers for mileage and pay stipend to volunteers who (1) are 60 years of age or older, (2) have a car, and (3) can meet low-income requirement. Stipend does not affect Social Security or other benefits. Orientation will be provided.



SANDIA LIVERMORE NEWS

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Take Note

A son of Rex Steele (8453) has received an appointment to the U.S. Naval Academy at Annapolis. Patrick Steele, a senior at East Union High School in Manteca, was nominated for the appointment by U.S. Rep. Richard Lehman of the 18th Congressional District. He will begin his schooling there in July. Rex is valedictorian of his class at Manteca.

Retired Sandian Bill Jamieson has just completed his second four-year stint on the Pleasanton Planning Commission and by city ordinance must step down after two terms. Bill served as chairman of the planning body in 1978 and again in 83-84.

Congratulations

Linda Petzold (8231) and John Emerick, a son, Matthew Ryan, Feb. 9.

Debbie and Mike Pendley (8235), a son, Jonathan Michael, March 12.

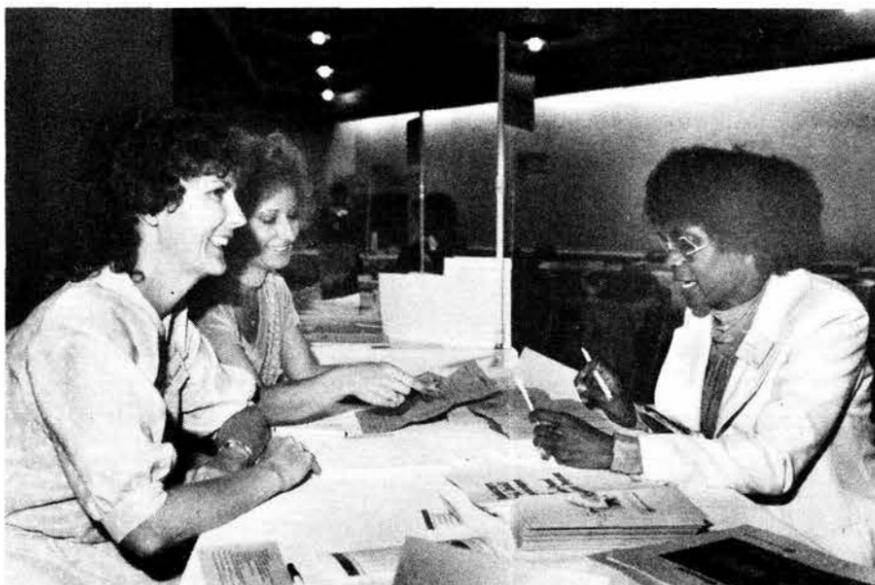
Rich (8466) and Martha (8413) Campiotti, a daughter, Chelsea Macadaan, Feb. 23.

Joy and Mike Hester (8262), a daughter, Stacy Kathleen, March 14.

A CITATION OF APPRECIATION was presented to Don Gregson who recently retired after 32 years with Sandia. The citation from DOE was "in recognition and appreciation of long and valuable service to the nuclear weapons program from all those in the production system" and was given to Don by Robert Hymer (at left), assistant manager of development and production, DOE/ALO. At right is Don's wife Jackie.



TAKING PART in the recent Women's Business Ownership Conference '84 were Adana Dean, back left, and Mary Rivenbark (both 8264) who are shown talking with Naomi Daniels (right) of Quality Electronics Assembly in Sunnyvale. Lewis Sisneros (3731) also attended representing SNLA. The conference was one of the first implementations of President Reagan's National Initiative Program for Women Business Owners and was supported by the U.S. Small Business Administration.



Toward Technology Transfer

COMBUSTION COURSE PANELISTS, (from left seated) were Don Hardesty (8361), Marshall Lapp (8354), Alan Eckbreth of United Technologies, Adel Sarofim of M.I.T., and Sidney Self of Stanford University. Standing is Jim Wang (8361), conference coordinator.

Combustion Course Successful

Sandia recently hosted a short course on combustion diagnostics that was considered a significant effort in technology transfer among the national laboratories, private industry, and universities that took part.

Conference coordinator Jim Wang (8361) said that the short course was designed to introduce advanced diagnostic techniques (mostly laser-based) developed at Sandia's Combustion Research Facility (CRF) to some 80 participants from industry, universities, national laboratories, and govern-

ment agencies. The techniques presented during the four-day course were concentrated on those used to make measurements in particle-laden combustion flows that are generally encountered in fossil fuel combustion and advanced power systems.

The objective of the short course was to familiarize participants with those techniques via lectures and laboratory experiment sessions. The lectures provided a broad background in theory and a survey of specific current applications; the laboratory sessions provided a close look at the latest instrumentation and offered hands-on experience to the participants.

Topics covered in the lectures included the need for advanced diagnostics in particle-laden combustion systems; optical diagnostic techniques for particulates; the use of imaging methods for measurements of particle size, velocity, and temperature; introduction to Raman spectroscopy; Coherent Anti-Stokes Raman Spectroscopy (CARS); applications of non-linear optical techniques in practical combustion systems; the use of laser fluorescence in flames; *in situ* measurements using Fourier transform infrared spectroscopy; and the design of collection probes for representative sampling and rapid quenching. Laboratory experiments undertaken in the course featured measurements of single particle temperature, size and velocity; measurements of soot; and CARS measurements.

There were 14 lecturers from Sandia and three guest lecturers from universities and private industry actively involved in the preparation and execution of the short course and the 700-page class notebook that accompanied it. This was the third diagnostics-related short course that the CRF has hosted in the past four years. Based on the comments on the evaluation sheets collected from the participants, Jim reported that this short course was a very successful one.

'Just In Case' Technologies

real-time data transmission, and long-term system reliability.

Because of the Labs' earlier work on the USO and other verification technologies and insights gained through participation in arms control negotiations, Sandia was able to develop a station that satisfied US needs for seismic monitoring and, at the same time, included features that were sensitive to Soviet concerns regarding the use of technologies that might allow spying (see related story).

A typical National Seismic Station has a downhole package containing three primary and three backup seismometers. It also has an authenticator that permits the transmission of unencrypted data (for use by the host country) by including an encoded authentication word that is a function of each data work transmitted to the surface. Any attempt to drill down to the package (100 m below the surface) would be detected easily, and the authentication word would indicate any substitution of false data.

On the surface, each station has equipment to receive data from the seismometers and transmit those data via satellite to a receiving station. The stations can operate for a year without maintenance.

Currently five stations are in operation throughout North America. Each is sending signals to the System Control and Receiving Station near Bldg. 839. Lawrence Livermore National Lab (LLNL) and DARPA's (the DoD's Defense Advanced Research Projects Agency) Center for Seismic Studies are analyzing these data; Sandia is now applying the latest pattern recognition techniques to the data analysis.

In the future, authentication techniques based on asymmetric encryption (such as the two-key code discussed by Gus Simmons, 1640, in a July '83 *Los Angeles Times* article) may be considered for use in the NSS system if it becomes necessary to restrict data access to treaty signers or if a host country demands a decoding key to authenticate the data in real time.

Ionospheric Monitoring

Another technology that may prove valuable in verifying the occurrence of a nuclear burst is ionospheric monitoring. That technology grows out of the fact that the shock wave generated by an underground nuclear detonation affects the ionosphere (80-550 km up), a condition that can be detected by reflecting radio waves off an ionospheric layer.

Ionospheric monitoring was pioneered by Louis Wouters of LLNL in the early 70s. The current program, directed by LANL, includes a Sandia component that measures the air pressure wave 10-20 km above an underground blast. The technique, built on research by Jack Reed (7111) and Randy Cole (6441), has been perfected by John Banister (7111) to the point that such pressure histories now compare favorably with those calculated from ground motion. Measurements for possible infrasound



BACK IN THE MID-60'S this crew helped to develop the first VELA satellites: (from left), Simon Steely (5324), Bill Myre (5200), Tommy Thompson (5323), Tom Zeller (former Sandian), Bill Goldrick (323), and Dick Spalding (320).

detection have also been obtained.

Databuoys

To improve the nation's ability to monitor the seas as well as the lands, Sandia has built and tested and could deploy "databuoys," nuclear spectrometers mounted on free-floating buoys. The spectrometers collect fallout from aboveground nuclear explosions, and the data are transmitted via satellite to receiving stations.

SLIFER

An LLNL-originated technology for measuring the rate of growth of the shock front of a nuclear detonation on-site at NTS has been further developed and packaged by Sandia to permit it to be used to measure yield and thus verify compliance with the Peaceful Nuclear Explosions Treaty (PNET), a US-USSR companion agreement to the Threshold Test Ban Treaty that restricts nuclear device test yields to 150 kt. Called SLIFER (shorted *location indication by frequency of electrical resonance*), the technology and the associated equipment could be flown to a location in the USSR where a Peaceful Nuclear Explosion project was being conducted. There, the SLIFER would measure the explosive yields to assure that the 150-kt threshold was not being exceeded.

Sandia's knowledge of this technology, used for years at the Nevada Test Site, enabled the Labs to interact with the team negotiating the PNET and to influence the negotiations when necessary to assure that Soviet explosions would be reliably measured.

IAEA-Related Technologies

Since the 60s, Sandia has developed new technologies to help the International Atomic Energy Agency perform its major mission — to verify compliance with the nuclear non-proliferation treaty. For example, secure containers for monitors, data authentication techniques, and the tamper-indicating seals that detect intrusion into areas where special nuclear materials are stored — all of these could be crucial in verifying terms of arms control treaties.



DATABUOY is allowed to free-float on the high seas where it collects nuclear fallout debris data and transmits the information to receiving stations. Two of its developers are Vic Schulze and Harold Gottlieb (both 324).

Finally...

All of these technologies grew out of — or were improved on the basis of — Sandia's work in designing nuclear weapons, monitoring nuclear testing, providing the technology to assure that nuclear weapons will work when they're supposed to — and won't work when they're not supposed to — and developing the means to assure that weapons do not fall into the hands of the wrong people.

Authenticating Non-Secret Messages

Verification data collected by a National Seismic Station (NSS) and transmitted via satellite to a receiving station are valuable only if they're valid, not falsified by a host country. At the same time, any host country will insist on being able to read the data transmitted, so data cannot be encrypted. Those twin conditions are met by an authentication process regarded as the definitive technique for such purposes.

"Sandia worked with authentication techniques in the mid-60s when we needed to ensure that unattended Safeguards instrumentation provided no false data on, for example, spent reactor fuel bundles," says Paul Stokes (310). "So we had some experience to draw on when authentication of NSS data arose in the early 70s. The problem was one of degree — the quantity of data far surpasses that generated by most Safeguards applications."

Sandia faced two problems in addition to the volume of data — 2400 bits every second for a year of unattended operation. One was that encryption in general doesn't authenticate. It doesn't have to because the message encrypted is unknown to a codebreaker. With authentication, the task is tougher — a codebreaker probably knows the message being sent because that message reflects the codebreaker's own actions, such as a nuclear test. As Paul puts it, "It's monitoring things he's doing. So you have to work with a code-breaking scheme in which he already knows the information you're protecting, or authenticating."

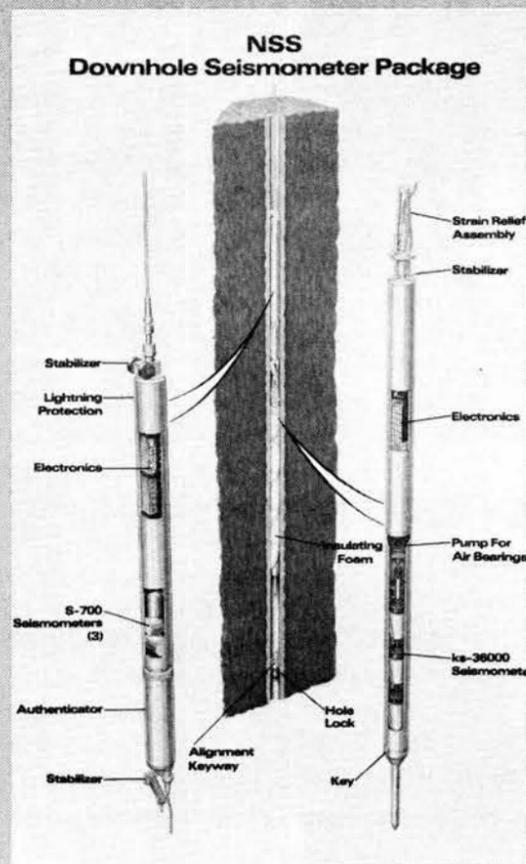
The second problem was that a host country won't permit data that's hidden from it to be transmitted to another country, so the message must be in "plain text," that is, easily readable by anyone.

One early solution was to transmit encrypted plus plain text information in parallel. Obviously, that means sending twice as much data as is generated; that's neither efficient nor elegant.

Then came what Paul calls "a real step forward in the whole authentication business." It's a technique in which information sent in plain text is accompanied by a small amount of data with which the receiver can compare the message and state with high probability, "This is the real thing."

Each 2400 bits of data include 10 bits that authenticate the other bits. Data do leave the host country in essentially plain text, and a host country can examine the "keying variable," or code, as soon as a new keying variable from an internal memory is substituted for the old one — every 12 days. Thus, both countries are reassured that the data transmitted are accurate.

The 10 bits comprise the "authentication word." The internally stored keying variable and the "data frame" (the rest



CUTAWAY VIEW of a National Seismic Station downhole seismometer package. Five stations are currently on-line throughout North America.

of the 2400 bits) are scrambled, then compressed by a mathematical procedure called mapping down to 10 total bits. (If the mapping went down to, say, one bit, a codebreaker would have a 50-50 chance to guess it correctly. With 10 bits, the odds are one in a thousand.)

Keying variables, enough to last for several years, are buried in the twin authenticators at each NSS site. (The redundancy prevents the suspicion of falsified data — if one authenticator indicates invalid data but the second doesn't, the first one has malfunctioned.) As the NSS seismometers detect displacement of the earth caused by a nuclear detonation (how far a given particle moved, measured in nanometers), a signal passes to the authenticators, which assign the current authentication word to the information transmitted.

The receiver removes the authentication word, repeats the scrambling operation, and compares the result to the transmitted authentication word. Any falsification of the data — small or large — results in authentication words uncorrelated to the original. The receiver would note immediately that the authenticator looked completely different from the original one.

"It works well, it doesn't waste much data for the authenticating chore — in short, it's the definitive technique for this kind of task," says Paul.

The technique was developed by Paul with the assistance of Ralph Stewart, a former Sandian.

Metal Trades Council Co-Sponsors Food Drive Set April 21

The "Mountain of Food" drive, which last year collected 10 tons of non-perishable foods for the city's needy, will be held this year on Saturday, April 21. National Guard trucks, which collect donations, will be parked during the day across from the Commissary on KAFB and at Safeway Stores throughout the City. The Metal Trades Council is co-sponsoring the drive with the United Way, Community Services Committee, New Mexico National Guard, and the American Red Cross.

The food is dispensed throughout the year by the Salvation Army and other charitable agencies serving human needs.

Retiree Deaths

(Jan.-March)

Dorothy Hummer (68)	Jan. 13
Robert Duke (72)	Jan. 16
Richard Gorman (57)	Jan. 25
Herman Von Steeg (65)	Feb. 12
Cuvier McGarr (72)	Feb. 15
Clifford Shaw (58)	Feb. 23
Harlan Kelsey (80)	Feb. 28
Francis Newman (91)	Feb. 29
Daniel Grim (64)	March 1
Thomas O'Kelley (72)	March 1
George Roth (72)	March 7
Harold Christenson (68)	March 9
Dorothy Gray (64)	March 10
Alice Preist (80)	March 15

Sympathy

To Odilia Silva (3152) on the death of her mother in Albuquerque, March 31.

To Ben Duggins (7533) on the death of his stepson in Shepherd AFB, Wichita Falls, Texas, April 3.

To Bernadette Silva (6415) on the recent death of her father.

To Diana Perea (5165) on the recent death of her father.

To Mary Kolesar (7550) on the recent death of her mother.

To Gail Gipson (7132) on the recent death of her father-in-law.

ECP News

Two United Way agencies will participate in the April 25 ECP Agency Awareness Program from 11:15 a.m. to 1 p.m.:

Albuquerque Boys' Club
Cafeteria (Bldg. 861)

Albuquerque Shelter for Victims
of Domestic Violence
Lobby of Bldg. 802

PAUL ERICKSON (7614),
DICK HAY (7172), and
DRAYTON BOOZER
(5343)



Supervisory Appointments

PAUL ERICKSON to supervisor of Computer Aided Design (CAD) Technology Division 7614, effective March 16.

In February 1976 Paul joined Sandia's advanced systems studies group. A year later he transferred to the Electro-mechanical Subsystems Department 2540. Until his present promotion, Paul was with the ESD II and Computer Aids Development Division 2542.

Paul received a BS in ME from Northwestern University and his MS and PhD in engineering mechanics from the University of Texas (Austin). He served two years in the U.S. Army. He enjoys gardening, racquetball, cooking, softball, and other sports. He and his wife Karen (2644) live in the NE heights.

DICK HAY to supervisor of Data Systems Division 7172, located at Tonopah Test Range, effective March 16.

Dick joined Sandia in 1965 as a staff member assigned to a telemetry group. He worked with the COIN program (seismic sensors), including a one-year assignment in Washington, D.C., until 1972 when he transferred to the VELA satellite program. While Dick was with the VELA program, he completed a one-year assignment in Australia. He worked in the energy program, using his seismic experience in natural gas wells investigations, and served for a year in DOE's Office of Safeguards and Security in Germantown. Most recently, Dick has served as project leader for group systems in the Rocket Systems Division 7525 during the up-grading of facilities in Kauai, Hawaii.

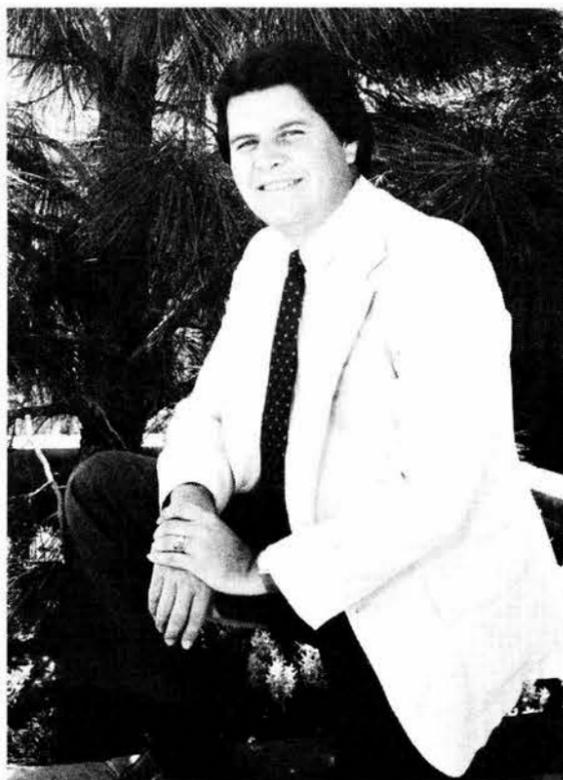
Dick received his BS in EE from Oregon State University and his MS in EE from UNM. He enjoys boating, water skiing, and camping. He and his wife Judy and their two children will live in Las Vegas.

DRAYTON BOOZER to supervisor of Advanced Systems Development Division II 5343, effective Feb. 1.

He came to Sandia in October 1975, worked in the Safeguards organization on facility protection systems until 1979, and since then has been with his present division where he has worked with guidance and control systems.

Drayton received his BS, MS, and PhD in

EE from Mississippi State University. He is a member of IEEE and a registered professional engineer in New Mexico. He enjoys backpacking in the Pecos and church activities. Drayton and his wife Beverly live in the NE heights.



DICK FAIRBANKS (3417)

DICK FAIRBANKS to supervisor of Shipping and Receiving Division 3417, effective March 16.

Dick joined Sandia in October 1979 as a systems analyst in Systems and Appraisal Division 3463, and later worked in wage and salary. Before his promotion, Dick was with Equal Opportunity and Affirmative Action Division 3511. He has been a member of the Indian Outreach Committee since coming to the Labs, and was chairman of the group from 1982 until the present.

He received his bachelor's and MBA degrees from UNM. Dick enjoys golf, photography, backpacking, and working with Little League. He and his wife Karen have three sons. They live in the NE heights.

Congratulations

Tom (1522) and Helen Baca, a son, Aaron Philip, March 26.

Nathan (1511) and Mary Bixler, a daughter, Rachel Annika, March 13.

Social Security Booklets Available

If you're thinking about retirement one of these days (of if you're already retired), you may want to order a booklet, *Handy Guide to Your Social Security*, from Benefits Administration & Employee Services. The booklet, published by Meidinger, Inc., discusses recent changes in SS, retirement benefits, and Medicare. Two ways to order — if you're an employee, mail your name and organization number to Div. 3543; if you're a retiree, send your name and address via US mail to Benefits Administration & Employee Services 3543, Sandia Natl. Labs, Albuquerque 87185. Or call 844-1940 and leave your name and address on the recorder that will answer your call (8-4:30 only).

flexi-back

Q. Golf carts are now being furnished in lieu of automobiles for local transportation. This appears to be a reasonable approach to conserve both fuel and material. However, the carts are manufactured by Yamaha. This is similar to a business owner (tax payers) whose employees (Sandia) use the owner's money to buy items from his competitors. Doesn't Sandia require any common sense consideration in these types of purchases.

A. The golf carts that are being furnished in lieu of automobiles at Sandia were purchased under the rules of the Buy American Act. Where there is a small business involved, a cost differential of 12 percent must be added to the bid price of the foreign product before determination of the lowest price can be made. The Yamaha carts were 23.5 percent lower than comparable quotes. The Buyer properly recommended that the award be made to the company with the lowest price. The Buy American portion of his purchase was approved by DOE.

R.R. Russell — 3700

Q. For years I have worked in different offices around the labs and several had windows. Now I am told that because I am an ESA, I don't qualify for a windowed office. Please explain this discriminatory action.

A. Sandia has no formal policy on who qualifies for offices with windows. Some buildings (like Bldg. 880) do not have windows for anyone. All of our newer buildings have windows, but most have some inside offices without windows. Different supervisors have used different techniques to assign offices to their people. Your supervisor may have considered your ESA status in making office assignments. Sandia's policy is to support the supervisor in making such decisions. (Sandia does have a policy that Lab technicians should have their desks in their laboratories unless there are circumstances that require that the desk be in an office.)

R.W. Hunnicutt — 3600

Ode to a Secretary

by Cindy English (8362/63)

She looks ordinary enough sitting at her desk, hair shiny and neatly arranged, clothes clean and appropriate; and she always wears a pleasant smile.

The only part of her that isn't ordinary looking is the blur all around her. She's an octopus: one hand on the typewriter, one hand on the word processor, another punching buttons on the phone, still another picking up the receiver, another hand dashing off numbers on a calculator, another thumbing quickly through a Rolodex file. And meanwhile, with a phone receiver wedged between ear and shoulder she jots phone messages from five calls coming in all at once.

All the while, her two supervisors stand over her, one inquiring about his travel plans, which he has just changed for the fourth time in three days; the other asking about the catered luncheon for 15 tomorrow that he asked her to arrange only an hour ago. Three staff members want to know the status of 1) his 25-page company report, 2) the travel voucher he forgot and is five days late with and headquarters just called him about, and 3) the vacation balance of the third — did she take one day or two last November? — and could she please check "right now?"

In the interim, such as it is, an important visitor (who is to be given the red carpet treatment) wants to know whether she can make these 12 "simple" vugraphs before his 10 a.m. seminar. It's 9:55. Then someone yells from another room, "Quick, come and fix the copier. It's jammed again!" And at the same time another person reminds her that she promised to show him how to use the Diablo printer — and he's waiting — with foot tapping.

Suddenly, out of the chaos, the quietest, least-demanding member of her division emerges bearing a small bouquet of fresh roses from his garden. He slowly hands them to her with a shy smile and says, "Because you take such good care of me..."

The noise diminishes, the blur ceases, and a single tear slides slowly down the secretary's cheek. "Thank you," she says quietly and gives him a small, grateful smile.

Sometimes, *sometimes* roses are more important than raises.



Virginia Dalin (5140)



Nancy Barr (3180)



Karen Andersen (1520)

National Secretaries' Week

10th Anniversary for Sandia's Secretarial Committee

Back in 1974, six Sandia secretaries became the charter members of a committee that, over the years since, has worked to provide an open line of communication between secretaries and management, and to encourage continued education and self-development of secretaries.

Those charter members were Thelma Foster (10/20), Wynn Patton (310), Jo Sena (2000), Ann Michele (3100), Etta Moore (3412), and Edwina Nordberg (6400). Current members of the committee are shown here.

Although National Secretaries' Week is officially April 22-28, the annual Secretarial Seminar at Sandia will be held Oct. 15-19 when more secretaries can participate.



Fran Roelle (2600)



Carmen de Souza (6330)



Mary Kolesar (7550)



Sheila Guynes (3551)

Take Note

The South 14 Bookstand — You can read the table of contents of *Buckboard Days* by Sophie Poe and get a pretty good idea of the book: The Young Kentuckian Goes West, On the Texas Frontier, Buffalo Hunting is Profitable, Trailing Billy the Kid, And So I was Married, and more. First published in 1936, this engaging biography was subtitled "The Thrilling Experiences on Our Southwestern Frontier of John William Poe, as Buffalo Hunter, United States Marshal, Sheriff, Rancher, Banker." His widow enthusiastically traces Poe's life and includes an account of his participation in the bloody Lincoln County War in 1881. He was even present when Sheriff Pat Garrett killed Billy the Kid and followed Garrett as sheriff. *Buckboard Days* has many photos, is published by the UNM Press, and runs \$9.95 at the LAB NEWS office, Bldg. 814.

Parents of pre-school asthmatic children will be interested in a new six-week program offered by the American Lung Association. It's called the "Family Asthma Program" and consists of separate and combined parent and child sessions conducted by a professional staff — physician, registered nurse, child care specialists. Parents often ask "What can I do to keep from panicking during an asthma attack?" The program will help both parents and children deal with this and other difficult questions. Child care for brothers and sisters will be provided at each session. The course will be offered from 6:30 to 7:30 p.m. each Monday, beginning April 23, at the Lung Association office, 216 Truman NE, 265-0732.

A number of Sandians are participating next week in the 20th Annual Symposium of NM Chapter of the American Vacuum Society. Some have served on committees during the planning of the symposium, others will make presentations during the technical sessions or act as session moderators. The symposium will be held at the Albuquerque Hilton on April 17-19 and will include a three-day technical program, a four-day program of education courses related to vacuum technology, and a two-day vendor equipment exhibit. For registration information, contact Gary Kellogg (1134), 4-2079.

A symposium that will provide management information about a new computer programming language will be held from 9 a.m. to 5 p.m., April 23, at the Albuquerque Hilton Inn. Sponsored by the UNM Division of Continuing Education and the BDM Corporation, the symposium is entitled "Ada on the Move: Future Opportunities for the Private and Public Sectors, or Just Another Programming Language?" (Ada is the registered trademark of DoD, Ada Joint Program Office.)

The fee for advanced registration (due by April 20) is \$65; registration at the door (8:15-8:45 a.m.) is \$75. The cost for an optional lunch is \$7.50. Advance registration forms may be obtained by contacting the UNM Division of Continuing Education, 805 Yale NE. For more information, contact Idalee Vogel, conference coordinator, at 277-6601 or 277-2863.

An exhibit of color photographs by Joe Laval (3163) and Roberta Collier opens tomorrow at Fixed Image, Inc., 3208 Richmond NE, and will hang until June 22. A reception is scheduled at the gallery tomorrow from 2 to 4 p.m. Joe's photographs were taken in northern Italy during the past two summers when he instructed month-long extension workshops in photography sponsored by UNM. Roberta Collier was a workshop student.

An Earth Systems Exposition (including Earth Building Conference IV, a solar/earth energy tradeshow, a demonstration day, tours, and something called a "spectacular vernacular") will be held at the State Fairgrounds on April 20-22. It's sponsored by Earth Systems Promotions and the NM Solar Institute and is New Mexico's first such comprehensive event covering earth building and solar energy technology and techniques. More info from Robert Proctor on 345-2202.

Interested in your English ancestors? Ron Hill (2562) will present a workshop on English Genealogical Research April 21 at 9:30 a.m. in Botts Hall at the Special Collections Library (corner of Edith and Central).

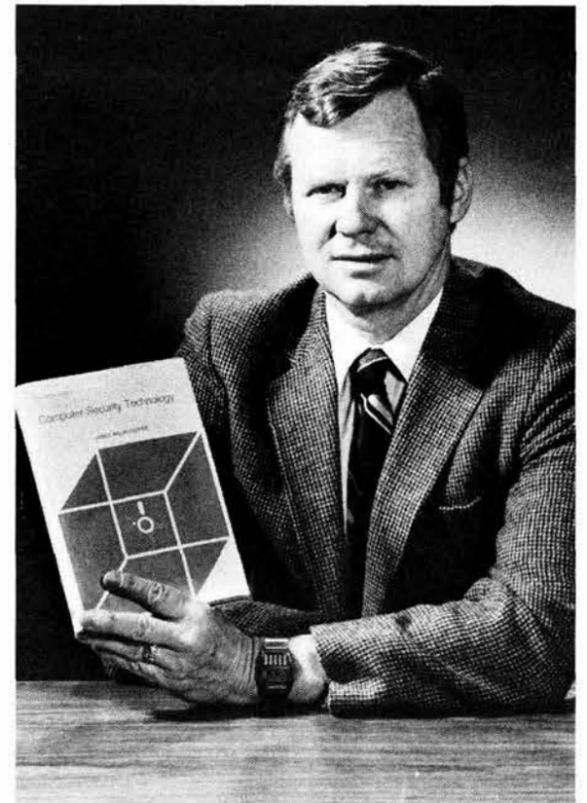
Ceremonies observing POW/MIA Recognition Day will be held on the East Parade Field on KAFB, April 14, beginning at 10 a.m. The ceremony will feature a "pass in review" by approximately 500 Junior ROTC cadets from Albuquerque high schools. A "missing man" flyover by the 150th Tactical Fighter Group of the NM Air National Guard has been scheduled. Various civic and veterans organizations will participate, including many ex-prisoners of war. Sandians are invited to attend.

Since the federal decision a year ago to de-regulate FCC licensing of commercial radio operators, the National Association of Business and Educational Radio (NABER) has been designated by industry to handle certification responsibilities.

Anyone who now holds a valid FCC 1st or 2nd class General Radiotelephone license may apply to NABER for new certification documents without taking a technician's examination. Deadline is April 30. Application forms are available at most two-way radio shops or from Mike Langner (KHFM), 262-2631.

Retiree Picnic

The annual retiree picnic is set for May 24 at the Coronado Club. Invitations to approximately 2500 Sandia Albuquerque retirees will be mailed later this month.



A NEW BOOK, *Computer-Security Technology*, written by Arlin Cooper, supervisor of Sandia's Computer Security Division 2612, was published recently by Lexington Books. The book surveys components used in contemporary computing to form a background for analysis of technology-based protective measures. The book provides the technical information necessary for reaching the right decisions on information security and physical-assets security. Arlin has headed Division 2612 since March 1980 when it was created. The book is the result of his early work in designing Sandia's computer security program. Ultimately, Arlin says, computer security rests with the integrity of employees. This is his second book. His first, *Microprocessor Background for Management Personnel*, was published in February 1981.



"MOVES LIKE A LINEBACKER, speaks like a lyric poet" says a recent *Geo* magazine article of Alfonso Ortiz, the professor of anthropology at UNM who will be the next speaker in Sandia's Cultural Awareness series. Al sees himself as part of the "thin red line" of Native American scholars and activists who link the "reservation Indians" with the government. His reputation as a leading anthropologist in the field of American Indian culture was the basis for a \$216,000 McArthur Prize. He will speak on "The Continuing Impact of the American Indians on the Southwest and the Nation" on April 25 at 11:45 in Bldg. 815.

Sandians Assist with Classification Policy Guide

For the first time, the DOE and the DoD are using a classification policy guide that incorporates a comprehensive rationale for decisions about nuclear weapon classification. Several Sandians played key roles on the task force that produced the new guide.

The new guide, *CG-W-5* (for *Classification Guide, Weapons, version 5*) replaces a version used for about 10 years. As classification changes to the old version were necessary, change notices were sent to each of the users. And, given the myriad technological advances of the last decade, especially in weapon design and computers, change notices were numerous and frequent. So it was time for a complete overhaul; the guide was becoming more and more difficult to work with — partially because the old version told *what* the guidelines were but didn't explain the *whys* underlying them.

"Bob Duff, director of the Office of Classification at DOE, recognized about four years ago the *CG-W-4* needed updating," says Dick Craner, manager of Classification and Sensitive Information Review 3180. "DOE formed a task force that included representatives from DOE headquarters and field offices, the three weapons labs, and the DoD. Then the task force was challenged to develop a new and innovative classification guide.

"The task force succeeded," says Duff. "We now have a guide that departs from past practice by including a narrative treatment of what is being considered for classification, the reasons for classification, and broad guidance for classifying material under review. That's a major step forward for weapons management because we now have — in one volume — comprehensive coverage of DOE/DoD classification policy affecting nuclear weapon design, research, development, testing, materials, production, and military utilization.

"As such, *CG-W-5* will be the policy foundation for all detailed classification guides on nuclear weapon matters that will be prepared later for the use of technical



THAT'S PRIDE — and maybe a bit of relief — on the faces of the Sandians who assisted in the creation of a much-improved nuclear weapon classification policy guide, known as *CG-W-5*, for the DOE and the DoD. In the foreground are Nancy Barr and Wright Van Deusen (both 3180); standing are Phil Mead (400), Frank Halasz (8265), and Dick Craner (3180).

authorized classifiers, such as the nearly 500 at Sandia," adds Duff.

The 1200 copies of the new guide will soon be distributed throughout the DOE/DoD complex to classification officers and middle-to-upper management in technical organizations. In addition to the major improvement, inclusion of the rationale underlying the various classification levels, *CG-W-5* will have a new format: it will be looseleaf so that change pages can easily be added.

Dick is proud of the Sandians who contributed to the new guide. Wright Van Deusen (3180) wrote three and a half of its nine chapters, and Frank Halasz (8265) wrote one. They also participated in the re-

view and re-drafting of all parts of the guide and in preparing detailed risk-benefit analyses and justification for the declassification actions associated with the new guide.

And although the guide was officially published by the DOE, Sandia was responsible for its editing, final layout, and printing. "Phil Mead (3151) took the writing of several different authors from around the country and did a masterful job of making it all consistent and coherent," says Dick. "Phil also prepared a highly detailed index for the 200-plus-page volume.

"Nancy Barr (3180) typed innumerable drafts of the various Sandia chapters, then typed the master draft of the final guide and kept it up to date. And all the composition and layout chores were handled by Jan Willis' people in 3152. All in all, Sandia made a major contribution to a much-needed document."

US/UK, Not Just DOE/DoD

Under terms of the United States-United Kingdom Mutual Defense Agreement of 1958, weapon classification policy changes, such as those in the new *CG-W-5*, must be coordinated with our counterparts in the UK's Atomic Weapons Research Establishment (AWRE). Wright Van Deusen (3180), Bob Duff and two other DOE headquarters people, and one person each from LLNL and LANL formed the team that visited AWRE for that purpose.

"It was a fascinating experience," reports Wright. "The British received a draft of the new guide last May, so they'd had plenty of time to do their own review. For three intense days we answered their questions and worked out compromises. Mostly we clarified points and pro-

vided them with background information. After slugging our way through the whole document, we finally agreed on all points."

Wright adds that the British made some real contributions and provided the Americans with some different, and valuable, viewpoints. "It was good to have some others look at the document cold — people who hadn't been as close to it as we had these past four years," says Wright.

After more than a week of meetings, including two sessions at the Ministry of Defence in London, Wright and his wife Beverly took a few days of vacation in England and Wales. None of their sightseeing was classified.

MAYBE WE HATE TO HATE



Possibly the nation's capacity for full-throated hate has atrophied from disuse. For devious reasons of state, the Government and media occasionally designate certain men and suggest it would be nice if we hated them. Fidel Castro is such a man, as is Col. Muammar el-Qaddafi of Libya, and Yasir Arafat of the Palestine Liberation Organization. Not one has set the nation ablaze with hate. North Americans care too little about Latin America to spend much energy hating Castro. And how can you make its hate glands swell about a dictator from a pipsqueak country like Libya? It's more fun hating spinach. As for Arafat, every time you start to think, "This time I can really hate Arafat," you find yourself studying his jaw and wondering, "I wonder why the poor guy can't get a decent shave," and end up with a guilty urge to send him a pack of razor blades.

—Russell Baker in *The New York Times Sunday Magazine*

Pancakes, Swiss Cheese, and the Cosmos

In *The Hitchhiker's Guide to the Galaxy*, space (that is, the universe) is described thus:

*Space... is big. Really big. You just won't believe how vastly hugely mind-bogglingly big it is. I mean, you may think it's a long way down the road to the chemist, but that's just peanuts to space.**

Well, it's probably even bigger than that, according to Jack Burns of UNM's Dept. of Physics and Astronomy who recently gave a talk entitled "Superclusters, Voids, and the Large Scale Structure of the Universe."

Burns began by describing the cosmic scales of gravitational entities — that is, systems held together by their own gravity. In this category are the solar system (and other recently discovered stellar systems, e.g., stars surrounded by debris), groupings of stars like the Pleiades, globular star clusters, the galaxies, and so on.

Our solar system is about five light hours in radius — from the sun to Pluto. Star clusters like the Pleiades are measured in tens of light years while globular clusters in hundreds to thousands of light years. Individual galaxies are tens of thousands of light years across. And our small, "local" cluster of 18 galaxies (containing the Milky Way and Andromeda galaxies) extends across millions of light years.

Getting into the big time, there are "rich" clusters of a hundred galaxies (10 million light years) and still larger clusters containing a thousand galaxies (50 million light years).

Until recently, most astronomers believed that these thousand-galaxy clusters were the largest gravitational entities, or structures, in the universe. It was thought that there was no significant clustering at scales beyond 60 million light years.

The Cosmological Principle states that the universe is homogeneous (the same everywhere) and isotropic (the same in all directions) on large enough scales, even though observational evidence on smaller scales shows that the universe is strongly "clumped." But at what minimum scale size can this fundamental assumption of modern cosmology be applied? Burns says that the new Doppler red shift surveys of selected volumes of our local universe have begun to show evidence for very large second-order clustering of galaxies, called superclusters, that may be hundreds of millions of light years in extent.

[The Doppler red shift refers to the use of the Doppler effect (the phenomenon noticeable in acoustics when the pitch of a train whistle seems to rise as the train approaches and fall as the train departs) to measure the velocity of astronomical bodies toward or away from an observer on the earth by comparing several spectral lines of elements in, say, a star with a lab spectrum of the same elements. The lines in the spectra of galaxies are red-shifted with respect to their terrestrial wavelengths and the red shift increases linearly with increasing distance.]

A few years ago, two astronomers

catalogued all the galaxies observable from the northern hemisphere (over a million). Burns showed a map of these galaxies, which *seemed* to show clumps and filaments in places — unlike, for example, certain "milky-smooth" portions of our Milky Way galaxy. The problem is that the map is only two-dimensional, and those who don't like the idea of clumpiness on such a large scale have been able to argue that one is seeing just an ordinary statistical effect enhanced by imagination.

Burns therefore is working on a *three-dimensional* map of candidate superclusters with the third dimension obtained by spectroscopic measurements of Doppler red shifts produced by the expanding universe. Only with recent advances in CCD ("charge coupled device") technology has it become possible to do spectroscopy on such faint and distant objects. Even so, one is forced to catalog *clusters* of galaxies rather than individual ones, and to limit the maps to specific regions of space. Nevertheless, Burns' data clearly suggest that superclustering on such scales is quite common and non-random. These superclusters are clearly non-spherical with pronounced filamentation in some instances and large holes, or voids, between the superclusters. The voids, however, are remarkably spherical and also extraordinarily large.

"The universe is mostly empty space," says Burns. "Like a giant swiss cheese. The volume occupied by the holes is considerably greater than the volume taken up by the 'cheese,' or matter itself. Our calculations show that the volume of space occupied by galaxies and clusters is less than 1 percent."

If Burns' observations are accurate, the theoretical implications of the formation of the universe will have to change. If very

large filamentation is real and abundant, it does not correlate with the age of the universe as currently calculated. According to the hierarchical model (based on isothermal fluctuation just before and during the Big Bang), it would have taken 10 times longer than the present age of the universe to form the filamentation observed by Burns and his colleagues.

An alternative theory is called the "pancake model" — formally it's adiabatic fluctuation. Very simply put, after the Big Bang, certain areas of the infant universe collapsed into one dimension, or a plane-like distribution of matter. However, says Burns, there are "plaguing problems" attending this model. For one, the universe has to be closed for the pancake theory to work. The presence of massive neutrinos would solve this problem *if* indeed there are massive neutrinos.

"There's no evidence for them," says Burns. "But particle physicists have at hand a whole zoo of particles they can use to fit into their theories — axions, for instance." And it's certainly nice to note that Alan Guth's "Inflationary Universe," described at a recent Sandia Colloquium (LAB NEWS, Jan. 6, 1984), definitely predicts a closed universe and probably predicts just the right initial distribution of mass fluctuations to lead into the pancake model.

"To sum up, the Cosmological Principle may perhaps apply on the very largest scales. But on a scale size of 1 percent or so of the diameter of the observable universe, structure is still interesting — it's large, stringy, with a lot of empty space. But much more theoretical and observational work needs to be done before we can be fully confident of our swiss cheese model."



MEET LIFEGUARD, the UNM Hospital emergency transport helicopter that Sandia will use in case of accident or injury in one of our remote areas. Gwen Gorman of Sandia Medical (right) invited the copter and crew here to brief Medical on their services; Cindy Mendez is head nurse of the unit, and Sherman Henderson (behind door) is a medical technician. Phone number for Lifeguard is MED-LIFT.

* Douglas Adams, *The Hitchhiker's Guide to the Galaxy* (New York: Pocket Books, 1981), p. 76.



GOVERNOR RAMON GARCIA (3425) at his home in Santo Domingo.

He's a Sandian

He's a Governor

Thirty-two years ago Ramon Garcia was a young man from Santo Domingo Pueblo who had recently seen a lot of the world as a WWII infantryman in the U.S. Army. He had been at Tarawa in the Gilbert Islands, at Luzon in the Philippines, and in Japan. He was back home again and he needed a job. The Santo Domingos are farmers and jewelry makers, but most adult males depend on income from jobs outside the pueblo.

Ramon found his job at Sandia in February 1952. For 15 years he worked in the old "Road Department" warehouse; he's also worked in purchasing, property control and, since 1978, in Instrument Repair and Calibration Division 3425.

Last month, Ramon interrupted his career at Sandia for a year's leave of absence as the new Governor of Santo Domingo Pueblo. He was appointed to the office by the Pueblo Council — former governors and pueblo officials. The Council is the ultimate authority for the pueblo; the Governor implements the actions of the Council.

It will be a busy year. The Governor represents the people to all outsiders. He administers the business affairs of the pueblo as well as the tribal courts and law and order enforcement. He oversees all the social service programs and the administrative services such as accounting, personnel, purchasing, and property management. He is also responsible for education, health care, irrigation, water rights, and land claims. In this non-paid tribal public position, the Governor is required to perform traditional tribal duties and responsibilities on behalf of his people and pueblo.

In this city-state government, any action proposed is carefully deliberated with one dominant theme — "How will it affect the people and the Pueblo?" The Council meets often and deliberates until a decision is made. Obviously, this approach is successful. Of the 90 or so pueblos reported by Coronado in 1540, Santo Domingo is one of 19 that is still inhabited. The secular life and the government of the pueblo evolved from and was dependent upon communal religious beliefs. Those beliefs, often misunderstood by outsiders, have enabled the Pueblo Indians to maintain a solidarity that has, for the most part, preserved ancestral ceremonies and rituals and created a system of government that works for them.

These, then, are some of the responsibilities that Ramon has assumed. Governing a pueblo with a population of 3400 residents is a full-time job. He often holds court in the

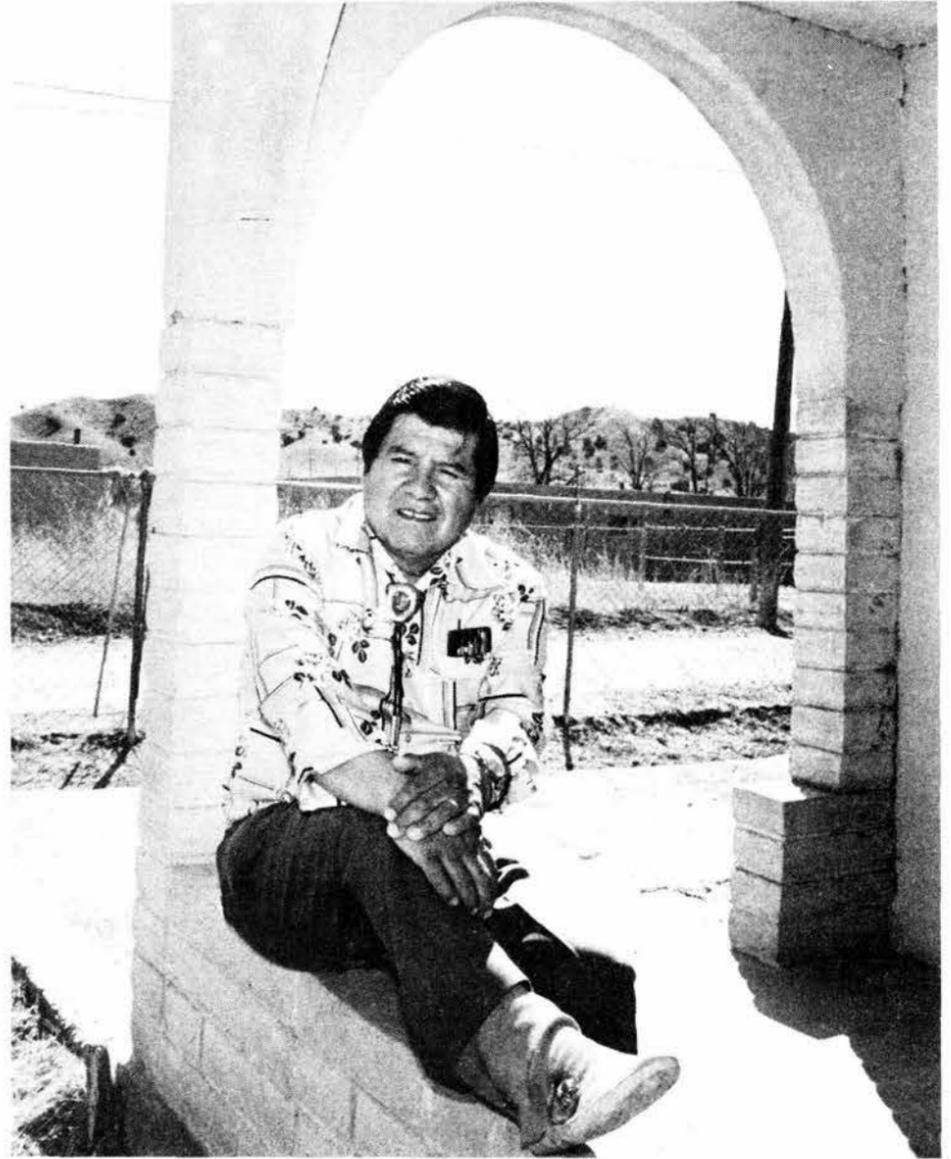
evening, and arranges meetings after working hours so that those concerned can be present. He is assisted by two staff officers, his Lieutenant Governor, Council members, and numerous program directors who administer the government-assistance programs. Ramon has served as a staff officer to three past governors; he was also the pueblo's utility secretary for 10 years. Following his inauguration, Ramon spent five days in Washington, D.C., getting acquainted with Bureau of Indian Affairs employees and their programs.

Not all of his time is spent behind his desk. A few weeks ago, on March 12, Ramon conducted the ditch cleaning activities that are so important to all of the pueblos. It's a community affair in which volunteers get the job done. A few days later, after irrigation of the fields had begun, one of the ditches broke, and once again, Ramon was out with volunteers to fix it.

As Governor, Ramon worries about the 25 percent reduction in government financed programs, he worries about the alcohol problem that is prevalent in most tribes, he is concerned about land claims and mineral rights litigation; in short, he worries about his people and is determined to do his best to govern them.

We've introduced Governor Garcia, the administrator. Let's meet Ramon Garcia, the man.

His pride in his adobe home was evident when he showed us through it. Ramon built it and continues to add improvements. When we arrived, he introduced us to Cindy, his youngest daughter and a student at NMSU, and explained that his wife Loren-cita was away at the moment, helping a neighbor. His other daughter, Inez, works at the pueblo headquarters. His son, Ramon, Jr., is a student at UNM.



He escorted us into a long room, dominated at one end by a huge brick fireplace. The walls are covered with rugs, baskets, gourds, and other items. The only furniture in the room are chairs along each wall and glass-fronted cabinets that hold colorful blankets. Ramon hosted the monthly meeting of the 19 pueblo governors in this room in January. He talks about his six grandchildren and how they use the big fireplace for weiner roasts. We discuss his and his wife's collection of pottery from various pueblos.

His favorite spot is the easy chair in front of the traditional Indian fireplace in the living room, where he relaxes after many late evening meetings. "This is where I think about the day's activities and decisions," he says.

In the front yard, he points in the direction of his childhood home, where his father, who is over 100 years old, still lives. We talk of their biggest ceremonial on Aug. 4. It's the Feast Day of the pueblo's patron saint, St. Dominic, and it's the day of the Corn Dance. Southwestern author Frank Waters says, "At Santo Domingo the Corn Dance has reached its highest development as a ceremonial, and has maintained its greatest intensity. It is one of the truly great Indian dances of America."

Ramon explains about the dance, "It's open to the public, but please, no photographs and no recordings. Outsiders don't understand what this ceremony means to us; many think it is a commercial version for the tourist. That is true, for instance, of some of the dances at the State Fair. But it isn't true here. When we dance, we are not asking just for good crops and good growing weather and peace for the Indians, we are asking for those things for the entire world."

Breaking the Violence Chain

Domestic violence may be a root cause of virtually all major social behavioral problems today. This is the conviction with which Gini Berkenfield operates as Executive Director of the Albuquerque Shelter for Victims of Domestic Violence. The shelter, a program of the Women's Community Association and one of seven in the state, is the only shelter in Bernalillo County.

The statistics are startling: One family in ten is abusive. Domestic violence, the single most unreported crime in the nation, is the cause of one in four homicides. Over half of all juvenile delinquents have experienced violence at home. About 65 percent of adult abusers were battered themselves or witnessed battering in their home.

In one recent month, the Albuquerque Police Department responded to 690 domestic disturbance calls. And the shelter averages 200 crisis calls every month; in addition it provides emergency services to the residents at the shelter.

"The studies done in this field indicate that by teaching effective methods of resolving conflict, relieving stress, and improving communications, battering can be lessened and in some cases, stopped," Gini says. "Since violence is taught at home, it follows that if it can be stopped in the home, then violence as a means of problem resolution will be essentially eliminated for the family and its children for generations to come."

Gini and her staff of 11 operate the shelter as a 24-hour facility. Their location, in metropolitan Albuquerque, can accommodate 102 adults and children. The average shelter client lives with her children in an apartment on the premises for 10½ days. During her stay, she is recovering from a beating or whatever crisis caused her to come to the shelter, applying for assistance (welfare, food stamps), looking for a place to live, helping with the cooking and cleaning at the communally run shelter, and attending both private and group counseling sessions.

"Most of the women who come here have at least two children," Gini says, "and the children are all victims — either they have been abused or they have witnessed some violent scene." One of the current goals of the shelter is to remodel and equip one of the buildings to become a children's center. The facility will provide day-care for children so their mothers can work toward controlling their lives. It will also allow child counseling on a daily basis. "We know from past experience that these children will probably have trouble sometime in the future," Gini explains. "With a professional staff working with both the parent and child, we hope to promote some stability in their lives."

The Women's Community Association is a private, nonprofit group that has sponsored the Shelter for Victims of Domestic Violence since 1978. The present shelter site was purchased two years ago. It is a blighted apartment facility of 10 separate buildings in an area of historical significance. To provide a children's center, the



FAMILY COUNSELOR Sarah Mickey entertains a small child in the shelter's makeshift play area. If funds can be raised, the building will be converted to a children's center.

shelter needs money to match a dollar-for-dollar grant made by the State Historic Preservation Fund. The money must be matched by August 1.

A United Way agency, the shelter also receives operating money from federal and state programs; however this funding will not stretch to cover the cost of establishing

the children's center. "We hope to raise at least \$15,000 for the matching grant," Gini says. "People are helping us in various ways: the Civitan Club has offered to construct and equip a playground in the yard surrounding the children's center, and three of the rooms in the building have recently been painted by a volunteer."

The shelter works with other agencies in the city to clothe and feed its clients. However, they do need many other items; Gini has provided a list of their most urgent needs for anyone who might wish to help out: baby furniture — cribs, highchairs, potty chairs, etc.; children's art supplies; twin beds, bed linen, and household furnishings. "We also need volunteers who will babysit for two hours in the evenings. We hold group counseling sessions each night for the adults, and providing child care during that time is a real problem," Gini says.

Anyone interested in contributing to the shelter can call 242-3114. Sandia's ECP Committee conducts an on-going ECP Agency Awareness Program; Gini Berkenfield will represent the Shelter for Victims of Domestic Violence on April 25 in the Lobby of Bldg. 802.

FIT BITS

More than 90 percent of the people who suffer strokes have high blood pressure. Approximately 95 percent of these stroke victims die. When did you last have your blood pressure taken?

Smoking usually begins around age 12 and is a firmly established habit by adulthood. The most effective way to keep teens from smoking is to have a school classroom select a respected peer to present the argument against smoking.



UNITED KINGDOM VISITORS — Periodically, top level US and UK executives meet to take stock of the two countries' cooperation in uses of atomic energy for mutual defense purposes. On their way to this year's meeting, (called, logically enough, Stocktake), these British visitors included stops at Sandia Albuquerque and Livermore. Those shown here are (from left) Stan Orman, a deputy director at the Atomic Weapons Research Establishment; Peter Jones, director of AWRE; Richard Norman, chief scientific adviser of the Ministry of Defense; Bill Parsons, head of the Atomic Coordinating Office in Washington; President Dacey; and (standing) Dennis Fakley, assistant chief scientific adviser (nuclear) of the Ministry of Defense. Norman, Fakley, Jones, and Orman plus Rear Admiral John Grove, head of the UK's Trident program, visited Livermore after the Stocktake meeting; Grove, Orman, and Walter Thrush of the Royal Navy stopped at Albuquerque on their way home. Jim Mogford (400) is Sandia's US-UK coordinator.

MILEPOSTS

LAB NEWS

APRIL 1984



Alice Morgan (4020) 20



Kyle Williams (7482) 30



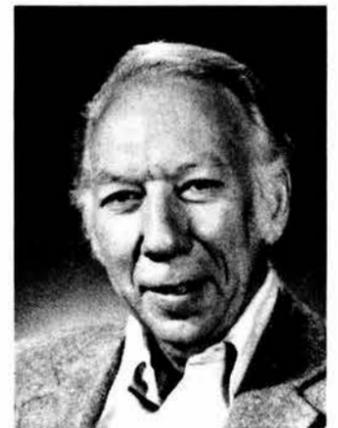
Bill Walker (7525) 30



Clarence Washington (5311) 20



Darwin Newcom (2642) 10



Ed Beauchamp (1845) 20



Steve Babcock (1252) 10



Joe Sanchez (3424) 35



Tom Pace (7120) 35



Arnold Bentz (5141) 35



Bob Miller (3423) 10



Sean Souther (3742) 10



Ken Johnson (7172) 25



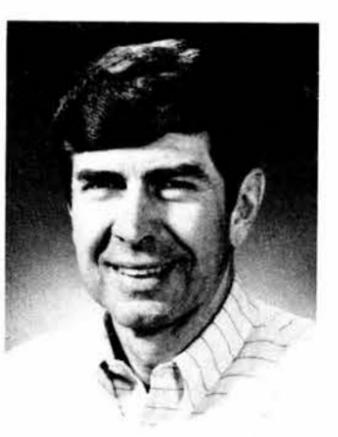
Bob Beasley (7172) 25



Jeanne Boyd (3151) 10



Joe Honest (3412) 15



Don McBride (1634) 15



Estrella Dulleck (7242) 10



Janette Layne (2341) 10



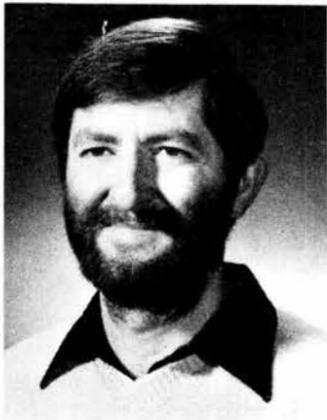
Tom Harrison (6221) 30



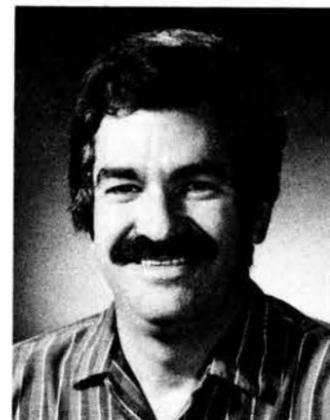
Abbie Williams (3155) 20



Ermenio Mata (3435) 20



John Anthes (1261) 10



Don Tipping (7112) 15



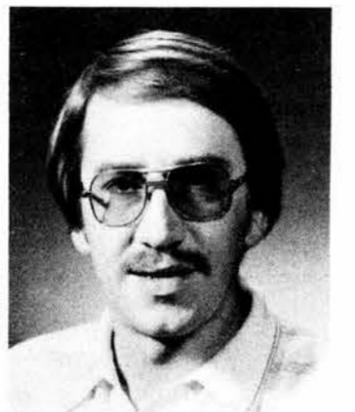
Neita Tucker (141) 20



Roy Ellison (2154) 20



Larry Ruggles (1234) 15



Steve Babicz (2116) 10



Ernie Alford (8161) 35



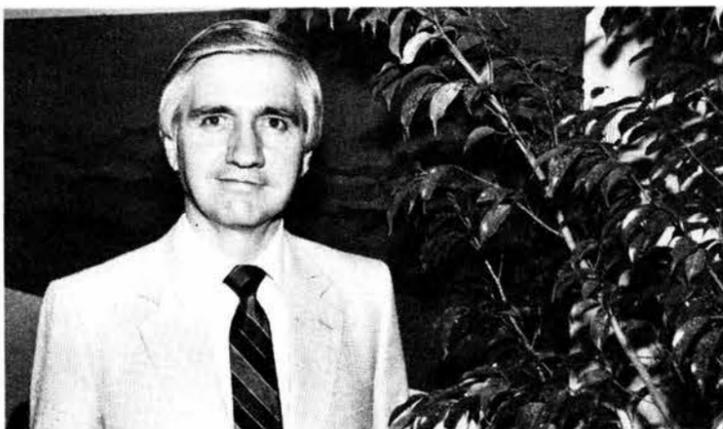
Joe Williams (311) 20



Richard Kinchen (7543) 10



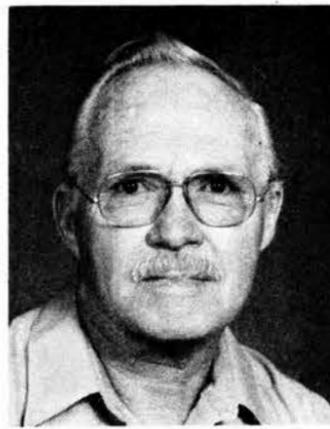
Sherwood Duliere (6453) 25



Ed Gullick (3533) 20



Ed Leeman (2363) 20



Morrie Mote (8312) 25



Storey Cook (8111) 15

My Favorite Old Photo



IN 1892, to be a blacksmith was about as remarkable as being, say, a mail carrier today. Yet when did you see your last blacksmith shop? That's Grandad Tom Knight in the light clothing, holding the horseshoe. A smith shoed horses, true, but spent as much time keeping the rolling stock going —

putting steel rims on wagon wheels, replacing spokes, working on the harness. Grandad had come to Texas from North Carolina in 1890, finally settled in Childress where this picture was taken (and I was born). Born in Alabama during the Civil War, Grandad died in 1929. (Joe Knight — DOE/ALO)

UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

Deadline: Friday noon before week of publication unless changed by holiday. Mail to: Div. 3162.

RULES

1. Limit 20 words.
2. One ad per issue per category.
3. Submit in writing. No phone-ins.
4. Use home telephone numbers.
5. For active and retired Sandians and DOE employees.
6. No commercial ads, please.
7. No more than two insertions of same ad.
8. Include name and organization.
9. Housing listed here for sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

TWO inside doors w/handles, 30" x 80", \$25; 24" x 80", \$10; day bed w/casters, no bolsters, \$25. Sharp, 293-1824.

KITCHEN sink, dbl. bowl, white cast iron, 22" x 33", no chips, w/single lever faucet & disposal, \$45; 8 x 10 rust rug, bound all around, loop pile, \$25. Rainhart, 821-3690.

RABBITS: 11 New Zealand, 5 weeks to 3 months old; 7 Siamese Satin, one month old, \$3-4 ea. Nelson, 881-0148.

WURLITZER organ, '76 model, \$1300 OBO; Atari 2600 game machine, 7 cartridges, rapid fire controller, \$150 OBO. Rael, 299-0343.

SKIS, Fischer Freerites, 180cm, Tryolia 260 bindings, \$120; Dolomite ski boots, size 8½, \$30. Moyer, 881-0754.

FREE firewood logs, 1½" dia. by 1½' long, approx. 20 pieces. Sherwood, 299-8146.

FREE: 15 Juniper hedge plants, 2-3' high, you dig and remove. Horton, 883-7504.

MOUNTAINEERING boots, size 9½, almost new, Vibram soles, make offer. Drumheller, 281-3127.

TIRE, Armstrong Tru-Trac, 11 x 15, used as spare very few miles, \$20. Dalton, 873-2644.

GUITAR, Yamaha acoustic, \$25. Hesch, 892-2105.

TV, 19" GE color, \$50. Rayner, 821-5534.

SEARS, 110 pound weight set & basic bench, \$25. Davis, 293-1287.

CHINA cabinet, contem. style, best offer. Eckley, 294-7650 after 5.

VACUUM, deluxe upright w/attach., \$45; port. manual typewriter w/case, \$40. Baney, 294-8970.

DINING table, drop-leaf, w/2 leaves, custom pads, 2 arm, 4 side chairs, & credenza, contemporary, fruit-wood finish, \$550. Syme, 883-0521.

TWIN mattress set; IBM Executive typewriter, model B-1, 15" platen; Gulbransen model "R" electronic organ, modern design. Peabody, 296-6239.

GARAGE sale: storm door, window screens, fluorescent lights, copper built-in appliances, ceiling fan, Blazer rear seat, shelves, misc. Aragon, 881-4795.

ANSCHUTZ 22LR custom, \$550; Contender Super-14 (357 max/22LR), \$290; RWS M45 air rifle, \$150; RWS R66 air pistol, \$175. Zamora,

mattress & box springs set, \$30. 865-7445 after 6.

WURLITZER organ model 4023, sustain percussion presets, vibrato, swingin' rhythms, toy counter, dancing chords, \$700. O'Meara, 299-1080.

SMITH & WESSON .357 mag. model 19, 6" barrel, nickel plated, new, \$265. Lesperance, 298-5203.

LARGE refrigerator, freezer needs work, \$40, you haul. Brigham, 293-6914.

STUDENT desk, \$30; metal shelves, \$10; twin bed frame, \$15; bucket seats for '65-77 Bronco, \$50. Wilcoxon, 296-8295.

SMALL dog house, \$5 OBO. Garcia, 266-4015.

SKIS: Rossignol FPs, 185 cm w/Salomon 627 bindings, \$120; Rossignol CMs, 170cm, no bindings, used once, \$50. Sinclair, 884-7096.

120 PATIO blocks, red, square, 50 cents ea. Greenwood, 298-5268.

DESK, all wood, lg. top work area (over 15 sq. ft.), \$375. Price, 294-4743.

TV, B/W, 17" screen, w/roll-around stand, \$75. Strascina, 299-2285.

35MM Olympus OM-10 camera w/reg. & zoom lenses, filter & Olympus strap, \$300. Rodriguez, 296-3277.

GOLF clubs, Lady Spalding, 3-9 irons, 1, 3, & 5 woods, putter, wedge. Hunter, 256-7758.

WROUGHT iron wall decorations, wall & free-standing candle holders, fp tool set, lamp, shield of armor, misc. decorations, best offer. Shaw, 299-8524.

BED Frame, double, metal, casters, \$10. Dalphin, 265-4029.

NEW Savage Fox B-SE, 12 ga., M/F, vent, single trigger, ejectors, \$260; new .22 single action revolver, \$60. Kureczko, 298-1577.

SWIMMING pool equip.: pump, \$35; filter, \$25; butane pool heater, \$25. Melick, 867-2860.

50 HP outboard motor, elec. start w/tanks & controls, bronze prop, long shaft, light weight, \$650. Hay, 884-4826.

SLEEPER sofa, earthtone plaid, cost \$430, sell \$150; Epiphone guitar, soft case, \$150. Crenshaw, 296-8948.

KITCHEN cabinets, 11' wide x 8' high w/cutouts for sink, oven, stove, \$300. Benton, 877-2473.

STEEL Belted radial tire, ER78-14 w/4-hole rim, \$50; 9 x 12 nylon/canvas tent, used twice. Chavez, 831-9591.

FIVE VW bug wheels, 4 w/rubber, \$20 for all, OBO, proceeds to be donated to Thunderbird Square Dance Club. Lane, 884-4566.

AIREDALE pups, AKC reg. litter, shots, \$250. Williams, 299-8986 after April 15.

TILLER, Wards 5 hp, gear drive, \$200. Turner, 293-8938.

NEW Olympus OMG camera w/50mm, case, \$220; Minolta SR-T101 body, \$65; auto. 132X flash, \$45; Keystone 110 tele/flash, \$15. Nunez, 884-3623.

ARISTOCRAT Lo Liner trailer, 16', extras, \$2500. Gronseth, 299-3540.

SCOTCH pines, 2-3', ready for transplanting, \$2 ea., bring your container. Barnaby, 3917 La Hacienda Dr. NE, 265-4353.

FIREWOOD, small pickup load, \$30;

Brandon, 836-5621.

CARPET pieces, 78" x 78", 36" x 122", 30" x 64", rust color, 100% nylon pile, never used, \$50 for all 3 pieces. Rowe, 881-6159.

STEREO, Realistic quartravox AM/FM stereo receiver, tape, phone & aux. hook-ups, w/2 speakers & phono. Lewis, 883-8454.

EARLY American maple bedroom set: dbl. dresser, nite stand, full size bed, \$100. Mason, 299-7781.

COUCH, earthtone, \$100; wood/glass coffee table, \$25; fur chaise lounge. Nielsen, 299-6740.

SEARS hood hair dryer; 5" foam twin mattresses & bunkies; 4 cf Trav'ler ice box; formal dresses, size 7-12. Beasley, 298-3398.

FOUR Firestone steel belted radial tires, P195/R75-15, off Ford 100, complete w/rims, \$125. Marquez, 836-7115.

WATER PIC, \$15; port. telephone amplifier, \$10; 24" concrete circular dividers, \$3 ea.; Chilton's manual, 1970-81 Datsun pickup, \$4. Binder, 299-2937.

YOUTH BED, 6 mos. old, Pennys, cost \$200, sell for \$100. Weber, 293-7522.

C4 auto. trans. rebuilt, \$100; Bronco 3-spd. trans., \$50; Ford 4-spd. close ratio trans. w/alum. bell hsg & Hurst shifter, \$125. Spencer, 296-6250.

FREE: 6-mo.-old male Great Pyrenees/Collyie cross, quiet, friendly & intelligent, needs loving home. Scheffer, 294-3434.

KEROSENE flame gun for weed burning, complete w/instruction book; blood pressure monitoring kit. Rody, 299-6084.

TRAVEL trailer, Playmore model 1500, sleeps 5, propane stove & heater, elec. brakes, Zipprich, 298-5943.

EDISON electric heater, \$20; manual ice cream maker, \$5; Aztec heat panel, \$15. Stevenson, 242-7635.

TV, MGA, 19", remote, \$160; violin, Roth, ¾, \$200 OBO. Westfall, 883-4390.

1981 Coleman fold-down, furnace, awning, potti, sleeps 7-8, much more, \$3250. Shideler, 293-3235.

APPLE computer and/or system, all or part, for sale, lease, or rent. Mayer, 294-3368.

COMPLETE bee keeping equipment: 8 supers, frames, excluders, capping knife, extractor, smoker, gloves, veil, manuals, \$195. Southwick, 281-3782.

TRANSPORTATION

'76 HONDA 550 Four Super Sport, Vetter fairing, luggage rack, \$825 OBO, will trade for fishing boat. Rozelle, 298-0396.

'72 FORD Courier pickup, low miles, R & H, 4-spd. manual trans., w/shell. Houghton, 299-3386.

'73 JAGUAR XKE 2+2, AT, 69K miles, dk. blue, below CPI avg. retail, \$11,500. Rutledge, 821-3048.

PEUGOT 10-spd. bicycle, Reynold 531 frame, new Suntour derailleurs, Quick Release hubs, alloy wheels, Clincher tires, \$290. Drumheller, 281-3127.

'82 HONDA ATC, 110, \$650. Chapman, 294-0437 after 5.

'83 KAWASAKI 750cc motorcycle, 4-cyl., chrome & black, 860 miles. Ortega, 296-4714.

HOT ROD, 1926 T roadster, chrome V8 Chevy, yellow, discs, street & show, \$10,500. Marchi, 299-8516.

'82 YZ80 dirt bike, \$600. Smith, 836-1676 after 5.

'74 AUDI Fox, \$1295 OBO. Garcia, 299-3937.

SAILBOAT, 16' Hobie Cat catamaran, Carumba pkg., \$3300. Shenk, 296-6015.

'83 HONDA XL600R, dual purpose motorcycle, 1500 miles, \$1700. Rasmussen, 266-1097.

'77 TRIUMPH Spitfire convert., low miles, FM stereo cassette, maroon, \$3300. Zurawski, 268-9511 after 5.

'79 YAMAHA XS-650, special full fairing, AM/FM, 5K miles, \$1250 or trade. Marquez, 836-7115.

'78 BUICK Opel, 43K miles, new brakes, muffler, Diehard battery; 4-spd., 4-cyl., \$2600 OBO. Hesch, 299-1844.

'69 SUZUKI 350 motorcycle, windshield, saddlebags, crash bar, 22K miles, helmets. Shapiro, 821-2936.

BIKES: banana seat 20" girl's, \$25; boy's 26" SGL, speed improved by 16-yr.-old son, \$35. Anthes, 884-3644.

'74 DATSUN pickup w/camper shell, \$1200. Morrison, 298-0347.

BICYCLE, 24" Centurion, touring, w/handlebar bag, \$200. Rodriguez, 296-3277.

'75 PONTIAC LeMans GT. DeReu, 821-6063.

'67 F-250 pickup w/8' Aristocrat cab-over camper, orig. owner, \$4500. Johnson, 298-1011.

1940 BUICK Special, straight 8 engine, new battery, \$2950 OBO. Chavez, 831-9591.

'83 TOYOTA Tercel 4 x 4, stereo, PS, AC, silver, 4-yr. warranty, \$8500. Johnson, 255-3913.

'83 FORD Ranger pickup w/full gages, accent stripes, chrome rails, \$500 under book. Williams, 299-8986 after April 15.

'81 SUZUKI 850, windjammer plus extras, \$2300 OBO. Schluter, 299-2968 after 5.

'69 CADILLAC, Eldorado, 76K miles. West, 255-5855.

'75 FORD F-100 pickup, 6-cyl., 3-spd.; '74 Dodge clubcab pickup, 4 x 4, AT. McCormick, 821-2092.

'72 CHEV. wagon, 4-dr., 3 seats, AC, AT, roof rack, \$1200. Pierce, 883-2719.

'82 SUZUKI 750TZ, purchased 10/83, 280 miles, Slipstream fairing, bars, pegs, \$2375. Stephenson, 299-3914.

'81 FORD super-cab F150, AT, PS, PB, AC, & cruise, paired w/17' 5th wheel camp trailer. Beasley, 298-3398.

'77 SUZUKI GS 750, \$600; Dune Buggy, VW powered, tubular, needs clutch & seats, \$750. Spencer, 296-6250.

BICYCLE, women's 10-spd. Murray, \$60. Binder, 299-2937.

'73 VW bug, \$1500 OBO. Herrera, 281-5308 after 5.

'76 DODGE Colt, 85K miles, \$1000. Smith, 293-0216.

'72 PORSCHE 914, 1.7 liter engine, 5-spd. trans., \$2495. Burchard, 294-3557.

'77 OLDS Cutlass S231 cu. in. V6, AC, PS, PB, low miles, one owner. Ran-

dall, 821-0388.

'48 JEEP, Willys CJ2A Ford V8, roll bar, skid plate, tow bar, \$975. Crompton, 299-5569.

'70 VW bug, \$650. Russell, 255-9979.

'68 VW, red w/white interior, make good deal for quick cash. Brown, 873-0401.

OLD CARS: 1923-28 Chevys & parts; 1924 Studebaker; 1935-48 bodies: Oldsmobile, Buick, Dodge, Chevy, Chrysler; 3 1950-52 Pontiacs, 6 1961-64 Corvairs. Mayer, 294-3368.

'77 JEEP Cherokee, AM/FM, auto., PS, PB, CC, Quadra-Trac, new tires & brakes, HD suspension, roof rack, \$2850. Shunny, 265-1620.

'82 OLDS Cutlass, 4-dr., 25K miles, V8, AC, PS, PB, cassette, cruise control, tilt wheel, split bench, \$7900. Champion, 299-0163.

REAL ESTATE

7¾% assumable loan, 4-yr.-old house, 3-bdrm., 2 bath, landscaped, 1475 sq. ft., West side. Smith, 836-1676.

WINROCK Village condo, 1-bdr., 1st floor, overlooks pool, new paint, assumable w/escalation, \$15K down. Sinclair, 884-7096.

HATCH property: two ½-acre lots, one w/2-bdr. house, one w/MH hook-up; trades considered. Miles, 293-4386.

20 ACRES, 660' frontage on 472, 2.5 miles east of 344, view, \$30K. Kureczko, 298-1577.

MH, 14 x 80", in 4-Hills, 3-bdr., 2 bath. Blair, 298-0896.

CANDLELIGHT house near Eldorado, 4-bdr., 1¾ bath, 2040 sq. ft., LR w/cathedral ceiling, custom stone fp w/heatilator, orig. owner. Iman, 299-6500.

1.9 ACRES, 9 miles south of Tijeras on Hwy. 14 just south of Oak Flats Picnic Grounds, \$15K. Horton, 884-8989.

LARGE 2-bdr. deluxe townhouse, NE, will consider trades. Dean, 299-3281.

WANTED

SMALL house or 1-bdr. apt., visiting professor for 3 months, starting late May. K.H. Kim, (919) 489-9747 (night), 683-6451 (day).

USED kitchen cupboards, both overhead & counter-top, wood construction only. Ganzerla, 265-2705.

PENNY stock club members wanted, join for under \$500, \$25/mo.; metal dbl. bed frame w/casters. Schubeck, 821-3133.

TRAILER, 12', purchase or extended rental period this summer. Schwoebel, 298-4295.

OPAQUE projector for home art work, reasonable price & condition. Kureczko, 298-1577.

TELESCOPING tower for ham antenna, 35-50'. Moore, 294-5646.

ROOMMATE, 3-bdr., 1½ bath house near Lomas & Juan Tabo, \$187.50/mo. plus ½ utilities. Eley, 296-3185.

CHILD'S set of golf clubs; cross-country boots, size child 3-4; wood desk. Helmick, 292-3718.

SET of bolt-on jacks, 3 or 4, or 3 port. jacks for 8' camper. McComas, 892-6607.

Kids' Egg Roll Tomorrow at 10; Casino Night Tomorrow at 6 p.m.

TONIGHT, it's western barbequed beef ribs on the buffet spread for \$6.25, or try selections from the Club's regular menu. Karen Edwards instructs free country western dance lessons from 7:30 until 8:30 when Deputy Dan takes over the bandstand. The dining room is open from 6 to 9 p.m., and Happy Hour prices are in effect from 4:30 until 8:30.

TOMORROW is a big day for kids, adults, and the Coronado Club. At 10 a.m., the doors open to welcome the little ones age 6 and under to the annual Children's Easter Egg Roll. By special arrangement with the Club's board of directors, the Easter bunny will have been there early and hidden a great number and variety of Easter eggs including a few gold ones good for special prizes for the kids that find them. There will be egg roll competitions and prizes in various age groups. Cartoons follow. Admission is free to members and families.

TOMORROW NIGHT, the Club becomes Las Vegas on the Rio Grande for Casino Night. You trade \$1 in real money (guests pay \$2) for admission and a bundle of play money to wager at blackjack, poker, craps, chuckaluck, and the wheel of fortune. There'll be door prizes given away each hour, and the big news is this — winner of the grand drawing will receive a free weekend for two in Las Vegas. The prize includes airfare and two nights lodging at the Hacienda. Cocktail hour starts at 6; casino action starts at 7:30. Elton Travis and the Westernaires play for dancing from 8:30 until 12:30. Green chile, posole, and French dip sandwiches will be available.

THE MINI-LUAU scheduled Thursday, April 19, brings a national touring band and dance troupe to the Coronado Club for an evening of dancing and extraordinary entertainment — hula dancers, flame dancers, Hawaiian singers, with time out for an outstanding fresh seafood Polynesian buffet. The band is called "Pearls of the Pacific" and it's built a top-notch reputation at clubs from coast to coast. Dinner hours are from 6 until 8:30. The music starts at 7:30. Tickets are \$11.95 each. Reservations are a good idea for this one, call 265-6791.

ON FRIDAY, April 20, the Isleta Poor Boys return to the Club bandstand to play the best in country and western dance music. The kitchen staff offers an outstanding smorgasbord buffet for \$9.95. Happy Hour bar prices are in effect from 4:30 until 8:30 when the music starts.

ON EASTER SUNDAY, April 22, mark the occasion with a champagne brunch at the Club. The menu includes ham mimosa, carved roast beef, chicken legs with yogurt sauce, eggs scrambled with cream cheese,

assorted salads and vegetables, blueberry muffins, and desserts — chocolate, vanilla, and strawberry mousse. Pianist Jim Trost will play background music. Dining hours are from 11 a.m. until 3 p.m. Cost is \$9.95 for adults, \$5.25 for children under 12. Call 265-6791 for reservations.

A FINANCIAL SEMINAR, a Club-sponsored discussion of mutual funds, will be presented Tuesday, April 24, starting at 7 p.m. in the ballroom. Speakers are Charles Justus III and Sandra Corless of American First Financial, a financial planning and consulting firm. There is no admission charge.

CORONADO CLUB POOL AND PATIO season tickets go on sale Tuesday, April 17, at 8 a.m. at the Club office. Prices — \$12 for a single, \$24 for a couple, and \$35 for a family of three or more — are lower than last year's prices. Buy your tickets early and avoid standing in line at swim lesson registration (you must have season pool and patio tickets to enroll in swim classes). Swimming instruction registration is scheduled Saturday, May 5, from 9 a.m. until noon. Costs are \$12.50 for swim lessons and \$17.50 for adult and water safety classes. The Club's twin pools will open on the start of Memorial Day weekend, Friday, May 25. The gala grand opening party, with everyone invited, is scheduled for Monday, May 31.

ORGANIZING for another season is the Coronado Club swim team for youngsters through 18 interested in competitive swimming. The group meets for practice from 7:45 to 9 a.m. Mondays through Fridays during the summer. If you'd like your child to learn competitive swim strokes and get great exercise, social interaction, and friendly competition, call 4-8486. There are no tryouts, the Club takes all comers.

TENNIS — Four of the nicest tennis courts in the city are in the Club's patio area. The Coronado Tennis Club is accepting new memberships. Annual dues are \$40 for a family, \$32 for a single. Call 4-8486 for details.

TRAVEL — The Club has two travel packages with seats available — New Orleans International Exposition May 25-29 for \$562 and Honolulu on May 12-19 starting at \$485 with extra options available. Also, travel director Charlie Clendenin has a special nine-day tour to Fiji and the South Pacific for \$825 leaving June 30.

THE CORONADO CLUB WOLFPACK meets Tuesday, April 17, at 7 p.m. in the El Dorado room for its annual business meeting and election of new officers. Chairman Bill Minzer (ret.) will present the annual report. Refreshments will be served.

Answer to the Antojitos Riddle

Some are true acronyms — initials pronounced as words. The others are not; strictly speaking, they're initialisms — pronounced as individual letters.



"PEARLS OF THE PACIFIC," a national touring show band and dance troupe, appears at the Coronado Club for a Mini-Luau on Thursday, April 19. The group is headed by Kaulu, above, and features the exotic Mona as lead dancer. The Club kitchen staff is preparing an outstanding fresh seafood Polynesian buffet for the event. Tickets are \$11.95. Call 265-6791 for reservations.

