

Sandians use Nevada Test Site facility to examine emissions from explosives and propellants

Series of underground tests explores demilitarization of munitions and rocket motors

By Nancy Garcia

Trying to determine the nature of the air and ground emissions released during disposal of excess munitions through open burning or open detonation, researchers from Sandia and other labs have begun a series of tests inside a sealed, underground chamber at the Nevada Test Site.

The tests are taking place in the X-tunnel complex. Built in the early 1980s for ballistics studies, the X-tunnel complex features a ballroom-sized chamber at the end of a 600-foot-long tunnel. Besides Sandia, Lawrence Livermore and Los Alamos national laboratories are participating in the tests under the direction of the Nevada field office of the Department of Energy, with assistance from Bechtel Nevada and Radian International.

Carefully encased laser diagnostic tools were designed and installed by a team under the direction of Sarah Allendorf of the Combustion Research Facility (8361) and David Ottesen of Materials Chemistry Dept. 8713. These tools were used to monitor the formation and potential release of hazardous gases, such as carbon monoxide and hydrogen cyanide. Seven tests were conducted using artillery shells and rocket motors earlier this year. The data have been compiled and are now being analyzed.

In the past, says Joel Lipkin (8119), who manages Sandia's participation in the project,

researchers have only been able to collect gas and particulate emission data from very small-scale explosive detonation or propellant burn events.

"Because these laboratory tests usually involve only a few grams of material, the results could not be easily related to the real world situation where hundreds or thousands of pounds of material are generally detonated or burned in a single event," he says.

'Dazzler' produces bright flame

In the first test in December 1996, called "Banshee," six artillery shells containing 100 pounds of explosives were set off. In January, "Polaris" exploded 24 shells carrying nearly 500 pounds of explosives. "Beast" involved the same amount of shells and explosives in February. In March, "Colossus" consumed 60 shells contain-

ing 1,000 pounds of explosives.

Starting in May, the test chamber in X-tunnel was used to determine the emissions from burning rocket motor propellants. Two Nike rocket motors containing a total of 1,500 pounds of a nitrocellulose/nitroglycerin-based propellant were burned in a test called "Sunspot," then four Nike rocket motors with 3,000 pounds of propellant were burned in "Thunderbird." Finally, two Improved Hawk rocket motors with 1,200 pounds of ammonium perchlorate-based propellant were burned in June in a test called "Dazzler."

Because Sandia had previously worked to reduce its inventory of excess rocket motors, it had lead responsibility for the rocket motor burn tests at X-tunnel, Joel says. Ray Peabody (9333) was responsible for installing and detonating the

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Sandia LabNews

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Shifting weights, not firing jets, to improve accuracy of reentry vehicles, orbits of satellites

By Neal Singer

A missile or space ship, spinning like a football or Olympic diver as it reenters Earth's atmosphere, ordinarily is designed to be perfectly balanced — with tight control over the distribution of mass within it — to avoid flight stability problems. Unguided weapons in particular need accurate preflight balancing if they are to come close to their intended targets.

Going against this tradition, Sandia rocket scientists have devised a method that purposely unbalances the reentry vehicle to steer it closer to a target. The approach also could reorient a satellite in space.

The unorthodox method is relatively cheap, easy to install, does not change the external shape of the vehicle, and requires neither jets nor fuel.

Called the moving-mass trim-control system, the method achieves its effect simply by controlling the movement of two internal weights that rotate on a metal ring secured within the reentry vehicle.

The positions of the weights will be determined by an onboard computer chip equipped to receive input signals from the omnipresent Global Positioning

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Labs leaders pair with 20 schools in new Campus Execs program

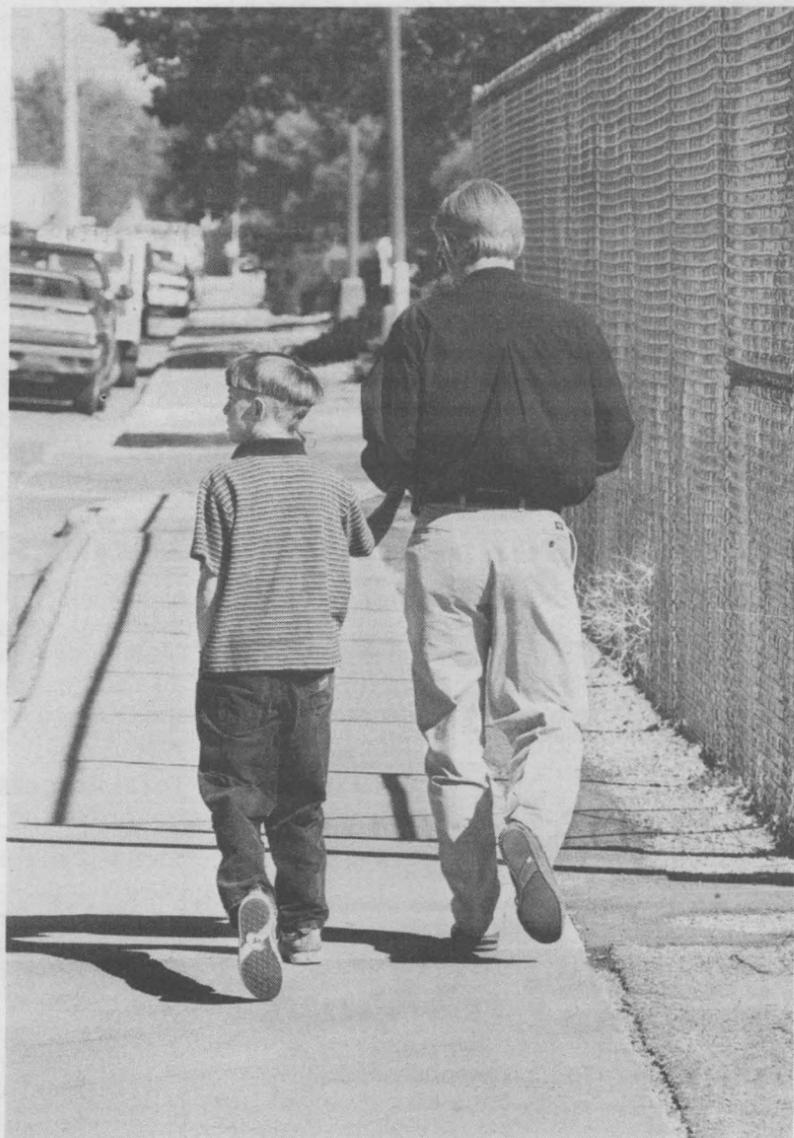
It's a full-court press on university collaborations

Eleven top Labs executives have enrolled in a new program to strengthen Sandia's research and recruiting activities at 20 universities.

Human Resources VP Charlie Emery (3000) and Laboratory Development VP Dan Hartley (4000) inaugurated the new Campus Executive program Sept. 22. The program's objectives include establishing high-level relationships with top university officials; linking Sandia's research and recruiting activities on select campuses; and focusing Labs/university research collaborations on Sandia's long-term directions, says Mary Ann Zanner, Manager of University Collaborations Dept. 4526.

To begin the program, each participating Sandia executive is paired with one or two universities having research programs that match the Labs' strategic mission. National Security VP Roger Hagengruber (5000), for instance, is paired with the University of Wisconsin, which works with Sandia in pulsed power and

(Continued on page 4)



BOYS IN THE LABS — A father and son take in the sights during Sandia's Take Our Sons to Work Day Oct. 9. More than 800 boys attended this year's daylong event. See page 9 for more Sons Day photos.

(Photo by Randy Montoya)

Sandians go south to study high-energy explosion over El Paso

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Undocumented USTs could soon become an expensive headache

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Sen. Bingaman suggests ways to strengthen industrial alliances

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Help continue Labs' long history of helping others through ECP

This & That

Stable workforce predicted - In case you missed it in the Oct. 6 *Laboratory Leadership Team (LLT) Report*, Sandia finished FY97 with 7,492 regular full-time-equivalent (FTE) employees, 679 nonregular employees, and 1,348 on-site contractors, a total workforce reduction of 9.3 percent during the fiscal year. The good news: If current FY98 budget projections hold, Sandia expects to support about 7,500 FTEs this year.

Everyone with access to Sandia's Internal Web can read the *LLT Report*, *Daily News*, and much more regularly at the following address: <http://www-irn.sandia.gov/newscenter/news-frames.html>.

Contribute for the right reasons - It's easy to get the impression you should contribute to our ECP/United Way and LEAP fund-raising campaigns to make your department, your center, Sandia, or Lockheed Martin look good. You may actually hear some well-meaning Sandians say that. That's one reason to contribute, but there's a better one.

Helping genuinely needy folks and groups through these campaigns is a good, kind thing to do, and that's reason aplenty. If you're among the many Sandians who enjoy good health and a good job, please consider sharing some of your good fortune - whatever you can afford - with the less fortunate. (See related stories in this issue.)

Maybe the Half Monty - I must kill another rumor. The male members of the Laboratory Leadership Team will *NOT* dance the Full Monty on the steps of Building 800 if the ECP and LEAP campaigns both meet their goals this year. The weather is getting too cold for that.

Important questions and answers - Sandians can be such a source of knowledge. I wondered in this column several issues ago whether pigs actually sweat a lot. John Reddy (4823) tells me the answer is no - that pigs only sweat through their snouts because that's the only place they have sweat glands, and that's why they spend so much time wallowing. Now the next totally insignificant thing I want to know is whether the deceased investment mogul Dean Witter - who lives on through TV commercials - died of terminal hoarseness.

Southern Sass - More and more it pays to be a senior citizen, or at least look like one. While paying a restaurant bill during a golfing vacation to Myrtle Beach, S.C., several weeks ago, I was given the senior citizen discount by the cashier. Protesting mildly, I said, "But I'm only 46 years old" (fudging by several years just to make my point). Without cracking a smile, the cashier retorted, "That's OK. I'll still give you the discount just for dying your hair gray." Ouch!

On the same trip, I saw what could become a classic sweatshirt/T-shirt message: "Senior Citizen. Gimme my d__ discount."
- Larry Perrine (845-8511, MS 0167, lgperri@sandia.gov)

Explosion over El Paso: Natural or manmade?

A large explosion reported over El Paso last week brought Sandians Mark Boslough and Dave Crawford to the scene immediately. They drove into Texas with Doug Revelle - a researcher from Los Alamos whose infrasound monitors detect naturally exploding fireballs as well as breeches in the Comprehensive Test Ban Treaty - and two researchers from UNM's Institute of Meteoritics.

In El Paso, the team met with Canadian researchers who have extensive experience in characterizing fireballs.

"We wanted to distinguish the characteristics of a natural event from a manmade one," says Dave, who with Mark is known for extremely accurate simulations (using Sandia weapons codes) of Comet Shoemaker-Levy's impact on Jupiter and, later, of a hypothetical comet's collision with Earth.

After driving to the approximate site, checking eyewitness reports, gathering data from sensors, and computing the time difference between the explosion as recorded visually and acoustically on security cameras, the researchers concluded the event was caused by a meteor about the size of a refrigerator travelling 20,000 miles per hour, descending at an angle of approximately 45 degrees with the ground, and exploding because of atmospheric stresses at a height of about 30 kilometers with a force of 500 tons of TNT.

The researchers immediately sought fragments of the meteor because "the quality of the results depend on a 'fresh fall,'" says Dave. A quick find means less contamination by earthly compounds and less decay of short-lived radioactive isotopes from outer space.

However, the search for fragments - each probably 50 pounds or less - spread out over many square miles of Texas, was unsuccessful. "We don't have a reliable method of detecting these fragments from the air," said Dave, "and it's not easy to search Texas in a few days with five guys."

Dave says he and Mark will return to the area with an official search team when time permits. The location of the targeted area has not been announced, to protect the privacy of landowners wary of souvenir hunters clambering over fences.

Similarly sized meteors hit North America "every few years," says Dave, and the United States every ten years. Most burn up or explode in the atmosphere.
- Neal Singer

Bingaman outlines ways labs can strengthen alliances with industrial partners

Federal laboratory industrial partners say they experience difficulties in "finding a common language" with their lab counterparts and feel we often place an unrealistic value on government-developed technology and fail to understand the importance of project schedules, deadlines, business drivers, and lead time.

That's the bad news from a recent survey conducted by the National Coalition for Advanced Manufacturing (NACFAM), cited by Sen. Jeff

Bingaman last week in a keynote address at NACFAM's national conference in Albuquerque. Using those criticisms as a backdrop, Bingaman then outlined practical steps the national labs and DOE could take to improve the government's ability to partner with manufacturing industries.

Total immersion in business

As a first step, he encouraged the labs to take advantage of policies allowing personnel swaps between industry and national laboratories.

"You can learn something about a foreign language and culture by reading books and attending classes," he said. "Nothing is better, though, than an experience of total immersion in the other environment. . . we need to increase the movement of both researchers and their managers back and forth across the organizational boundaries.

"The benefit of such a push would be to have decision makers in DOE and its laboratories who know how technical advances make a difference outside the laboratory, and how industry exploits those advances in the real world," he said.

If you build it, they will come

He also called on the laboratories to streamline their intellectual property procedures, improve private-sector access to a greater number of user facilities, and invite their major industrial partners to move in, literally.

Specifically, he called the Sandia/City of Albuquerque plan to create a several-hundred-acre science and technology park near Kirtland Air Force Base (KAFB), where Sandia's major industrial partners could locate portions of their operations, a

"terrific idea."

"A Sandia Science and Technology Park, offering close physical proximity to the laboratory's excellent and unique facilities, would be a magnet to draw high-wage jobs with some of the nation's premier technology corporations to Albuquerque," he said.

It also would enhance the local R&D infrastructure, create additional in-state employment for the brightest graduates of New Mexico's colleges and universities, and help local start-up companies gain access to major high-tech corporations, he added.

Laboratory Development Div. 4000 is now working with the City of Albuquerque and various landowners on such a plan, says project manager Jackie Kerby Moore (4000).

Bingaman also said he would support a study of whether the fence enclosing KAFB could be moved so it would no longer restrict access to Sandia's Robotic Manufacturing Science and Engineering Laboratory, Microelectronics Development Laboratory, Advanced Manufacturing Processes Laboratory, and Integrated Materials Research Laboratory, all within several hundred yards of KAFB's eastern boundary.

"I can't think of a clearer signal that DOE is serious about improving industry's access to Sandia National Laboratories," he said.

"The federal laboratories are here to stay," he added. "We need to build the capacity of the federal government and its laboratories to be more effective, sophisticated, and predictable technology partners to industry. I look forward to continuing to work with you on this."
-John German

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LOCKHEED MARTIN

NTS tests

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various explosives used in the detonation tests as well as those used to split open the metal casing of the rocket motors and initiate the propellant burns.

The "ballroom" was sealed during the tests, and the burns were videotaped from a port in the entry. "Dazzler" got its name from the bright flame produced by the burning propellant. A day after the test, workers were required to wear respiratory gear to reenter the sealed chamber once it had cooled. Dazzler was the last test conducted in this series because the burning rocket motor propellant produced toxic emissions that required extensive cleanup operations at X-tunnel.

The artillery shells were detonated on a concrete pad or bed of gravel which pulverized in the explosion. About 75 pounds of steel in the case of each shell was turned into shrapnel that blasted limestone debris from the walls of the tunnel in the detonations. No shrapnel was produced during the rocket motor burns, but the burning propellant released large quantities of gas and soot.

Instrumenting the chamber

Installing and protecting sophisticated instruments in this harsh environment was a challenge. The laser hardware was encased in a metal box secured to the rock in the test chamber. Laser light passed through windows in the box into the gases in the chamber. A stream of nitrogen gas cleared sticky debris from the windows.

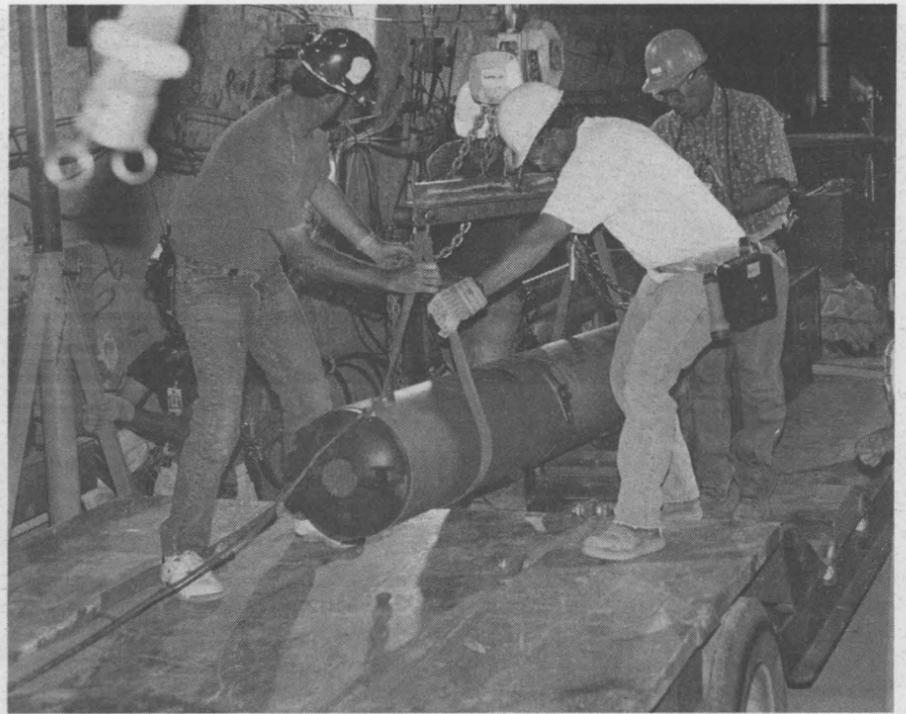
The laser beams were selectively absorbed by gases produced by the detonations and burns in

the test chamber. The chemistry changes rapidly as hazardous materials are produced by incomplete combustion, Joel says. Signals from these compounds are relatively weak in this setting and require a fairly sensitive monitoring system to detect.

LANL gathered particulate measurements, using a specially designed real-time impact detector. LLNL conducted gas chromatography and mass spectroscopy measurements, analyzing the depletion of oxygen in the chamber and the concentration of various gases including carbon dioxide and oxides of nitrogen.

The next series of tests, due to begin in 1998, will be based on experience with how the facility and systems worked in this initial series, Joel says. A variety of different types of tests are foreseen for several years to come. The X-tunnel tests are being carried out as part of an agreement between DOE and the DoD Joint Service Demilitarization Technology Office in Savanna, Ill. The Sandia work falls under the Emerging Threat Demilitarization program area.

Sandians participating in the studies include



UNDERGROUND WORK — An Improved Hawk rocket motor is readied prior to the "Dazzler" test at the Nevada Test Site.

Christopher Shaddix (8361), Larry Carrillo (8240), Howard Johnsen (8713), Dale Shenk (9333), Kevin Fleming (1554), Leon Seibel (8414), Ken Hencken (8362), Dennis Nelson (8812), and Vern Barr (8210). Numerical simulations of the rocket motor burn tests were provided by Stewart Griffiths and Bob Nilson (both 8345).

LEAP kickoff Oct. 30

The 1998 Livermore Employees Assistance Plan (LEAP) campaign will open with an agencies fair on Thursday, Oct. 30. Agencies being supported by LEAP will have tables with information and light refreshments on the Combustion Research Facility (CRF) patio from 10 a.m. to 2 p.m. LEAP pledge cards will be handed out at center meetings during November.

Sandia California News

Sandia signs agreement with community colleges to collaborate on training

Sandia/California Vice President Tom Hunter delivered a keynote address at the opening of Las Positas College's Science and Technology Center on Oct. 3, then signed a Memorandum of Understanding (MOU) with the local community college district to collaborate on education and training opportunities for people in the local area.

The agreement will establish an advisory committee to look into workforce training needs for Sandia and other high tech industries in the East Bay, as well as look for ways Sandia can assist

the college district. An example pointed out in Tom's speech was the need for Pro/E software training for Sandians and employees of other companies to update their skills in the computer-aided design field. Sandia already is working with Las Positas to establish such a training program in the coming months.

Technologically rich region

Speaking for the Chabot-Las Positas college district, District Chancellor Ron Kong said, "Our partnerships with such organizations as Sandia capture the essence of the mission of the community college in providing a skilled and knowledgeable workforce in meeting the challenges of the 21st century."

A Memorandum of Agreement with Lawrence Livermore National Laboratory was also renewed for a second year by the district. Included in that collaboration will be a certificate program in laser technology and some equipment from LLNL to support the college district's machine tool and computer numerical control programs.

In his speech, Tom pointed that Las Positas is located at the center of the most technologically rich region in the country with more than 200 industries, including 49 software companies, 40 scientific and biomedical firms, and a number of telecommunications industry employers within a 10-mile radius in the Tri-Valley. He noted that the college also has the unique distinction of having two national laboratories (Sandia and LLNL) within its service area, plus a third (Lawrence Berkeley Laboratory) only 30 miles away.

Citing specific examples of Sandia's history of partnering with Las Positas, he reminded the audience that Sandia established a science and engineering scholarship/internship program back in 1976, the second year of the college's existence. That program has provided scholarships and summer jobs for some 40 students.

He then pointed with pride to two audience members — Neal Fornaciari (8366) and Bill Replogle (8250) — who had come to Sandia from Las Positas as interns, then went on to UC-Berkeley to earn their engineering degrees and were hired into the technical staff after graduating.

Recognition awards

He also announced the establishment of a new \$1,000 award through the Lockheed Martin Foundation, in conjunction with the Livermore Chamber of Commerce, with which outstanding students and staff will be recognized annually from the college.

Other speakers at the building dedication included LLNL Deputy Director Jeff Wadsworth, Chancellor Kong, and Las Positas President Susan Cota. The new \$7 million science center contains eight laboratories and two multimedia classrooms and a third-floor observatory for the astronomy program.



SIGNING MOU — Taking part in the signing ceremony for the Sandia/Chabot-Las Positas Community College District Memorandum of Understanding are (seated from left) Las Positas President Susan Cota, Sandia VP Tom Hunter, and Chabot-Las Positas Chancellor Ron Kong. Standing are college board president Arnulfo Cedillo, board members Isobel Dvorsky and Lynn Carstensen, and Center 8800 Director Len Hiles.

Reentry weights

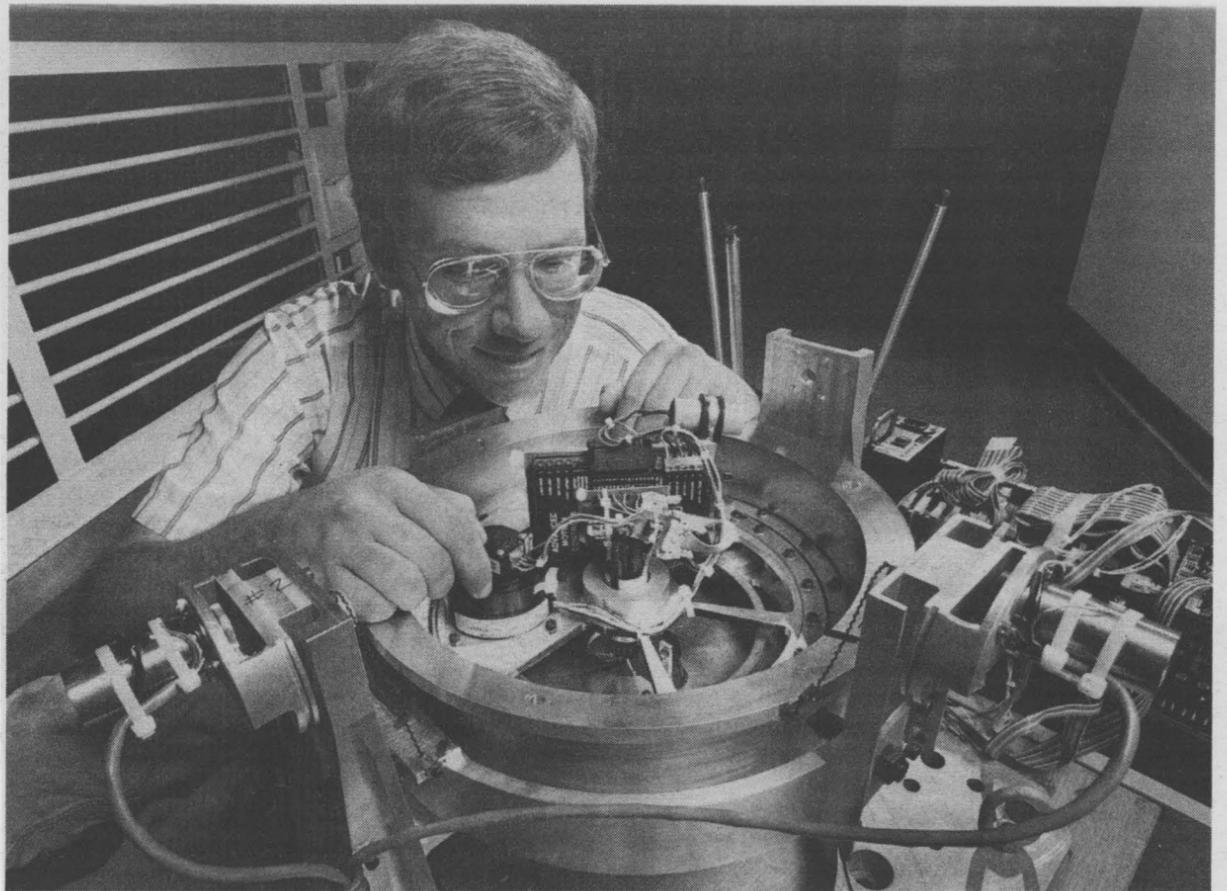
(Continued from page 1)

Satellite system. A guidance algorithm, fed precise data on the location of the vehicle, will alter the locations of the weights to create the trajectory needed to come down on target or to achieve a more effective orbit.

Shifting weights alter the direction of a vehicle in a manner similar to that unintentionally achieved when unsecured cargo shifts in the van of an 18-wheeler, taking the truck in a new direction. In the case of the Sandia design, the control system must ensure that the motion of the shifted mass does not cause the reentry vehicle to become unstable.

The design improves on an earlier Sandia idea recently flight-tested in a Navy-sponsored joint Sandia/Lockheed Martin project. In this earlier version, the moving weights were mounted to an extension of the vehicle, which changed its aerodynamic behavior. The newer design, intended for retrofit within existing vehicles, is smaller, requires less power to operate, and does not require new computations of the host vehicle's flight capabilities.

The research is funded internally by the Laboratory Directed Research and Development program, which funds speculative, defense-related research. Team members are Mark Vaughn (2418), Bev Sturgis (2411), Charlie Coffin (2413), Don Vanzuiden (2417), Ray Byrne, and Rush Robinett (both 9611).



WEIRD SCIENCE? No, simpler science. Mark Vaughn checks connectors on a prototype control system that moves weights around a circular rim to reorient a rocket flight or satellite orbit without use of jets or jet fuel.

(Photo by Randy Montoya)

Campus execs

(Continued from page 1)

ion beam research. (See "Campus execs and their university matches" below.)

The executives then seek to establish relationships with their universities' presidents, chancellors, provosts, and deans, particularly those officials who lead their schools' research and engineering programs, and to develop on-campus constituencies.

Integrating research and recruiting

To jump-start these relationships, Labs President C. Paul Robinson is sending letters to the university presidents summarizing current research collaborations between Sandia and each university, introducing the Sandia Campus Executive, and asking that the Sandian be considered for future advisory roles within the university.

Each participating exec then serves as Sandia's ambassador to the institution, which includes visiting the school at least once a year and promoting Labs programs and user facilities. Data books about each school are being compiled to help the execs become more knowledgeable about its technical programs, research work, and recruiting environment.

To help better integrate Sandia's research collaborations with its on-campus recruiting efforts, says Staffing Department Manager Karen Gillings (3535), the executives also are asked to meet with Labs recruiters at least once a year to identify ways the executive can reinforce recruitment activities at their schools.

"They may help our recruiters by identifying top students and programs that are compatible with our strategic plans and technical strengths," she says.

That will be important as Sandia ramps up its

recruiting programs for FY98, she adds. Executive VP John Crawford has approved hiring more than 180 regular staff members during FY98, almost double the number hired in FY97. In addition, Labs management has set a goal that 70 percent of all professional-level hires be within three years of their most recent, relevant degree to encourage bringing up-to-date skills onto Sandia's rolls.

"The perception on some campuses is that we've been out of the hiring picture for a few years and that bomb-building is not a viable career," Karen says. "We need to get the message out that Sandia is in a hiring mode, that we have exciting work, and that we are a desirable employer."

Some execs also may serve on their universities' curriculum advisory boards, allowing them to help steer students and research programs toward fields that are compatible with Sandia's mission requirements. They will also seek to encourage staff, student, and faculty exchanges between Sandia and the campuses.

"It's part of our full-court press to seek out and hire the best and the brightest from these institutions," says Karen.

University collaborations program

Among DOE's Defense Programs labs, Sandia does the most work with universities, adds Mary Ann. In FY96, Sandia participated in more than 500 research collaborations with 111 universities, totaling \$38.5 million worth of technical work.

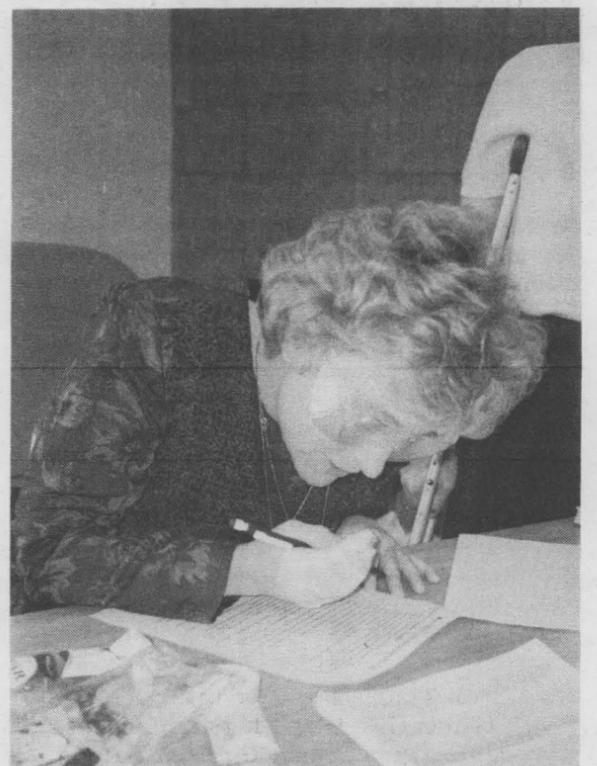
A major goal of the program is to spend Sandia's university-bound research dollars more wisely, in part by "thinking more strategically rather than tactically when we contract research work to a university," she adds.

"Maybe there are opportunities to consolidate some research at a university or focus programs on our longer-term goals such as stockpile stewardship," she says. "By developing some long-range goals and plans we may be able to get more from our university collaborations."

The Campus Executive program, recruiting activities, and university research collaborations are three major components of Sandia's overall university relations effort. Ed Gullick of Staffing Dept. 3535 coordinates these interactions. Key features of the Campus Executive

program are borrowed from similar programs at Lockheed Martin and AT&T, says Mary Ann.

Other institutions may be added in coming months, she adds. "We'll be looking at other universities for niches of expertise that match up with our strategic plans and goals," she says. "If it's a natural fit and everyone benefits, we'll establish new relationships with them." —John German



WHAT'S YOUR HANDICAP? — Sandra Hinton (3611) writes her name while trying to overcome two disabilities: the glasses, smudged with petroleum jelly, blur her vision, while her taped fingers impair her ability to write. Disability Awareness Committee members handed out "temporary disability kits" Oct. 15 in the Bldg. 822 breezeway to help increase employees' awareness of the obstacles people with disabilities face. Several Sandians took the "disabilities" back to their offices to try out for a few hours. Steven Yesner (7522) told interested passersby about Sandia's plan to establish "areas of refuge" in large, multistory buildings where people with ambulatory disabilities can go in an emergency. These havens are safe from smoke and fire and have two-way radios for communicating with emergency personnel, who can determine whether evacuation is necessary. People with disabilities can get hurt when being evacuated by well-meaning but untrained people, Steven explains, so the areas of refuge will help minimize instances where people are evacuated needlessly, such as during fire drills or minor emergencies.

Campus execs and their university matches

C. Paul Robinson, President	Florida State University
John Crawford, Executive VP	University of Texas, Texas A&M
Bob Egan (1000)	University of New Mexico, University of Illinois
Heinz Schmitt (2000)	University of Texas El Paso, Lehigh University
Charlie Emery (3000)	Howard University
Dan Hartley (4000)	New Mexico State University, Georgia Tech
Virgil Dugan (4500)	University of Arizona, Arizona State University
Roger Hagenruber (5000)	University of Wisconsin, MIT
Joan Woodard (6000)	Stanford, New Mexico Tech
Tom Hunter (8000)	UC-Berkeley, UC-Davis
Gerry Yonas (9000)	Cornell University, Caltech

Labs races to uncover underground storage tanks before 1998 regulatory compliance deadline

'Forgotten' tanks must be found, dealt with before Dec. 22, 1998

By Bill Murphy

Joe Bonaguidi needs your help.

Joe, an engineer in Environmental Monitoring and Reporting Dept. 7575, is trying to track down underground storage tanks (USTs) at Sandia/New Mexico that may have been overlooked in previous audits. And the clock is ticking: Under guidelines spelled out in state and federal underground storage tank regulations, all USTs nationwide must be registered and either closed or brought into compliance with stringent environmental safety standards by Dec. 22, 1998.

Failure to meet the deadline translates into big fines — up to \$15,000 per day — so Joe, heading up the Labs' UST effort, is in a race to make sure Sandia beats the clock.

What's got Joe worried is whether all of Sandia's USTs have, in fact, been identified. The Labs registered 78 known tanks back in 1988. Most of those tanks were used for storing heating oil for individual buildings. They were easy to find: If the building had an oil furnace, you knew to look for a tank. All 78 tanks identified in 1988 have been dealt with. They've either been removed, closed in an environmentally sound way, or brought into compliance with the new environmental regulations. With all 78 tanks taken care of, everything was looking copacetic for full compliance with regulations long before the 1998 deadline.

'Did we miss any more?'

But in the last few months, two forgotten tanks came to light.

"Obviously we missed two tanks [in our 1988 audit]," Joe says. "What we don't know is, did we miss any more?"

The UST story starts back more than 10 years ago. In the late 1980s, environmental regulations required that all USTs be registered. This rule applied to the hundreds of thousands of tanks around the country — including those at Sandia. The purpose of registration? Environmental regulators wanted to get all the information about tanks out on the table as early as possible. They wanted to know where the potential problems were — and they considered all underground tanks to be potential problems.

They wanted to know where the potential problems were — and they considered all underground tanks to be potential problems.

Fix, close in place, or remove

The rules in place allowed tank owners 10 years to either close the tanks or bring them into compliance: Equip them with leak-detection devices, overfill-prevention devices, and spill-protection devices. Provide corrosion protection for the tank and its associated piping. Keep track of the tank's entire life history, its every fill, spill, inspection, and repair, with exhaustive documentation.

If tanks were to be closed rather than brought into compliance, any soil contamination would first have to be remedied. When that was completed, the tanks were to be either: 1) removed, or 2) closed in place, filled with an inert solid material making it impossible to ever use the tank again.

"If you've noticed around town that every gas station is getting torn up and rebuilt, well, that's why — it's because of these regulations," Joe says.

He says he hopes Sandians — retirees and active employees — will come forward if they know of any underground tank systems that might have been overlooked in the past.

And it's really important, Joe says, for folks

"In the past our focus has primarily been on petroleum and not chemical storage. There's a real possibility we've missed some of the chemical tanks."



TRACKING TANKS — In this 1989 photo, Sandian Dave Dionne checks the condition of underground storage tanks removed in late 1988. According to state and federal requirements, all USTs must be accounted for, brought into compliance with new regulations, closed in place, or removed by December 1998. (Photo by Randy Montoya)

to realize that he isn't just talking about fuel oil tanks. The regulations apply to all kinds of chemical storage. One of the "missing" tanks discovered recently held mineral oil used in recirculating lubrication systems. The other contained ethylene glycol.

Does Joe think there are other tanks out there, waiting to be discovered?

"Yeah, I really do," he says, "because in the past our focus has primarily been on petroleum and not chemical storage. There's a real possibility we've missed some of the chemical tanks."

Aboveground underground tanks

The whole business of finding forgotten storage tanks is pretty tricky. It's challenging enough to locate buried underground tanks. It's even trickier to find aboveground underground tanks.

Joe explains: "We have unique systems at Sandia. The second [missing tank] we found here actually didn't have a buried tank, but it fit into the regulations because more than 10 percent of the volume of the system was underground."

The regulations, Joe says, are very clear: If the amount of liquid that can be held in buried pipes amounts to 10 percent of the liquid volume capacity of the overall system, then the entire system is considered to be an underground storage tank.

"If we'd found this tank a year from now [after the 1998 compliance deadline]," Joe says, "if this had been, say, January 1999, the state's UST Bureau could have fined us and shut that system down, could have put that facility — it happened to be the Centrifuge — out of operation until we had brought it into compliance with the standards."

What happens if, in all good faith, Sandia somehow misses a tank or two until after the Dec. 22, 1998 deadline? The stiff noncompliance penalties could still apply. As far as the state UST Bureau and the EPA are concerned, tank owners have had 10 years to find, register, and fix or close

their systems. Deadlines will not be extended, EPA says, so loose ends must be tied up immediately.

Although looming deadlines are a concern, and a very real one, Joe says, a sense of responsibility for environmental issues certainly comes into play.

"If we have an old tank somewhere that has some kind of a regulated substance in it, chances are nobody's taken care of it and chances are it's going to leak," Joe says. "We could have very expensive cleanup costs associated with that. We could impact groundwater, and we all know how important groundwater is in the state of New Mexico. We just don't want that to happen."

Bringing USTs into compliance — or closing them — could cost \$30,000 or more per tank, Joe says. Funding issues are being worked out at this time, he adds.

"These regulations are why the motor pool gas station was closed last December," Joe says. "It was so expensive to bring that facility up to standards that it was cheaper and more efficient and better for the corporation to get our fuel from the Air Force."

If you have any information about fuel or chemical storage tanks that may have slipped through the cracks back in 1988 when the Labs was registering its USTs, call Joe Bonaguidi at (505) 845-7804. And remember: An aboveground tank may have enough buried piping to qualify as a UST. If you're not sure, call Joe.

PQA ceremony set

Sandia employees and retirees are invited to attend the annual President's Quality Awards presentation ceremony Oct. 29, 1:30 p.m. (12:30 p.m. at Sandia/California). The event honors the 1997 recipients of Sandia President's Quality Awards (*Lab News*, Sept. 12). Concurrent ceremonies will be held at the Technology Transfer Center (Bldg. 825) in Albuquerque and at the Combustion Research Facility auditorium in Livermore. A reception at each site will follow the one-hour formal ceremonies.

Recent Patents

J. Randall Creighton (1126), Frank Dominguez, A. Wayne Johnson, and Thomas Omstead: Method for Deposition of a Conductor in Integrated Circuits.

New Sandia CD-ROM reveals nitty gritty details of downhole oil well environment

By John German

What goes on deep underground as an oil well "sucker rod string" plunges down thousands of feet of tubing during pumping?

In a word: stress, lots of it. The string is strained, compressed, buckled, and bent as it works against the resistance of crude oil surrounding the rod on each downstroke. And that's just the downstroke.

To help the US oil industry characterize well bore dynamics and mechanical stresses on sucker rod strings, Sandia is making the results of a series of field tests carried out at six producing US oil wells available to members of the petroleum industry on a free CD-ROM. Called the Downhole Dynamometer Data Base (DDDB), the CD-ROM contains more than 60 megabytes of data gleaned from a downhole diagnostic tool that measures stresses along sucker rod strings used to extract crude oil from approximately 80 percent of domestic oil wells.

"Sucker rod pumping accounts for most of the United States' domestic oil production," says Bob Cutler of Advanced Geophysical Technology Dept. 6114, "so anything that improves the efficiency of sucker rod operations is significant for a healthy domestic oil and gas industry."

Sandia's work was sponsored by DOE's Natural Gas and Oil Technology Partnership, a program designed to bring national laboratory resources to bear on technical problems identified by the US petroleum industry.

What's going on down there?

The diagnostic tool, called the downhole dynamometer, is a foot-long, cylindrical steel probe, several of which can be integrated into a sucker rod string and sent deep into a pumping well. A series of sensors distributed along each probe's surface — including strain gauges, an accelerometer, and pressure and temperature gauges — gathers information from the well bore during pumping.

Raw data can be saved in the tools' memory chips for months at a time until the sucker rod string is extracted from the well, most often during normal maintenance periods.

From this data, researchers and well operators



DOWNHOLE DATA — An oil well worker installs a downhole dynamometer on a sucker rod string during a field test in 1996. Data from tests at six producing US oil wells are included on a Sandia CD-ROM available free to members of the oil industry.

can extrapolate valuable information about the well bore dynamics and mechanical stresses that often lead to equipment fatigue and rod failure.

Because sucker rod failure represents a significant cost to the oil recovery industry, Sandia researchers hope the information contained in the DDDB can be used to improve the load-versus-position codes oil well operators use to determine sucker rod design and, ultimately, help operators optimize sucker rod string taper, weight, and other factors for a variety of wellbore environments.

In the past, operators have relied on limited load-versus-position information measurable at the surface to extrapolate stresses on sucker rod strings deep underground.

"This new data should give operators a lot of previously unmeasurable information about what actually goes on in the well bore," says Bob.

Sandia and Nabla Corp. (Midland, Tex.) conducted the field tests from February through December 1996 at US oil wells featuring a variety of pumping conditions.

"We chose well environments and operating conditions that are representative of what would be encountered in the field," he says.

Five dynamometers per rod string

During each test, five downhole dynamometers were incorporated into a sucker rod string at depths ranging from the surface to 9,600 feet, depending on the depth of the well, known well bore conditions, and the pumping equipment being used.

The CD-ROM features easy-to-use, industry-tested interface and graphing utilities that allow the user to generate load-versus-position dynagraphs from data collected down hole. The interface can be used with Microsoft Windows 3.11, Windows 95, and Windows NT; instructions for installation and use are included.

To receive the disk, the company must agree to abide by some restrictions, such as agreeing not to incorporate the database into another commercial product.

A variety of oil-industry players could benefit from this data, says Chip Mansure of Geothermal Research Dept. 6111, including pump equipment manufacturers, well operators, and sucker rod manufacturers and service companies.

Technology for the downhole dynamometer diagnostic tool was originally developed by Glen Albert, founder of Albert Engineering (Longmont, Colo.). At the request of the Natural Gas and Oil Technology Partnership Sucker Rod Working Group, Sandians John Waggoner (now with Western Geophysical in London), Chip, and Bob commissioned further development of the dynamometer by Albert Engineering, coordinated the field tests, and built the DDDB and its graphical user interface.

Results of the field tests have been presented at meetings of the Society of Petroleum Engineers and at the Southwest Petroleum Short Course.

Enhancements to aging weapons are goal of partnership between Sandia and Ensign-Bickford

The Ensign-Bickford Co. (EBCo) and Sandia will work together under a new partnership to enhance the safety and reliability of explosive components used in US nuclear weapons systems and in civilian applications.

Based in Simsbury, Conn., EBCo has been working with Sandia since the 1950s to combine the best commercial practices and DOE technology to ensure a stable source of explosive ordnance components. The new partnership, announced at a contract signing ceremony on Oct. 16 in Simsbury, extends and expands earlier cooperative work. The contract is for two years and is worth approximately \$10 million.

This is one of the largest contracts with industry ever awarded by Sandia's Manufacturing Development Engineering (MDE) program, which was established largely to allow DOE to secure weapon components from industry instead of running its own — often more costly — operations to produce components, without sacrificing stringent quality requirements.

Many components that will be developed and manufactured through the EBCo/Sandia partnership will replace aging components in the US nuclear stockpile. Although no new weapons are being developed, components are replaced with better, safer ones as needed or at the end of their design lifetimes. Sandia plays a major role in certifying the continuing safety and reliability of the nuclear weapons stockpile.

"Teaming with companies such as EBCo

allows us to ensure that our weapons stockpile remains viable and safe, while keeping our costs down," says Gary Beeler, VP of Defense Programs Products and Services Div. 14000. "It also allows private companies to adapt applicable technology for commercial and industrial purposes. The partnership is good for our defense program and good for industry."

The Sandia/EBCo work will involve several technologies developed or refined by the two organizations to make weapon components and other explosives systems ever safer and more reliable. One device that will be used extensively is the semiconductor bridge (SCB), a low-energy igniter that Sandia developed and patented in 1987 with both civilian and national defense applications. EBCo has a license to produce SCBs.

SCBs ignite explosives in an extremely fast (several microseconds), precisely timed, and safe manner. They are finding increasing applications for tasks such as igniting explosive charges in rockets, actuating certain weapon functions, and igniting explosives used in mining and construction industries.

Sandia and EBCo have already teamed to develop an award-winning system that uses SCB technology. The GEOSIS™ Mini-hole Seismic Surface Initiation System, which improves technology for helping oil exploration companies determine where to drill, won a 1997 R&D 100 award.

—Larry Perrine

Feedback

Labor law determines Sandia's policy on vacation increments

Q: Since the compressed workweek was implemented, vacation can no longer be taken in increments of four hours except on Fridays, resulting in excess hours, which then must be carried over at the end of the fiscal year. Why hasn't Sandia adopted the use of taking vacation in one-hour increments or even half-hours? Other companies don't seem to have any problems with this method. If it's associated with administrative costs, where is the expense coming from? It seems that allowing employees to take vacation in one-hour or half-hour increments gives them more flexibility to use up accrued vacation.

A: I agree that your idea would allow more flexibility for employees to use their accrued vacation. However, the policy is based on labor law. The Fair Labor Standards Act (as interpreted by the courts) prohibits employers from deducting one- or two-hour absences from exempt employee leave (vacation/holiday) accounts. Since Sandia's policy is to treat exempt and nonexempt employees the same whenever possible, Sandia also applies this interpretation to nonexempt employees. In order to accommodate Sandians in a fair manner, Sandia allows the half-day vacation limit to all employees.

—Marlene Vigil (3343), Benefits Planner

Think safety, reliability, simplicity to avert 'perpetual state of glitch,' science writer tells software engineers

By Bill Murphy

"Yesterday, my kitchen crashed."

That excerpt from a humorous account of the perils of owning a "smart house" was one of several examples cited by Ivars Peterson to demonstrate the myriad ways software glitches can ruin a perfectly good day.

That, in a nutshell, was the theme of a keynote address Peterson, mathematics and physics editor of *Science News* magazine, delivered during the High Integrity Software Conference cosponsored by Sandia and IEEE (Institute of Electrical and Electronics Engineers).

In his address, "Averting a State of Perpetual Glitch," Peterson offered a series of cautionary tales about the pitfalls of faulty programming to an audience of about 100 software engineers. The conference was the fourth in Sandia's "High Consequence Engineering" series.

Participants in the High Integrity Software Conference oversee computer systems whose reliable, flawless performance is essential: in weapons, medical applications, transportation systems, and control and automation systems of all kinds.

From Wright Flyer to Boeing 777

In designing glitch-free systems, Peterson said, software engineers and programmers face a daunting task. Why? In a word: complexity, which is increasing in computer systems at a hyperactive pace. As Peterson put it, "This tremendous increase in complexity has happened very quickly. It's like having gone from the Wright Flyer to the Boeing 777 in just a few years."

If complexity is the problem, then the solution for programmers is to simplify, simplify. Right? Well, it's not as simple as that, Peterson said. Programmers — and their customers — are "addicted to complexity," he contended.

"Things don't naturally get simpler. No one sells products that have fewer features, less glitz than their predecessors or competitors. Programmers rarely take things out of their programs." And, he adds, as computer hardware becomes increasingly powerful, the need to write lean and mean code becomes less and less relevant.

"In designing and building software, there are no natural, obvious limits, no readily apparent constraints, as there are when an engineer has to design a bridge, where the laws of nature rule," Peterson said.

'Featureitis' takes the driver's seat

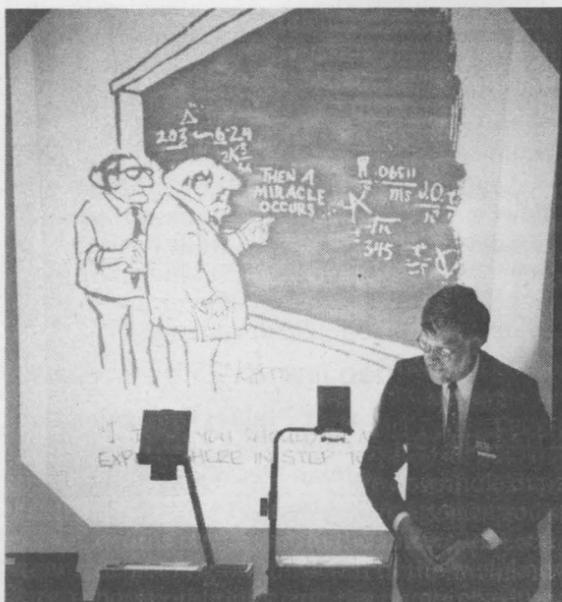
Absent these obvious constraints, he said, a rigorous and disciplined approach to programming goes by the board, software gets fatter and fatter, "featureitis" takes the driver's seat, complexity marches inexorably onward and upward, and the potential for unforeseen, unanticipated, indeed almost inevitable error escalates with each "upgrade."

The issue of creeping complexity is taken seriously by programmers, Peterson noted. As recently as this August, *IEEE Computer* featured a collection of articles on "fighting complexity" in computer systems. One of the articles quoted software engineer David Parnas: "Complexity is not a goal. I don't want to be remembered as an engineer of complex systems."

And, in the same issue of the magazine, Alexander Stoyen wrote: "Fighting complexity is not a futile task. Despite chronic lack of attention and thus funding, much-needed complexity-fighting methods and tools will emerge" and a new generation of computer scientists, engineers, and programmers will use these tools to combat systems complexity.

Peterson called Stoyen "an optimist." He characterized himself as more skeptical. "You only have to watch how college students — and these days even high school students — do their [programming] assignments to see the frequent lack of discipline and clear thinking in their work."

The computer environment has become so complex, Peterson said, that most people accept as a given that there will be bugs in new computer sys-



MIRACLES — Science writer Ivars Peterson adjusts an overhead slide during his keynote speech at the recent High Integrity Software Conference. The caption says: "I think you should be more explicit here in step two." (Photo by Randy Montoya)

tems and new software and that such bugs will be corrected only through a long series of revisions.

"The fact that practically no one expects software to work the way it should the first time out clearly demonstrates the formidable task involved in ensuring that computer systems function properly and programs are free of error. [Given the level of complexity in today's systems] it's practically impossible to be certain that a computer system will function perfectly. . . . This means we should be careful of what we entrust to computers."

An unprecedented suite of perils

Software complexity poses an unprecedented, unique suite of perils, with consequences that can reverberate throughout society. The much-publicized "millennium bug" is one highly visible example. The millennium bug, though, Peterson said, is an obvious problem with an obvious, if costly and cumbersome, solution. More troubling, he said, are the not-so-obvious bugs, not easy to anticipate, to isolate, or to fix.

Computers can also add to complexity in an ironic way, he said. For example, US customs officials working along the Mexican border are required to fill out as many as 51 different forms for each arrest they make. The paperwork, which can take hours to complete, "doesn't really

encourage making arrests," Peterson said. Everybody in the border control loop knew the paperwork was a real problem, he said. The solution: Computerize the process to make it easier and faster to fill out the forms.

"Maybe, however, the question should have been, 'Why do police have to fill out so many forms? Were they all really needed?' In this case computers allowed a complex procedure to survive, and now there's much less incentive to simplify and rationalize it."

In other words, Peterson said, computers can often help extend and entrench ill-advised practices. "The point is," he said, "doing something dumb on a computer may make it faster or more convenient, maybe even more efficient, but that doesn't make it any less dumb."

Peterson said he suspects that "if we don't pay attention, what we may be drifting into is not so much a time of great disasters involving computers, though they undoubtedly will happen, from telephone system crashes to airplane accidents and medical equipment failures. What we may be entering is a state of perpetual glitch — with its attendant state of perpetual anxiety."

We're already at the threshold of this new era, he said. Your office computer network goes down and you can't get your work done. Your e-mail system goes off-line, the virus checker misses the latest Trojan horse, the backup system fails to back up a critical file.

Sometimes, Peterson said, "a glitch mysteriously appears — perhaps on the night of the full moon — and then just as mysteriously disappears when the system is rebooted. These are very complex systems."

The computer age, Peterson said, is "a tribute to our adaptability and resilience. . . but the learning overhead keeps growing — new computers, new operating systems, new programs come faster and faster. Such an accelerating pace takes its toll. How far can we push people before we get lost in a cyberfog in which things happen to us for no apparent reason?"

"The computer is a truly marvelous instrument, an amplifier of the human mind," he said. "But it's an amplifier not only of the human mind's genius, but also its flaws and weaknesses."

"More than ever, our society depends on the reliable — if not correct — functioning of computers. Each computer failure is a reminder that we all pay the price for sloppy thinking in software development, for making the rush to market a more important consideration than safety and reliability."

New Mexico Academy of Science annual meeting Nov. 8 to discuss science education

On Saturday, Nov. 8, the New Mexico Academy of Science (NMAS) will hold its annual meeting at noon at the New Mexico Museum of Natural History and Science, which is the recent recipient of a \$1 million gift from Lockheed Martin. The museum is now headquarters for NMAS.

The theme of the half-day meeting and banquet will be "Science Education," with emphasis on how New Mexico's scientific community can help develop curriculum standards for our schools. President-elect of NMAS and organizer of the meeting Richard Nygren (6428) has been active as chairman of the writing committee for Science Performance Standards for the New Mexico State Department of Education.

The committee has recommended improvements in the preparation of teachers, with emphasis on the appropriate methods of inquiry for learning.

Guest speaker Ben Shedd has helped NMAS propose changes in the Science Content Standards, the formulation of which pre-

ceded review of the Science Performance Standards. Shedd also conceived, designed, directed, and co-produced the museum's Dynamax film "Tropical Rain Forest," an Academy Award-winning production that will be shown at the meeting; he will discuss the behind-the-scenes aspects of the film.

In the mid-1980s under the auspices of NMAS (founded in 1902), some 40 Sandians helped build hands-on exhibits for the Albuquerque Museum and a Halley's Comet exhibit for the Museum of Natural History. Presidents of NMAS have included Sandians Irving Auerbach, Anthony Zupero, David Freiwald, Janda Panitz, Marvin Moss, and Bill Snyder. Richard Nygren will assume the presidency Jan. 1.

Inquiries about the meeting, banquet, and admission fees may be directed to Richard (ren2@roadrunner.com). Information about NMAS and its activities may found at <http://www.nmmnh-abq.mus.nm.us/nmas/nmashome.html>.

Latest entrepreneurs 'leave' Sandia with a flourish

Three launch business based on Labs technology

With one of the two authors of national technology transfer-enabling legislation looking on, Labs Director C. Paul Robinson recently signed the paperwork sending three more Sandians off on entrepreneurial leave to use Sandia-developed technology in launching their own company.

His signature put an appropriate flourish to the end of a day of emphasis on technology transfer, highlighted by Sen. Pete Domenici's tour of four companies launched on the strength of technology developed at DOE national laboratories. Domenici, R-N.M., and Sen. Jeff Bingaman, D-N.M., co-authored the National Competitiveness and Technology Transfer Act of 1989 (NCTTA), which allowed those technologies to flow out the gates.

Recalling the early days of that initiative, when he managed tech transfer as part of his vice president's portfolio before taking the reins at Sandia, Paul said he heard time and again from prospective users getting their first glimpse of technologies lining Labs shelves, "This is a candy store!" He added, "The best sweets are, of course, our people."

And, he said to those looking on — some already at work in their new businesses and others about to take the first step — "You are the pioneers, and you deserve the rewards of your entrepreneurship."

New entrepreneurs on their way

Pam Ward (1812), Mike Smith (9577), and Joel Stevenson (1841) were all smiles, lined up behind Paul. When he asked one of them to describe their new business, Peak Sensor Systems, Pam stepped forward and said it will make better, faster microprocessors.

She got a laugh from onlookers with the afterthought "and if you want some, we'll sell 'em to you" before stepping back into line with her new business partners. All three signed out of the Labs Oct. 16 to begin leaves-of-absence. Theirs is the 48th such leave granted to employees.

Sandia's entrepreneurial leave program allows employees to launch businesses based on Labs-developed technologies while retaining some of their employee benefits, including insurance. They have the option of returning to the lab staff within a specific time frame.

TVC has helped launch 25 businesses

Before introducing Paul for the signing ceremony, Technology Ventures Corporation President and CEO Sherman McCorkle pointed out that TVC has helped capitalize and launch 25 businesses — including the four Domenici's group visited — since it was itself funded and launched by Lockheed Martin for that purpose four years ago.

McCorkle said the four "have garnered over \$15 million in equity investment. Each has attracted both national and international attention. And each has made, or is making, a significant contribution to the economic development of the state."

Domenici said his tour of the four Sandia technology-spawned businesses had reaffirmed his conviction that the NCTTA is an important facet of the nation's economic health.

"It's difficult to see today, but 10 to 15 years ago the impediment was not the labs, but a government frightened to death to use the labs for private-sector growth," he said. "But this (tech-

nology transfer) is something very, very big for our state and very important for our nation."

Predicting burgeoning benefits from the growth of innovative technology and its spread into the expanding economy, Domenici asked rhetorically, "Where are the skilled workers going to come from? There aren't going to be too few jobs, there're going to be too many."

And those jobs, he said, are going to be created by businesses like those he visited during the daylong tour.

The businesses were:

- WaveFront Sciences, which creates diffractive optics by using a technology similar to that used in manufacturing semiconductor chips.

- MuSE Technologies, which provides virtual reality simulations that enable the "virtual" viewing of complex systems from any vantage point.

- MicroOptical Devices, which uses vertical-cavity surface-emitting laser technology in semiconductor chip production and bar-code scanning, printing, and other applications.

- QM Technologies, which developed Ion Beam Surface Treatment technology, a chemical-free procedure that hardens the surface of many materials and protects them from wear and/or corrosion.

— Howard Kercheval

Sandians investigate rocket malfunction, crash at NTS

Sandia launch personnel are busy investigating the cause of the Oct. 4 crash of a Labs rocket that went astray following its launch from Sandia's new Wahmonie Launch Facility 60 miles northwest of Las Vegas on the Nevada Test Site.

The rocket, a rail-launched two-stage Strypi XII being flown as part of the Navy-sponsored Reentry Body Impact Fuse Flight program, veered off course to the west seconds after its 12:30 a.m. launch. The rocket impacted on Bureau of Land Management land 10 miles northwest of Goldfield, Nev. (pop. 659), about 40 miles west of its intended target at Sandia's Tonopah Test Range (TTR). The rocket's 70 mile flight path was to have been within the controlled airspace of NTS, Nellis Air Force Range, and TTR. The actual flight went some 20 miles beyond the Nellis boundary.

The Esmeralda County (Nev.) Sheriff's Department responded, and search efforts began shortly after sunrise. Program manager Walt Williamson of Aerospace Systems Development Center 2400 says all significant debris from the rocket has now been recovered and taken to Wahmonie or TTR for study.

Rocket experts from the involved Sandia organizations are investigating the incident and hope to identify the cause of the accident within the next month. A malfunction resulting in a dispersion of this magnitude has not occurred in any of the more than 40 previous Strypi rocket launches performed by Sandia, he says.

No one was injured and no property damage occurred as a result of the crash.

— John German

Avis stats show Sandia drivers have at least one rental car accident every week

Will you be number 392?

If you're a Sandia rental car driver, there's about a 1 in 400 chance you'll have an accident each time you drive off the rental car lot, according to statistics compiled recently by Avis Rent A Car System, Inc.

Sandia had a total of 59 accidents (out of 23,072 rentals) in rental cars in 1996, a ratio of 0.25 percent, or one accident for every 391 rentals. That's approximately one accident a week for a Sandian driving a rental car.

At the request of Sandia management, Liz Carson, Treasury and Travel Services Dept. 10507, recently asked for an accident report comparison between Sandia and two similar-size companies. Avis' national account manager, Michael Washkevich, responded that Company A had one accident every 242 rentals

(0.41 percent), while Company B had an accident every 383 rentals (0.26 percent).

"The Avis information shows that Sandia's ratio is slightly better than average," says Liz. "It is worse than the average Lockheed Martin company, though."

"Although we came in higher than other Lockheed Martin companies," Liz adds, "California is the major travel destination for New Mexico Sandians and a lot of accidents happen there."

"I am very concerned about the safety of our employees in rental cars," adds Executive VP John Crawford. "We are having a number of accidents, each of which should be a 'wake up call' for our entire staff. I urge everyone to exercise extra caution when you are traveling —

your greatest responsibility is to return home safely."

What can you do to ensure your safety while driving a rental car? The Travel Services Department is sponsoring a Travel Fair in November. Avis has prepared a presentation based on a CNBC special aired Sept. 20 titled "Avis Cares/Vehicle Safety," which the company will show at the Travel Fair and to interested organizations at their sites. Watch future *Weekly Bulletins* for times and locations.

— Janet Carpenter

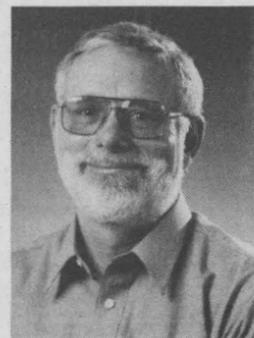


HAUL IT AWAY — Avis Rent A Car employee Martin Nee secures a wrecked rental car to the bed of an Avis tow truck. The car, involved in a roll-over, was wrecked by a Sandia driver, a situation that occurs once for about every 400 cars the Labs rents from Avis. (Photo by Randy Montoya)

Recent Retirees



Dan Aeschliman 30
9115



Bill Shurtleff 32
9752

ECP/UW campaign begins Oct. 27

One great deed is all they need

Sandia's 1997 Employee Contribution Plan/United Way (ECP/UW) general campaign to raise money for United Way of Central New Mexico and other health and human services agencies is scheduled for Oct. 27-Nov. 7 in Albuquerque.

A change this year, as a result of feedback from Sandia employees, is the ability to donate to any nonprofit health and human services agency worldwide by using the donor option form.

The campaign began with pledges from members of Sandia's Laboratory Leadership Team (LLT). "Results from the LLT are outstanding," says ECP/UW 1997 Campaign Chair Jackie Kerby Moore (4000). "One hundred percent participation, an increase of \$9,000, and an average gift per person of 1.4 percent of base salary, up from 1.1 percent."

The campaign now shifts to directors, managers, team supervisors, union leaders, and employees. President Paul Robinson and VP Tom Hunter have asked for 100 percent participation from management, which they hope will set the pace for the remainder of the campaign.

"This year's corporate goal is \$1.525 million; however, each vice president defined a goal for their organization, and executive management is optimistic that we will exceed this goal," says Jackie.

"Union leadership has enthusiastically embraced this campaign and are calling for support from their memberships," Jackie adds. Union leaders include Doug Wilfon (7842), Metal Trades Council;



Jo Ann Neel (12111), Office and Professional Employees International Union; and Duane Carr (7435), Security Police Association.

This year's United Way campaign theme, "One Great Deed," focuses on the possibility of change — change in the lives of individuals helped, and change in the lives of those offering help, making everyone feel connected.

None of us can do everything but each of us can do something, according to United Way campaign literature. "If you do just 'one great deed' this year, make it a gift of time or money or both to United Way of Central New Mexico," it says.

Funds raised in the 1997 United Way drive will support programs, not agencies. Agencies will be challenged to submit funding proposals for programs that focus on the community's most vulnerable populations in the areas of basic needs, literacy and learning, preventing crime and violence, strengthening families and individuals, health and wellness, and persons with disabilities.

"We're dedicating this year's ECP campaign to the memory of Rick Orzel [6641], who died Aug. 11 after a long fight with brain cancer," adds ECP Program Administrator Juanita Sanchez (12660). "Rick was a great supporter of United Way and served as an ECP center representative and loaned executive to United Way. He was active in volunteer work, especially at La Mesa Community Preschool Day Care. Last year, he gave 99 presentations at Sandia and other companies in the community."

Next year's ECP/UW Campaign Chair Bruce Fetzer (12680) announced the creation of the Rick Orzel Community Impact Award. "The ECP Executive Committee created this rotational award, a plaque that will move each year to the division showing the greatest percentage increase in participation," says Bruce.

— Janet Carpenter

What does your ECP/United Way dollar buy?

- \$1 per pay period**
Provides legal advice to a low-income parent facing problems with child-visitation rights.
- \$2 per pay period**
Supports both before- and after-school care for three children of a low-income working family.
- \$3 per pay period**
Buys a hearing aid for a senior citizen on a restricted income.
- \$4 per pay period**
Grants a full weekend of adult day care for a developmentally disabled family member.
- \$5 per pay period**
Provides emergency shelter and counseling to a victim of domestic violence.
- \$6 per pay period**
Gives three days of counseling and protective care for an abused child.
- \$7 per pay period**
Affords 11 weeks of safe day care for two children, freeing their low-income parent(s) to work.
- \$8 per pay period**
Provides two full days of employment counseling and a complete skills evaluation for a mentally disabled individual.
- \$9 per pay period**
Provides three months of family counseling to keep a troubled son or daughter in school.
- \$10 per pay period**
Gives emergency shelter and counseling to a family threatened by domestic violence.
- \$25 per pay period**
Supports continuous protective care and counseling for an abused child until she or he can be safely returned home or moved into foster care.

Shoes for Kids campaign begins

In the past 40 years, Sandia has teamed with various community partners to provide impoverished children with more than 6,000 pairs of shoes. Last year 450 children in 18 schools were fitted with shoes thanks to Sandians' donations.

Shoes for Kids promotional signs soon will be posted in the Area 1 Cafeteria (Bldg. 861), the Coronado Club, the Bldg. 800 Lobby, and at both locations of the Sandia Laboratory Federal Credit Union.

Continuing a 40-year tradition, the program committee encourages you to donate as generously as you can to make this holiday season a little brighter for those less fortunate.

The credit union will once again be the avenue for collection of funds. Please make your checks or money orders payable to "Sandia Laboratory Federal Credit Union," with a notation at the bottom stating, "For the benefit of Shoes for Kids, account #223180," and mail or deliver your donation to either branch of the credit union. You may also request a direct transfer of funds from your personal account to the Shoes for Kids account, #223180. (The phone number for the credit union is 293-0500.)

The following contributors make Shoes for Kids possible: the Sandia Laboratory Federal Credit Union (collects the donations), Albuquerque Public Schools (identifies needy children), Kinney Shoes (reduces shoe prices and fits the children), numerous bus companies throughout the city (provide transportation from the schools to Kinney Shoes), APS Foundation (financial agent who handles the disbursement of funds), and the employees whose donations make the program a success.

This year consider making your donation on or before Dec. 9 so that most children can be fitted with new shoes prior to the holiday season. (The account remains open throughout the year.)

The children who benefit from your donations are very appreciative and Sandia receives wonderful letters from them, says Pam Catanach of Community Involvement and Issues Management Dept. 12650. Some of their comments include: "They feel like I am walking on the clouds," "They made me happy," "They will keep me warm," "Thank you for being very nice to us," and "They make me run fast."

If you have questions about the Shoes for Kids program, contact Pam at 284-5211.



GRACIAS POR LOS ZAPATOS — Thank you for the shoes from a child named Nefi, a recipient of shoes provided through Shoes for Kids.

Take Our Sons to Work day

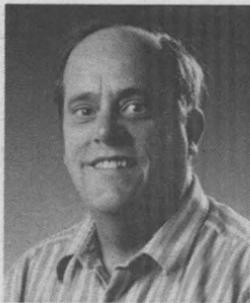


SONS TO WORK — In photo above, Sandia Security Police Officer Grant Aguirre (7435) points out the capabilities of Sandia's Security Headquarters Command Center to son Brett, 11, during Take Our Sons to Work Day on Oct. 9. In photo below, Chris Zender, 9, son of Gary Zender (right, 1822), listens carefully to "driving instructor" Dan Puetz of Advanced Vehicle Development Dept. 9652. (Photos by Randy Montoya)



Mileposts

October 1997



Michael Vahle
20 4616



Shanna Narath
20 4524



Ron Kamm
15 10263



Don Porter
30 4421



Wahid Hermina
15 9111



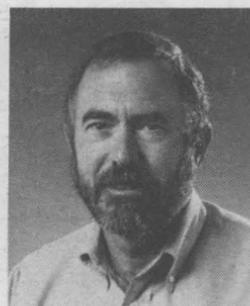
Kathie Hiebert-Dodd
20 5913



Yolanda Chavez
20 10206



William McCulloch
30 12333



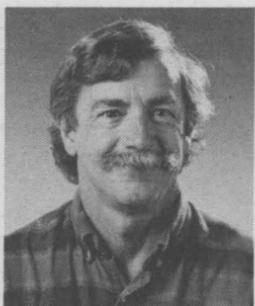
Douglas McGovern
25 5841



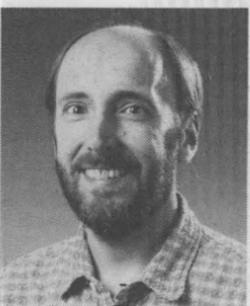
Larry Stevenson
20 2147



Donna Lambert
20 4212



Larry Azevedo
20 1541



Francis Bouchier
15 5848



Jimmie Quick
15 10263



Pete Chauvet
20 9782



Thomas Sullivan
35 2523

Hispanic Heritage Month ends with chile cookoff at C-Club



FIRE AND ICE — Hank Perez, Coronado Club executive cook, tastes chile number 12 during judging of Sandia's first "Chile Cookoff" Oct. 15 at the C-Club, sponsored by the Hispanic Leadership and Outreach Committee. Sandia employees entered six red and six green homemade chiles in the contest, which ended a month of activities celebrating Hispanic Heritage Month at Sandia. Icewater, soda crackers, tortillas, and handkerchiefs were favorite accessories for judges Miguel Robles (3600), B.J. Jones (3000, seen tasting in the background), Nestor Ortiz (6400), Ed Graham (7800), Frank Gallegos (7400), Adele Caldwell (9001), and Hank. Winners were Kathy Silva (3611), first place, red; Joy Martinez (10232), first place, green; and Martha Trujillo (10232), green. Linda Lovato-Montoya (3611) organized the Hispanic Heritage Month activities. (Photo by Randy Montoya)

Awards programs for outstanding women seek nominations

Looking for a way to recognize the accomplishments and contributions of outstanding women in your organization? Consider nominating someone under one or both of the awards programs noted below. Further information and details (including nomination forms) about each of these programs soon will be available on the Women's Program Committee home page at http://www.hris.sandia.org/3600/3611/wpc_1.html. These pages are currently under construction but are expected to be completed very shortly. In the meantime, the following information is available. If you have questions, call Kathy Silva (3611) at 844-6281.

Women on The Move — 1998 nomination forms from the YWCA are expected to be out within the next few weeks. Based on information currently available, the nominations of Sandia candidates for the WOTM Awards will be due to the Women's Program Committee (WPC) by close of business Wednesday, Nov. 26. For those wishing to get a head-start on completion of a nomination, the following three items constitute the major portion of the nomination:

1. In one to two pages list the nominee's education, achievements, accomplishments, and community involvement, and describe how she impacts others through her leadership in the community.
2. List three to five professional and community organizations to which the nominee has made a significant contribution. Include a contact person (i.e. chairperson, president, etc.) and the address and phone number for each organization listed.
3. In 50 words or less, provide a brief biographical sketch of the nominee including education, employment, etc.

Society of Women Engineers — The Society of Women Engineers (SWE) requests your nominations for seven prestigious national awards:

1. Achievement Award — SWE's highest award, given annually to a woman who has made an outstanding contribution over a significant period of time.
2. Upward Mobility Award — recognizes a woman who has made an outstanding contribution in the field of engineering and/or technical management such that she has achieved at least the level of general manager or equivalent upper management position.
3. Resnik Challenger Medal — honors the memory of Dr. Judith A. Resnik, NASA Astronaut, and is designed to recognize engineering contributions broadening the frontiers of space exploration.
4. Rodney D. Chipp Memorial Award — celebrates and recognizes a man or a company who has contributed significantly to the acceptance and advancement of women in the engineering field.
5. Distinguished Engineering Educator Award — presented to a SWE member who has demonstrated excellence in teaching.
6. Distinguished New Engineer Award — presented to SWE members who have been actively engaged in engineering, demonstrated outstanding technical performance, and have had no more than ten years of cumulative engineering experience.
7. Fellow Grade — conferred on SWE members to recognize their outstanding service to the public's advancement and awareness of engineering as a profession for women.

Award recipients will be recognized at the annual national convention of the Society of Women Engineers in Houston on June 20, 1998, and also in the national publication *SWE Magazine* and press releases distributed at various levels.

All nominations must be postmarked by Dec. 15, 1997, and sent to SWE national headquarters. All nominators and recipients will be notified by April 1, 1998.

The Society of Women Engineers encourages the nomination of candidates who are members of minority groups underrepresented in engineering.

Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads

MISCELLANEOUS

SEARS TREADMILL, w/incline & programmable capability (like new), \$600. Hunter, 865-5745, ask for Becky.

LARGE DESK, 60"L x 29"W x 25"H, makes great work bench, \$45. Swahlan, 292-3598.

KING-SIZE WATERBED, solid wood, canopy, w/custom spring, California king mattress; 36-in. color TV monitor; VCR; good condition, cheap. Semonick, 883-4212.

INFANT PLAYPEN, 40" x 40", like new, light-yellow padding, with white mesh, \$25. Phelan, 869-6094.

SIERRA WOODSTOVE, double-glass doors, great buy at \$400 (purchase price was \$1,300). Potter, 856-6965 or 265-4148.

PORTABLE ELECTRONIC TYPEWRITER, AT&T Model 6210, SureSpell, error correction, & Type Off, manual, extra ribbons & liftoff tapes, \$50. Leisher, 281-5258.

STORM DOOR, 32-in., white aluminum, w/full-length glass & screen, all handles, latches included, \$25. Luna, 881-6808.

DACHSHUND, AKC, beautiful long-hair miniature male pups, 2nd shots & wormed, 4 months old, will deliver in Albuquerque area, \$200 cash. Gray, 281-4172.

ELECTROMECHANICAL DRAFTING TABLE, 42" x 32", working table space, made by Hamilton, \$100. Giersch, 299-9512.

REFRIGERATOR, Frigidaire, white, \$250 OBO; stove top, Kenmore, white, \$100. Nenoff, 260-0943.

SOFA SLEEPER, matching loveseat, \$250/both, Jaramillo, 292-3295.

BARSTOOLS, contemporary, black metal, \$40 ea. Chavez, 243-4595.

HEALTHRIDER, top-of-line model, \$300; Gravity Edge muscle system, \$500; both nearly new. Madrid, 281-8782.

CAR STEREO, Kenwood cassette/CD changer combo, paid \$900, asking \$500 OBO. Noriega, 867-8287.

DOUBLE-BED FRAME, heavy-duty, \$20; king-size electric blanket, dual control, \$20. Hudson, 884-7621.

SAMSONITE LUGGAGE, two large pieces, like new. \$45 OBO; assorted drapes, curtains, valances, rods, and hardware. Sikora, 821-1983 or 881-4741.

BLACK LEATHER BAR STOOLS (4), excellent condition, \$120/all or \$60/pair; 4-ft. chain-link fence (50 feet), w/gate, \$35. Serna, 899-9618.

MACINTOSH PPC 7200/90, 16/500/4x, OS8, \$800; Mac SE20, \$50; Kurta, 12x12 drawing pad, w/o pen, \$50; monitors: Radius 20", \$475; Apple 16", \$350; Apple 13" RGB, \$150. Cohn, 275-8080.

MAGELLAN GPS, Meridian XL position, velocity, plotting, 200 waypoint/50 breadcrumb buffers, \$110. Bodette, 275-9722.

DINING ROOM SET, Lancaster Woods by Burlington Furniture, hutch, 8 chairs, table w/covers, 2 leaves, extends 102 in., \$1,575. Sheldahl, 299-4077.

LARGE MOVING SALE, tools, toys, sports, books, work benches, furniture, more, Nov. 1-2., Bosque Farms. Forrester, 869-0552.

CHRISTMAS LIST BAZAAR, gift ideas for young & old, Sat., Oct. 25, 9 a.m.-5 p.m., 8112 Loma Del Norte NE. Powell, 328-6709.

AREA RUG, 4' x 5'3", cream, little used, \$39; color TV, 13", not cable-ready, \$49. Caskey, 298-6428.

KELCO REVERSE OSMOSIS WATER FILTER, new, includes 5 filters, installs into plumbing, \$300. Oscar, 345-7046.

KITCHEN CABINETS, sink, selling due to remodeling; 2 rattan bar stools (need repair); microwave. Nicolary, 296-6408, ask for Nancy.

BOY'S BUNK BED, bright-blue tubular style, twin/top, full/bottom, w/both mattresses, \$150. Chavez, 861-0934.

WATERBED, queen-size, 12-drawer pedestal, headboard w/shelves, free. Sipola, 299-1119.

THREE-PIECE WALL UNIT, combination shelves, drawers, doors, lighted top-shelves, dimensions 30 x 76 x 14 ea., perfect condition, \$300/all 3. Chapa, 822-1528.

PC, 486 DX2/80-Mhz, complete w/8MB RAM, 770MB HD, 2X CD-ROM, monitor, Windows95 & Office, games, \$600. Peters, 293-6356.

ELECTRIC WATER HEATER CONTROLLER, 2 heating and 2 economy settings per 24 hours, \$20 OBO. Moss, 298-2643.

QUEEN-SIZE BED, extra firm, excellent condition, HD frame, 3-yrs. old, \$350 cash. Sturgeon, 281-9035.

SPEEDO SWIMSUITS (2), woman's size 32/8, new, never worn, \$15 ea. Simon, 299-8468, evenings.

NEW BOXCAR SIDING, 1" x 6", tongue & groove, about 60', very reasonable. Zurawski, 884-3862.

LIONEL, WILLIAMS, K-LINE TRAINS, 0-27, w/1,500-ft. tracks, 200 trestles, all sizes. Armijo, 254-9387, after 7 p.m.

WASHER/DRYER, apt. size, \$100 ea.; large parlor stove, coal or wood, like new, used 1 season, \$225. Hayes, 299-1200.

BUD LIGHT BOTTLE ON ICE, 4-ft. light fixture, for pool table, \$275 OBO; hard-shell saddle bags, for BMW motorcycle, \$300 OBO; truck shell, \$150 OBO. Pierson, 293-9133.

SCHWINN AIRDYNE EXERCYCLE, excellent condition, cost \$575 new, asking \$275. Thorp, 292-0169.

WOMAN'S LEATHER BIKER JACKET, size 6, \$175; Harley-Davidson boots, size 6-1/2, \$75; both \$225; roller blades, \$30. Zamora, 831-4575.

HUGE SIESTA HILLS NEIGHBORHOOD ASSN. YARD SALE, Lassetter Park, Dakota/Ridgecrest SE, Sat., Oct. 25, 8 a.m.-3 p.m. Durkee, 255-4211.

WHITE GERMAN SHEPHERD, full blooded male, female parent on premises, \$125. Gutierrez, 897-2099.

VGA COLOR MONITORS, excellent condition, \$95-\$125 ea., money-back guarantee. Leslie, 266-1797.

CRAFTSMAN TABLE SAW, 10-in., w/bench & locking casters, \$160; book cabinet, 6 shelves, w/doors, 78" x 36" x 16", \$60. Sparks, 266-5060.

SEVEN-PIECE SECTIONAL COUCH, off-white, reasonable. Schowers, 822-8494.

STEAM CARPET CLEANER, w/power head, \$75; stair stepper, \$40; trolling motor, w/battery, \$100; 26-in. woman's bike, 10-spd., \$50. Patrick, 265-4569.

CHROMCRAFT DINETTE SET, wood/chrome, 42-in. diameter, w/additional 16-in. leaf, 4 swivel chairs, w/casters, \$180. Kawka, 823-1570.

KITCHEN REMODELING SALE, Oct. 24-25: electric range, microwave, sink, faucet, countertop, screen door, lighting fixtures, cooking items. Schamaun, 298-5192.

BRASS READING LAMP, by Access, adjustable, halogen lightbulb, hardly used, sleek design, \$45 OBO. Wagner, 823-9323.

WOOD-BURNING STOVE, dispatch phone, telescope. Garcia, 343-8207.

CAPTAIN'S BED, chest of drawers, desk w/hutch/chair, \$300. Bulmer, 298-0812, leave message.

PRINTER, Microprism, IDS 480, w/handbook & cable, B&W, works well, \$10. Lenz, 884-4835.

SOLOFLEX, \$400; Vitamaster foldable stepper, barely used, \$50; Tunturi portable stationary bike, \$25. Mills, 897-2817.

PLAYER PIANO, w/music rolls, electric musette, 25-yrs. old, rarely played, needs tuning, \$1,100. Gomez, 291-0691, evenings.

BROWN BUNK BEDS, plywood, no mattresses, good condition, \$100; Precor ski machine exerciser, \$60. Corcoran, 265-1694.

MOUNTAIN BIKE, 19-in. Huffy, \$50; drafting table, \$30; 19-in. GE color TV, \$40; 70-watt speakers, stands, \$50/set. Pena, 271-5222.

HOOVER UPRIGHT VACUUM CLEANER, \$30; microwave oven, \$40; electric dryer, \$100. Simmons, 891-2475.

DEADLINE: Friday noon before week of publication unless changed by holiday. MAIL to Dept. 12640, MS 0165, FAX to 844-0645, or bring to Bldg. 811 lobby. You may also send ads by e-mail to Nancy Campanozzi (nrcampa@sandia.gov). Call Nancy at 844-7522 with questions. Because of space constraints, ads will be printed on a first-come basis.

Ad Rules

1. Limit 18 words, including last name and home phone (We will edit longer ads).
2. Include organization and full name with the ad submission.
3. No phone-ins.
4. Use 8 1/2" by 11-inch paper.
5. Type or print ad; use accepted abbreviations.
6. One ad per issue.
7. We will not run the same ad more than twice.
8. No "for rent" ads except for employees on temporary assignment.
9. No commercial ads.
10. For active and retired Sandians and DOE employees.
11. Housing listed for sale is available without regard to race, creed, color, or national origin.
12. "Work Wanted" ads limited to student-aged children of employees.

TV, Magnavox 25-in., Sanyo 4-head VCR, both excellent condition, must sell together for \$325; piano, Adam Schaaf upright, cherry wood, \$500. Hultine, 888-4887.

CREAM/BLUE SOFA, matching chair, w/ottoman, like new, \$450/all; blue-border area rug, 9' x 12', \$250; twin-size comforter, pillow sham, \$50. Campanozzi, 821-5077.

OLDHAUSEN POOL TABLE, regulation-size, excellent condition; table & 4 chairs, w/buffet; blue leather recliner. Kuebler, 856-6051.

JENNY LIND CRIB, w/mattress, \$50. Fellows, 256-7678.

TRANSPORTATION

'82 GMC SUBURBAN, 3/4-ton, new 350 CID engine, new transmission, new AC (all under warranty), new radiator, \$5,000. Quintana, 275-5842.

'92 FORD EXPLORER XLT, V6, teal/mocha, tow pkg., 95K miles, well maintained, AM/FM cassette, roof rack, good tires, AC, \$9,975 OBO. Dawes, 856-3435.

'84 VOLVO 240DL, 4-dr. sedan, red, 181K miles, AT, AC, well maintained, \$3,500. Zirzow, 281-9896.

'86 CHEV. NOVA, 4-dr., hatchback, PS, PB, PL, cruise, AC, AT, make offer. Draper, 281-2663.

'92 TOYOTA PICKUP, 4x4, 110K miles, V6, cruise, shell, security, new clutch, original owner, all scheduled maintenance, \$9,000. Torrez, 865-5309.

'85 TOYOTA 4-RUNNER, 5-spd., AC, JVC, AM/FM cassette, chrome wheels, towing pkg., white, no accidents, 169K miles, \$6,800 OBO. Newman, 266-6928.

'89 ACURA INTEGRA, 2-dr. + hatchback, 70K miles, blue, good condition, original owner, \$4,800 OBO. Hendrickson, 275-3119.

'67 FORD F250 PICKUP, runs well, needs lots of other work, good candidate for rebuilding, \$1,000. Shenk, 296-6015.

'91 MITSUBISHI GALANT LS, loaded, AC, AT, PS, PW, PL, power sunroof, cruise, AM/FM cassette, excellent condition, 77K miles, \$5,900. Pike, 866-5899.

'95 CHEV. TAHOE LX, 4x4, AM/FM cassette, AT, AC, cruise, luggage rack, custom wheels, power everything, 46K miles. Padilla, 299-2976, ask for Tadd.

'85 F150, 70K miles, 6-cyl., 4WD, 4-spd., shell, short bed, premium wheels, good rubber/manuals, \$3,600 firm. Krivitzky, 897-9104, evenings.

'91 DODGE SHADOW, 2-dr., 5-spd., 51.5K miles, tint, \$4,000 OBO. Gonzales, 266-3193.

'85 CAMARO, V6, AT, nice car, good interior, new tires, new transmission, minor front-end damage, very reliable, \$2,700 OBO. Bordlemay, 883-4926.

'95 PROBE GT, 26K miles, V6, alarm, sunroof, AC, PD, PW, PS + more, excellent condition, \$13,600. Gurule, 873-9150.

'94 FORD EXPLORER, Eddie Bauer, 4x4, fully loaded, excellent condition, 50K miles, extended warranty, book \$18,175, sell for \$16,500. Bragg, 275-3172.

'90 CHEV. C1500, stepside, Silverado, 2WD, 350 V8, extras, immaculate, 44K miles, \$10,500. Gamblin, 821-8708.

'94 GEO METRO STATIONWAGON, 6-spd., manual, white, excellent conditions, 41K miles, \$4,500 OBO. See, 864-7864 or 883-3048.

'76 FORD COURIER, 4-cyl., 4-spd., 2WD, reliable, no broken glass, drive train OK, passes emission test, 162K miles, \$650. Horine, 897-1131.

'95 TOYOTA TACOMA PICKUP, extended cab, 6 cyl., 5-spd., AC, very low mileage, under warranty, \$13,000. Prevender, 296-8586.

'95 SUZUKI SWIFT, bids through 10/30/97; '97 Mazda pickup, extended cab, '91 Chev. Astro van, bids through 11/04/97; right to refuse bids, sold as is. SLFCU, 237-7386, ask for Christine.

'90 NISSAN, 4x4, white, good condition, \$3,600 OBO. Chavez, 861-0712.

'72 FORD BRONCO, 3-spd., 302 CID, AC, \$2,800. Reif, 299-4243.

'93 FORD TEMPO, AT, AC, cruise, PL, AM/FM cassette, very clean, needs minor body work, low mileage, \$3,500. Atkins, 821-7989.

'96 FORD MUSTANG, 20K miles, AT, V6, AC, AM/FM stereo cassette. Strauch, 831-4766.

'93 EXPLORER XLT, AT, AC, all power, ABS, tinted, new radials, AM/FM, excellent, \$14,600. Buck, 856-1870.

'94 FORD TAURUS GL WAGON, 3.8 V6, all power options, dual air bags, ABS brake, super buy, \$8,900. Hart, 291-8774.

'90 PONTIAC SUNBIRD, convertible, white/black, AC, AM/FM cassette, front tires new, must sell, runs great, \$4,500 OBO. Otero, 839-4075.

'91 PLYMOUTH VOYAGER LE, all-wheel drive, power everything, AT, 3.3L V6, 1 owner, excellent condition, \$8,875. Guilinger, 299-6680.

'88 MERKUR SCORPIO, excellent inside/out, loaded, PS, 78K miles, \$3,500 (\$1,500 below book). Harrison, 897-3541.

'96 YAMAHA 1100 WAVE RIDER JET SKI, 2 seater, used 3 months, excellent condition. Smallwood, 839-7298.

RECREATIONAL

'72 SAAB SONETT, fiberglass sports car, 2-seats, rare, \$750 OBO; '81 Yamaha 250XT motorcycle, runs great, street legal, single cyl., 4-stroke, great trail bike, great shape. Hayward, 292-2980.

'97 SEA-DOO JET SKI, 3-seater, brand new, only used 50 hours, w/custom trailer, cover, & other accessories, \$8,000. Limon, 892-6285.

IDLE-TIME CAB-OVER CAMPER, fully contained, sleeps 5, flushable toilet, oven/stove, heater, 8-ft. full-size bed, great condition, \$975. Eldred, 865-1406.

BIKES: man's Schwinn, 5-spd., \$25; woman's Touring, \$25. Babb, 865-6843.

'96 HONDA 300TRX 4-WHEELER, racks on front & back, like new, no more than 50 hrs. used. Baca, 836-8609.

MAN'S BICYCLE, York Signature, 12-spd., 21-in. frame, 21 lbs., Campy running gear, \$200. Swanson, 281-2735.

'87 BAYLINER 1400 CAPRI, 50-hp Force, Minkota trolling motor, galvanized trailer, set up for fishing, \$3,200 OBO. Vine, 293-0940.

TWO ROLLING STONES TICKETS, bleachers, \$50/ea.; Yamaha Pee-Wee-80; AT, 3-spd., unleaded, w/boy's size 3 boots, chest/arm protector, Shoe helmet, \$650 OBO. Jennings, 268-8789.

REAL ESTATE

3-4 BDR. HOME, 2 baths, remodeled custom adobe, 3 beautiful acres in alfalfa, irrigation rights, pipe-fenced corral/barn, \$249,900. Bruff, 232-7608.

3-BDR. MOBILE HOME, 16x80, '96 Oakwood, 2 baths, appliances AC, carport, deck, w/awning/skirting, Four Hills MHP, \$34,500 OBO. Jaramillo, 292-3295.

4-BDR. HOME, 3 baths, studio, 2,670 sq. ft., La Cueva district, professionally landscaped, corner lot, master bdrm. w/deck, walk-in closets. Winter, 856-0789.

4-BDR. HOME, 1-3/4 baths, 2 living areas, dining area, fireplace, 2-car garage, Eubank & Montgomery NE, good schools, \$135,000. Buck, 661-4087 or 896-2563.

3-BDR. NEW HOME IN BELEN, 1-3/4 baths, 1,350 sq.ft., vaulted ceilings, 1 acre, horse facilities, \$88,000; 2 adjacent acres also available. Castillo, 864-6823.

5 ACRE LOTS, 2 ea., South Mountain, Edgewood, great water area, pinon, juniper, mountain views, electricity available, call for details/terms. Roach, 296-0795.

2-BDR. HOME, 1 bath, huge backyard, near shopping/freeway, many extras, \$84,900. Knight, 839-0948.

5.3 ACRES, Forbes Trinchera Ranches, near Ft. Garland, Colo., \$3,500. Ayers, 888-8922, leave message on recorder.

2-BDR. MOBILE HOME, 2 baths, '92 Redman, 14' x 70, located Tierra West. Estill, 883-1531.

WANTED

24-PIN PRINTER FOR PC, less than 3 yrs. old, donation or low cost, for church scout troop. Reed, 268-7484.

VIDEOTAPE, of 10/6/97 Monday Night Football game, Denver Broncos vs. New England Patriots, to temporarily borrow. Armstrong, 299-8705.

SNOWBLOWER, gas or electric. Loucks, 255-9444.

EXERCISE DEVICE, brand name: "Vitalizer." Monnet, 865-7941.

ANALOG MAGNETIC RECORDING MACHINES, old (Ampex, Revox, etc.) or new (Beta HiFi). Larsen, 292-7896.

TAPE BACKUP, for PC or removable storage device, such as Bernoulli box, for home computer, does not need to work. Goering, 897-9505.

HOUSEMATE, townhouse in Spain/Moon area, \$350/month including utilities. Spear, 286-9218.

PUPPY & HOUSESITTER, for few days in November. Benton, 275-2602.

STROLLER AND CRIB OR PLAYPEN, to rent, borrow, or buy, for 5-month-old grandson coming to visit from Nov. 12-17. Kopriva, 897-0140.

HOUSESITTING, responsible individual seeking long/short term housesitting position, available immediately, references available upon request. Minton, 883-1916.

BASS GUITAR PLAYER, for "just-for-fun" 70's, 80's, 90's rock band, no money. Douglas, 281-9843.

LARGE DOG CRATE. Gonzales, 842-6607.

LOST & FOUND

FOUND: Woman's watch, near Bldg. 804, brand name "Guess." Gendreau, 844-3712.

LOST: Burgundy Mount Blanc ball-point pen, possibly between buildings, snowcapped end, gold tip, sentimental value. Busick, 858-0415.

FOUND: Cute baby picture photo album, on receptionist desk, Bldg. 810. Campanozzi, 844-7522 or 844-9272.

Planning starts for Sandia's 50th anniversary celebration

During 1949, a number of events took place that served to separate Sandia from Los Alamos Scientific Laboratory and bring it under the management responsibility of AT&T subsidiary Western Electric.

In 1999 Sandia will celebrate its 50th birthday. Planning has begun for how we will commemorate this important year. While the official "birthdate" is Nov. 1, 1949 — when AT&T assumed management — a number of events will likely be held throughout the year.

How do you think we should acknowledge and celebrate 50 years of contributions to the nation and local communities, honor and thank retirees and current employees, and increase awareness of Sandia's future direction and evolving mission?

A planning team representing each division has been selected (some represent more than one area), and its members would like to hear from you. If you have an idea for the 50th, please contact one

50th anniversary planning team

Name	Org.	MS	Phone
Brown, Jim	5341	1373	284-5107
Bersie, Joan	8842	9141	294-2912
Clausen, Julie	12680	0129	844-0948
Griego, Carlos	3344	1021	844-2739
Haas, Amy	6200	0431	844-2699
Hagerman, Scoti	10500	0157	844-1726
Levin, Jann	3343	1022	845-8524
O'Canna, Myra	15102	0612	844-6315
Payne, Deborah	12670	0129	844-3909
Sanchez, Patti	1203	1071	845-9595
Schrader, Barry	8802	9111	294-2447
Taylor, John M.	5335	1203	844-8207
Walther, Jim	12660	1490	284-3232

of the planning team members listed above.

"This will be an exciting year for Sandia, an opportunity to look back on our past as well as to the future," says project leader Julie Clausen

(12680). "We want to encourage a lot of participation in planning for the year, and this is everyone's chance to come up with some creative ideas."

In the coming months, the planning team will gather up all the ideas, evaluate them, and make recommendations to senior management. The team will develop a plan for 1999 anniversary events and will be soliciting volunteers to help carry out each of the events. A Web site will be developed where employees can find updates on planning efforts.

You can send your ideas to Julie, MS0129, jjclaus@sandia.gov, or to any member of the planning team (see box at left).

Attn. retirees, employees: Opportunity available

With the recent death of project principal John Shunny (see the Sept. 26 *Lab News*), the 31-year-old South 14 Village Project desperately needs new volunteer support — and a new goal.

John, assisted by Julian Sanchez (ret.), managed the project, but John's passing and Julian's wish to increase his travel time significantly mean that someone needs to step up to the task if it is to continue. The retail end of the project has Sandia's permission to stay as-is: The *Lab News* will continue to sell coffee mugs, caps, hats, and T-shirts, all with the Sandia thunderbird logo. And the current suppliers are still out there awaiting orders.

One change needs to be considered, notes Julian: "I've talked with three leaders in the communities along South Highway 14. They agree that the folks we've been helping, the current older generation, are no longer as impoverished and as powerless as they once were. Most of the communities have senior citizens' centers, which provide a variety of assistance, including transportation for those who need it."

Therefore Julian suggests that a volunteer (or two or three) meet with him and a *Lab News* representative to discuss the challenge of following John's footsteps and of choosing a worthy beneficiary to the \$2,000 to \$3,000 of annual income the project typically produces.

If you're interested in the challenge, please call Bruce Hawkinson at 844-4042 by Nov. 21.

Open benefits enrollment period runs through Nov. 9; details in '98 Benefits Choices booklet

Benefits open enrollment Oct. 20-Nov. 9 — The annual benefits open enrollment period will run from Oct. 20 through Nov. 9. Open enrollment is a time when Sandia employees and retirees may use the automated phone system to choose or change certain benefits. You should have received the '98 Benefits Choices Open Enrollment booklet describing the benefits options and Primary Care Physicians lists for Lovelace and the Triple Option Plan (TOP). These were mailed to internal mail stops for employees and to home addresses for retirees. Note: The Primary Care Physicians' list for TOP is in draft form. For those electing the TOP plan, a Primary Care Physician selection form (included in the Open Enrollment packet) needs to be filled out and sent to Mutual of Omaha by Nov. 24, 1997. If you have not received a packet, please call the Benefits Customer Service Center at (505) 845-2363.

Reimbursement Spending Accounts (RSA) open enrollment reminder — The RSA Plan allows participants to set money aside from their paychecks in either a Health Care Spending Account, Day Care Spending Account, or both before federal, state, and Social Security taxes are deducted. These accounts allow you to take advantage of medical tax deductions and day-care tax credits without having to itemize on annual federal tax returns. Regular employees with at least six months of continuous service as of Jan. 1, 1998, are eligible to enroll in the plan. You must enroll during open enrollment (Oct. 20-Nov. 9) in order to participate during 1998. Important: Current 1997 participants must re-enroll to participate in 1998.

If you plan to enroll in either account but cannot predict your future expenses, enroll for the \$100 minimum during open enrollment. You can then change your election amount or disenroll by telephone anytime prior to midnight on Dec. 31, 1997. You must enroll between Oct. 20 and Nov. 9 to take advantage of the grace period.

Refer to the '98 Benefits Choices Open Enrollment booklet for more information and instructions about enrolling.

Dental Deluxe Plan to be offered during open enrollment — Reminder: If you're interested in enrolling in the Dental Deluxe Plan (DDP), the open enrollment period is Oct. 20-Nov. 9. The

DDP is an enhancement to the current, Sandia-paid Dental Expense Plan (DEP) and includes an increased reimbursement of covered services and increased annual and lifetime maximums. The DDP is optional and requires a monthly premium payment. If you do not elect to purchase this plan, you will remain covered under the current DEP. The DDP is available only to regular employees. Retirees are not eligible.

Once enrolled in the DDP, a two-year mandatory participation is required. This means coverage will be effective Jan. 1, 1998-Dec. 31, 1999. The next time the Dental Deluxe Plan will be offered will be in 1999 for coverage effective Jan. 1, 2000-Dec. 31, 2001.

Refer to your '98 Benefits Choices Open Enrollment booklet for more information. For detailed plan options and benefits, refer to the Sandia Dental Expense and Dental Deluxe Plans Summary Plan Description (SPD) dated August 1997 and attend an open enrollment meeting.

Note: If you have not received the Dental SPD by Oct. 27, call the Benefits Customer Service Center at (505) 845-2363.

Panelists discuss tolerance, workplace issues for lesbian, bisexual, and gay employees

Six local representatives of the national group Parents, Families, and Friends of Lesbians and Gays (PFLAG) recently addressed more than 50 people who attended a panel discussion at Sandia/New Mexico about creating a healthy work environment for lesbian, bisexual, and gay employees and their relatives and co-workers.

The Oct. 9 session began with a short video intended to correct what it said were the most common misunderstandings about lesbian, bisexual, and gay ("lesbigay") people. The video, "In Our Own Words: Dispelling the Stereotypes," produced by the Dallas Gay and Lesbian Alliance, noted there are gays in every culture, religion, profession, and political party.

Following the video, PFLAG's Albuquerque-chapter President Sandy Lane opened the discussion with a story about her five-year-old granddaughter who was ostracized on the playground because she has two mothers. The school addressed the problem by teaching the students about family, inclusion, and respect for the individual, she said.

"Hostility in the workplace is not so different than in my granddaughter's school," she said. "When you deal with it openly and honestly, you have a work environment where people are able to do their best, to function as team members focused on the task at hand."

The other panelists, all either lesbigay themselves or relatives of lesbigay people, each recounted instances of intolerance or discrimination based on sexual orientation. The most recurrently discussed issue was the inability of lesbi-

gays to "be themselves" in a workplace setting, always having to hide even trivial details about their personal lives, such as what they did during the weekend, for fear of being ostracized.

Intolerant comments, "fag jokes," and "what is not said" are often what trigger fear of "being totally honest in all aspects of our lives," said Karen Monty, a human resources manager at COMPA Industries who is a lesbian.

"If I wouldn't feel safe revealing who I am at work, that's unhealthy," added Pat Baillie, a retired Air Force Major and training specialist at AlliedSignal, also a lesbian.

"A person's orientation is irrelevant to that person's value to the organization," added Ira Rimson, a retired Navy commander whose youngest daughter is a lesbian.

And if employees encounter an unhealthy environment, added Lane, "they are likely to go look for a company where the environment is more comfortable. The goal is to create an environment where every single person can feel valued."

Sandia's Gay/Lesbian/Bisexual Networking Group (GLBNG) sponsored the discussion in observance of National Coming Out Day Oct. 11. GLBNG Programs Vice Chair Kent de Jong (2338) says the group's primary mission is to educate employees with respect to workplace issues affecting lesbian, bisexual, and gay employees and their relatives and co-workers. GLBNG has a mailing list of about 50 employees. The group's Internal Web site is at <http://www-irn.sandia.gov/glbng/nmglbng.htm>.

—John German

Coronado Club

Oct. 26 — Halloween party. Games and treats for kids 6-9 p.m. \$1.50 (\$2.50 for guests).

Oct. 30 — Thursday bingo night. Card sales and buffet start at 5 p.m., early birds' bingo at 6:45 p.m.