

Beefed-Up Airport Security Is Goal Of Washington-Area Demonstration Project

Sandians are putting their security expertise to work to help make the nation's skies even friendlier by keeping potential saboteurs and hijackers away from aircraft.

Security specialists in Safeguards Engineering Dept. 5240 are designing and demonstrating an enhanced security system for Baltimore-Washington International (BWI) Airport; the system could become a prototype for airport security systems across the country. The project, commissioned by the Federal Aviation Administration's (FAA) Technical Center in Atlantic City, N.J., grew out of earlier security work the Labs did for the FAA.

Dennis Miyoshi, 5240 manager, explains that Sandia is developing a total systems concept — one that emphasizes systems engineering rather than hardware design. "The idea is to develop a

The integrated system will incorporate three basic functions of security — detection, delay, and response.

balanced system that protects against the many ways that an adversary could use in getting to aircraft," he says.

The demonstration system — scheduled for installation at BWI by the end of 1991 and for evaluation the following year — will incorporate various hardware and procedures to protect against higher levels of threats to aircraft. The entire program, estimated to cost between \$6 million and \$10 million, is scheduled for completion in 1992.

Two concourses of the five-concourse BWI
(Continued on Page Six)



HOLDING A GUN — but purely for calibration — Terri Olascoaga (5248) checks whether a metal detector is responding to the weapon, as Don Gould (5248) makes notes. Detectors used in the airport-security project at Baltimore-Washington International will be calibrated for triggering by test weapons that the Federal Aviation Administration plans to use as a standard in the future — weapons that are smaller and harder to detect than those currently used for setting the detectors.

Someday, Earth-to-Orbit

Electromagnetic Launcher Pushes Without Touching

Perhaps before the year 2000, Sandia's electromagnetic-launch technology could become an alternative to rocket-launching small payloads — up to 400 kilograms (about 900 pounds) or so — and could deploy hardware such as a network of communication satellites or strategic-defense weapons. The technology may ultimately reduce launch costs for other kinds of payloads, such as supplies for an orbiting space station, a moon base, or the staging of a Mars expedition.

The basic principles have been demonstrated in a series of experiments and tests in the Coyote Canyon test area. There, a prototype launcher has accelerated aluminum projectiles along a barrel, or flyway, through a series of cylindrical coils. Pulses of electrical current in the coils produce electromagnetic fields to propel the projectile.

The system is based on a patented "magnetic reconnection launcher" invented by Bill Cowan, manager of Advanced Energy Conversion Systems Dept. 1220. Unlike some electromagnetic launchers (such as railguns), the Sandia technology involves no sliding electrical contact between the projectile and barrel.

The success of the prototype launcher is an important step, says Pace VanDevender, Director of Pulsed Power Sciences 1200: "This is the first time anywhere that anybody has designed a contactless electromagnetic launch system that works. And this one does work."

A contactless system minimizes wear on the flyway, providing greater reliability and perhaps a

higher repetition rate than a contacting system.

A full-scale earth-to-orbit launcher would be an electromagnetic-rocket hybrid, in which the launch package would include a small rocket motor. The electromagnetic launcher would provide enough velocity to send the projectile above the earth's atmosphere. The rocket motor would fire to

provide the additional increment of velocity needed to achieve orbit.

A preliminary study indicates that, for the present state of aerodynamic heat-shield and acceleration-hardening technology, a velocity between 4.5 and 6.5 kilometres per second (2.7 and 3.9
(Continued on Page Four)



LAB NEWS

VOL. 42, NO. 2 SANDIA NATIONAL LABORATORIES JANUARY 26, 1990

Electromagnetic-Launch Concept Had Years-Long Incubation

One of those Sandia research projects that embody years of quiet thought and out-of-view experiments surfaced in the past month. (See "Electromagnetic Launcher Pushes Without Touching.")

Or as Bill Cowan (1220) puts it when he discusses the recently announced concept for a contactless electromagnetic launcher:

"I've been working for years with the interaction of magnetic fields and motion, either using the field to cause motion, the way a motor does, or using motion to produce electromagnetic energy."

The launcher uses electromagnetic fields to accelerate a projectile, but Bill says that idea was helped along by his experience in building

and testing explosive generators.

"The possibilities of magnetic reconnection have been fascinating to me for a long time," he says. "The launcher idea really came from asking how you could use magnetic reconnection to move something." Bill's answer to that question was convincing enough to get him a patent for what's termed a "magnetic reconnection launcher."

The patent describes an earlier version of the launcher — one that fired flat-plate projectiles and was developed as a prototype of an anti-ballistic-missile weapon for possible use in space — but the fundamental operating principles of the cylindrical-projectile launcher now under test are the same as covered in the patent.

This & That

Whereyafrom, Crab? - The filler item we used last issue about unusual college mascots (Campbell University Camels, Emory & Henry College Wasps, and more) brought to mind the time I was driving down a Texas coastal highway and passed a football stadium with big lettering on the side, "Home of the Fighting Sand Crabs." Now that must strike fear in the hearts of opponents! The town name escapes me, but I'm betting we have at least one Sand Crab alumnus at Sandia. Anyone else have a more unusual school mascot/nickname - in high school or college?

* * *

VIA VIP - Like many Sandians, John Ulibarri (9141) gives much of his personal time to community service work. Several years ago - through the Labs' Volunteers in Action (VIA) program - John responded to a request to help the Center for Alcoholism, Substance Abuse, and Addictions. Since then, he's been a volunteer with the agency's adolescent substance-abuse program. Clinical supervisor Kathie Wright recently wrote to VIA commending John's work: "His volunteer service has been invaluable to our organization and to the families he has worked with," she said. "We sincerely appreciate the time and effort that he has so generously donated." Sandia employees and retirees interested in becoming a member of VIA should contact Al Stotts, Community Relations Div. 3163, on 844-2282.

* * *

Worst Guess I've Ever Seen - After we printed the latest batch of Sandia address botches several issues back, retiree Charles Clark of Albuquerque sent a note that retirees also get mail with some mighty strange spellings. He included a label addressed to him in Albeouerue.

More received at the Labs: Sandia Nat'l Lamp in Alberquergue (to Ed James, 5166); Saudia Natl. Lags (to Bob Setchell, 5166); Sandia National Labor Atornies (to Jim Van Den Avyle, 1832; "Amazingly, they spelled my name correctly," notes Jim.); and finally, someone sent in a label that was addressed to no one in particular, just to "Sandia Nut," with the rest of the basic Sandia address correct. The mail room had a heck of a time with that one - too many possibilities.

* * *

Educational Emphasis - Executive VP Lee Bray says a good turnout of Sandians for the Albuquerque Public Schools mill levy extension election Feb. 6 would recognize the Labs' growing stake in education. Whether they vote yea or nay, says Lee, Sandians need more than ever to be involved and informed on educational issues. Incidentally, according to stats that became available just last week, Sandians hold about 11,570 degrees, from associate through PhD. More than 20 percent - about 2650 - come from New Mexico institutions.

* * *

Dirty Money - Reported by Katherine Griffin in *Hippocrates*: Two toxicologists in Miami sampled 135 currency bills from 12 American cities. Cocaine traces turned up on all but four bills, and those had just been printed. One toxicologist explained that people use rolled up bills to snort cocaine, or fold bills into a packet to carry it. As the bills rub together later in a cash drawer, little flakes of the drug go onto other bills. Because fibers absorb and trap cocaine, money can retain traces of the drug for a long time.

This could give a new meaning to the term "laundered money." Even honest folks may have to start cleaning their cash. ●LP

feed back

Q. Why not provide an ombudsman in Employee Accounts? I just finished a period of frequent travel, and one Travel Advance has what looks to be an unaccounted-for ticket. I have accounted for everything, but my pay will be docked and my director notified just because somebody else made a mistake. Folks listen to me explain the problem, but they aren't as interested as I am in getting things cleared up.

A. Employee Expense Section 152-2 is responsible for managing and monitoring the employee account system, and is charged with assisting Sandians in clearing all forms of Travel Advances (TAs). Voucher clerks in the Section are assigned to individual Sandia organizations (see page 100-2 in the phone book). The section supervisor has overall responsibility for guiding Sandians through the process. While she is not officially called the "ombudsman," she serves *de facto* in that capacity and can ease the trauma. She is officially charged with reviewing all employee-account statements, especially those with possible past-due TAs. Before any action by Sandia to recover funds from an employee, Org. 152-2 does an in-depth analysis to ensure absolutely that the employee is truly delinquent. Only after this determination is made will notification to management begin; subsequent legal action (such as garnishment) may ensue as necessary.

Paul Stanford — 100

Q. Sandia hires people that had Top Secret clearances with the DoD and, in some cases, even had Sandia and DOE picture badges. However, when these people go to work for Sandia, they are restricted from access to classified information until they receive their DOE "Q" clearance; therefore, they spend a significant amount of time in the "leper colony" before they can do the work they were hired to do. This seems a terrible waste that could - in part - be resolved by giving them a temporary (or interim) clearance based on their DoD investigation. The DOE Albuquerque Operations Office should have the authority to verify the DoD clearance information and to issue a temporary "Q" clearance.

A. DoD visitors to Sandia with Top Secret clearances are allowed access to classified information on the basis of verified access authorization and need-to-know. When such an individual is hired by Sandia, DOE/AL will consider granting a "Q" clearance if the following conditions are met: the Top Secret background investigation meets the scope and extent of the "Q" level of access; the Top Secret investigation was conducted within the last ten years and has been updated within the past five years; and there is no unresolved derogatory information in the investigative reports, or newly developed derogatory information.

Jim Martin — 3400

Deaths



Bob Fellerhoff (DMTS) of Advanced Systems Development Div. IV 9144 died Nov. 15 after a long illness. He was 58 years old.

He had been at the Labs since July 1959.

He is survived by his wife and two sons.



Imogene Lord of Purchasing Information Center Sec. 3731-1 died Jan. 1 after a long illness. She was 63 years old.

She had been at the Labs since March 1976.

She is survived by her husband and daughter.

Retiree Deaths

Lillian Liskovec (84)	Oct. 4
Margaret Hansen (81)	Oct. 8
Clifford Savage (85)	Oct. 15
Earl Deno (72)	Oct. 16
Raymond Glass (72)	Oct. 17
Kenneth McNabb (77)	Oct. 22
Hilda Roche (63)	Oct. 22
Erwin Mebs (90)	Oct. 25
Elmer Smith (64)	Nov. 3
Richard Candlin (73)	Nov. 8
Thomas Witherspoon (49)	Nov. 9
Arthur Jacobs (64)	Nov. 14
Joe Maria Sanchez (69)	Nov. 29
Mavis Randle (82)	Dec. 5
Lloyd Chapman (76)	Dec. 16
J. W. Windsor (76)	Dec. 18
Charles Ortiz (73)	Dec. 18
Price Hennan, Jr. (68)	Dec. 24
John Richey (88)	Dec. 27



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Easier Access, Lower Costs**Automated Cartridge Systems:
A Boon to Data Storage Capacity**

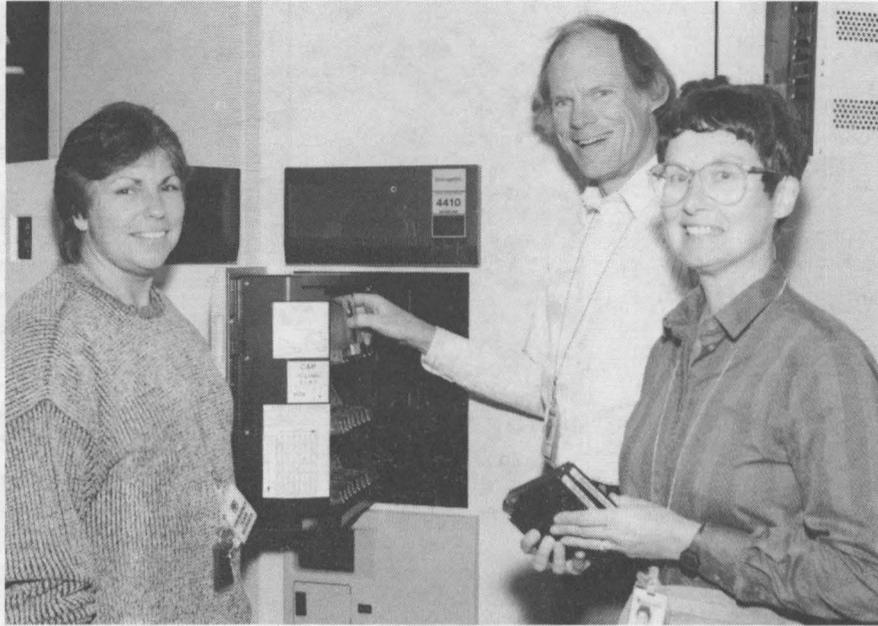
The data storage capability of the central computer network at Sandia, Livermore, is being greatly increased by the addition of two Storage Technology 4400 Automated Cartridge Systems (ACSs). Benefits include easier data access for employees and lower operating costs.

The high-performance, high-capacity cartridge systems are incorporated into the Common File System (CFS), according to CFS project leader Tom Jefferson (DMTS, 8235). The CFS serves as permanent file space for Cray and VAX computer users at Livermore. The new systems became operable this month.

"Before, CFS on-line data was stored either on disks or on the IBM Mass Storage Subsystem [MSS]," explains Tom. "Off-line data was on cartridge tapes. On-line storage capacity is minimal, so most CFS data was stored off-line. That made it inaccessible evenings and weekends when no operators were available to help access the information.

"The ACSs — one for the restricted-access CFS and one for the secure CFS — should remedy that problem. They provide much more on-line-stored data that can be accessed without operator intervention."

Each ACS is a fully automated robotic system. The housing containing the cartridges and the robot is called a silo because of its cylindrical shape (11 feet in diameter, 8 feet high). Each silo holds approximately 6000 IBM 3480 (or compatible) 18-track magnetic tape cartridges, each containing 240 million bytes — resulting in a total capacity of 1.44 trillion bytes. The restricted-ac-



COMMON FILE SYSTEM TEAM (left to right) Betty Pimentel (8236), project leader Tom Jefferson (DMTS, 8235), and Pat Leary (8235) insert a cartridge into an Automated Cartridge System silo.

cess silo has six drives and the secure silo 10 drives, each with a transfer rate of three megabytes per second. If increased storage capacity is needed in the future, each ACS could be expanded by adding up to 15 more silos.

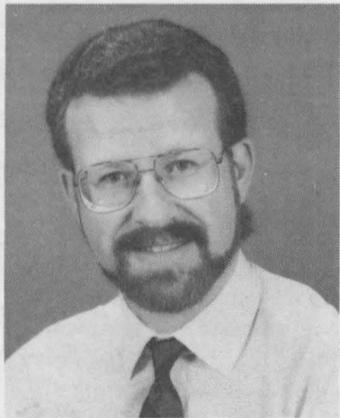
The Standardization Advantage

"The silos will take the place of the IBM MSS, which is being retired," says Tom. "Each ACS silo has a data storage capacity six times that of the MSS and an overall data transfer rate 10 times faster." Another significant advantage of the ACS, notes Tom, is its use of standard IBM 3480 car-

tridges and recording techniques for data storage.

"The cartridges can be read or written on any 3480 cartridge drive," adds Tom, "whether the drive is in the ACS or not. Standardization means a significantly lower price per megabyte transferred — in fact, just 1/34 of what it would be using comparable-capacity MSS equipment."

As they do now, Cray or VAX users who wish to save a file in the CFS will use the CFS utility to communicate over the network with the IBM central processing unit connected directly to the ACS. The Common File System then decides where the user's file will reside — either on disk or the ACS. ●

**Supervisory
Appointment**

DENNIS BEYER (DMTS) to supervisor of Systems Engineering Div. II 8163.

Dennis joined Sandia, Livermore, in March 1976 as a design engineer in the Command and Control Division. Two years later, he became lead mechanical engineer in

the Special Projects Division. From 1982 to the present, he's been lead mechanical engineer for the W82 in the division he now heads. He was named Distinguished Member of Technical Staff last year.

He has BS and MS degrees in mechanical engineering from the University of Michigan.

Dennis's outside interests include designing and building loudspeaker systems, designing and collecting sundials, and vacation travel with his wife. He and his wife Doreen live in Pleasanton.

Congratulations

To Kelly and Howard (8511) Royer, a daughter, Ashley Jean, Nov. 8.

To Cleo Evans (8431) and Bill Hill, married in Reno, Nov. 25.

To Doris (8271) and Felix Johnson, a daughter, Danika Latrice Nikeya, Dec. 29.

To Sally Antonchuk (8133) and Marty Raubfogel, married in Pleasanton, Jan. 4.

To Bonnie Spencer (8532) and Dan Grant, married in Dublin, Jan. 6.

To Gloria (8311) and Randy Christensen, a daughter, Holly Colleen Noelle, Jan. 8.



SANDIA
LIVERMORE NEWS



BENCHMARK TEAM for the first Sandia Cray-1S got together when the machine was powered off last month. The team put together a performance-evaluation set of codes by which to judge the Cray-1S and competing supercomputers before the Cray was installed at Sandia, Livermore, in 1980. "The competition among supercomputer manufacturers at that time was stiff," recalls team member George Anderson (ret.), who headed the Computation Department when the Cray was acquired. "We finally chose the Cray because it performed best in terms of our benchmark standards." Team members: (kneeling in front, from left) Tom Jefferson (DMTS, 8235) and Chuck Bisson (8233); (seated, second row, from left) Gordon Miller (ret.), Gabe Gabrielson (8237), Pat Leary (8235), George Anderson (ret.), Dick Isler (8274), and Jim Lathrop (8233); Fred Whitworth (8525) stands in back. Other members of the team not shown are Gene Angvick (8283), Juanita Benson (8233), Kelly Montoya (ret.) and Arnold Schuknecht (ret.). When the Cray-1S was powered off, a Cray Y-MP with 64 million words of memory was put into use (see LAB NEWS, Dec. 8, 1989).

(Continued from Page One)

Launcher

miles per second) for the electromagnetic booster would optimize the cost for this kind of earth-to-orbit launch.

Record Speed

"The launcher we're working with now," says Bill, "fires a cylindrical projectile about 14 centimetres [5.5 inches] in diameter. An earlier launcher, using a flat-plate projectile, accelerated a 160-gram [about 3/10 pound] projectile to a kilometre per second. That's a record velocity for non-contacting launchers." (A kilometre is about 6/10 mile.)

The flat-plate launcher was being investigated as a possible space-based kinetic-energy weapon, but what was learned from it applies directly to a ground-based cylindrical launcher.

"Our next milestone for the present launcher," says Bill, "is to accelerate a five-kilo-

"This is the first time anywhere that anybody has designed a contactless electromagnetic launch system that works."

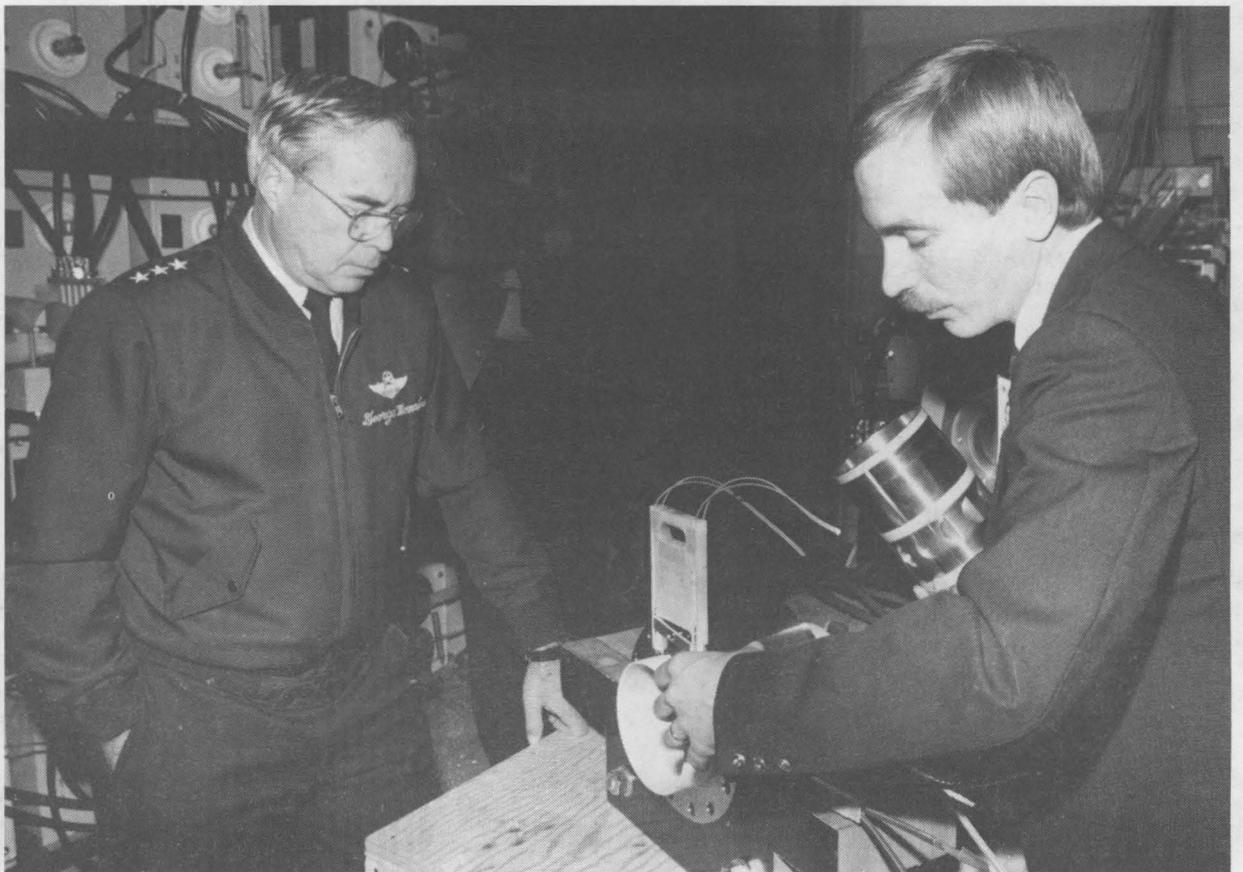
gram projectile to 300 metres per second. That's the performance we designed this launcher to achieve, on the basis of our understanding of the technology. Reaching that velocity with that mass will be a measure of how well we're able to predict performance, and how well potential sponsors can trust us to do what we commit ourselves to do."

The experiments and demonstrations have been supported by a computer-simulation code developed by Mel Widner, supervisor of Electromagnetic Launcher Div. 1221. Called WARP 10, the code has successfully anticipated all experimental results.

"A major issue was how to control heating," says Bill. "Heating of the projectile — possibly to the melting point — is a problem with contactless launchers. Mel's code was a key to success



BILL COWAN (1220), originator of the magnetic-reconnection launch concept, stands at the nose end of a full-scale mockup of an electromagnetically launched earth-to-orbit vehicle.



LT. GEN. GEORGE MONAHAN (left), who heads the Strategic Defense Initiative Organization, receives an explanation of Sandia's electromagnetic launcher prototype from chief experimenter Ron Kaye (1221).

in developing a system that wouldn't overheat the projectile."

Bill explains the principle of operation, and what WARP 10 revealed about projectile heating: "In the cylindrical version of the launcher, the coils are placed close together end-to-end. The coils have to be sequentially energized with current, each one at just the right instant." Bill's patent covers a timing scheme (implemented at Sandia with fiber-optic sensors) to detect the position of the projectile and connect a capacitor bank to each coil when the projectile has reached the right point.

"You want to set up a wave of current in the coils, along the flyway," says Bill, "and let the projectile ride it the way a surfer rides an ocean

wave. If the projectile stays just in front of the wave — more precisely, if the current induced in the projectile stays just in front — you get a continuous push. That makes the current inside the projectile circulate in only one direction and keeps the projectile from overheating. It also gives the most efficient acceleration."

The present launcher has six stages, each consisting of a cylindrical coil energized by a capacitor bank when the projectile is in it. An earth-to-orbit launcher would need an upward-tilted flyway perhaps a kilometre long and consisting of several thousand stages.

"I recently ran a simulation with more than
(Continued on Next Page)

Named for Its Speed

WARP 10 Predicts Test Results With Unique Accuracy

One of the strong points of Sandia's electromagnetic-launcher work has been the close coupling of experiment and computer simulation. That's unusual, according to Miles Palmer, a physicist at Science Applications International Corporation who recently conducted a study of Sandia's earth-to-orbit concept.

"As far as I know," says Palmer, "a code like WARP 10 that predicts launcher performance is unique. I can't guarantee that I know every single thing going on in this field, but I'm fairly well abreast of the status. To my knowledge, no one in any other electromagnetic-launcher program has had more than limited success in predicting the performance of their systems."

By contrast, says Mel Widner (1221), developer of the WARP 10 code, the Sandia team has been able to predict actual test results typically to within 10 percent, and sometimes much closer. "Besides the performance tests of actually firing the projectile," says Mel, "the code has agreed very well with bench measurements of inductance, inductance gradient, magnetic field, induced current, and projectile heating."

WARP 10's accuracy and speed are essential to its use as a design code — slow-running simulations are too expensive for repeated use. (Mel says "WARP 10" is higher than he remembers *Star Trek's* Capt. Kirk ever ordering for the *Enterprise*.) Even though it's a fast-run-

ning code, Mel's recent simulation of a full-scale launcher with 3000-plus stages took about 20 hours on a Cray computer. Normally, however, a simulation requires just a few stages: "You don't have to run the full number for scaling," says Mel. He credits Willie Nelson (contractor) with much of the effort in converting the original VAX version to run on the Cray.

Besides predicting the results of design modifications, WARP 10 is helpful in setting up experiments. "We might want to change the energy in the stages, or the armature design," says Mel. "The code can predict what's going to happen and thus help us set up the diagnostics and firing positions."

WARP 10 divides the launcher coils and the projectile into many electrical circuits, then solves the circuit equations simultaneously. The solutions give the current in each circuit; from those, WARP 10 calculates values such as acceleration, force distributions, velocity, position, and temperature. The output is usually in the form of plots and large printouts of numbers. "I've also done video animation for some problems," says Mel, "with the help of Peter Watterberg [2634]. The animation shows a cross section of the projectile in the center of the frame, with the launcher stages sweeping by and the temperatures of different parts of the projectile color-coded."

(Continued from Previous Page)

3000 stages," says Mel, "which predicted that the launcher could reach the velocity needed for earth-to-orbit applications."

During launch, says Bill, acceleration of the projectile would probably be 1000 to 2000 g's (1000 to 2000 times the acceleration of earth's gravity). Although this is high acceleration — certainly fatal to a human being — it's substantially less than the 10,000 to 30,000 g's experienced by artillery shells, some of which carry electronics.

"For launching payloads that include electronics, there will be an acceleration-hardening penalty to pay," says Bill, "but we don't think it will be too severe."

The next step at Sandia is to scale up to a larger, 10-stage launcher. That one will have the barrel diameter, about 2-1/2 feet, and the mass capability needed in an eventual earth-to-orbit launch facility. The launcher will be built in Area IV's Strategic Defense Facility, and test projectiles will be caught inside the building. Further scale-ups will then require adding additional stages.

Gas-Gun Tests Planned

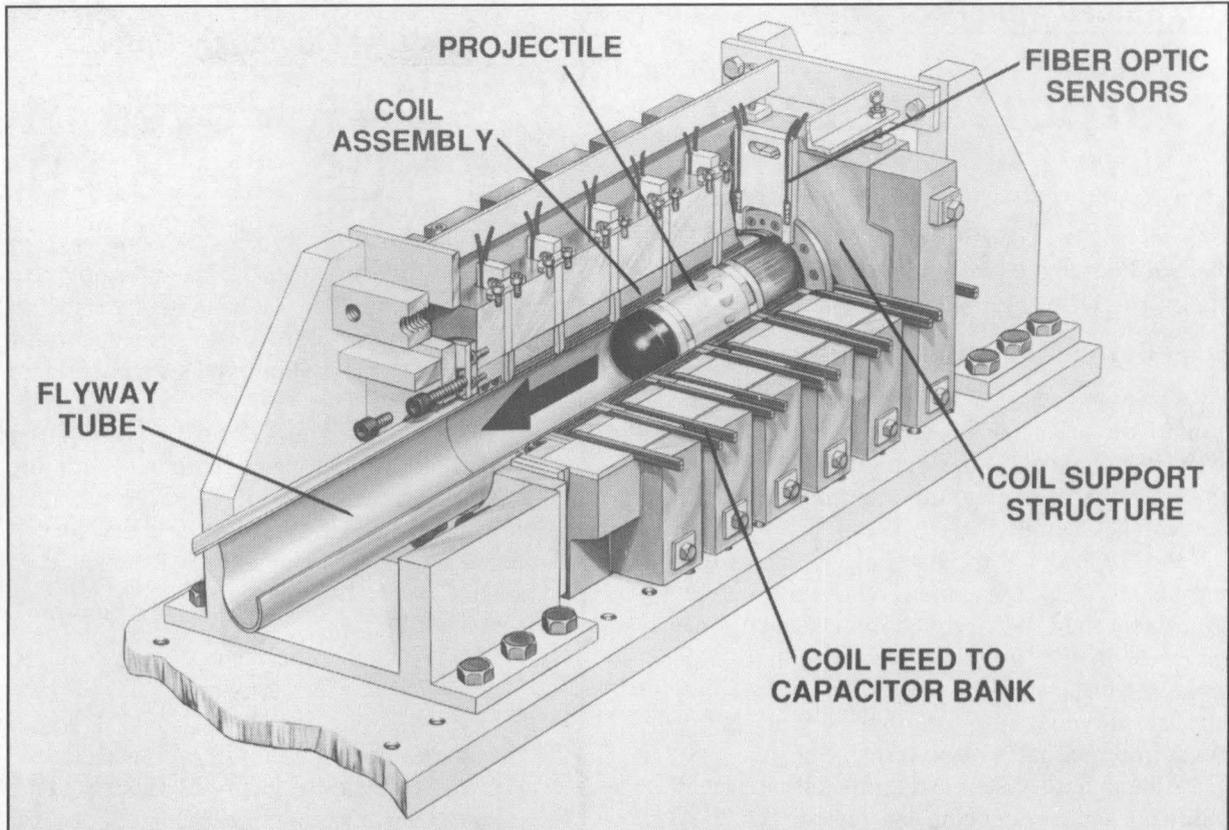
Even though WARP 10 predicts the ability of a full-scale launcher to accelerate objects to earth-to-orbit velocity, says Bill, other technical issues remain. A major one is what happens when the projectile is moving through the flyway at several kilometres per second. "The projectile needs to be stable," says Bill, "and if it touches the flyway at all, you want a gentle touch — just a nudge — so that the flyway will have a long lifetime."

"A related issue," he continues, "is that contact between the projectile and the wall of the flyway could produce a plasma, which would be electrically conductive and could cause problems. We plan to address these sorts of phenomena even

An earth-to-orbit launcher would be an electromagnetic-rocket hybrid.

before the next launcher scale-up, by using the gas gun in Jim Asay's organization [Thermomechanical and Physical Div. 1534]."

Bill emphasizes that getting the launcher technology to its present point — and continuing in the future — requires the contributions of many people. He mentions, besides Mel, several people in 1221: Billy Duggin, Gene Cnare, Ron Kaye, Bob Davis, Roque Feliciano, and Ed Ratliff. Outside 1221, Bill acknowledges Dean Rovang (1239), Ed Brawley (contractor), Tom Hesch, and Mel Gonzales (both 7412). ●KFrazier(3161)/CS



CUTAWAY VIEW of prototype launcher now undergoing performance tests. Actual launcher is shown in two photos at bottom of page.

Electromagnetic Launch Could Be Quicker and Cheaper Than Rockets

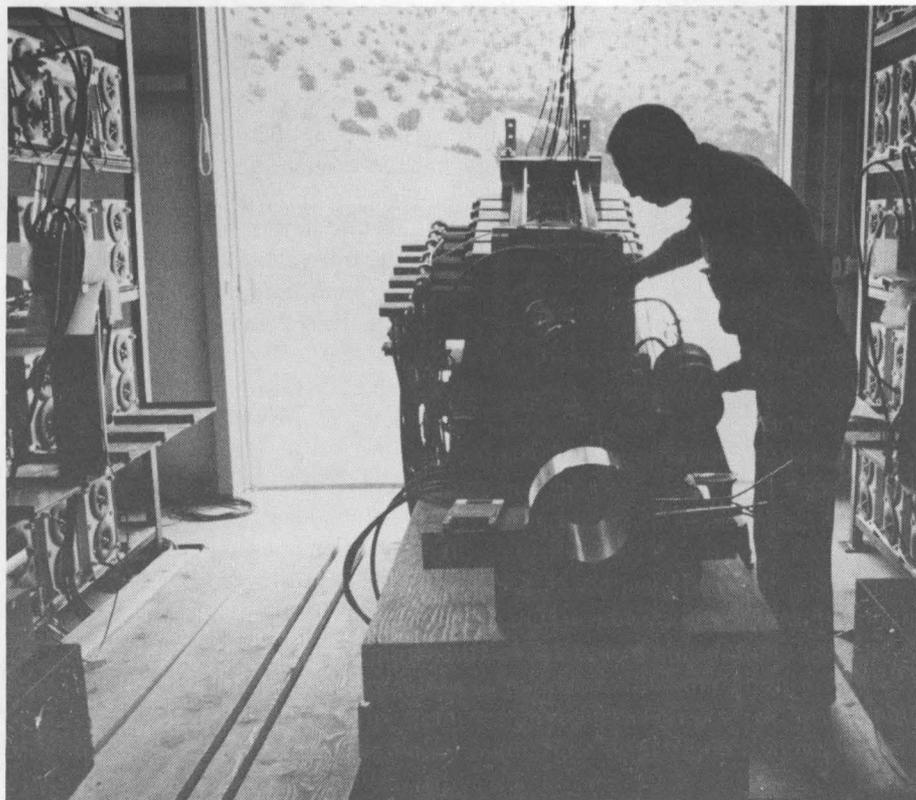
Although an earth-to-orbit launcher based on Sandia's present system may offer substantial benefits, the magnitude of the benefits — particularly economic ones — can't yet be stated firmly. But Miles Palmer, a physicist at Science Applications International, is willing to speculate on the range of possibilities.

Palmer recently studied the Sandia concept, concentrating on its use in deploying strategic-defense hardware such as Brilliant Pebbles (small "intelligent" interceptors). For that type of use, the major advantage of electromagnetic launch is the quick response time. Palmer says, "If you look at that sort of mission alone, the cost is roughly comparable to large rocket boosters and much lower than small rocket boosters."

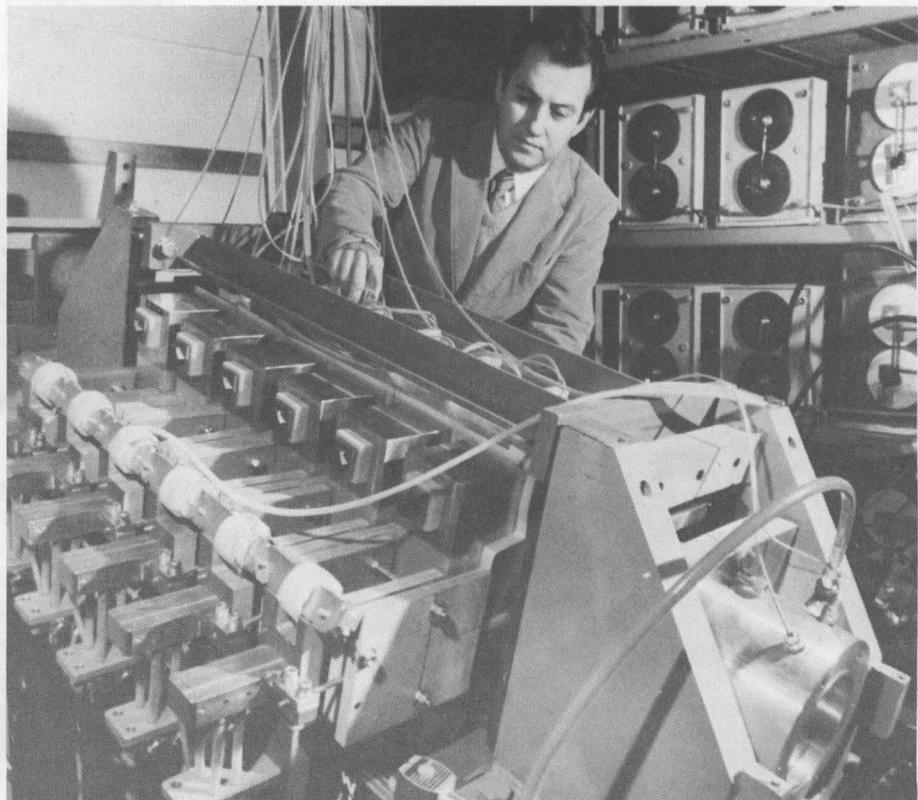
Significant economic advantages begin to appear when other, far-term missions are envisioned. "In other studies," says Palmer, "I've

estimated that an electromagnetic launcher could support NASA missions such as a space station or preparation in orbit for a Mars expedition. Expendables such as water, air, food, and fuel can be launched in small quantities and don't require special design for high acceleration. If you use a launcher repeatedly, the cost per payload should be considerably cheaper than rocket launch."

How much cheaper? "That's controversial," says Palmer. "It depends primarily on the cost of a heat shield to protect the payload as it goes upward through the atmosphere, and the cost of the rocket motor to get it into orbit once it's above the atmosphere. If you make optimistic assumptions, you might get a hundred-fold reduction — paying only one percent of what the job would cost with rocket boosters. With conservative estimates, you still get a cost that's one-fifth to one-tenth of that for rocket boosters."



SIX-STAGE PROTOTYPE LAUNCHER is checked by Gene Cnare (1221).



MEL WIDNER (1221), looking over launcher, developed WARP 10 code.

(Continued from Page One)

Airport Security

airport will be involved in the demonstration system, serving between 30 and 35 flights daily. The three airlines in the two demonstration concourses are United, Delta, and America West.

Beyond the Impulsive Outsider

For years, aviation security has been designed primarily to protect against the threat known as the impulsive outsider — an often irrational passenger who exhibits little planning in airplane hijacking or bombing attempts.

Project leader Terri Olascoaga, Systems Engineering Div. 5248, says the BWI airport project is a move by the FAA to investigate security measures to protect against "more sophisticated" threats — ones posed by disgruntled airport or airline employees, non-employees who exhibit greater premeditation, and terrorists.

Although the system isn't fully defined yet, the following actions are being considered.

- Screen all persons working at the airport, as well as passengers;
- Improve the effectiveness of screening procedures and equipment;
- Use intrusion sensors — detection devices that would alert security personnel if an unauthorized person gained access to a secure area;
- Use closed-circuit television for timely alarm assessment;
- Install duress alarms — signals that could be triggered by screeners to alert security personnel of a threat; and
- Install revolving doors at screening points, with computer-controlled locks operated by airport security personnel. This could prevent a person who has been identified as a threat from bolting into gate areas and onto aircraft.

Task Force Guides Project

Terri chairs the task force guiding the project. Other Sandians working on system planning are Dave Caskey, Don Gould (both 5248), and Art Trujillo (5245). Dave and Art also serve on the task force, along with three FAA representatives, two BWI airport officials, the commander of the state police unit charged with protecting the airport, and the station managers of the three airlines with gates in the demonstration area.

Terri coordinates the project, while her three Sandia colleagues have specific areas of concentra-

'Sandia Can Obviously Help . . .'

FAA Moves Steadily to Improve US Airport Security Systems

Although airline hijackings, bombings, and other security threats to air travelers are a bigger problem in other countries now, the Federal Aviation Administration (FAA) is moving steadily to develop improved security systems for US airports.

That's why Sandia security specialists in Dept. 5240 are involved now in the Baltimore-Washington International Airport project (see main story), says Roy Mason of the FAA. Mason, of FAA's Aviation Security Program in Atlantic City, N.J., is project manager for the Sandia work.

He says Sandia has been working with the FAA in various air-security projects since 1984, through an interagency agreement. "We knew that Sandia had a pool of people with knowledge in many areas of security — access control and intrusion detection in particular — and that the Labs had done a lot of research for the Department of Energy in these areas," says Mason. "We're trying to use this experience and exper-

tise to good advantage and test appropriate technology and systems in an airport environment."

(Sandia is DOE's lead lab for developing physical protection systems to ensure security of nuclear facilities.)

"In the past," says Mason, "when we had more airplane hijackings and other air-security problems in the US, we had to be pretty reactive, instead of proactive. Now that we don't have as many serious incidents, we want to carefully study how US airport and airline security can be improved. Sandia can obviously help with this."

FAA officials remain hopeful that security for international air travelers will also improve steadily, but Mason acknowledges that progress is slow: "The US has security agreements with several individual nations, and these work pretty well. We're active members of the International Civil Aviation Organization [a United Nations group], but it does take an awfully long time for something to happen in that arena."

tion. Dave is responsible for the "air side" — airport areas not normally accessed by the public, such as runways, baggage operations, the ramp area, and maintenance facilities. Don is responsible for areas open to the public — ticket counters, gates, jetways, and waiting areas. Art, who works

“. . . a constant, heavily armed airport security force probably wouldn't be well received in our society.”

part-time on the project, is responsible for making recommendations to protect against the insider threat — persons who work at the airport.

Defining the threat is a key first step in designing a security plan, Terri says. "You can't provide 100 percent protection against everything, so you do what's reasonable. And you can't measure the success of your program unless you define your goals," she explains.

Part of the project calls for designing a system that protects against the higher-level threat from insiders and more methodical outsiders, and

for developing contingency plans to protect against terrorists.

Quick Implementation Necessary

"You have to be concerned about the terrorist threat," says Terri, "but a constant, heavily armed airport security force probably wouldn't be well received in our society. The alternative is contingency planning to implement enhanced security measures quickly when there's a major security alert.

"There are different alert levels, and security would get more restrictive for higher levels. For example, you might not allow any carry-on baggage, or you might not let anyone but ticketed passengers on airport grounds, or you might even call out the National Guard. There's a whole range of things you could do, depending on circumstances," she explains.

Dave Caskey says the integrated security system will incorporate three basic functions of security — detection, delay, and response: "You can increase the delay for the adversary after detection, or decrease the response time, but you have to have the right combination to intercept adversaries before they complete their act. Balanced protection is the goal."

Terri says the Sandia scientists realize that a key part of any security plan is its operational impact on the airport. "This is why the task force is so important," she says. "The members' input is essential to project success. Everyone on the task force has contributed significantly to the development of the enhanced security system concept.

"This operating security system will allow us to test procedures and determine which ones will work. Some of the things that may seem smart to us may not be practical in the real world, and we may find that some things are not as great a hassle as we thought."

Sandia and the FAA considered several airports before deciding to use Baltimore-Washington International for the project. The main criterion for choosing the airport was that it had to be one designated by the FAA as "Category X," a group of 17 US airports that are considered particularly sensitive. This rating is determined by several factors, including passenger volume, amount of international traffic, strategic location, and past incidents.

"Also, BWI has a reputation among airports for forward-thinking management where security is concerned," says Terri. "We've had excellent cooperation, primarily as the result of Bill Jackson's (BWI director of operations) commitment to the program."

•AEtheridge(3161)/LP



1990 SECRETARIAL COMMITTEE members, gathered in Sandia's secretarial-training room, look at class materials used in training new-hire secretaries. Committee members and the role of each are (front row, from left) Gay Nell Harris (5120), chairman; Julie Walker (121), Women's Committee liaison; Mary Alice Padilla (6210), SWAPS (Secretarial Writing and Professional Standards newsletter) committee; Lucille Verdugo (1530), seminar chairman; (back row) Betty Gronewald (7210), SWAPS chairman; Geri Herrera (9240), vice-chairman; Judy Hansen (3730), recorder; Sharon Sturmoski (2530), SWAPS committee.

This Makes Eight!**Braudaway and Stearns Elected IEEE Fellows**

Two Sandians who trace their association to the sharing of office space at Sandia Base in the '50s have been elected Fellows in the Institute of Electrical and Electronics Engineers (IEEE).

Dave Braudaway, DMTS in Electrical Standards Div. 7242, and Sam Stearns, DMTS in Ground Motion and Seismic Div. 9311, were named Fellows by the IEEE board of directors late last year. The elections recognize excellence in the advancement and practice of electrical and electronics engineering.

In 1955, before beginning their Sandia careers, the two shared an office as teachers at the Armed Forces Special Weapons Project on Sandia Base. Although their simultaneous election is a coincidence, it adds to the award, says Sam: "I'm really happy to be receiving this award with Dave. We've been good friends for so long, it makes it special."

Dave's Citation

Dave's award citation reads: "For contributions to the development of primary standards measurement techniques and equipment." A member of the Electrical Standards Division throughout his 33-year Sandia career — most of it in the Primary Standards Laboratory — Dave has seen some changes. "Many of the measurements we're now making are not much different than when I started, but more of them are now referenced to fundamental physical phenomena — a more complex, but considerably more reliable method. It's been my pleasure to work with some of the systems that have pushed measurement capabilities."

Among the dozens of calibration and standards evaluation projects Dave has tackled, several stand out. One is the development of equipment for automated calibration of voltage standards, used by Sandia around the clock from 1962 through 1983. Before Dave's work, the calibrations were done by hand. "We learned some things about how these standards worked in the process, and we changed the direction of the [calibration] industry," he says.

In 1978, Dave developed a Josephson Volt system for the DOE complex, using superconductivity for very precise direct current measurements. In 1985, a high-precision universal measuring machine that Dave helped develop was installed at Sandia. He was also named a Distinguished Member of Technical Staff that year.

A native of Gering, Nebr., Dave earned a BS in electrical engineering at the University of Colorado in 1954 and MS and PhD degrees in the same field at UNM between 1957 and 1968.

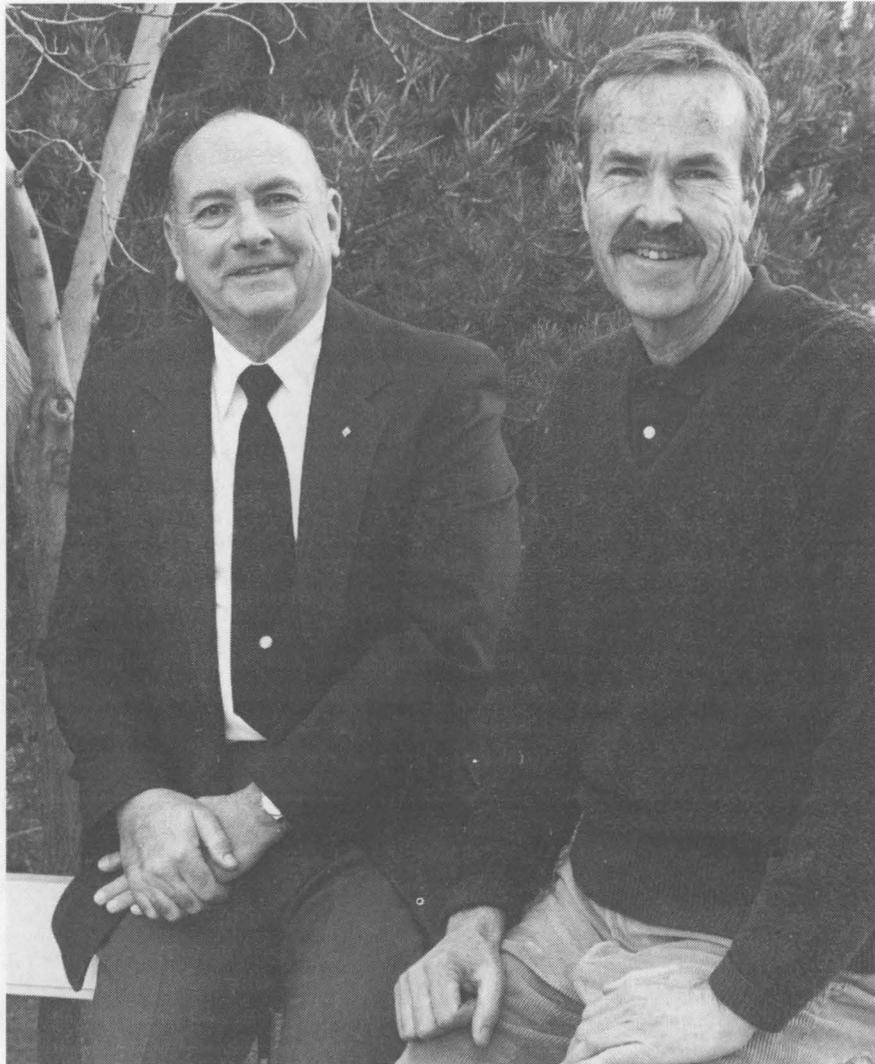
Sam's Citation

Sam's citation reads: "For contributions to education in digital and adaptive signal processing systems and algorithms." It's a unique citation for someone who's not directly an educator, says Sam: "It reflects on Sandia's strong commitment to education." An internationally recognized authority in signal processing, Sam has authored or co-authored four textbooks on the subject.

Sam worked at the Labs from 1957 to '59, then returned in 1971. He became a member of what's now the Ground Motion and Seismic Division in 1974. He was named a Distinguished Member of Technical Staff in 1983.

"Signal processing has many applications because of the great increase in computer capabilities," says Sam. "It's an excellent area now for graduate study. Most signal processing is being done digitally, and there are new applications coming along all the time." Sam has applied signal processing theory to several areas, including safeguards, test ban monitoring, and development testing.

Sam's first text grew out of lecture notes he developed for a then-new UNM signal processing course. Now a Sandia-sponsored part-time profes-



OLD FRIENDS & NEW FELLOWS — Dave Braudaway (left, DMTS, 7242) and Sam Stearns (DMTS, 9311) are the latest Sandians to be elected Fellows in the Institute of Electrical and Electronics Engineers. They've known one another since 1955, when they shared office space as teachers at the Armed Forces Special Weapons Project on Sandia Base.

sor at UNM, Sam has served on several graduate faculties since the early 1960s.

A native of Seattle, Wash., Sam earned his BS in electrical engineering at Stanford in 1953. After serving in the Navy, he was awarded his MS in

Congrats from VP Peurifoy

"It's a real pleasure to see Dave Braudaway and Sam Stearns get elected IEEE Fellows," says Bob Peurifoy, VP for Technical Support 7000.

"Both of them worked in Organization 7000 for many years [Dave still does], so I know personally how dedicated and professional they both are. Sandia has lots of fine employees, but we can always use more like these two. My congratulations to them both."

electrical engineering in 1957 at UNM and earned his doctorate there in 1962 in electronics and computer engineering.

Both Dave and Sam have volunteered their services to IEEE, one of the factors influencing fellowship election.

Congratulations

To Renee Zarella and Nick DeReu (5133), married in Albuquerque, Dec. 30.

To Gloria Solis (3543) and Jake Spidle, Jr., married in Albuquerque, Jan. 5.

To Sharon (2611) and Mike (9115) Fletcher, a son, Kyle David, Jan. 18.

Don't Drive One in Five

It's time to get in gear for this year's "Don't Drive One in Five" competition Feb. 12-16, part of Albuquerque's Better Air Campaign. Sandia is the defending champ in a three-way competition with DOE/AL and KAFB. Sandia won last year's competition by having a higher percentage of employees carpooling, walking, biking, or riding the bus to work. Details will be included in the next issue of the LAB NEWS.

Dave first joined IEEE in 1951. Among the offices and committee positions he has held are president of the Instruction and Measurement Society Administrative Committee, 1988-89; member of the Technical Advisory Board Administrative Council; and chairman of the Standing Committee on Technical and Standards Activities, 1983-1985.

Sam, who joined IEEE in 1957, has served as session chairman for various domestic and international IEEE conferences, guest editor for a special issue of the Institute's Transactions publication, and as general chairman for the 20th Asilomar Conference on Signals, Systems, and Computers in 1986.

Dave and Sam are the second and third Sandians recently named IEEE Fellows. Dave Myers of Device Research Div. 1141 also received that honor late last year (LAB NEWS, Dec. 22, 1989). Five other Sandians are IEEE Fellows — Jim Gover (2161), Charles Gwyn (2160), Venky Narayanamurti (1000), Cecil Land (DMTS, 1164), and Bill Snyder (6500). Only about 1.3 percent of IEEE members are elected Fellows.

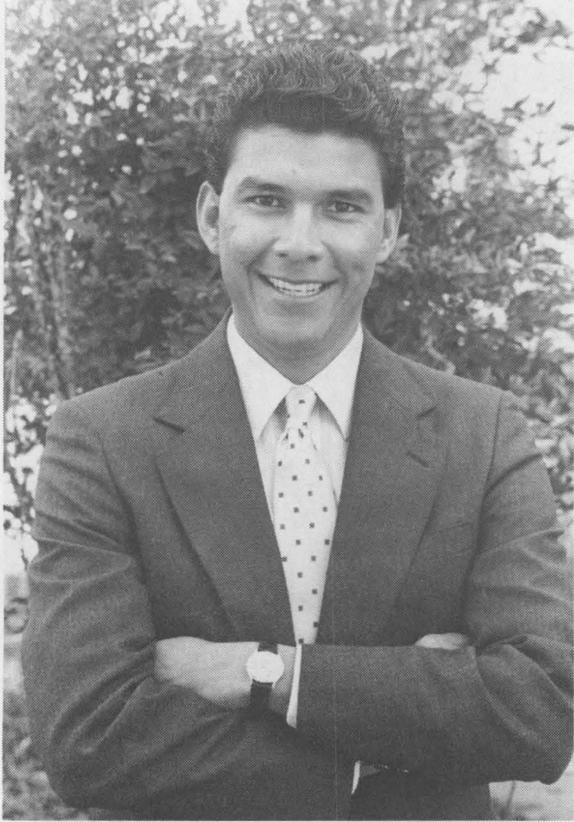
•WKeener(3161)

Fun & Games

Boating — The Coast Guard Auxiliary is offering its power- and sail-boating safety courses beginning Feb. 14 and continuing for approximately 12 weeks. Both courses will be held Wednesdays at 7 p.m. at the Armed Forces Reserve Center classroom annex (400 Wyoming NE). Each session lasts approximately an hour and a half. Cost for text and worksheets is \$10 for the first family member, additional family members \$3/ea. for worksheets. For early registration, call Earl Livingston on 298-5926, Ed Williams on 821-2060, or Ben Gardiner (7411) on 298-0116.

Softball — SERP Softball Association will meet Monday, Feb. 5, at the Coronado Club, Zia Rm., at 5 p.m. The meeting is open to all interested players. Each team must send a representative to obtain registration materials. Call Ed Marek (1524) on 275-2792 for information.

Supervisory Appointments



RUBEN MUNIZ to administrative assistant to VP 5000.

Ruben joined the Labs in June 1981 as a member of the Contract Auditing Division, auditing Sandia contracts throughout the US and in Canada. In February 1984, he became an analyst in the Financial Policies and Procedures Division. He's also been an analyst in the Customer and Supplier Accounting, Budgeting Programmatic Support, Defense Budget, and Energy and External Liaison Budget divisions.

He has a BBA with majors in accounting and finance and an MBA with an emphasis in accounting from Eastern New Mexico University. Before coming to Sandia, Ruben worked for the accounting firm of Peat Marwick Main & Co. in Albuquerque.

He's a member of Sandia's Hispanic Leadership and Outreach Committee and a member of the Coronado Club Board of Directors.

Ruben enjoys fly-fishing, camping, skiing, and other sports. He and his wife Tammie Lynn have one daughter and live in Taylor Ranch.

MANUEL ONTIVEROS to supervisor of Illustration and Design Communications Div. 3155.

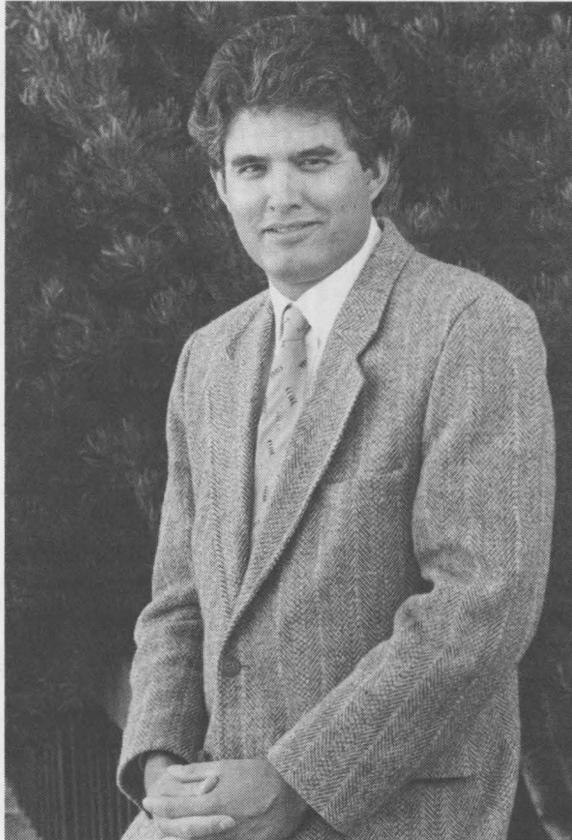
Manny joined Sandia in July 1980 as a member of the Assets Management Systems Design

Division, where he developed and maintained computerized management information systems. He was project leader for the development of the Classified Material Accountability System, and system manager of the Nuclear Materials Management System.

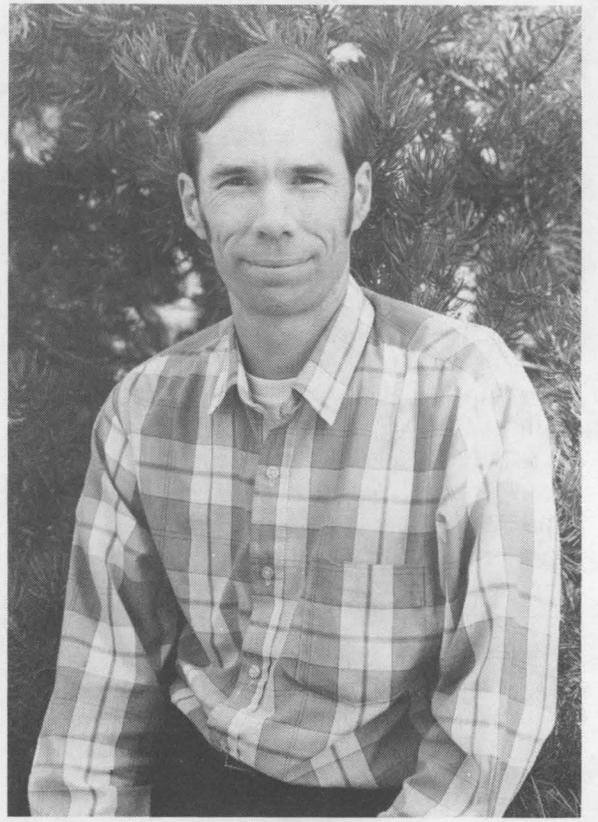
He transferred to the Systems Planning and Development Division in 1983, doing strategic and operational planning for administrative computing systems. In 1985, he joined the Data Administration Division, where he was project leader for the development, implementation, and production support of administrative data bases. He went to the Human Resources Information Systems Division in 1988, where he led a software project for transferring data from a UNiSYS to an IBM system.

Manny has a BBA in business systems analysis from New Mexico State University and an MBA in computers and information systems from UCLA. Before coming to Sandia, he worked for TRW in Redondo Beach, Calif. He teaches a basic computer principles class for Sandia's Out-of-Hours program.

He enjoys reading, hiking, chess, and sports. He and his wife Linda have three daughters and live in the NE Heights.



MANUEL ONTIVEROS (3155)



PAUL BUTLER to supervisor of Applied Technology Division 2526.

In June 1980, Paul joined the Storage Batteries Division, where he helped develop the computer-controlled battery evaluation lab. He was project manager for several advanced battery development contracts and was responsible for evaluating zinc/bromine flowing electrolyte prototypes. He was design engineer for the new portable PAL power supply and chairman of a DOE-sponsored task force on battery test methods.

In 1989, he transferred to the Battery Development Division, with responsibilities for several batteries in production — including some thermal batteries and some silver/zinc primary reserve batteries. He helped in developing a computer model for predicting characteristics of thermal batteries.

Paul has a BS in chemistry from Idaho State University and an MS in chemical engineering from UCLA. Before coming to the Labs, he worked for Allied Chemical in Idaho Falls, Idaho. He's a member of the Industrial and Engineering Chemistry Division of the American Chemical Society.

He enjoys gardening, hiking, auto repair, and coaching soccer and Little League baseball. Paul and his wife Pam have three children and live in NE Albuquerque.

Events Calendar

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

Jan. 26 — Odetta, folksinger with operatic voice; 8 p.m., South Broadway Cultural Center, 848-1320.

Jan. 26-Feb. 4 — "Nero's Last Folly," text and performance by Italian comedian and circus performer Leo Bassi, one-man performance scrutinizes three classic circus gestures — a pie in the face, a juggling act, and a fire-swallowing routine; 8 p.m. Tues.-Sat., 2 p.m. Sat. & Sun. matinees, special "Pay What You Can" performance 7 p.m. Jan. 28; KiMo Theatre, 243-4500.

Jan. 26-Feb. 11 — Annual Black History Month presentation: "A Lesson from Aloes," play by Athol Fugard typifies the entire apartheid system and personalizes it, a dramatic story about relationships between three characters — two white and one black; 8 p.m. Fri. & Sat., 6 p.m. Sun.; Vortex Theatre, 247-8600.

Jan. 27 — "You Say Chaquegue, I Say Shaquegue," New Mexican folktales performed by La Com-

pañia de Teatro de Albuquerque; 8 p.m., South Broadway Cultural Center, 848-1320.

Jan. 27 & 28 — "The Most Reluctant Dragon" by Bill Hayden, Albuquerque Children's Theatre production; 1:30 and 3:30 p.m. each day, Popejoy Hall, 888-3644 for information, 277-3121 for tickets.

Jan. 28 — Exhibition lecture, "Cowboys on Canvas," by Byron Price, executive director of the Cowboy Hall of Fame and Western Heritage Center (Oklahoma City), in conjunction with "Adventures West" exhibit; 2 p.m., Albuquerque Museum, 243-7255 (tickets available at museum on day of the event only).

Jan. 28 — Chamber Players Series Three: "From Wagner to Our Time," New Mexico Symphony Orchestra Chamber Players, conducted by Roger Melone, featuring Rossini's "Pas de Six" from William Tell, Britten's "Soirees Musicales" after themes of Rossini, Riegger's "Canon and Fugue for Strings," and Wagner's "Siegfried's Idyll"; 3 p.m., First United Methodist Church, 842-8565.

Feb. 2 — "Album," premiere of play by David Rimmer about two teenage couples in the '60s, fea-

turing music from the Beatles, Beach Boys, and Bob Dylan, benefit for Casa Esperanza (New Mexico's only lodging facility for adult cancer patients and their families); champagne & hors d'oeuvres reception 6 p.m., executive gift auction 6:15-7:15 p.m., curtain 8 p.m.; Albuquerque Little Theatre, 842-1433.

Feb. 2, 3, & 4 — "Coppelia," Southwest Ballet Company performance of comical and poignant ballet in three acts; set to music by Delibes; 8:15 p.m. Feb. 2 & 3, 2 p.m. Feb. 4; Rodey Theatre, 294-1423.

Feb. 2-24 — "Seascape with Sharks and Dancer" by Don Nigro, Theatre-in-the-Making performance; 8 p.m. Fri. & Sat., CenterStage, 260-0331.

Feb. 3 — Annual Baroque Concert, Chamber Orchestra of Albuquerque, with violist Marcus Thompson, featuring music by Telemann, Vivaldi, J. S. Bach, Lully, and van Wassenaer; 8:15 p.m., St. John's United Methodist Church (2626 Arizona NE), 881-0844.

Feb. 9 — Great Artist Series: New Mexico Symphony Orchestra, featuring baritone Sherrill Milnes, works by Mozart, Handel, and Schumann; 8:15 p.m., Popejoy Hall, 842-8565.

Produces Thousand-Neutron Pulses

Sandia Neutron Generator Used in Medical Research

A pulsed neutron generator developed at Sandia is being used to make clinical measurements of carbon content in human subjects. The generator, which is the product of a contract between Sandia and the US Department of Agriculture (USDA), was recently delivered to the USDA's Human Nutrition Center on Aging at Tufts University in Boston.

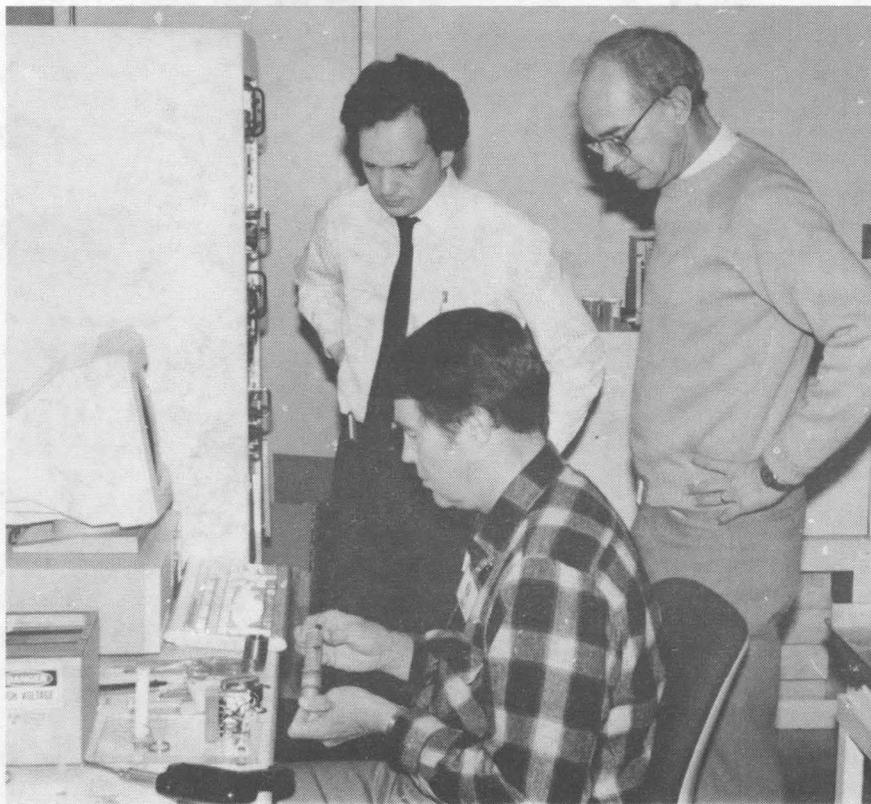
Mike O'Neal (2564) and John Weinlein (2364) designed and built the neutron generator, which uses pulsed beams of hydrogen isotopes to cause neutron-producing nuclear-fusion reactions. (Neutron generators are used in nuclear weapons to initiate the nuclear explosion.) Body-carbon measurements made with neutrons can provide a direct evaluation of body fat (and energy store) in patients and normal subjects.

Radiation One-Third of X Ray

Approximately a thousand neutrons are produced during each pulse, at a pulse rate of up to 8000 per second. In the setup at Tufts, the radiation exposure to a person undergoing the total-body-carbon measurement is about one-third the exposure from a chest x ray. That's according to physicist Joseph Kehayias of Tufts, who designed the system and is doing the experiments.

After Mike and John finished installing the neutron generator and explaining operating procedures, Kehayias described himself to Tube Development Div. 2564 supervisor Frank Bacon as a "delighted customer."

The generator at Tufts uses two Zetatron neutron tubes, a type developed at Sandia in the 1970s



MIKE O'NEAL (2564, seated) installs Zetatron tube into neutron generator while Joseph Kehayias (left) of Tufts University and John Weinlein (2364) look on.

for a uranium-logging project. Kehayias earlier used a single-tube version in experiments on human subjects at Brookhaven National Lab.

Zetatrons are built by General Electric Neutron Devices Department in Largo, Fla., and have been used throughout the DOE complex for monitoring waste material in which nuclear fission could occur. ●

Premiering "Premier"

TLC Pilot Program for Retirees Starts Soon

Next month, 250 randomly selected Albuquerque-area retirees and their spouses will receive invitations from Sandia's Medical organization to participate in a Total Life Concept (TLC) pilot program tailored for retirees.

"We received a tremendous response — some 1000 strong — when we sent out a questionnaire to area retirees late last year concerning their health needs and possible interest in such a program," says TLC program manager Pete Egan (3330). "So we'll offer a pilot program — 'TLC-Premier' — this year that focuses on some of their major health and wellness concerns.

"If we get an enthusiastic response from the pilot group — and I think we will — we hope to continue the program in future years for other retirees and their spouses."

Quality of Life, Continuing Vitality

"The emphasis here is quality of life and continuing vitality," Pete continues. "After all those years of work, retirement rewards include things like time flexibility and the chance to pursue hobbies and other interests. However, if one's health isn't so good, those chances may slip away."

Once enrolled in TLC-Premier, retirees and their spouses will attend an orientation session at the Coronado Club. During the session, they'll complete a Healthtrac form, which will help them assess effects of their behaviors on their health. Also, biometric tests during the orientation — blood pressure and cholesterol checks, for example — will provide a picture of current health status.

"Two or three weeks later, we'll provide participants feedback based on their Healthtrac re-

sponses and test results, including some suggestions on how best to improve their vitality," says TLC Premier coordinator Larry Papenfuss (contractor). "After that, they'll have an opportunity to participate in any or all of the five classes that will be offered this year."

The health-awareness classes (subjects were chosen based on the retiree survey) cover the following areas:

- cholesterol management (March)
- physical activity (April)
- weight reduction (May)
- arthritis management (September)
- heart disease prevention (November)

Three sessions of each class will be offered, allowing scheduling flexibility to participants.

"We, of course, hope the classes will motivate Sandia retirees to make healthful changes in their lifestyles," adds Larry. "Most important, though, we'd like to see them learn more about their health and have a little fun along the way."

Stabilizing or even reducing health care costs — paid by both individual participants and the Sandia Medical Care Plan (MCP) — could be an important side benefit. Medical claim information for retirees was analyzed by TLC and Benefits representatives. Based on that data, TLC-Premier health-education classes for retirees were specifically designed not only to improve the quality of life for retirees, but to help reduce the incidence of heart disease, cancer, and musculoskeletal diseases — conditions that create high-dollar medical expenses.

For more information on TLC-Premier, call Larry on Tuesday or Thursday mornings between 9 a.m. and noon on 845-9171. ●

Sympathy

To Louis Kerschion (2853) on the death of his mother in Albuquerque, Nov. 19.

To Charlie Greenwood (DMTS, 9211) on the death of his father-in-law in Albuquerque, Dec. 16.

To David (DMTS, 1152) and Shirley (3551) Emin on the death of his father and her father-in-law in Albuquerque, Jan. 7.

To Shirley Craig (3437) on the death of her father-in-law in Clovis, Jan. 9.

To Tom Hunter (6310) on the death of his father-in-law in Crescent City, Fla., Jan. 10.

To Gordon Pike (1815) on the death of his father-in-law in Albuquerque, Jan. 10.

To Donna Rix (411) on the death of her father in Albuquerque, Jan. 11.

To Susan Homer (1273) on the death of her mother in Rhode Island, Jan. 14.

Welcome

Albuquerque — Janise Baldo (3151), Denise Bencoe (1845), James Davis (7841), Pauline Gerstle (3531), Richard Grant (1822); William Jenkins, Jr. (7823), Mary Lockwood (154), Judith McKinney (3718), Mary Monson (3151), Gary Nordyke (7266), Todd Owen (9131), Carol Petty (3716), Margaret Quintana (3741), Lynne Rathjen (3726), Erlinda Silva (3712), Molly Smith (9144); *Other New Mexico* — Peggy Clews (1841), Reed Jackson, Jr. (5161), Jann Minor (154), Stephen Newton (1845), Raul Rivas (5219).

Elsewhere: *Arizona* — Bryan Spicer (5143); *Florida* — Cisela Fuentes (2833); *Georgia* — Mary Compton (3144); *Idaho* — James McCord (6416); *Illinois* — Michael Dugger (1834); *Rhode Island* — Stewart Silling (1533); *South Carolina* — Michael Prairie (6216); *Texas* — Allison Kane (7252), Patrick Milligan (3411), Timothy Peterson (7844), David Reddy (5165).

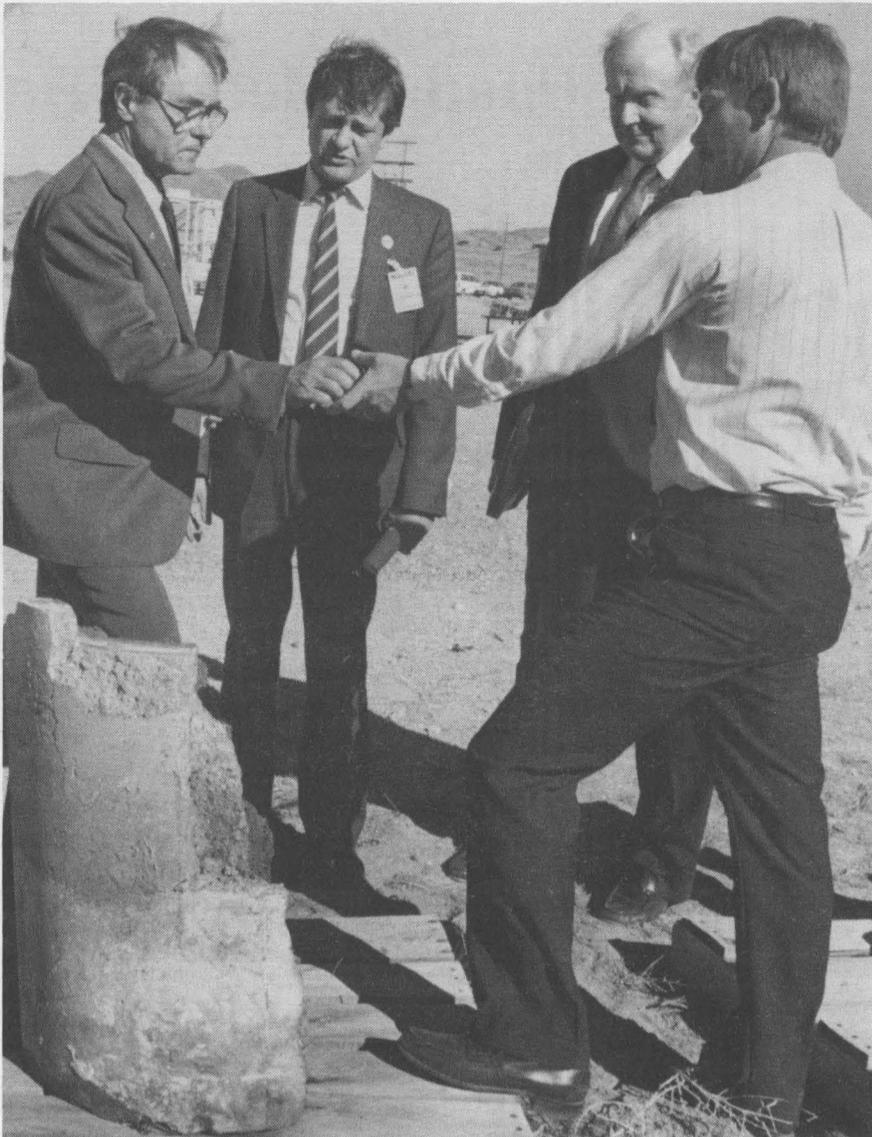
Glue-Makers Flex Their Mussels



Polyphenolic protein is the substance that mussels secrete to keep themselves firmly anchored to rocks, docks, wrecks, or other solid forms. . . . The National Institute of Dental Research has poured money into research on these peptides. It seems that mussel glue, unlike most other adhesives, works well in wet environments, and may be used to fill, seal, or bond teeth.

New Scientist

ERV COPUS (6422, right) hands Prof. Nikolai Ponomarev-Stepnoi, First Deputy Director of Atomic Energy at the USSR's I. V. Kurchatov Institute of Atomic Energy, a sample from concrete (in front of the group) that had been used in studies of reactions between concrete and nuclear-reactor core material. Looking on are another Kurchatov researcher, Alexander Gavrishin (second from left), and Dave McCloskey (6400). Ponomarev-Stepnoi and Gavrishin visited Sandia through a joint agreement on the safety of nuclear power between the US Nuclear Regulatory Commission and the Kurchatov Institute.



feed iiback

Q. When new badges are issued this spring, I hope a laminator is used to seal the edges. Our badges deteriorate very quickly. Our special gate passes (edge sealed) last forever, but are only good for one year. How about using the special gate-pass laminator for the new badges?

A. Though lamination is used on both badges and gate passes, the process used for the latter creates a better bond on the edges. Your comments are

right on target, and we intend to change the system in the near future. DOE has contracted with Systems Engineering Div. 5248 to develop a badge specification that will be used throughout the DOE community. In the meantime, Visitor Access & Administration is working with Div. 5248 to produce a more durable and functional badge for the 1990 reissue.

Jim Martin — 3400

Favorite Old Photo

This was a typical Sunday picnic on the banks of a stream in Arkansas in the early 1900s. In the foreground is my great-aunt Bessie Morgan; in the center, my maternal aunt Norma Woodard; and on the right, Ollie Graves, a family friend. Other family members are in the background.

— Brick Dumas, 9210



Take Note

John Tissler (7535) was awarded the Army Reserve Meritorious Service Medal for outstanding service as Commander of the Army Reserve 84th Finance Center (Santa Fe) from August 1985 to July 1989. He's a lieutenant colonel, and has been a member of the Army Reserve for 18 years and served 5 years active duty.

John Merritt (5268) is the author of a chapter about Soviet Union special forces in a new book, *Inside Spetsnaz*, published by Presidio Press. He's a retired Army major and is a specialist on military special forces.

The New Mexico Network for Women in Science and Engineering will present an "Expanding Your Horizons" Conference March 3 at UNM. This is a one-day conference for young middle- and high-school women in Albuquerque and surrounding areas. The purpose is to encourage them to enter science, engineering, and other technical fields. Registration forms sent to the schools on Jan. 22 are due back to the Network by Feb. 13. All young women are invited to attend. Call Ellen Cronin (1200) on 265-5229 if you have questions.

Attention, Retirees

Members of Benefits Div. 3543 will give a presentation covering credit benefits for retirees on Medicare on Monday, Feb. 12, at 1 p.m. at the Coronado Club. Repeal of the Catastrophic Coverage Act for Medicare will also be addressed, and questions from the audience will be answered. If you have a topic you would like discussed, call Pat Liguori (ret.) on 256-3613.

The New Mexico Kachina Chapter of the Society for Technical Communication (STC) recently presented awards to two Sandia publications: "Research at Sandia National Laboratories" and "Sandia Technology — Special Issue: Verification of Arms Control Treaties." The publications are now eligible for the STC's 1989/90 international competition.

Retirement Seminars

Michael DeVincentis, Jr., and Steven Stubbs of Dean Witter Reynolds, Inc., will present "Portfolio Planning for a Secure Retirement" on Tuesday, Jan. 30, at 5 p.m. at the Coronado Club, Zia Rm. For information, contact Michael or Steven on 883-6262.

Guy Trujillo of SunAmerica Securities, Inc., will present "What You Should Know About Retiring Before You Retire" on Wednesday, Jan. 31, from 5 to 6 p.m. at the Coronado Club, Conquistador Rm. For information, call Guy on 294-6655.

But What About Their Pimples?

Some [dairy] farmers in the Middle Atlantic states have discovered that several sweet things happen when they feed their cows chocolate candy bars. Feed bills go down. The milk's butterfat content goes up — and the milk fetches a higher price.

Will Flickinger, a livestock nutritionist in Dover, Pa., tells the 60 dairy farmers he advises to mix chocolate with the ration of hay, soybeans, alfalfa, and grains their herds consume. "They love it," says Ralph McGregor, a farmer who follows the regimen. (He and the others rely on the salvage center at Hershey Foods Corp., where damaged KitKats, Reese's Pieces, and the like pile up by the ton.)

Chocolate doesn't change the cows' behavior, says Mr. Flickinger, and it doesn't make them gain weight. (The nourishment is milked out of them.) But the cows don't show much restraint when there's chocolate around. "If you put a pile of candy bars out in a pasture," Mr. Flickinger says, "they'd go eat themselves to death."

Kirsten Swartz, *Wall Street Journal*

Take Note

Extra copies of Sandia's 40th anniversary booklet, "Recollections for Tomorrow," are available to employees and retirees. To obtain additional copies, call Community Relations Div. 3163 on 844-6909.

The glossy 53-page booklet was mailed to employees (current and retired) on Nov. 1, 40 years from the day that AT&T assumed management of

Sandia for the government. The booklet, a first-of-its-kind for the Labs, contains first-person remembrances of some of the Labs' most important events, programs, and accomplishments.

Frank Lasky (2522) was recently named "1990 Citizen of the Year" by the *Torrance County Citizen*. The newspaper, which publishes news of in-

terest to Estancia Valley residents, cited Frank for his leadership in the Edgewood Citizens and Homeowners Association (ECHO). During his year as president of ECHO, the organization has begun or completed several major community projects — planning a recreation park, refurbishing a community center, and stationing a road maintenance worker and a deputy sheriff in Edgewood.

UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

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

WORK BENCHES: 2 x 6 and 4 x 4 construction, one 8', one L-shaped 6' x 8', \$100/\$150. Seamons, 292-2679.

MOTORCYCLE HELMET, AGV full-face, size 56 (small), \$125. Kovacic, 256-9867.

HARD-RUBBER PISTOL GRIPS, Hogue, fit S&W L-frame square butt, \$10. Roherty-Osmun, 293-8127.

ENGLISH SPRINGER SPANIEL, papers, liver & white, w/6' x 12' dog run and doghouse, \$100. Schowers, 822-8494.

WURLITZER PIANO, console model, w/bench, fruitwood finish, will include piano lamp, \$1350. Hunt, 299-5098.

PINBALL MACHINE, \$25; Hurd double-awning window, \$25; GM 700 R4 automatic transmission, \$400. Thalhammer, 298-8521.

FIVE-DAY LIFT TICKETS, Jackson Hole; Bell & Howell movie projector, w/camera; Sunbeam humidifier; 25" Zenith console TV; insulated draperies. Kellogg, 299-3737.

RACK STEREO SYSTEM, LXI, 100 watts, dual Dolby cassette, AM/FM, turntable, equalizer, 3-way speakers, cost \$400, sell for \$300. Schkade, 292-5126.

SNOW BLOWER, 5-hp, \$150; Apple IIc, w/extras, \$650; air conditioner, \$100; 19" B&W TV, \$20; misc. items, all OBO. O'Toole, 828-9260.

NINTENDO POWER SET, w/power pad. Riley, 869-2119.

CHILD'S SKI BOOTS, size 11 (17.5 European). Blankenship, 299-1422.

AJAY MANUAL TREADMILL, 2 miles recorded, \$75. Jones, 899-0642.

SKI RACK, gutter mount, \$20; new Ford wheels, 15", white spokes, \$10/ea. Quintana, 898-6718.

TWIN BED, mattress, box spring, nightstand, dresser, desk, chair, \$200. Filusch, 299-5932.

NIVICO (JVC) CONSOLE STEREO, w/reel-to-reel tape, needs work, \$100; RCA 26" console color TV, \$25. Standing, 292-9249.

KENMORE WASHER/DRYER, portable, for apartment/mobile home, \$300 OBO; carpet, w/padding, 3 pieces approximately 12' x 14', \$35/ea. Snyder, 293-3611.

ANTI-GRAVITY INVERSION BOOTS,

w/hanging frame and base, \$30. Caffey, 296-1942.

BUMPER-POOL TABLE, w/game table/regular top, \$150. Prew, 296-3815.

WHIRLPOOL BATH, Sears, for bathtub, w/accessories, \$60. Miller, 268-5992.

PORT-A-CRIB, includes mattress and bumper pad, \$50. Beatty, 299-3429.

SCUBA DRY SUIT, Bell Avon professional, heavy-duty valves, hood, used twice, size medium, \$640 firm. Hutchinson, 265-2482.

AMANA REFRIGERATOR, 13.6 cu. ft., bottom freezer (6.5 cu. ft.), \$100; Singer sewing machine, w/cabinet, bench, forward and backward straight stitch, \$75. Marrs, 821-5144.

YASHICA T2D 35mm CAMERA, auto focus, \$175; Velbon mini-F tripod, new. Burton, 275-9483.

PLAYPEN, 40", folding, w/pad, \$25. Almquist, 294-4723.

BUGGY/STROLLER COMBO, \$30. Rejent, 299-1518.

CAMPER SHELL, fits Chev., GMC, or Ford full-size long bed, steel frame, sliding windows, boot, \$175. Mills, 823-4484.

SOFA BLOCK BUNK BEDS, w/mattresses; Sears cement mixer; bookcase. Vandewart, 298-4741.

NORGE WASHING MACHINE, used 3 years, large-capacity, heavy-duty, white, \$175. Anderson, 298-0477.

DESK AND CHAIR, light wood, best offer; earth-tone plaid sofa and matching chair, country-style, \$250 OBO. Prins, 821-0490.

CAGE for large dog, \$20; 2 child seats for bicycle, \$15/ea.; assorted motor-cross equipment; AM car radio, \$20. Blankenship, 822-0516.

KENMORE DISHWASHER, convertible, needs repair on door leak, \$35. Yingst, 884-3812.

GUNS: .30-06 Springfield Savage Super-Sporter, \$250; 12-gauge Ithaca pump, model 37 Featherlight, \$125. Adams, 821-9079.

BUNK BEDS w/pastel comforters, antique wicker desk, double-size quilted bedspread, O'Sullivan typewriter stand, twin-size mattress & box spring. Hawkins, 296-8531.

CORDLESS TELEPHONE, Base Station, Uniden 1500, Band 25A, repaired and operable, belt clip, owner's manual, \$25. Reed, 881-0020.

PROPANE TANKS: 25-gal., \$30; 150-gal., \$175. Hole, 881-7417.

CAL SPA PORTABLE HOT TUB, 7' x 8', gas-heated, 1-1/2 yrs. old, \$2800. Girard, 821-5529.

ELECTRIC GUITAR, Roland digital recorder for Juno-60 or Jupiter-8 Roland keyboard; dual gas wall heater. Gonzales, 344-4933.

FULL-SIZE MICROWAVE, \$60; exercise bike, \$30; 7600-Btu window air conditioner, \$100. Ludwigsen, 821-9624.

KING-SIZE WATER BED, country-style, 4-poster, oak finish, 6-drawer pedestal, extra-firm mattress, mattress pad, liner, heater, \$295. Sikora, 891-7862.

DRAFTING TABLE, 3' x 5', including Vemco arm-type drafting machine, scales, stool, \$50. Peterson, 266-9524.

SEARS GAS DRYER, \$50; KitchenAid dishwasher, motor, pump, \$5. Kavet, 299-1793.

CHEST OF DRAWERS, 34" W, 19" D, 46" H, \$100 OBO. Lewin, 898-2303.

GAS FIREPLACE LOG SET with natural or propane gas control, \$50. Martegane, 884-4643.

TWO HIGH-BACK BUCKET SEATS

from a Blazer, \$100 OBO; 1 Harley-Davidson knucklehead frame, \$125. Souther, 281-3465.

DRAPES, beige, for 6' sliding patio door, left pull, includes rod, \$95; matching drape for window 6' W x 2' H, w/rod, \$50. Brion, 298-1761.

NIKON F2 PHOTOMIC, w/50mm Nikkor F1.4, and 135mm Soligor F1.8, \$250 OBO. Crabb, 344-5415.

TABLE SAW, 10", w/stand, general-purpose blade, saw guard, Builders Square, \$60. Godshall, 294-2214.

REMINGTON Model 760 pump action 30/06, includes scope, mount base, sling swivels, \$275. Smiel, 865-9081.

TEKTRONIX 4105 COLOR GRAPHICS TERMINAL, w/tilt, swivel stand, manuals, \$200. Knapp, 294-6359.

DINING SET, dark oak, 42" x 66" table, two 18" leaves, 6 chairs, china cabinet, \$500. Cooper, 888-0967.

OSTER ELECTROSTATIC PRECIPITATOR, apartment-size, used one season, \$60. Guttman, 888-5114.

ROOM-DARKENING SHADE, white, 70-1/2" W x 71" L, \$5; 2 brown wood-grain cafe rods, 83" W and 86" W, \$8/ea. OBO. Campbell, 889-0961.

'84 WESTINGHOUSE WASHER/DRYER STACK, \$395; indoor/outdoor wrought-iron gates, 42-1/2" x 42-1/2", \$75. Laffoon, 298-7282.

DINETTE SET, 4 chairs, \$100; bathroom items: faucets, cultured marble, baseboard heater, \$50. Draelos, 296-3078.

SOFA SLEEPER, double-bed-size, \$150; AM/FM 8-track stereo, \$25. Graham, 293-7302.

CHILD'S DRESSER, dark wood, \$40; queen-size water bed, \$125; Brentwood rocker, \$15. Robertson, 293-1007.

BLACK & WHITE TV, 18", \$50; silver service, w/tray, \$75. Pinkerton, 255-2505.

WOVEN VERTICAL BLINDS, for patio door, \$75; dishwasher, 5 yrs. old, \$60; color TV, 19", 5 yrs. old, needs repair, \$40. Ricco, 828-1997.

WEIGHT MACHINE, DP GymPac 1000 fitness system, all accessories & manuals included, \$150. Carlson, 892-5645 after 6.

NORDICA SKI BOOTS, woman's size 7-8. Moss, 298-2643.

ROUND-TRIP AIR TICKET TO NEW ORLEANS, Feb. 24-28 (Mardi Gras), \$148; also have Holiday Inn reservations near airport. Moore, 281-2480 leave message.

THREE-DRAWER FILE, legal/letter-size, Autumn Wood, 41" H x 20" D x 20" W, \$150; TV cabinet w/storage, 40" H x 21" D x 31" W, TV opening 29" W x 20" H, \$100. Ashworth, 281-2824.

CHILD SEAT FOR BIKE, \$8; auto bike carrier, \$10; vertical blinds, mauve, 100" x 94" and 70" x 72", hardware included, \$50. Webb, 828-2271.

TRANSPORTATION

'73 EL CAMINO SS, \$2700 OBO. Boultinghouse, 344-0780 before noon, 869-6264 after 3.

'88 PONTIAC FORMULA, V-8, AT, PS, PB, cruise, tilt, AC, AM/FM cassette, tinted windows, custom wheels, \$11,600 OBO. Gutierrez, 891-8108.

'73 CAMARO RS/LT, restored, loaded, 350, AT, AC, \$5500. Loudermilk, 299-4621.

'86 ISUZU TROOPER II, turbo diesel, 4-WD, brown, AC, PS, 5-spd., 58K miles, AM/FM cassette, \$7500 OBO. Taylor, 262-0942.

'84 FORD LTD SW, 6-cyl., 3.8L, AC, cruise, PW, luggage rack, white exterior, 60.5K miles, \$3600. Convisor, 828-2137.

'86 MERCEDES BENZ 300E, anthracite, gray leather, 24K miles, under warranty. Bennett, 298-1142.

'78 BMW R100RS MOTORCYCLE, extras, \$2500. Kovacic, 256-9867.

'84 NISSAN 300ZX TURBO, 5-spd., T-tops, electronic dash, leather interior, red, tinted windows, 45K miles, \$7300. Baremore, 296-9267.

'85 CHEV. S-10 BLAZER, 4x4, one owner, 42K miles, AC, PW, PL, luggage rack, \$6500 OBO. Olson, 299-8678.

WOMAN'S 3-SPD. BICYCLE, w/tot seat, \$40. Quintana, 898-6718.

'81 GMC SIERRA CLASSIC PICKUP, 1/2-ton, long bed, 350 V-8, AT, PS, PB, stereo, loaded, \$3450 OBO. Mills, 823-4484.

'86 CHEV. CAMARO, T-tops, louvers, PW, PL, loaded. Hamilton, 881-2705.

HONDA CR500, ATK fork kit, rebuilt rear shock, extras, \$600. Blankenship, 822-0516.

'77 DATSUN PICKUP, 4-spd., R & H, 78K miles, trailer capacity, new tires, \$750. Joseph, 299-6989.

'74 FORD LTD. PARTS CAR, complete, \$200. Brandon, 836-5621.

'76 PONTIAC VENTURA, passed emission test Dec. '89, 41K miles, \$625 OBO. Caster, 299-4308.

'86 BAYLINER BOAT, 50-hp, Force outboard, trailer, AM/FM stereo w/cassette player, Bimini top, custom canvas cover, \$3000. Henry, 831-3099.

WINNEBAGO LeSHARO VAN, self-contained, loaded, 17.5K miles, 22 mpg, \$12,500. Joseph, 266-0774.

'84 NISSAN PULSAR NX, burgundy, AC, 5-spd., AM/FM cassette, 85K miles, \$2500 OBO; mountain bike, w/Suntour, Solida, Mountech, Schwinn components, \$150. Roth, 344-7060.

'84 PONTIAC FIERO, 32K miles, w/all extras, \$4000. Muyschondt, 884-7699.

'80 TOYOTA CELICA GT, 5-spd., AC, new clutch, 90K miles, needs electrical work, \$1300 OBO. Souther, 281-3465.

'75 CHEV. CAMARO, 6-cyl., candy-apple red, PS, AT, new tires, AM/FM cassette, \$1500 OBO. Arguello, 821-9635.

FREESTYLE BIKE, Hutch Trickstar, \$150. Cooper, 888-0967.

'75 CHEV. IMPALA, V-8, 4-dr., AT, AC, PS, PB, radio, 106K miles, \$1000. Merritt, 884-8487 after 5.

'63 F-100 TRUCK, 6-cyl., \$650. Graham, 293-7302.

'81 HONDA CM400 MOTORCYCLE, 9.8K adult-driven miles, one owner, always garaged, \$575. Robertson, 293-1007.

'87 NISSAN MAXIMA, loaded, 41K miles, \$11,000 firm. Cassell, 298-5262.

TRICYCLE, \$8; Playskool plastic scooter, \$5. Webb, 828-2271.

'87 FORD VAN, Ivory Coach conversion, 38K miles, 5L, V-8, AT, dual air, 6/60 warranty. Barnhart, 292-4186.

REPOS: '88 Nissan Pathfinder, '87 Nissan Maxima, '83 Honda 1100 Aspencade touring bike; bids accepted through Feb. 6; we reserve the right to refuse all bids; subject to prior sale. Sandia Lab FCU, 293-0500.

REAL ESTATE

3-BDR. HOME, in Peralta, 1-3/4 baths, pitched roof, half acre, double

garage, refinance, \$73,500. Tafoya, 865-9816.

50' x 100' LOT, Lake Bridgeport, Tex., restrictions, 2 blocks to water, fishing, \$2350. Hawley, 299-2516.

4-BDR. HOME, Four Hills, 2700 sq. ft., \$139,900. Blaich, 294-6662.

9 ACRES, one mile southwest of Belen, \$15,000 or make offer. Sanchez, 1-864-9297.

ANGEL FIRE LOT, 3/4 acre, Chalet II, 2 blocks from ski run, level, wooded, utilities, \$16,900. Bennett, 298-1142.

3/4-BDR. HOME, on 4 acres in Placitas, passive solar, 2240 sq. ft., deep-water well, \$210,000. Schmidt, 867-5989.

4-BDR. HOME, Tramway/Indian School area, 3 baths, 2926 sq. ft., city and mountain views, formal LR and DR, \$250,000. Allen, 292-4238.

3-BDR. HOME, double garage, 1600 sq. ft., passive solar and gas heat, in Rio Rancho. Jimenez, 892-5726.

3-BDR. HOUSE, Indian School/Morris area, 1250 sq. ft., 1-3/4 baths, 2-car garage, 5 yrs. old. Hernandez, 296-3890.

2-BDR. ANGEL FIRE CONDO, Racquetclub Commons, 2 baths, fully furnished, \$46,000. Otey, 294-1874.

4-BDR. HOME, NE, cul-de-sac, 1-3/4 baths, 1600 sq. ft., timed sprinklers, below FHA appraisal, assume \$642/mo. payment. Grafe, 271-0136.

3-BDR. HOUSE, NE, corner lot, insulated, wood stove, 1-3/4 baths, no down, FHA assumable, \$606.03 PITI. Spiller, 298-3594.

PATIO HOME, Tramway/Rover area, 1720 sq. ft., 2 master BRs, 2 baths, great room w/FP, 2-car garage, \$104,900. Schkade, 292-5126.

4-BDR. HOME, 1-3/4 baths, formal LR and DR, FR, 2100 sq. ft., \$119,900. Barber, 275-2440.

WANTED

APPLIANCES: refrigerator, Sears/Whirlpool/GE, frost-free; washer & dryer, Maytag or Whirlpool top of the line; home ready Jan. 24. Ricker, 293-1847.

BOXING EQUIPMENT, heavy bag, gloves, head gear, top and bottom ball, speed bag. Hutchinson, 265-2482.

EXERCISER, Schwinn Air-Dyne only. Fenimore, 298-8052.

VACATION COMPANIONS, 2 women to join 2 women, Pennsylvania Dutch area, share expenses, March 22 to April 1, prefer age 40s. Johnson, 296-1917.

MAN'S 10-SPD. BIKE, large enough for a 6'7" growing 15-year-old. van Berkel, 897-2541.

ROOMMATE, share 2-bdr., San Mateo/Constitution area, nonsmoker, no cats, \$250/mo. plus 1/2 utilities. Gasser, 255-6244.

DOGHOUSE, for Doberman/shepherd cross. Gonzales, 296-9055.

DOGHOUSE for medium-sized dog. Souther, 281-3465.

SHARE-A-RIDE

FULL-TIME VANPOOL SEATS AVAILABLE, along N-14 and Frost Rd., \$34/mo., ride every day. Rentzsch (281-5017) or Burns (281-3922).

Coronado Club Activities

It's a Super Weekend In More Ways Than One

IF YOU THOUGHT the Super Bowl is the only thing happening this weekend, think again. Tonight, enjoy dinner theatre at its best as you watch "The Gingerbread Lady," a Neil Simon play presented by the Kirtland Community Theatre group at 8 p.m. Dinner, featuring baked herb chicken, baron of beef, full salad bar, baked potatoes, and more, begins at 6 p.m. Cost for both dinner and the show is just \$10.95/person, and reservations are recommended (265-6791).

A BBQ BLAST tomorrow night (Jan. 27) is a fine way to get warmed up for The Big Game on Sunday. Barbecued pork ribs and chicken — those all-time menu favorites — are available for \$6.95/plate beginning at 6 p.m. Afterward, enjoy shuffle-and-stomp time from 8 until midnight, with the Isleta Poor Boys twanging the tunes. A bonus for those with dinner reservations: free c/w dance lessons between 6 and 7.

IT'S PARTY TIME this Sunday (Jan. 28), as fanatic football fans from all over town congregate in the main lounge at 3 p.m. to watch you-know-what. Join your friends to toast (and cheer on) your favorite team.

PISCINE PLEASURE is yours next Friday evening (Feb. 2), when Seafood Night features either surf-and-turf at \$10.95/plate or stuffed cod at \$6.95/plate. Free country/western dance lessons are available between 6 and 7 p.m. if you have din-

ner reservations; afterward, try out your newly learned stomp skills from 8 to midnight, when the Isleta Poor Boys make a return appearance.

MEMBERSHIP HAS ITS PRIVILEGES, as every C-Club member knows. Some of the benefits: the best patio, pool, and tennis facilities in town; Friday night dinners, dinner theatre, and live bands for dancing; and special family/children's events. If you'd like to take advantage of all these great opportunities, the Club makes it easy for you to sign up all through February; stop in at the membership booth in the lobby any weekday between 11 a.m. and 1:30 p.m. Free gifts and discount books are available to new members and to current members accompanying friends who sign up during the membership drive.

FAMILY NIGHT on Saturday, Feb. 3, features kid-pleasin' favorites like burgers, fries, corn dogs, French dip sandwiches, and other good stuff. Food-line service starts at 5 p.m. Afterward, watch the movie adventure "Benji — The Hunted" on the big screen at 6 p.m. As usual, movie admission is free.

A BRUNCH OF FUN is on tap Sunday, Feb. 4, from 10 a.m. to 1 p.m. The bountiful bill of fare includes baron of beef, Virginia baked ham, Denver omelets, Belgian waffles, scrambled eggs, bacon, hash browns, green chile stew, tossed salad, and much more. Prices are \$6.95/adults, \$3.50/chil-

dren 3 through 11 years old, and free/toddlers under 3.

T-BIRD CARD SHARKS get together for another gaming session on Feb. 1, starting at 10 a.m. Come out for all kinds of card games, free refreshments, and convivial conversation.

SPEAKING OF THUNDERBIRDS, this retired — but unretiring — group starts a series of New England-style town meetings in February to discuss topics of interest to retirees. The confab on Feb. 6 from 3 to 4 p.m. at the C-Club concentrates on whether or not the AARP really represents the best interests of retirees.

Lady Godiva Rides Again

The National Atomic Museum unveils a new exhibit — "Lady Godiva and the Realities of Nuclear Energy" — next Wednesday, Jan. 31, at 10 a.m. Featured is an operational replica, formerly on display at the Smithsonian's Museum of American History, of the Godiva fast-burst reactor.

"Godiva," the first fast-burst reactor, was designed and developed at Los Alamos National Laboratory (LANL). It's a scientific device that simulates the radiation environment of an atomic explosion.

The reactor's unlikely name stems from the fact that its uranium core is unshielded and, therefore, unclad — like the other (Lady) Godiva, who, according to legend, rode naked through the streets of Coventry in an effort to persuade her husband to lower the heavy taxes in his earldom.

The new exhibit presents the history and various uses of fast-burst reactors, as well as the basic principles of nuclear fission. Pinocchio, a mechanical simulator, demonstrates the initiation, growth, and control of a neutron fission chain.

James Jackson, Deputy Director of LANL, will speak during exhibit opening ceremonies. ●

Sandia Booklet Is Hot Off the Press

How many people work at Sandia?

If you ever get that question — or others of a general nature about the Labs — you'll be interested in knowing that the 1990 version of Sandia's general-information booklet is available to give you quick answers to dozens of questions about the place you work.

Covering topics ranging from Sandia's budget to areas of energy research, the 20-page illustrated booklet is a handy guide to Sandia programs, facilities, and statistics.

Copies are being sent to all Sandia supervisors, but you can get your own personal copy by sending a self-addressed internal mailing envelope (9" x 12") to Div. 3162 (no phone calls, please). If

you have a need for multiple copies of the booklet, contact Div. 3161 on 844-8066.



Volunteer counselors are needed for the American Cancer Society's Camp Enchantment June 24-30 in

Alamogordo. Established in 1987, the camp provides children with cancer an opportunity to experience the fun and excitement of outdoor activities and other recreational opportunities. Meals, lodging, and transportation will be provided. If you're interested in this opportunity, call Al Stotts (3163), coordinator of Volunteers in Action, on 4-2282.

Effective January 1, 1991

Special Increase Announced For Pension Security Plan

Sandia's Board of Directors and DOE recently approved a special increase in pensions effective January 1, 1991, for all eligible retired employees and annuitants who are covered under the Pension Security Plan (in general, union-represented employees, non-salaried employees, and certain salaried employees in equivalent job classifications, e.g., MA, SAT, LSG, and LMS).

To be eligible, a retiree or annuitant (1) must have elected to participate in the pension plan as revised in July 1975 and (2) must be receiving a pension on December 1, 1990.

The increase has been approved by DOE but is still subject to Internal Revenue Service approval. All eligible retirees and annuitants will be notified of this increase by letter in September 1990. It is Sandia's intention to begin paying the increase effective January 1, 1991, even if IRS approval has not been received. If the IRS does not approve the increase, it will have to be discontinued for future pension payments.

For eligible retirees on pension in January 1988

or earlier, the increase will be 5% of the pension amount payable on January 1, 1991. For eligible retirees whose pensions were effective after January 1988, the increase will be equal to 1/36th of 5% (0.1389%) for each full month of retirement from the effective date of pension through December 1990. The minimum increase will be 0.1389% (one month) and the maximum will be 5% (36 months). The last special increase granted under the Pension Security Plan was effective January 1, 1988.

Post-retirement increases will not be made in payments to (a) alternate payees under qualified domestic relations orders or (b) active employees over age 70-1/2 to whom Sandia may become obligated by federal law to make pension payments even though they remain on roll.

The surviving annuitants of employees receiving or eligible to receive service or disability pensions will receive identical percentage increases in their annuity payments.

Anyone with questions should call Dave Medina on 844-7336.



CYNTHIA SCHNEEBERGER'S (3712) exam score topped the list of 208 candidates from across the nation being tested for status as Certified Professional Contracts Managers (CPCM). Also passing last May's exam and joining several other Sandians who hold CPCM certificates were Mary Nation (3712) and Ann Riley (3726). The CPCM designation indicates the highest level of qualification in the contracting profession.