

Mock Verification Inspections Examine Security Risks

The Soviet peered at the curious piece of machinery that sat on the table under its white shroud. "Shto eta?" he asked. The five Sandia scientists in the room already knew what he was asking, even before the translator reiterated in English: "What's that?"

For the past several hours, 10 Soviet scientists had been asking other questions, examining the Sandia facility's many warehouses, laboratories, and test facilities — all containing US strategic information. In all, 15 US and Soviet scientists, 4 Sandia managers, 10 escorts, 4 translators, 15 security guards, and 2 US congressmen crowded into the small work area and looked on.

This fictional inspection of a Sandia facility never occurred, but if it had, it would have been a

"We are trying to understand what information is at risk if DOE weapon-complex facilities are ever required to host an on-site inspection."

security and logistics nightmare. To understand what a real-life inspection like this would mean to the Labs, a team of Sandians is taking part in practice inspections to determine DOE's vulnerability in the event of a treaty-imposed short-notice site inspection.

Since before the Intermediate-Range Nuclear Forces (INF) treaty was ratified between the US and Soviet Union in June 1988, the Departments of Energy and Defense have been concerned about the possibility of on-site inspections by Soviet experts. Under this treaty, the US is required to host inspections by Soviets up to 15 times per year at the Soviets' request. The inspected facilities are chosen by the Soviets from a list of some 30 US sites deemed as missile operating bases and support facilities.

Forthcoming strategic nuclear arms-control agreements under negotiation may include short-notice inspections of DOE and DoD facilities not covered in the INF treaty, putting other classified information and sensitive data at risk.

John Taylor of Verification Systems and Technology Div. I 9241 is one of several Sandians cur-



JOHN TAYLOR, Verification Systems and Technology Division I 9241, overlooks a scale model of an INF-treaty verification facility operated by the US in Votkinsk, USSR. This model, along with others located in Bldg. 855, helps US government officials make decisions regarding verification of treaty agreements.

rently working on susceptibility issues for DOE. He says practice inspections of various DOE facilities have been helpful in determining the security risks of on-site inspections.

"We are trying to understand what information is at risk if DOE weapon-complex facilities are ever required to host an on-site inspection," says John. "We also have to account for the logistics of an inspection — how much money it costs, how productivity will be affected, how many hours of advance notice we will have to prepare — people are often surprised at what's involved."

Mock Inspections Informative

Since 1986 the group has conducted a number of mock inspections at several DOE, DoD, and commercial facilities, including the Redstone Arsenal in Huntsville, Ala.; the Martin-Marietta plant in Baltimore; Sandia's TOSI facility; and several weapon production sites. At one site, Russian speakers even played the role of Soviet experts, and the inspection was conducted using translators. The group has found the most difficult aspect of such inspections to be the logistics, especially the number of people who actually tour a facility, John says.

"Treaty-imposed inspections usually allow for 10 foreign visitors, but when you add the guards, escorts, and VIPs — who want to come along because it's the only time Soviets will be in their congressional district — the number can reach 50 or 60," says John.

He says it's often difficult to fit a crowd of 50 people into a space that normally holds only manufacturing equipment or laboratory experiments. It's also difficult to keep track of the actions of
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LAB NEWS

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Sandian Serves Deaf Community

Labs' Technical Expertise Helps State's Hearing-Impaired

"New Mexico Relay, this is Operator 23, go ahead," says Operator 23.

"Yes, I'd like to call Norma Smith, please. Her number is 294-8681," says a male voice on the other end. Operator 23 dials the number.

A few seconds later, a readout on Operator 23's computer screen answers in bright green text: "THIS IS NORMA GA"

Operator 23 voices the message to the male caller: "This is Norma, go ahead."

"Norma, this is Jim. Would you like to go to a movie tonight at 7:30?" he asks.

Operator 23 types into the keyboard:

"NORMA THIS IS JIM WOULD YOU LIKE TO GO TO A MOVIE TONIGHT AT 7:30 Q GA"

Norma's answer flashes across the screen: "YES PICK ME UP SK"

"Yes, pick me up. Bye," says 23 to Jim.

"See you then. Bye," answers Jim.

23 types the message "SEE YOU THEN SKSK"

Without Operator 23, Jim and Norma couldn't speak to each other on the phone. Norma's deaf. She uses a device called a Telecommunications

(Continued on Page Five)

Wanted: Retirees to Help Educate Youth

A special effort is under way to see if Sandia's retirees are interested in participating in Education Outreach programs. The purpose of such programs is to inspire pre-college youth to feel more comfortable with and to pursue careers in the fields of science, mathematics, and engineering.

"Among our 3,000 or so retirees, there is a wealth of technical knowledge and experience that could be utilized to help students and teachers," says John Otts (35), who heads the K-12 portion of Sandia's Education Outreach Division.

Examples of Education Outreach programs are tutoring, consulting with teachers in the community, providing technical or clerical support, or giving lectures and demonstrations. Retirees are also being asked to submit any suggestions they may have for outreach activities.

Currently, the K-12 program supports a variety of volunteer as well as funded projects for teachers and students. Yet the program is a long way from meeting all the demands and needs of public and Native American schools, says John.

To get input from retirees, John is proposing several brainstorming sessions this fall. Those interested are invited to submit written suggestions or to call John on 844-2198. Livermore-area retirees can contact Karen Scott (8524) on 294-3760.



RELAY COORDINATOR Becky Aranda and Mike Skroch (5176) work to get the new relay system up and running. Incoming voice calls are taken on the headset or on the phone, and data messages from telecommunication devices for the deaf (TDDs) appear on the PC screen in front of Becky. Relay network operators repeat both voice and data messages word for word, and they even include background sounds on voice calls, such as laughter.

This & That

Wrong About US Students? — A popular notion these days is that US students don't have enough interest in their studies, especially in math and science. But recent experience at an Albuquerque high school may indicate otherwise. Thirty-seven students at Sandia High School signed up for an enriched physics class that meets two days a week during regular school hours and for an hour and a half one evening. This class is taught by three Sandia volunteers — Dennis Miyoshi (5240), Philip Stanton (1534), and Wolfgang Wawersik (6232).

Dennis also directs the Monday Night Tutoring Program at Sandia High, which provides students with individualized tutoring in various subjects. Dennis says many Sandians volunteer their time for this program, and that about 15 tutors out of 20 who participated on Oct. 8 were Sandians. Kathleen Church, assistant principal at Sandia High, recently sent a letter to the LAB NEWS thanking all Sandia volunteer instructors and tutors. "This program and the volunteers have contributed a special boost for many individual students," she says. "From Sandia High School to Sandia Laboratories, a very big THANK YOU!"

* * *

Directors Are Worth a Million — In last issue's story about changing signature levels and spending limits, Sandia directors weren't listed in the chart showing new standard acquisition limits. Directors may now authorize expenditures up to \$1 million, twice the previous limit. Oops!

* * *

Team Picture Policy — We all have to make occasional decisions that we wish we didn't have to make. That's exactly what I did recently when I determined that budget and space limitations will no longer permit us to publish winning sports team pictures in the LAB NEWS. There are so many company-sponsored sports leagues these days that we can't publish all winning team photos, so the only fair policy is to not publish any. I hope everyone will be a good sport about the policy, especially those big guys on the football teams.

* * *

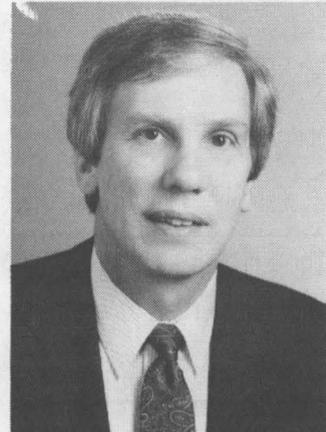
Taking Everyone's Advice — All writers apparently get lots of advice. LAB NEWS writer Charles Shirley came across this gem in a preface to the second edition of *Oh! Pascal*, a text used in a Sandia computer class. The co-author, Doug Cooper, writes, "I've received much advice on *Oh! Pascal!*, including suggestions that it be longer, shorter, harder, easier, funnier yet more serious, with fewer and additional example programs, and problems that are simpler and more difficult to do, as well as more but less mathematically oriented. I'm pleased to report that all of these comments were found to be useful, and are incorporated in the second edition."

* * *

Gritty Advice — Deciding whether or not to take advice sometimes depends on how it's delivered. I recall ordering breakfast in a Texas restaurant several years back and requesting that hash browns be substituted for the standard grits that are served with breakfast in some parts of the country. The elderly waitress looked at me like I'd just spit on Sam Houston's grave, and sternly said, "You eat them grits, boy. They're good for you." I ate 'em. ●LP

Paul Robinson Named Director of Systems Analysis

C. Paul Robinson, currently chief negotiator and head of the US delegation to the Nuclear Testing Talks with the Soviet Union, has been named Director of Systems Analysis 9400. The new directorate has been created from Systems Analysis Dept. 9010 and its divisions, which currently per-



C. PAUL ROBINSON

form US strategic and arms-control analysis. He will join the Labs later this month.

"I'm happy to be a part of Sandia's capabilities," Paul says. "I'm particularly excited about being able to work with Sandia systems analysts to think through, in considerable depth, new direc-

tions in defense and other areas that would make the most sense for the US."

Paul received a PhD in Physics from Florida State University in 1967, joined Los Alamos National Laboratory as a staff member, and soon served as chief test operator at the Nevada Test Site. Between 1971 and 1980, Paul led laser research activities in chemical and explosive-driven lasers and created and led the Applied Photochemistry Division at LANL.

In 1980, he was named principal associate director responsible for LANL's national security programs, including nuclear weapon R&D and testing, stockpile maintenance, strategic defense initiatives, inertial fusion, nuclear materials supply and safeguards, advanced conventional munitions, and arms-control and verification activities. In 1985 he became senior vice president and principal scientist at Ebasco Services, Inc., a division of ENSERCH Corporation, an energy, engineering, and construction firm.

Former President Ronald Reagan appointed Paul to serve as US ambassador to the Nuclear Testing Talks in Geneva, Switzerland, in February, 1988. Paul led the negotiation of two major agreements between the US and Soviet Union: the new protocols to the Threshold Test Ban Treaty and the Peaceful Nuclear Explosions Treaty, both signed by President Bush and Soviet President Gorbachev on June 1, 1990, during the Washington summit. On Sept. 25, the US Senate voted unanimously to ratify the two treaties and protocols.

Says Roger Hagenbruber, Vice President of Exploratory Systems 9000, of the appointment: "Paul has long believed that incisive analysis and thoughtful studies hold the key to anticipating national needs and providing leadership in meeting them," he says. "The Sandia Management Council's strategic planning efforts strongly echo that view as essential in guiding us forward in our future of certain change."

"Paul's many friends at Sandia welcome him as a person who not only shares our values, but one who strengthens our ability to provide exceptional service to the nation," says Roger. "Putting Paul together with the talented group of analysts in Organization 9010 and the 'thinkers' everywhere at Sandia should be a dynamite combination for stimulating creative thinking and insight for all of us."

Paul, who will live in Sandia Heights, looks forward to bicycling and skiing in New Mexico. He and his wife Suzanne have two adult children.

Welcome

Albuquerque — Aida Garcia (21-1), Gertrude Gutierrez (3141), Sharon Liggins (3426), Joanne Robertson (22-2), Dolores Sena (3426); **Other New Mexico** — Cynthia Blain (3426), Robert Knowlton (3233), Lonnie Martin (3212), Virginia Schroeder (3426), Lillie Taylor (3211).

Elsewhere: **Maine** — Anne Cosbey (3734); **Maryland** — Mark Grubelich (2512); **New York** — Bruce Hendrickson (1422); **Utah** — Daren Davidson (9145).

Congratulations

To Annette and Steve (9013) Hatch, a son, Craig Lawrence, Sept. 24.

To Brenda Langkopf (6313) and John McBrayer (2553), a daughter, Kepra Lang McBrayer, Sept. 30.

To Rosemary and Bill (9015) Cordwell, a daughter, Kristen Rose, Oct. 1.

Beef on the Hoof?



The average supermarket loses a steak a day from the meat case, says Knogo Corp., a Hauppauge, N.Y., maker of anti-theft systems. Christopher Winans, *Wall Street Journal*



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Climate Watch

Sandia Scientists Propose Experiments To Study and Predict Effects of Global Warming

There are many things in nature that scientists don't agree on. The extinction of the dinosaurs, the formation of the universe, the origin of life, and other issues give scientists plenty of fodder for dispute.

But there is one assertion about nature that a majority of present-day scientists endorse to a greater or lesser degree — the notion that the Earth will eventually get warmer as a result of higher concentrations of carbon dioxide in the atmosphere. What they don't agree on is how much warming will occur, when it will occur, how it will be distributed around the globe, or how it will affect climate.

Though carbon dioxide is naturally produced by living organisms during respiration, humans have elevated carbon dioxide levels beyond that inherent in nature. The chief source of man-made carbon dioxide is the burning of fossil fuels. Forest fires, including the deliberate burning of tropical rain forests, also spew carbon dioxide into the atmosphere.

"We know that if we double the current amount of carbon dioxide in the atmosphere, which is

"Water vapor is the major greenhouse gas and also is key to cloud formation."

likely to happen sometime in the 21st century, the atmosphere will absorb four watts per square meter more energy than now," says John Vitko (8300-A), the project manager in charge of global climate change research at Sandia. "What is not known is how much temperatures or ocean levels will rise or how regional rainfall will be affected."

The overall effect depends in a complicated way on the interaction of a variety of variables, such as greenhouse gases, cloud type and distribution, water vapor, aerosols, and wind circulation, explains John. For example, clouds can cause warming or cooling. They can block the sun's radiation from reaching the Earth, resulting in overall cooling. Or they can trap infrared radiation that would otherwise be radiated back into space so that it never leaves the Earth's atmosphere, resulting in overall warming.



CLOUDS AND CLIMATE are the focus of research being conducted at Sandia, Livermore by Ray Cline (left, 8210) and John Vitko (8300-A). Clouds can have either a warming or cooling effect on climate. They can block the sun's radiation from reaching the Earth, resulting in overall cooling, or they can trap infrared radiation, resulting in overall warming. (Photo by Lynda Hadley, 8285)

Such warming, known as the greenhouse effect, may already be taking place. Analysis of temperature measurements taken over the past century indicates that the earth has warmed about 1 degree F, but it is not clear whether this warming is due to greenhouse effects or other causes, says John.

Project Will Look at Climate Change

As the federal agency responsible for understanding the impacts of energy-related emissions on the atmosphere, DOE plays an integral role in the multiagency US Global Change Research Program. DOE is helping to lay the groundwork for a comprehensive project that will measure the effects of cloud cover, water vapor, aerosols, and greenhouse gases on climate.

DOE Planning Two Studies

The DOE is planning two programs to study global climate change.

The first is called ARM (Atmospheric Radiation Measurement), a program to develop better climate models by achieving a more detailed physical understanding of atmospheric processes, especially the interaction of solar radiation with clouds. The DOE is currently reviewing potential pilot sites for the experiment, in which scientific instruments will be used to make climate measurements. The central part of the site will be intensively instrumented and will be 25 miles in diameter, a size chosen to match the "footprint" of some satellite measurements. Many laboratories and universities will participate.

The other DOE program is called CHAMMP (Computer Hardware, Advanced Mathematics, and Model Physics). Its goal is to speed up climate calculations by a factor of 10,000. This increase in throughput could be used to reduce the size of the cells in the grid

or increase the complexity of the models. This will be accomplished with new, more efficient algorithms as well as parallel-processing supercomputer technology.

Computational scientist Ray Cline (8210), who is working with John, explains: "We are studying parallel processing in order to increase the performance of a chemistry climate code in collaboration with Lawrence Livermore National Laboratory. LLNL's Atmospheric and Geophysical Sciences Division has developed an atmospheric chemistry model, and we're working with them to provide the parallel processing and the computational methods to make the code run faster. Once we have a faster code, we would like to put more detailed physics into the code or reduce the size of the cells in the grid."

This collaboration also includes Yale University and Scientific Computer Associates, a private company, along with Sandians from organizations 1421, 8233, and 8210.



**SANDIA
LIVERMORE NEWS**

Meanwhile, John and other researchers at Sandia are proposing and designing instruments to help collect data for the project.

Global warming calculations are based on so-called General Circulation Models (GCMs), which currently divide the Earth's atmosphere into individual cells the size of a large state — about 300 miles on a side — and about a mile high. But the calculations are extremely complicated. Even the best existing climate models are not detailed enough to accurately predict regional climate change.

"Existing climate models are reasonably good at calculating some globally averaged features," notes John. "But it's not possible to do calculations on a regional basis, where, for example, a farmer in Iowa wants to know if there will be enough rain for his crops during the summer."

(Continued on Page Six)

Welcome

Livermore — Bettilou Davis (8362), Scott Keith (8513), Carmella Orham (8312), Bill Replogle (8442), Catherine Schell (8524); *Other California* — Cynthia Asprey (8512), Dean Davis (8284), Robert Ernesto (8513), Catherine Fernandes (8162), Neal Fornaciari (8362), Robert Hillaire (8154), Randy Jahoda (8536), Victoria Levin (8541), John Nash (8454), Phillip Paul (8351), William Richmond (8513), Jimmy Scott (8513), Rodney Sepulveda (8362), Karen Simpkins (8154), Marta Vera (8524).

Elsewhere: *Oregon* — Jeffrey Blank (8154), Joe Scallorn (8513); *New York* — Andrew Hazelton (8284); *Utah* — Del Hatch (8134); *Washington* — Edwin Bochenski (8353).

Goal is US Leadership

Former Director Heads SEMATECH

Bill Spencer, former Director of Systems Development and Microelectronics at Sandia, has been named president and chief executive officer of SEMATECH, a non-profit consortium of private companies and government groups whose goal is to restore US leadership in semiconductor manufacturing.



BILL SPENCER

He replaces the late Robert Noyce, who headed the consortium from July 1988 to June 1990. Spencer's new appointment is effective Nov. 1.

"We are very pleased that Bill has been appointed to this position," says Harry Saxton, Director of Semiconductor Components 2100, one of the Sandia groups working with SEMATECH. "He is an excellent choice. He has first-hand experience both in the government and private sectors, and we are looking forward to working with him."

Sandia has several cooperative projects with SEMATECH. A major agreement between the two calls for the Labs to develop a national center here. Called SETEC (Semiconductor Equipment Technology Center), its mission is to help companies that manufacture IC processing equipment to improve the reliability of existing equipment and develop advanced equipment and processing techniques.

From 1978 to 1981, Spencer was Director of Systems Development at Sandia, Livermore, and from 1973 to 1978, he was Director of Microelectronics at Sandia, Albuquerque. He was also a research professor of medicine at UNM. He began his career in 1959 at Bell Laboratories.

Since 1981, Spencer has worked for Xerox Corp. At the time of his appointment as CEO of SEMATECH, announced Oct. 3, he was group vice president and senior technical officer for Xerox Corp.

SEMATECH member firms include AT&T, Advanced Micro Devices, DEC, Harris Corp., Hewlett-Packard, IBM, Intel, LSI Logic, Micron Technology, Motorola, NCR, National Semiconductor, Rockwell International, and Texas Instruments. The federal government participates in SEMATECH through the Defense Advanced Research Projects Agency (DARPA) in DoD.

CALLED TO DUTY — Sam Narrow (left, 3212), the first Sandian called to active duty in the Persian Gulf crisis, completes the necessary paperwork with help from Janey Carroll (3543). Sam is in the Army Reserve and is a health physicist in Area IV. Several more Sandians in Albuquerque and Livermore have since been called to duty.



(Continued from Page One)

Verification Inspections

individuals in a crowd that large.

"All a visitor has to do is run a finger along some piece of equipment and he or she has a material sample of what you're doing," John says. "Also, it's important to plan routes ahead of time when travelling through classified areas with visitors because they'll see everything along the way. What about housing, feeding, and safety issues for foreign visitors? You have to consider everything."

Inspection Readiness

Although the purpose of real on-site inspections is to give the Soviets confidence that the US is complying with treaty agreements, there is a lot of classified information within DOE sites that Soviet visitors do not need to know, and it is in DOE's charter to protect that information. John says that the possibility of short-notice inspections might require DOE to adjust its daily approach to security at some facilities.

"Under the INF treaty, the facility being inspected gets nine-hours notice. With other agreements, the time a site has to prepare may be more or less," he says. "That amount of time determines a site's readiness on a day-to-day basis. If the Soviets say they want an inspection of a facility in nine hours, you must be ready to have sensitive information protected by then."

Take Note

Sandia is hosting a DOE/HQ-sponsored conference, "Concurrent Engineering and the NDE [nondestructive evaluation] Role," Oct. 29 through Nov. 1 in Albuquerque. Oct. 29 and 30 activities will be unclassified; only Q-cleared individuals may attend the workshops and their recap on Oct. 31 and Nov. 1. The conference is meant to meet the needs of the weapon designer and benefit those who support the designer from the material science, production process development, and inspection departments. Ruth David (7550), Dick Damerow (2564), and Graham Thomas (8316) are members of the conference planning committee. Contact Ruth David on 4-2239 for more information.

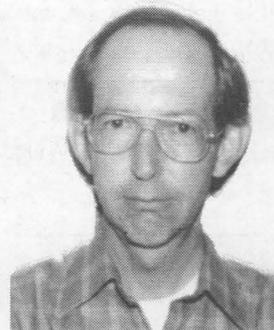
A joint meeting of the Electrical/Systems/Nuclear/MHD (Magnetohydrodynamic) Working Groups, sponsored by the Interagency Advanced Power Group, will be held Oct. 30 and Nov. 1 at Sandia. The meeting is for government technical managers responsible for power generation, distribution, and control. Army, Air Force, Navy, NASA, and DOE personnel will communicate innovations in this area and learn about Sandia's capabilities. For information, contact Frank Thome on 4-5637.

Some possibilities for protecting information are shrouding equipment inside cleared areas or putting away equipment and materials at the end of every employee's shift. John says information about DOE procedures and capabilities can be just as sensitive as some classified information about specific equipment or materials.

Other Sandians who have helped with the inspections include Pauline Dobranich (9241), Ed Mauldin (7231), and several people in Video Production and Film Processing Div. 3153 who have videotaped mock inspections. John says most decision-makers have never seen an actual on-site inspection, and the tapes are used to educate them about the logistics of hosting real-life inspections.

"There are people in government who approve and disapprove of on-site inspections. Either way, it is important to give them an idea of what it really takes to host one," he says. **•JG**

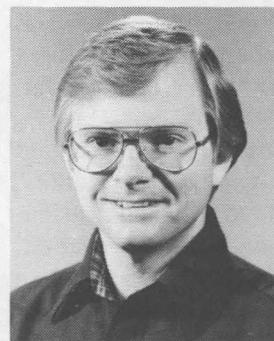
Employee Deaths



John Freeman of Plasma Theory Div. 1241 died Sept. 26 in a car accident.

He was 47 years old. John was a division supervisor and had been at Sandia since 1965.

He is survived by his wife, daughter, and son.



Steve Falacy of Tube Development Division 2564 died Oct. 6 in a hot-air balloon accident.

He was 46 years old. Steve was a Senior Technical Aide and had been at Sandia since 1967.

Survivors include his wife and three daughters.

Retiree Deaths

- Doris Welch (82).....Sept. 1
- Wamon Cope (76).....Sept. 2
- Stanley McCammon (89).....Sept. 6
- Dorothy Parker (77).....Sept. 14
- Isidoro Apodaca (86).....Sept. 19
- Joe Chavez (76).....Sept. 23
- William Stinnett (70).....Sept. 26
- Donald Papineau (56).....Sept. 27
- Manuel Romero (81).....Sept. 27
- Margaret Nielsen (72).....Sept. 28

Sympathy

To Leona Dennis (5113) on the death of her father in Roswell, Sept. 21.

To Jan Layne (2340) on the death of her father in Tulsa, Okla., Oct. 3.

To Erlinda (7853) and Tim (9211) Taylor on the death of her mother and his mother-in-law in Albuquerque, Oct. 3.

To Gene Hauser (5144) on the death of his mother-in-law in Ladysmith, Wisc., Oct. 5.

To Elizabeth Scott-Patterson (7212) on the death of her father in Buffalo, N.Y., Oct. 6.





THE BRITISH ARE COMING — No, they were already here in early October to produce a film on treaty verification using Sandia technology. Journalists from the BBC filmed a tank being equipped with a reflective tag that identifies the vehicle, similar to the way a fingerprint identifies a human being. The tag consists of tiny, crystalline particles randomly arranged in a unique pattern that can be illuminated and read with a special set of lights and a video camera. Applying a tag to the side of the tank's gun turret is Sandian Don Bauder (9242), while Keith Tolk (far left, 9242) looks on. Standing in the foreground on top of the tank is BBC producer Peter Ceresole. The film segment will be part of a "Horizon" program to be broadcast in Britain in December.

(Continued from Page One)

Hearing-Impaired

Device for the Deaf (TDD), which looks like a tiny FAX machine. It consists of a small keyboard, a 40-character LED readout screen, and an acoustic coupler for a phone, similar to a modem.

When a speech- or hearing-impaired person wants to communicate with another such person, the caller puts a phone onto the TDD and starts typing. The message is transmitted the same way computer data is transmitted using modems. The person on the other end reads the data message and responds on his or her own TDD keyboard. Special codes such as GA (go ahead), Q (question), and SK (stop keying or "goodbye") make keying messages quicker and easier. There are no punctuation marks, only letters and spaces.

An Engineer's Intrigue

TDD's are useful when a deaf person wants to call someone else with a TDD, but useless for communicating with non-deaf people, who are the majority. To boost the deaf community's powers of communication, many states have installed phone relay systems using operators to translate data messages from TDDs to regular voice messages. Until last May, a truly modern phone relay network for the hearing-impaired was just a dream in New Mexico.

The New Mexico Association for the Deaf (NMAD) had the funds necessary to set up a phone relay system for the deaf in New Mexico, but did not have the necessary technical expertise in telecommunications. They turned to Sandia's Mike Skroch (5176), who has long been involved with the deaf community.

Mike was intrigued. The relay network was a good systems problem, he says, and being an engineer, he couldn't help but tackle it head on. In May he joined NMAD's Relay Advisory Council. The council set an Oct. 1 deadline to begin operation of a relay system that would become the measuring post for other states' networks.

US West provided the money, a consulting firm called Independent Living Resource Center

took over the administration, and the State Corporation Commissioner gave it his blessing. Five months later, their dream is a working reality. As of Oct. 1, the New Mexico hearing-impaired can call up anyone in New Mexico who has a phone.

"I'm not a crusader for a cause or anything," says Mike. "People need help, and everyone should help others when they can. This was a nice systems problem, and it was the kind of project I like because, when you're done, it's something you can see and know you made a difference."

Difficult Task

Mike's first task was to choose the equipment that would make for the most effective phone relay system. He used his vacation time to travel to Connecticut and Phoenix to see their relay systems in

Speech- or Hearing-Impaired Dialing? Here's How

New Mexico Relay Network users calling from a telecommunications device for the deaf (TDD) dial 275-7333 (from the Albuquerque area) or 1-800-447-9913 (from outside Albuquerque). Voice callers dialing TDD users call 275-2444 (from the Albuquerque area) or 1-800-242-7002 (from outside Albuquerque). The network is operational 24 hours a day, seven days a week. Call 505-275-8811 with questions about either voice or TDD calling.

person. He called other relay networks in Minnesota, Washington State, and Kansas City. When he finished gathering information, he started ordering equipment for what he believes is now one of the best phone relay systems in the nation.

One of the biggest problems was writing the specifications for the PBX system, he says. A relay network has special requirements — four phone numbers, for instance. Two data lines are used for hooking up to TDDs, and two voice lines are needed for talking to hearing people. Each type of line, voice or data, needs both local and long-distance lines.

"We ordered the best from all the different

Fun & Games

Basketball — The SERP Men's and Women's Basketball Association will hold a meeting Oct. 24 at the Coronado Club, Conquistador Rm., at 5 p.m. Interested coaches and players are invited to attend. The tentative season starting date is Nov. 26, with an exhibition game for each team between Nov. 19 and 23. Contact the SERP office on 4-8486 or 4-2641 for more information. A list of players looking for a team is being compiled.

Ski Swap — The Sandia Peak Ski Patrol's 24th annual Ski Swap will be held Nov. 2 through 4 in the main exhibit hall at the State Fairgrounds. The swap offers skis, boots, poles, and clothing for both downhill and cross-country skiers. Ski patrollers will be on hand to offer advice on equipment. If you have equipment to sell, register it Friday, Nov. 2, between 11 a.m. and 7 p.m. The sale is on Saturday from 9 a.m. to 4 p.m. and on Sunday from 1 to 4 p.m. Proceeds are used by the Ski Patrol to buy medical supplies and rescue equipment. For information about the Ski Swap, call John Shunny (ret.) on 265-1620.

Take Note

More than 300 riders are expected to participate in the 15th annual Horse-A-Thon on Oct. 20 along the Rio Grande Bosque to benefit the American Lung Association of New Mexico. Last year, 237 riders raised \$24,000. For more information, contact the Lung Association on 265-0732.

state's networks and put it together," Mike says. "We had to get the equipment suppliers to understand what our system was used for. If we just asked for the equipment, they would have thought of us as just another business phone customer and given us a sort of 'pre-fabbed' phone system. Once they understood the purpose of the system, we got what we wanted."

After the equipment arrived, Mike worked long hours getting the system operational before Oct. 1, sometimes 40 hours a week outside of work. Finally, at a Sept. 28 ribbon-cutting ceremony, Mike's work was accomplished. He demonstrated the new system in front of media representatives and members of the state's deaf community.

Labs Leader

For Mike's volunteer work, Labs President Al Narath sent him a note thanking him for his work and helping Sandia achieve the goals of the Strategic Plan by being a leader in the community. Mike humbly calls it his "glory letter" and says his drive really comes from his interest in the deaf community, although the note was a nice touch.

"Deaf people are isolated in our society," says Mike. "I have a lot of respect for people who can talk but can't hear themselves do it. I guess that's why I'm involved with it — I'm fascinated with manual communication. Someone who knows sign language can talk while eating or from inside a car with the windows up. And if you know it well enough, you know that signing is an emotional language in which you use body language and facial expressions more than in spoken language."

As an undergraduate at Rochester Institute of Technology, Mike was a tutor and note-taker for students in the school's program for the hearing-impaired. When he came to Sandia in 1987, he began taking sign language classes from Judy Tripp (7522) and has been involved with Albuquerque's deaf community ever since.

At the Sept. 28 ceremony, which marked the opening of the relay network, Mike was thanked for his contribution to the deaf community. Next he will help establish a fair billing system for long-distance calling on the network — after a nice break, he says. ●JG

feed'back

Q. The policy permitting hiring of BS-level technical staff has some interesting implications and raises some questions. It seems that the very graduates we will seek to hire (highly motivated, high GPA, etc.) would be those most interested in pursuing graduate study. Given the much publicized dearth of US citizens obtaining engineering and science PhDs, does this not work against the national interest? Once hired, will these people be discouraged from pursuing advanced degrees? Is Sandia going to reduce the scope of educational programs and discourage current staff members from furthering their education?

I'm an MS-level MTS who would like to start on a PhD at UNM. My reasons: to improve my abilities and thus, enhance my work, besides the personal, intellectual satisfaction of obtaining the degree. A possible salary increase upon degree completion did not enter into my decision, nor do I have any aspirations to move into management. I just want to be a better engineer.

Because of family considerations, I can't take a leave of absence. The pursuit of a doctorate will require that I have support from the Labs at least to the extent of having a work schedule that will accommodate classes and research. In the past, the EAP, UPT, and In-House Dissertation structures have done this. Under the new policy, can I realistically hope to receive the same support?

A. The hiring of BS-level technical staff is intended to give the Labs more flexibility in achieving the right match between job content and capability of people to perform the job. It is not intended to lower our standards for technical excellence or discourage continuing education.

This action, rather, is in response to line managers across the Labs who recognize that some science and engineering positions do not require the advanced skills and knowledge of an MS- or PhD-level staff member. Being continually assigned work for which one is over-qualified is both frustrating and demotivating to the advanced-degree staff member. You'd probably agree, also, that the practice is not cost-effective.

Hiring at the BS level gives us a larger pool of potential candidates from which to choose, increases our ability to better match people to line-organization needs, gives us more versatility in moving people around to meet changing organizational needs, and enables us to "home-grow" specialists and encourage their education in areas where capabilities might be lacking at the Labs.

Sandia remains firm in its commitment to technical excellence and continues to encourage and promote educational opportunities for all its employees. Your own educational pursuits involve decisions to be made by you and your line management, following Sandia's educational policy outlined in SLI 4550.

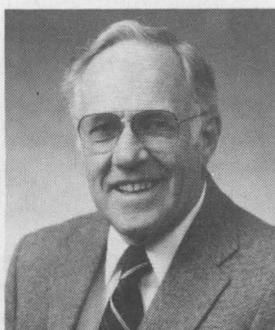
Ralph Bonner — 3500



Recent Retirees



Bert Lindsay
(2175) 33



Roger Campbell
(2618) 37

(Continued from Page Three)

Climate Change

The huge size of individual cells is a major part of the problem. For instance, Livermore, Oakland, San Francisco, the Sierra Nevada mountains, and part of the Pacific Ocean are all in one grid. The entire state of New Mexico is in another grid, though climate conditions are quite different in the northern and southern parts of the state.

To improve climate calculations, the size of the 30,000 individual cells that currently make up the global climate grid must be reduced. Ideally, the cells should not be larger than a single cloud in area.

Computational speed is expected to improve dramatically in the 1990s with the introduction of massively parallel computers (LAB NEWS, Sept. 7). These computers will be able to handle large volumes of data, such as detailed climate measurements, making it possible to reduce the size of the cells and do complex calculations that previously could not be accomplished in any reasonable amount of time.

Instruments Proposed for Study

Sandia, in collaboration with NASA, is proposing two remote sensing techniques for a DOE project (see "DOE Planning Two Studies") that use laser light to measure and characterize water vapor and clouds — Raman Lidar and DIAL (Differential Absorption Lidar). Lidar is the light analog of radar. Just as radar stands for radio detection and ranging, lidar stands for light detection and ranging.

"Water vapor is the major greenhouse gas and also is key to cloud formation," says John. "However, it's not easy to measure water vapor, certainly not at any high resolution, and among the most promising techniques for doing it are laser-based techniques. Sandia has the expertise for using lasers as research tools that make these measurements on a continuous basis." In meeting this challenge, John and his project group in 8300A are drawing on the talents of the

entire laboratory, including laser research (8300, 1100), optical engineering (7550, 9200), field measurements (6320, 7500), satellite measurements (9200), and computing (8200, 1400).

"Think of transmitting a short pulse of light as throwing out a ping-pong ball that eventually bounces back," John adds. "You can tell how far away an obstruction is by the length of time it takes for the ping-pong ball to travel back to you. The lidar works in a similar fashion. We'll choose two light frequencies: one that gets absorbed by water vapor and one that doesn't. The length of time it takes for the light to be scattered back to ground instruments will tell us how high the water vapor is, and the amount of light absorbed will tell us how much water vapor there is."

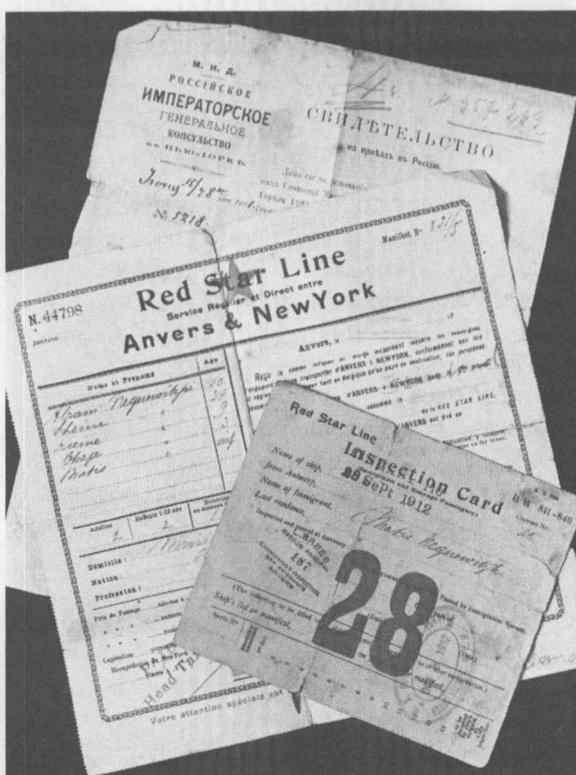
Sandia researchers and their colleagues at Scripps Institute in San Diego are also proposing a full-sky imaging system — sort of a three-dimensional cloud-mapper. "We're trying to understand how clouds interact with radiation," says John. "If you're going to determine how much radiation is getting through to the ground, you need to know where the clouds are above you. Because clouds come and go on a rapid time scale, you need to be able to measure the changing cloud distribution."

Based on parameters such as temperature and water vapor profiles, computer models will predict where clouds will form, and the results will be compared with actual field measurements.

Such research is important for understanding the feedback effect between clouds and climate, explains John. As more energy is absorbed by the atmosphere, temperatures rise, and more water evaporates. But the water vapor itself traps more radiation, causing still more warming.

"The question is, how does this process affect the formation and distribution of clouds?" asks John. "And do the changes in clouds cool the Earth or do they warm it, since it turns out they can do both? In order to understand the magnitude of the rise in temperature due to increased carbon dioxide, we have to really understand this feedback effect between water vapor and clouds." ●LD

Favorite Old Photos



CURLS WERE COMMON on young lads around the turn of the century, as shown in this picture of my father, Matis Negin, taken about 1917 or so in Atlanta. Born in Poland, in an area that is now part of the Soviet Union, he still has locks of his hair from those days. His family migrated to America from Russia in about 1910. Our family name used to be much longer, but was shortened by American immigration officials — a common practice during that time. To the left are immigration documents, including one from imperial Russia, issued when my grandparents sought reentry after their first journey to the US. Not long after that, the family returned to America for good. During recent research, I have discovered many Negin's in the United States, including a second cousin who lives in nearby Corrales.
— Jennie Negin (3140)

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

Ad Rules

1. Limit 20 words, including last name and home phone.
2. Include organization and full name with each ad submission.
3. Submit each ad in writing. No phone-ins.
4. Use 8 1/2 by 11-inch paper.
5. Use separate sheet for each ad category.
6. Type or print ads legibly; use only accepted abbreviations.
7. One ad per category per issue.
8. No more than two insertions of same "for sale" or "wanted" item.
9. No "For Rent" ads except for employees on temporary assignment.
10. No commercial ads.
11. For active and retired Sandians and DOE employees.
12. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

VINTAGE VOSE PIANO, \$495 OBO. Alexander, 291-8028.
 HARRY'S BAR ASHTRAY, purchased from Harry's (Venice) in 1959, \$35. Wilson, 344-5373.
 OAK VENEER DESK, 5-ft., w/hanging letter-size file drawer, \$60; Zenith color TV, 19", '86 model, \$75. Donaldson, 899-0071.
 JVC AUDIO CASSETTE DECK, Dolby B/C and real-time counters, \$175 or trade for receiver. Gwinn, 281-9897.
 FREE DIRT, you bring a truck, we load, and you haul. Decker, 296-1913.
 CINNAMON SETTEE w/2 chairs, \$150; recliners, \$75-\$130; beige couch, love seat, chair, \$450; queen-size pine waterbed, w/drawers, \$425. McMillen, 292-5126.
 DRAFTING BOARD, 6-ft., w/Vemco V-track, w/light and shelves, \$599. Luther, 293-4462.
 KITTENS, 6 wks. old, black, gray, or black/orange, free. Durand, 891-3251.
 SKI PACKAGE: "Pre" skis, 190cm, w/Look (N77) bindings & 46-in. poles, \$90. Barr, 821-5870.
 PINSEEKER DRIVER, 8.5-degree loft, stiff graphite shaft, 2 mos. old, \$80. Witt, 888-3307 after 6 p.m.
 EVAPORATIVE COOLER COVER PLATES, 3, metal, 34" x 28-1/2", \$10. Auerbach, 296-1489.
 GAS RANGE, double oven, harvest gold, includes vent hood, \$100. Teague, 293-8736.
 TRAVEL TRAILER, '84 model, 17-1/2-ft., self-contained, sleeps 6, \$4500. Anaya, 255-8215 after 6 p.m.
 CAMPER SHELL, Guidon, fiberglass, for F-100, \$125; exercise rowing machine, DP 1000, new, \$50. Angel, 275-1107.
 RANCH-MINK STOLE, \$95; black/white rabbit coat, w/hood, leather trim, size 8, \$60. Biffle, 293-7043.
 LITTLE TYKES PLAYHOUSE, \$75; cubicle slide set, \$45; both kept indoors. Sturgeon, 281-9035.
 APPLE IIc, additional 5.25 drive, software, Mathblaster, Logo, Appleworks, diskette case, \$395. Blaich, 271-8470.
 SOLID-OAK TABLE, 48" x 48", w/4 upholstered chairs, \$225. Lucy, 899-1013.
 STEREO HEADPHONES, Koss Pro/4X, professional set, 15-ft. cord, \$35. Holmes, 897-0916.
 PERSIAN KITTENS, 15 wks. old, black/white, \$75/ea. Montañó, 867-5402.
 LEADING EDGE PC, model D, IBM PC/XT-compatible, 8 MHz, 640Kb, HD, math co-processor, software on hard disk, \$575 OBO. McCord, 281-2146.
 WOODEN WORKBENCH, for garage, 72" x 32", \$15. Mozley, 884-3453.
 TIRES: 185/70SR14, 4 for \$25. Norwood, 266-2717.

REFRIGERATOR, gas stove, twin mattress sets, Schwinn scooter, electric typewriter, credenza, push mower, unopened Pictionary game. Siegrist, 293-4148.
 COMPUTER, IBM/XT-compatible, 640K, 20MB HD, amber monitor, mouse, 2400-baud modem, software, \$700; dot-matrix printer, \$125. Girven, 899-1503.
 BLANK VHS VIDEOTAPE CASSETTES, Scotch EG T-120, all unused, most never opened, \$3.25/ea. or 5 for \$15. Schkade, 292-5126.
 TYPEWRITER, Olympia portable DeLuxe, w/case, \$65 OBO. Campbell, 889-0961.
 STEEL SHELVING ASSEMBLY, heavy-gauge, Grainger 1W689, six-tier w/adjusting clips, \$39. Silverman, 298-1308.
 CAMPER, Mitchell Fishing Hut, slide-in furnace, 2-burner stove, sink, refrigerator, jacks. Eisenberger, 877-7041.
 CREDENZA-STYLE STEREO, walnut; queen-size headboard. Prevender, 296-8586.
 CAMPER SHELL, Custom Topper, fits Ford long-bed, tan, no dents, \$175. Long, 296-4974.
 CELLULAR TELEPHONE, new, portable, w/carrying case, must complete 1-yr. lease for air time, \$600 retail, sell for \$400 OBO. Sparks, 891-1635.
 SKI RACK, fits '85-'91 Volkswagen Golf or Jetta, carries 6 pairs of skis, \$50. Schneeberger, 298-5955.
 LIVING ROOM SET, solid-wood, w/cushions: queen-size sofa sleeper, 2 love seats, 2 end tables, coffee table. Vollmer, 865-1771.
 BALDWIN PIANO, professional upright, 45", walnut, tuned regularly, w/bench, \$1300. Chu, 293-4375.
 COCKER SPANIEL PUPPIES, 5 wks. old, \$100/ea.; Pre skis, 204cm, poles, size 11 boots, pants. Apodaca, 294-5525.
 MOTORCYCLE CARRIER, designed for campers, trailers, motorhomes, pickups, w/bolts to bumper, \$50. Thompson, 293-9592.
 SKIS: Rossignol w/M26 bindings, 170cm, used 4 times. Thompson, 294-7572.
 NORTH FACE TENT, 1-person, \$90; internal-frame backpack, \$60. Grant, 275-9006.
 COMPUTER, PC/XT-compatible, 10 MHz, 640K RAM, 30MB HD, two 360K 5.25-in. drives, 14-in. monitor, 1200-baud modem, more, \$750. Davis, 294-1048.
 MINIATURE POODLES, AKC-registered, male, cream, 10 wks. old, shots current, parents on premises, \$175. Little, 883-9329.
 DINETTE, 3' x 5', w/swivel chairs, \$75; Weber 18-in. grill, \$15; 18 mahogany cabinet doors, \$35; blonde corner table, \$25. Van Deusen, 299-4328.
 TWO CORDS WOOD, \$150 or trade for lawn mower. Garcia, 873-4337.
 ANTIQUE PIANO-ROLL MUSIC CABINET, 1920 vintage, holds 50-60 rolls, w/20 music rolls. Nordeen, 296-7898.
 TWO TIRES, General radial, 2-ply steel, 4-ply tread, white sidewall, P225/75R14, \$10/ea. Stamm, 255-2640.
 QUEEN-SIZE WATERBED, w/12-drawer underdresser, dark wood, lighting & heater included. Jacobs, 281-8478 evenings.
 WASHER/DRYER, apt.-size, stacked, \$300; golf clubs, \$50; wood stove w/pipe, Ben Franklin-style, \$100. Perlinski, 275-0664 evenings.
 DALMATION, AKC-registered, 6-yr.-old male. Oglesby, 296-5361.
 TOY AIRCRAFT CARRIER, figurines, accessories, die-cast to remote control, batteries & charger. Maes, 865-1443.
 NFL TICKETS, in Phoenix, 47-yr. line, Patriots, Thanksgiving weekend, \$100; Giants, \$120; Colts, \$80. Schofield, 292-7220.
 SNARE DRUM, Hi-hat stand, cymbal stand, 3 Zildjian cymbals, \$200. Miller, 268-5992.

BALDWIN ORGAN, w/bench, music. Wheeler, 881-8469.
 MAPLE HUTCH, \$500; maple table, w/leaf, 4 captain's chairs, \$225. Tremi, 292-9219.
 SKIS, 207cm, K2, 710 Saloman bindings, \$40 OBO; Saloman SX60 woman's ski boots, size 310 (6-7), \$30 OBO. Davis, 298-3342.
 SOFA SLEEPER and love seat, \$275; rocker, \$30; twin bed, \$40; china cabinet, \$400. Jackson, 292-5035.
 TIME SHARE, 7 nights in Palm Desert, 1-bdr. condo, amenities, Jan. 25-Feb. 1, full or half week at \$45/night. Ater, 822-9697.
 BLACK PLASTIC, 6-mil., 18' x 75', free; hot water heater, 50-gal., pilot won't stay lit. Kerschen, 821-2848.
 LAWN MOWER, Sears, rear bag, 4.0 reserve power, 5 height adjustments, \$125 OBO. Zirzow, 281-9896.
 HP-41C CALCULATOR, w/Quad-Memory and MathPac, \$75; accessories: card reader, \$50; printer, \$50; Sears manual treadmill, \$50. Loucks, 281-9608.
 GUITAR EQUIPMENT: Marshall, 50W, \$330; Crate, 60W, \$145; Kramer w/Floyd, \$310; Fender Champ, \$70; distortion, \$45; Flanger, \$45. O'Toole, 828-9260.
 COLOR TELEVISION, 19-in., GE, w/remote, \$100. Schubeck, 821-3133.

TRANSPORTATION

'84 JEEP CHEROKEE CHIEF, 5-spd., AC, PB, PS, stereo cassette, 89K miles, 2.8 V-6, \$5495 OBO. Alexander, 291-8028.
 '79 CHEV. MONZA SW, 3.2-liter, PS, new paint, Michelin tires, best offer. Mesibov, 292-1249.
 '87 FORD CROWN VICTORIA SW, V-8, 5.0-liter, AC, cruise, PS, PL, AM/FM cassette, 62K miles, \$4800. Coleman, 883-7498.
 '76 CHEV. PICKUP, 4-spd., PS, twin tanks, 350 engine w/81K miles, \$3200; '85 Mercury Marque SW, AT, loaded, \$3300; sell or trade, need tractor w/attachments. Lackey, 869-9333.
 GIRL'S 10-SPD. BICYCLE, Huffy Olympia, 26-in., \$30. Wyant, 298-0371.
 '74 LINCOLN MARK IV, 2-dr., white w/white leather interior, new tires, brakes, \$3200 OBO. Letz, 293-4525.
 '71 TOYOTA CORONA MARK II, 4-dr. sedan, stereo, AT needs work, \$500. Vawter, 299-4463.
 MOUNTAIN BIKE, 17-in., Specialized Hard Rock components, \$225. Maes, 266-6562.
 '78 TOYOTA COROLLA SR5, liftback, \$800. Cincotta, 822-1090.
 '80 LINCOLN MARK VI, white, moon roof, new tires, 20-mpg, luxury options, \$3950 OBO. Blaich, 271-8470.
 '88 TOYOTA COROLLA GTS, 35K miles, 1.6-liter, 5-spd., power moon roof, loaded, from Calif., \$9500. Cooper, 299-4454.
 '76 OLDS. 98 LS, 4-dr., loaded, 86K miles, all records, \$2400. Lynch, 821-8126.
 '83 NISSAN PULSAR, black, 2-dr., AC, AM/FM cassette, sunroof, AT, rebuilt engine, \$2500 OBO. Padilla, 345-7660.
 '80 DODGE PICKUP, Custom 200, PS, PB, 318 CID, 4-spd., \$2500. Maxam, 898-2435.
 '87 TOYOTA CAMRY WAGON, 5-spd., AC, cruise, AM/FM cassette, 32K miles, tilt, \$8800. Ghanbari, 883-3819.
 '62 THUNDERBIRD, restored, new white paint, red leather seats, all power, \$6200 OBO. Villareal, 296-3036.
 '78 DODGE STEP-SIDE PICKUP, 4x4, 1/2-ton, 360, AT, 12.50x33 radials, rollbar, limited slip, 73K miles, \$3300 OBO. Kallenbach, 293-6916.
 '85 GMC S15, long-bed, w/step bumper, white, AM/FM cassette, \$4250 OBO. Karr, 821-1309.

'83 FORD CUSTOM VAN, AC, PS, PB, tilt, cruise, AM/FM stereo cassette. Harrison, 897-2023.
 '88 CHEV. BLAZER S-10, 4x4, 4.3L V-6, PS, PB, AT, AC, AM/FM cassette, cruise, Tahoe pkg., more, \$12,500. Vollmer, 865-1771.
 '89 GMC PICKUP, 350 V-8, 5-spd., AC, PW, cruise, 13K miles, \$11,700 OBO. Campbell, 296-8304.
 '83 PORSCHE 1911SC, slate blue, SSI exhaust, \$20,500; '85 Corvette, red, performance-tuned 310-hp, \$15,500. Ahr, 294-8736.
 '87 TOYOTA COROLLA; '85 GMC Jimmy, 4-WD, AT, AC. Fitzpatrick, 275-3422.
 '77 MERCURY MONARCH, Ghia model, 302 V-8, gray, 4-dr., fully equipped, compression 110. Nordeen, 296-7898.
 '79 CORVETTE, new engine, AT, assume loan and take over payments, \$167/mo. at SLFCU. Allen, 275-5813.
 '82 FORD EXP, blue, 1.6L, 4-spd., PS, AM/FM cassette, moon roof, car cover, shop manuals, 85K miles, \$1500. Martinez, 296-2292.
 '69 DATSUN 510, 2-dr., 4-spd., sunroof, \$750. Hagengruber, 299-8361.
 '76 TOYOTA LAND CRUISER, 4-WD, Alpine stereo, Yakima bike/ski rack, extra tank, \$2800. Gerstle, 821-1112.
 '73 SAAB SONNET, 4-cyl., FWD, 2-seat sport coupe, 90K miles, 28 mpg, \$3000. Heintzleman, 281-4032.
 SAILBOAT, 21-ft. Catalina, w/trailer, extras. Gruer, 296-8163.
 TRACTOR, \$800 firm. Garcia, 873-4337.
 '73 PLYMOUTH FURY, 4-dr., 74K miles, new steel-belted radial tires, \$995 OBO. Stamm, 255-2640.
 '81 HONDA MOTORCYCLE, 900 CB Custom, fairing, radio, trunk, cruise, \$1100. Bouchard, 265-8148.
 BICYCLES, junior models: Mountain Uneviga Rover, 15-spd., 24-in. wheels; Peugeot racer, 17-in. frame, 10-spd., 600 rims, alloy components, \$150. Weirick, 281-1462.
 '83 CHEV. VAN, Zimmer conversion, tan, loaded, 75K miles, front/rear AC, AT, \$7500. Varnado 828-2076.
 '73 AMC AMX 360, AT, PS, PB, extras. Gorman, 292-7119.
 '77 LINCOLN CONTINENTAL MARK V, white w/jade interior, loaded, \$3000. Barnes, 296-0462.
 '83 CHEV. S-10 PICKUP, 6-cyl., AT, AC, AM/FM, w/camper shell, \$2700. Benton, 877-2473.
 '79 FORD F-150 WINDOW VAN, LWB, 6-passenger, 30K miles on 6/300 engine. Kerr, 299-7527.
 '82 PONTIAC FIREBIRD, PS, PB, tilt, AT, AC, V-6, AM/FM, \$3200. Jackson, 292-5035.
 '75 CHEV. NOVA, 2-dr., AT, PS, PB, AC, 103K miles, passed emissions test, \$600 OBO. Montoya, 881-6898.
 '79 CUTLASS, 350 engine, \$1950. Norwood, 266-2717.
 '80 DODGE POWER WAGON, club cab, long-bed, 4-spd., \$3100 OBO. Loucks, 281-9608.

REAL ESTATE

3-BDR. HOME, 2 baths, 2-car garage, 652 Claudine, show by appointment only, assume no qualifying, \$78,900, \$8000, \$742.67 PITI. Minor, 292-4776.
 4-BDR. HOME in Tablazon near Tijeras, 2-1/2 baths, contemporary w/southwestern accents, deck. Young, 281-2173.
 3-BDR. MOUNTAIN HOME, in Cedar Crest, 1100 sq. ft., hardwood floors, new appliances, 1 acre, \$74,000. Watson, 281-2691.
 4-BDR. HOME, 2-1/2 baths, living, dining, family, sun, utility rooms, covered patio, Jaun Tabo/Indian School area, \$116,000. Perrine, 293-1429.
 3-BDR. MOBILE HOME, 1.25-acre, in Los Lunas, satellite dish, \$34,000. Ward, 865-7810.

2-BDR. MOBILE HOME, 14' x 70', 2 storage sheds, Four Hills Mobile Home Park, 709 Elk Dr. SE, \$13,500. Weems, 281-5837.
 3-BDR. HOME, 1-3/4 baths, wood stove, fruit trees, corner, assumable VA, near KAFB, \$73,000. Normann, 291-9909.
 1/3-ACRE LOT, corner cul-de-sac in Four Hills, 1513 Stagecoach Lane SE, near country club. Hanely, 296-5136.
 3-BDR. MOBILE HOME, 2 baths, in Four Hills Park, 24' x 65', sunporch, view. Tessler, 296-7587.
 3-BDR. HOME, 1-3/4 baths, den w/FP, utility, schools 1/2 block away, Gibson Gate 1/2 mile away, \$79,900. Starzynski, 299-3489.
 3-BDR. HOME, all brick, pitched roof, 1850 sq. ft., SHS district, \$100,000. Barnes, 296-0462.
 TWO LOTS in Sunland Estates near El Paso, Hidalgo County. Greene, 292-2395.
 4-BDR. HOME, 1-3/4 baths, 1920 sq. ft., east of KAFB, priced below market. Garcia, 292-0979.
 3-BDR. HOME, 1750 sq. ft., 1-3/4 baths, living room, den, FP w/wood-burning insert, landscaping, Parsifal NE. Pasko, 299-6057.

WANTED

ROOMMATE, to share 2-bdr./2-bath apartment at Mission Hill Apts., near Menaul/Eubank, \$200 plus \$15 electric. Mesibov, 292-1249.
 CHILD'S SKI EQUIPMENT, size 3 boots, bindings for 50 lbs. and up. Kwak, 294-2524.
 CANOE. Davidson, 293-9486.
 SNARE DRUM and stand, 8-1/2" x 14", wood shell, prefer Tama. Maes, 266-6562.
 PING-PONG TABLE; king- or queen-size bed, in good condition, will pay cash or trade. Roeschke, 265-7583.
 SADDLE BAGS, leather. Snyder, 296-5771.
 INFANT CAR SEAT, must be in good condition. Underhill, 294-5774.
 CHEST-STYLE FREEZER, approx. 10-cu.-ft. capacity. Prevender, 296-8586.
 MATERNITY CLOTHES, size 4/6, in good condition. Sanchez, 831-2645.
 TRAVEL TRAILER or 5th wheel, clean, 17-ft. to 24-ft., less than \$2000. Normann, 291-9909.
 FREEZER, 8- to 10-cu.-ft., front door preferred, but will consider one w/top door; wood or aluminum ladder, 10- to 12-ft. Baldo, 345-1288.
 CAR COVER to fit medium to large American car. Gorman, 292-7119.
 TYPEWRITER STAND, sturdy, w/wheels. Campbell, 889-0961.
 HOUSEMATE, share 3-bdr., 2-bath home, separate living areas, near Sandia, kitchen & laundry facilities, enclosed yard, utilities included. Nordeen, 296-7898.
 LATHE TOOLS, Craftsman lathe accessories. Zirzow, 281-9896.
 '88 BALLOON FIESTA OFFICIAL COIN, in excellent condition, will buy if the price is right. O'Toole, 828-9260.
 DONATION of working upright piano, for non-profit rehabilitation center. Thalhammer, 298-8521.

SHARE-A-RIDE

CORRALES & RIO RANCHO VAN-POOL has openings for full-time & part-time riders. Durand (891-3251) or Boatman (892-3570).
 CEDAR CREST VANPOOL has openings, Frost Rd., N-14, Tijeras. Yelton (281-2893) or Burns (281-3922).
 CARPOOL RIDERS from Old 66 N/S217 area, rideshare or ??, non-smoking only. Zirzow, 281-9896.



Coronado Club Activities**Celebrate German Heritage at Tonight's Bavarian Bash**

IT'S MORE THAN A PARTY — it's a tradition! It's Oktoberfest, tonight at the C-Club. Die Polka Schlingels, a German "Oompah" band, is the featured entertainment, along with authentic Austrian and German folk dancing by Rudy's Schuhplattler Dancers. And wait until you taste the food — wienerschnitzel (\$7.95), sauerbraten (\$8.95), schweineschlegel (\$7.95), and knockwurst or bratwurst plate (\$6.95). German beer and wine will be available. Call ahead or you might miss out (265-6791).

SPEAKING OF TRADITION . . . try this American tradition — Sunday brunch. This Sunday, Oct. 21, the Club offers its usual hearty fare. Try pancakes, turkey or ham, potatoes, eggs, green chile stew, salads, and more (adults/\$5.95, kids 4 through 12/\$2.50, and toddlers/free). Call ahead, please.

DON'T COOK THURSDAY NIGHTS! Come to Bingo night every Thursday and take advantage of the Club's low-cost buffet while playing the Fortune Wheel game. Card sales begin at 5:30 p.m. Early-bird games begin at 6:45.

TRIP THE LIGHTS FANTASTICALLY as you dance the night away, Friday, Oct. 26. Trio Grande will play '50s rock, '60s and '70s popular

country, and bluegrass. Jumbo turquoise margaritas will be only \$2.50, and tasty dinner morsels include chicken teriyaki, poached cod, chicken-fried steak (all two-for-one price \$10.95), prime rib (\$7.95), and fried shrimp (\$7.95). Reservations recommended.

TRICKS . . . OR TREATS? Both, of course, at the annual Halloween party for kids, Sunday night, Oct. 28. Magician Richard Searle provides the tricks, and the Club provides the treats. From 6 to 9 p.m., kids wear their BOO-ti-ful costumes for the costume contest and visit the haunted house. Games and prizes will be featured, and a low-cost buffet is available from 6 to 8. Ghoulies and goblins, bring your membership cards, because this party is for members' kids only.

DO THE MONSTER MASH, Wednesday, Oct. 31, at the Halloween party for big kids from 5 to 10 p.m. Adults can win the costume contest for having the ugliest, most original, and funniest costume (no, you can't go as yourself), and Dunn's Dancing Machine D.J.s will spin some of your favorite disks starting at 6. After visiting the taco bar, get ready for some scary drinks — "Zombies," "Brains," "White Ghosts," "Green Goblins," and "Longneck Ghoulies."

Take Note

Christopher Jillson has been appointed President/CEO of Sandia Laboratory Federal Credit Union (SLFCU), effective Oct. 1. He has been with the credit union since 1985. He replaces Richard Rays. The SLFCU has more than 25,000 members, with two offices in Albuquerque and one in Livermore.

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October is National Car Care Month, a time set aside to focus motorists' attention on vehicle preventive maintenance. Objectives are to improve air quality, highway safety, fuel conservation, and owner operating costs. National Car Care Month is supported by the American Lung Association of New Mexico, the Automotive Service Association, and the National Car Care Council. A highlight will be the Car Care Fair on Oct. 20 and 21 at Los Altos Park from 9 a.m. to 4 p.m. There will be free safety and emission checkups, an "Ask Your Technician" booth, and presentations on pollutants, freon, and ozone. For information, call Beverly Besedick on 265-0732 or Dave Hoeful on 265-1962.

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"Mind Your Own Business," a seminar for women in home-based businesses, will be presented Saturday, Oct. 20, from 8 a.m. to 4 p.m. at the YWCA (7201 Paseo Del Norte). Workshops will be conducted by area business representatives, and there will be panel and roundtable discussions. For information, contact Carol Stuart at the YWCA on 822-9922.

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During World War II, a small group of British and Australian commandos pulled off one of the most daring exploits of the entire war. "The Heroes," a two-hour drama, tells the true story of 14 men who overcame enormous odds to successfully raid Singapore Harbor using a dilapidated fishing boat. The program airs on KNME-TV, Channel 5, on Wednesday, Oct. 24, at 9 p.m.

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The Council of Albuquerque Garden Clubs will sponsor a workshop on the making of corn husk wreaths on Sunday, Oct. 21, at the Albuquerque Garden Center (10120 Lomas NE) from 1 to 4 p.m. Corn husk and wreath base will be provided. Participants must bring a pail or small tub suitable for soaking corn husk. Call 296-6020 for reservations.

Events Calendar

Events Calendar items are gathered from various sources. Readers should confirm times and dates of interest whenever possible.

Oct. 19 — "The Legend of Sleepy Hollow," Washington Irving's American classic, New Mexico Ballet Company, choreographed by David Chavez; 8:15 p.m., Popejoy Hall, 277-3121.

Oct. 19-28 — "Wanted," by Grubb Graebner, story of Toni Lee Randell, a woman striking out at teachers, parents, and friends with violent demands for affection (adult language and situations); 8 p.m. Fri. through Sat., 6 p.m. Sun.; Vortex Theatre, 247-8600.

Oct. 20-21 — Valleyfest '90, food and fiestas to celebrate the Rio Grande Valley, includes the Corrales Harvest Festival, the Village of Los Ranchos Fiesta, the Festival del Otoño, the North Valley Neighborhood Association Chile Cook-Off, North Valley Artscrawl, autumn open house at the Rio Grande Nature Center, historic houses tour in downtown neighborhoods, and the Festival of Indian Dance at the Indian Pueblo Cultural Center; call for park-and-ride locations and details, 284-2292.

Oct. 21 — Very Special Raspberry Festival, benefit for Carrie Tingley Hospital and the Very Special Arts organization for people with disabilities; champagne brunch, entertainment, art auction, raffle, cookbook sale; 11 a.m. brunch, 1 to 5 p.m. activities; 768-5188 or 243-6626.

Oct. 23-25 — "Cats," Andrew Lloyd Webber's musical, lyrics adapted from T.S. Elliot's "Old Possum's Book of Practical Cats"; 8:15 p.m., Popejoy Hall, 277-3121.

Oct. 24 — Lecture, "The Hopi and Navajo Land Dispute: A Hopi Perspective" by Dr. Marvin Call, sponsored by Educational Committee of Friends of the IPCC; 7 p.m., Indian Pueblo Cultural Center Theatre (2401 12th St. NW), 843-7270.

Oct. 25-27 — Willow Creek Craft Fair; 5-8 p.m. Thurs., 9 a.m.-6 p.m. Fri., 9 a.m.-5 p.m. Sun.; 1205 Lawrence Ct. NE, 2 blocks east of Tramway and 2 blocks south of Lomas, 299-3403.

Oct. 26-Nov. 17 — "Memorandum" by Vaclav Havel, witty assault on the madness of efficiency peculiar to total bureaucracy, winner of the 1967-68 Obie Award for best foreign play, presented by Theatre-in-the-Making; 8 p.m., CenterStage (3211 Central NE), 260-0331.

Oct. 27-28 — Prime Time Expo V: quilt show, fashion show, 270 exhibits, door prizes, free health screening, senior arts & crafts fair, continuous entertainment, art & photo show, Southwestern Cuisine

Taste Fest, proceeds benefit Bernalillo County's frail elderly through the Senior Foundation, Inc.; 9 a.m. to 5 p.m. Sat., 11 a.m. to 5 p.m. Sun.; free transportation from all six senior centers; Albuquerque Convention Center, 344-7676 or 764-6454.

Oct. 27-28 — "Chrysanthemums Aloha!" Albuquerque Chrysanthemum Society Flower Show; 2 to 5 p.m. Sat., noon to 5 p.m. Sun.; Albuquerque Garden Center (10120 Lomas NE), 296-6020.

Oct. 31-Nov. 11 — "Man and Superman," comedy by George Bernard Shaw; 8 p.m. Tues. through Sat., 2 p.m. Sat. & Sun.; KiMo Theatre, 243-4500.



SANDIA SIDEWALK SUPERINTENDENTS — Facilities Construction and Environmental Engineering Dept. 7850 thanks these and all other sidewalk superintendents for their help in the nearly complete sidewalk replacement and repair project in Area I. The project fixed some potential tripping hazards, added several wheelchair ramps, repaired several driveways, and rebuilt some deteriorating storm sewer inlets.