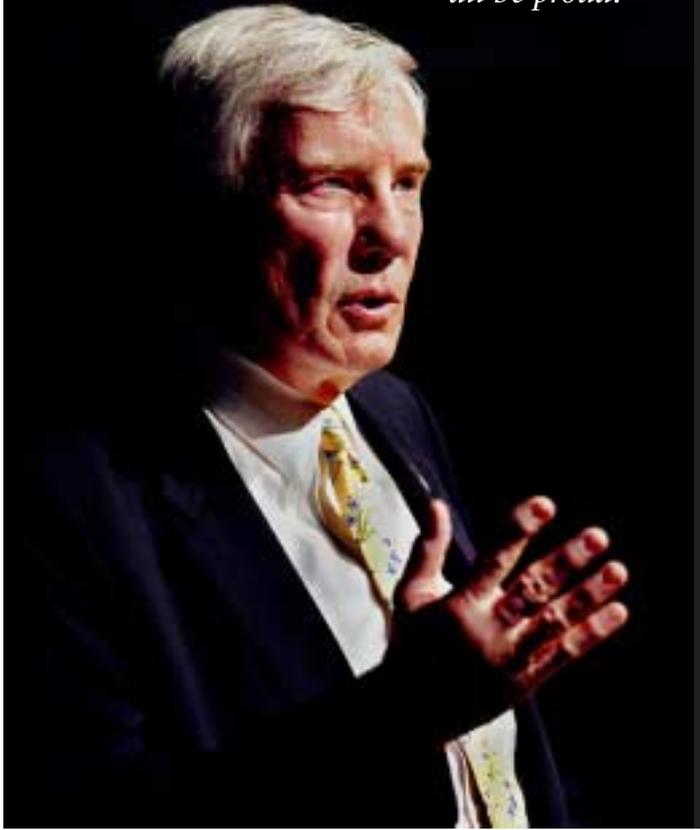


“... I cannot yet talk about many of the most important accomplishments. For those of you who trust my word, please know that Sandia has been leaving a legacy of achievements of which we can all be proud.”



Photos by Randy Montoya

Personal reflections on September 11: A year later

As we near the anniversary of the September 11 attacks, the Lab News invited Sandia President and Laboratories Director Paul Robinson to share his thoughts with employees.

By C. Paul Robinson

It is said that we can never know how momentous the times are until afterward when we pause and look back on them.

Undoubtedly the past year was as momentous as any of us ever want to experience. One year later, the tragedies of September 11 still loom large. Although the sites have been cleared, the memories never will be. Nor will the bereaved ever be the same.

We have had the first taste of victory since that awful day as US soldiers in Afghanistan, with some support from close allies and the Afghans themselves (especially the Northern Alliance), have now routed the Taliban from power. We similarly have killed or captured a great many of the Al Qaeda terrorists. Yet a large and unknown number are still out there. The fate of their leader, Osama bin Laden, is also still unknown to us.

President George Bush, in a joint session of Congress, pronounced to world leaders that “you are either with us or you are with the terrorists.” That simple maxim is still operating in a powerful way around the world, and enough time has now passed that I believe we know the choices that have been made. Quite surprising, but nonetheless important, we learned that the first leader to call the

(Continued on page 4)



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What we learned from 9/11 about responding to emergencies

... and a few things you should know that could save your life

By John German

Last year every Sandian played some role in responding to Sept. 11, 2001, the day the Labs shut down to protect employees from possible further terrorist attacks.

Fortunately, other than dealing with serious disruptions to our operations, most of us did not suffer directly. There were no attacks on Labs facilities, no deaths, no injuries.

Still, the unique situation served as the most massive and urgent multisite event Labs' Emergency Management (EM) personnel ever participated in.

“Our motto is ‘Prepare for the Unplanned — Plan for the Unexpected,’” says Bruce Berry (3115), Sandia emergency planner. “The events of Sept. 11 were certainly unexpected and unplanned.”

And, as all emergencies do, Sandia's response on 9/11 revealed vulnerabilities and potential improvements that had never been considered, says Bruce.

“What the terrorists did was horrific,” says Bruce, who responded on 9/11 first as a member of Sandia's emergency response team and later reported to the Pentagon as a member of the New Mexico Urban Search & Rescue Task Force.

“But we have learned from it, both as a nation and as a laboratory,” he says. “We should take everything we can from it to prevent something like it from happening again.”

Improvements since 9/11

During the last year the EM team has incorporated into its procedures some of the latest techniques and technologies in emergency response, as well as some important lessons learned from 9/11, says Michael Knazovich, Manager of Emergency Management Dept. 3115.

Vulnerability assessments of Labs sites have been conducted with an eye toward terrorist attacks and their potential consequences.

Hazards assessments of Labs buildings have been updated to address a broad spectrum of possible events, including low-probability/high-consequence events.

Sandia's atmospheric dispersion (toxic or radioactive “plume”) modeling capabilities have been upgraded so the EM team can get faster and more accurate estimates about where a cloud of hazardous materials might be heading.

New chemical and biological detection and

(Continued on page 5)

Labs' 9/11 anniversary observances planned

A variety of “low-key, respectful” observances are planned for Sandia on Wednesday, Sept. 11, says Rochelle Lari (3053) of the Labs' Diversity Leadership Program.

Although the exact agenda of events and commemoratives is not yet set, Rochelle reports that plans call for a 9/11-related exhibit in the lobby of Bldg. 802, a videotaped message from Sandia President Paul Robinson that will air during the day on TV monitors throughout the site (also see Paul's written comments to employees starting on this page), and a web-based “memorial wall” — a place where individuals can share and read stories, thoughts, poems, etc. Special NBC programming will also air on all Sandia video monitors throughout the day that will include live coverage of anniversary observances from New York, the Pentagon, and Shanksville, Pa.

Labs employees also will be encouraged to observe some “moments of silence”: 8:45 a.m. (all EDT) in respect for American Airlines Flight 11; 9:03 a.m. in respect for United Airlines Flight 175; 9:43 a.m. in respect for American Airlines Flight 77; and 10:10 a.m. in respect for United Airlines Flight 93, which Kirtland Air Force Base plans to observe.

Rochelle, who emphasizes that her group is working on several other activities, points out that Sandia's activities and remembrances are “in keeping with the principles” suggested by many employees through the web-based employee-comment program “Your Thoughts, Please” (www-irn.sandia.gov/newscenter/news-frames.html).

That internal web page currently features comments of employees who responded to the question, “If you were put in charge of a Sept. 11, 2002, Sandia National Laboratories program to commemorate the first anniversary of the Attack on America a year earlier, what would you do?” There will also be day-long city-sponsored activities at Civic Plaza that begin at 7 a.m., move to Sacred Heart Church at 5 p.m., and end at 9:30 p.m.

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- 8 Facilities team works hard to generate positive lore about its programs, deeds
- 10 CAMU team begins treatment of soils from Sandia's Chemical Waste Landfill

What's What

Last issue's call for practical jokes moved a few readers to write back, including Herb Case (2521), who passed along one a teacher friend pulled. One late October, she brought a waxed paper-covered tray of golden tawny spheres impaled on sticks into the staff room at her school. Late October. . . caramel apples, right? No. Caramel onions.

At least, Herb wrote, it was a joke "unlikely to cause . . . undue humiliation." Maybe, if you weren't headed out on that first, long-anticipated date.

And Ron Jones (6523) wrote that he got what he thought was an e-mail message from a fellow Sandian that claimed to offer a way to search for driver license information. Following the instructions to find his or someone else's license, and clicking on a web link, Ron pulled up a driver license with a picture of a monkey on it and a derisively incredulous "You didn't really think you could get someone's driver's license over the internet, did you ;)."

But maybe he was just kidding. Go to <http://www.DriversLicenseSearch.net> and try it for yourself.

* * *

Well, there was a little mileage in the dowsing story, but it's come to the end of the road.

Retiree John Quentin Kirkland defined it - literally: "From a crossword puzzle: rhabdomancy (ràb'de-màn'sê) noun Divination by means of a wand or rod, especially for discovering underground water or ores. [Late Greek rhabdomanteia: Greek rhabdos, rod + Greek -manteia, -mancy]."

(Hm. . . so that's what retirees do!)

Dick Thomas (6515) wrote that while "a lot of people believe in dowsing and there is a lot of anecdotal evidence for dowsing . . . the powers of dowsing always seem to wither under objective scientific scrutiny. In controlled tests, even experienced dowsers have not been able to find things with any better odds than chance."

Ditto from Dale Murray (5848), who noted: "On several occasions during my career at Sandia we have had dowsers come forward presenting their implements as technology that could be used to detect things of interest to security agencies (like explosives or drugs). . . . Throughout all of my investigations and actual testing I have found that no dowser has ever passed a formal randomized double blind evaluation. In short, there is no evidence that dowsing works and there is a mountain of evidence that it does not."

And Rick Buss (9117) wrote that while the What's What blurb about dowsing for utility lines near Medical was "a nice testimonial to the efficacy of dowsing," he would like to have seen "a line or two about Randi's monetary challenge and the various experiments debunking the subject. Even in a column aimed at amusing people, it would be good not to push pseudoscience."

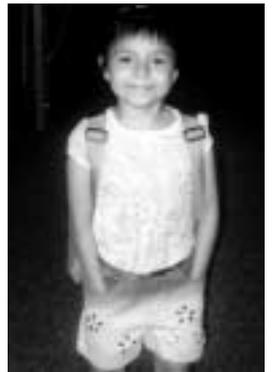
But the final nail in the coffin was *Lab News* Editor Ken Frazier's response to Rick: "I have to agree."

And that's that for dowsing in What's What.

- Howard Kercheval (844-7842, MS 0165, hckerch@sandia.gov)

Sandia's vacation donation plan comes to aid of Joy and Mariah

Mariah Martinez just celebrated her sixth birthday, first day of school, and a good doctor's report all on the same day. Sandian Joy Martinez (3113), her mother, is back at work with a big smile on her face. Mariah's stomach cancer is in remission. Sandia's vacation donation plan and the generosity of Sandians (*Lab News*, March 8) made it possible for Joy to stay with her daughter for 10 months during her medical crisis.



MARIAH MARTINEZ

"It was a comfort and a blessing to know that so many people cared; and no words can express my appreciation and gratitude. I hope that somewhere and sometime in my lifetime I can help someone the way I was helped in my time of need," says Joy. "Thank you all, again."

Mariah once again takes her picture without a hat. She now weighs 34 pounds, up from a low of 27, and is a happier energizer bunny. — *Iris Aboytes*

Explora seeks help developing exhibits

The Explora Science Center & Childrens Museum of Albuquerque is seeking another person in its exhibits department and they thought a retired or soon-to-be retired Sandian who loves to tinker would be a good choice. This word comes from Sandian Len Duda (2542), who has long been a member of Explora's board and recently served as Explora's interim director.

This exhibit developer would be part of a team designing, fabricating, installing, maintaining, and evaluating interactive, hands-on exhibits. Qualifications include good problem-solving and communication skills, drafting, wood and metal fabrication experience, standard shop tool skills, and an expressed interest in science education and tinkering.

Len says interested applicants should send a letter, resume, and references to:

Betsy Adamson, Exhibits Director; Explora; 2100 Louisiana NE, #98; Albuquerque, NM 87110.

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Boating skills course begins Sept. 17

A nine-lesson boating skills and seamanship course, given by the Albuquerque flotilla of the Coast Guard Auxiliary, begins Sept. 17 at 7 p.m. and will continue on each Tuesday evening for nine weeks. There is a nominal charge for the text and workbooks, but the instruction is free. Classroom space may be limited. Preregistration is necessary.

Call Ben at 298-0116 for additional details and preregistration.

Retiree deaths

Ronald J. Amaral (age 58)	May 13
Joan R. Gillon (81)	May 15
William W. Parker (85)	May 23
Shirley M. Meloche (79).....	May 25
Anna B. Pearce (90)	May 25
Rita L. Hodgen (90)	May 29
Willis E. Johnston (87).....	May 31
Carle C. Hunt (88)	June 1
Hazel L. Boyden (96).....	June 2
Catherine L. Fifield (84).....	June 8
Walter A. Adams (84).....	June 8
R. W. Henderson (87)	June 10
Dale S. Cone (88)	June 15
William E. Melegan (97).....	June 21
Bernardo Gallegos (79)	June 24
Jack D. Cyrus (72)	June 24
Willie F. Lucero (69)	June 25
Herbert E. Brown (97).....	June 27
Lloyd B. Jolly (91)	June 29
Laurie D. Krebs (87)	June 30
Joseph F. Genoni (83)	July 9
Bernard J. Dunne (72).....	July 13
Eugene A. Koenig (68)	July 17
Ivan Gillett (86)	July 17
Robert M. Jefferson (70).....	July 18
Wright Van Deusen (72).....	July 20
Jose S. Gallegos (72)	July 21
Michael Zapach, Jr. (71).....	July 22
William Drozdick (60)	July 22
V. L. Messersmith (82).....	July 26
Mary L. Hauer (87).....	July 30

Sandia researches ways to PROTECT facilities from chem/bio terror

Prototype chemical early-warning system evaluated for past two years in Washington Metro station

By Nancy Garcia

Preparedness for a chem/bio terrorist attack has been an area of active research at Sandia since well before 9/11.

"The trends in terrorism toward large-scale, high-visibility, high-casualty attacks have been recognized for at least five years," says systems analyst Susanna Gordon (8112).

She has helped lead a five-year program, PROTECT (Program for Response Options and Technology Enhancements for Chemical/Biological Terrorism), that focuses on safeguarding enclosed public facilities such as subway stations and airport terminals. PROTECT aims to demonstrate near-term improvements in response plans, and mid-term improvements using existing or state-of-the-art technology.

PROTECT, a collaboration between Sandia, Argonne National Laboratory, and participating transit authorities, began in 1998, three

of Advanced Technologies Dept. 8101. "We're discovering there are some things you can start to do today that won't take a lot of money, but will help."

Theatrical smoke and tracer gases have been used to track air flow through transit facilities, such as the Washington Metro.

An integrated, prototype chemical early-warning system has been installed in a Metro station (*Lab News*, July 28, 2000), where for nearly two years Greg Foltz (8112) has been leading the evaluation of a sensor array for its ability to operate properly in a subway station environment under real-world conditions of rail dust and grime. The sensors have proven capable of fulfilling this need, and a new generation of sensors is being designed for future installations based on the data gathered in this field test.

In the event of a sensor alarm, sensor readings will be analyzed by Argonne-developed software, the Chem/Bio Emergency Management Information System (CB-EMIS), which is designed to map the concentration and direction of a plume. Video images supplement the readings, to confirm whether an attack is taking place. The information, along with recommended response options, is sent first to the Operations Control Center for initial evaluation of the alarm. The control center also receives information with recommendations of "safe zones"

and advice to shelter in place or evacuate. If an incident is declared, CB-EMIS provides the same information to the Incident Commander on the scene so emergency personnel will know what they may encounter, and if they should suit up in protective gear before entering.

In addition, Sandia is providing a second software package to the Metro to allow access-controlled, web-based monitoring of the sensor system on a routine basis by Metro maintenance staff and police. This tool displays alarms as well as maintenance faults, and so could be modified to facilitate the rapid deployment of similar sensor systems in other facilities even in the absence of more sophisticated information systems such as CB-EMIS, which may take more time to modify for each facility.

"Nine-eleven really drove home the point for us that a lot of these things are in the operational details," says 8100 Center Director John Vitko.



METRO STATION — Susanna Gordon has helped lead a five-year program, PROTECT, that focuses on safeguarding enclosed public facilities such as subway stations and airport terminals from chemical and biological terrorism. One such subway system is the Metro in Washington, D.C., pictured here.

Sandia California News

years after the deadly sarin attack in the Tokyo subway. The chemical-agent release by members of the Aum Shinrikyo cult left 12 dead and 5,500 injured, even though the dispersal through 15 stations was deemed ineffectual, Susanna says.

Due to that precedent and the desire of the Washington Metropolitan Area Transit Authority to work with the labs on this issue, PROTECT initially focused on a possible chemical agent release in a subway.

"We wanted to try to understand how an agent would spread, model it, and then see if reasonable measures could be taken to minimize casualties," says Duane Lindner, deputy director

"We wanted to try to understand how an agent would spread, model it, and then see if reasonable measures could be taken to minimize casualties. We're discovering there are some things you can start to do today that won't take a lot of money, but will help."



BETH WICHMAN (8222) and Ray Trechter (9522) install prototype chemical early-warning system detectors in the Washington Metro in July 2000.

Since minimizing exposure is key, Susanna adds, "Time really is of the essence. We have found in our analyses that facility response in the first few minutes after an attack is critical."

Emergency response to a chemical incident in the Metro was tested in a field demonstration in December 2001 when the station was closed for the night. A fictitious perpetrator spilled water (simulating an agent) in the station, dashed out and collapsed as a train carrying event "players" pulled up. The plume was modeled by Argonne, and the response of the detectors was simulated by Greg Foltz.

"We are, in part, supposed to determine if the commercial equipment is ready," Greg said. "The technology is here and will clearly improve. We'll be able to integrate next-generation devices as they become available into the operational response system."

The team also plans to implement Sandia's gas-phase μ ChemLab for chemical agent detection in the demonstration program, he says. Two subway systems and an airport authority are now involved in the program.

The airport environment, Greg says, should be more conducive to testing biological detectors, which are being added as the program evolves to include defense against biological agents.

One of the concerns, Susanna points out, is that neither threat — chemical nor biological — would necessarily be immediately apparent (unlike fires or earthquakes). It is well known by the public that a biological attack would likely go unnoticed; however, it is less well recognized that some chemical agents can be similarly insidious. For instance, mustard, a chemical weapon of World War I, can be odorless and cause no symptoms for several hours even after exposure to a lethal dose. Detectors that are sensitive to such agents add great value by informing a facility of a threat that may otherwise not be noticed. Detection of faster-acting agents is also quite valuable, because hastening facility response can have an enormous benefit.

NNSA's new head Linton Brooks introduces himself, touts mission, value of national labs

Linton Brooks may have the title of "acting" Administrator of the National Nuclear Security Administration (NNSA), but he says he's not going to act like that.

"I don't expect to defer things 'waiting for the permanent replacement,'" he said in recent remarks introducing himself to NNSA employees.

"I'm what we've got and I plan to act as though I was going to be here forever."

Brooks, who has been involved in national security issues for 43 years, became acting head of NNSA in July after Gen. John Gordon,

NNSA's first administrator, accepted a presidential appointment to join the National Security Council (NSC) as deputy assistant to the president. Since last October Brooks had been NNSA's Deputy Administrator for Nuclear Non-proliferation.

Sandia President Paul Robinson and Brooks have known each other for much of their careers, and Paul speaks highly of him, calling Brooks "the genuine article." Like Paul, Brooks has an ambassador title; Brooks' is because he negotiated the START I and START II treaties.

"I've been in Washington since 1979," Brooks said. "I've served on the Navy staff, OSD [Office of Secretary of Defense], State, ACDA [Arms Control and Disarmament Agency], and NSC. Most jobs had strategy, policy, arms control, or nuclear in their titles." He was assistant director of ACDA at the end of the first Bush administration and vice president of the Center for Naval Analyses during the Clinton years.

"What I've done in the past is part of who I am," he said. "I don't have any preconceptions about certain issues, outside of nuclear nonproliferation, but I've been leading people and running organizations most of my life." He says he's formed "some pretty strong opinions about how to deal with people and issues." Some examples:



LINTON BROOKS

"I value candor, and I don't shoot messengers. . . . People who bring you bad news are not your enemies."

On chain of command: "Direction comes via the formal chain of command," he said. "But information can flow in many directions." He says adamantly that "I don't think it violates the chain of command" to ask information from an expert rather than his boss, to send information out widely rather than down through a hierarchy, or to gather people from different levels to brainstorm.

On candor: "I value candor, and I don't shoot messengers. . . . People who bring you bad news are not your enemies."

He also strongly emphasized the importance of staying focused on what's important and urged his colleagues to value the "special relationship" between the national labs and the government (see box at right). Other comments:

Collegiality and good ideas: "I've learned the value of collegiality and sharing information. . . . Spending the eight years before I came here in an organization full of creative PhDs has made me really value new ideas. Most good ideas come from non-managers, and I want to make sure we tap into those ideas."

Public service and bureaucracy: "I am appalled that the people who were called public servants in my youth are now called bureaucrats. I think it is unfortunate and wrong when politicians campaign against 'Washington' as though the career government official was some kind of alien life form. . . . Years in the bureaucracy have convinced me that Dilbert really is a documentary but we can all live with it. We have to work to make things better, but bureaucracy is always going to be frustrating. I'll try not to let it get to me, and I hope you'll do the same."

"There is one more important thing about me, which I suspect most of you share," Brooks concluded. "I want to make a differ-

Brooks on staying focused, valuing the national labs

Here are two key passages from Linton Brooks' recent remarks introducing himself to NNSA employees:

"From my time in START [Strategic Arms Reduction Treaty negotiations], I've learned the importance of keeping clear what problem you are solving while dealing with myriads of details. If we don't constantly focus on where we want to go, we won't be able to distinguish the important from the mundane. A wise colleague of mine often says the commonest form of stupidity is forgetting what you are trying to do. We all have to try not to fall into that trap."

"From eight years at an FFRDC [federally funded research and development center] — an organization with the same legal status as the national labs — I've learned that when those organizations are treated like partners rather than beltway bandits everyone benefits. I don't mean to minimize the importance of federal oversight, but you'll find I have a strong bias in favor of making extensive and effective use of the historic special relationship between the labs and the government."

ence, to really make a contribution to America's security. . . . Not everybody gets the chance to make a difference. We do. Not everybody gets the chance to make the country and the world safer. We do. Not everybody gets the chance to work with exciting technology and to adapt that technology to an important mission. We do.

"I'm proud to be part of this organization, thrilled at the opportunities before us, and eager to get started."

Reflections on 9/11

(Continued from page 1)

President and commit his nation to stand with the US was Vladimir Putin, President of the Russian Federation. Our two nations have taken major first steps to try and change the relationship that had persisted for more than five decades, and are examining in serious ways how we can seek a new strategic relationship.

Within Sandia, we have done much to support the Afghan war, as well as to begin the task of building better protections for our citizens here at home. Our work has included both highly classified projects, as well as some that have been revealed to the public. These contributions have been truly significant. I decided not to try and list them here, because I cannot yet talk about many of the most important accomplishments. For those of you who trust my word, please know that Sandia has been leaving a legacy of achievements of which we can all be proud. But, unfortunately, our work is far from over.

One consequence of the September 11 events has been the larger number of government agencies that have sought out Sandia's assistance. This gave testament that we might well have realized our "highest goal" — adopted well before September 11 — to become the lab that the nation turns to first for solutions to the problems that threaten peace and freedom for our nation and the world. Indeed, in a larger sense the aftermath of 9/11 has helped us to realize our vision of becoming "true



LIBERTY STANDS SENTINEL in New York Harbor on Sept. 11, 2001, in this TIME magazine photo.

national laboratories" — supporting every part of the US government that needs the help that our technologies can provide. We have suggested that this is the way our government should operate for the future, and we have championed this view in the impending formation of a new Department of Homeland Security.

We did prove to ourselves, once again, that

for research and development to pay the biggest dividends in solving important problems, we must do the work in advance of the need. Our past efforts in strategic planning have never seemed more valuable than now, but the challenge is even greater to be ready to provide relevant technologies for whatever the future brings. We took a major step in recreating our Advanced Concepts Group to focus nearly exclusively on helping us understand how we can continue to contribute to the protection of the nation against terrorist threats.

Our lives have been changed by September 11 in nearly every corner. We deal daily with extra fences and barriers, more security guards, increased airport security, and yet that nagging sense of unease remains. Today, it is still important for each of us to hug our loved ones a little harder, to give thanks for our freedoms a little more fervently, and to continue to use every power within us to help our nation through these troubled times.

Often when I am in Washington, D.C., I get my exercise by walking the Mall between the Capitol building and the Lincoln Memorial. Just above the Lincoln Memorial and across from the Vietnam War Memorial is the Korean War Memorial. As you see the oversized statues of soldiers laboring under the weight of their heavy packs and armaments, they converge on a small wall on which are etched the words "Freedom is not free." This has always been true and will forever be so. The significant difference for all of us since September 11 is that today and every day ahead has now become our day to contribute.

Emergency preparedness for the new millennium

If to you an emergency means remaining calm, exiting the building, and waiting outside for instructions, you'd better read this.

Ordinary building evacuations are obsolete, old fashioned, a thing of the past.

Although exiting a building and convening at an assembly area is an effective way of responding to some situations, such as fires, the range of emergencies that might beset a lab such as Sandia requires a more diverse set of options, says Steve Heaphy (3115).

If a cloud of toxic fumes, say from a hazmat accident, began to drift over a Sandia building, for instance, Sandia's Emergency Operations Center (EOC) might ask Facilities to shut off the building's air intake (a capability for many Sandia buildings, but not all) and ask building occupants to stay put, a protective action called "shel-

ter in place."

Here are the four most common protective actions:

Normal evacuation (fire alarm): Evacuation team members coordinate evacuation of the building and verify that all occupants have exited the building and gathered at a designated assembly area.

Directed evacuation: Evacuation team members pull the fire alarm and direct occupants out a certain door or in a specified direction.

Quiet evacuation: Evacuation team members clear the building without the use of fire alarms, radios, or cell phones.

Shelter in place: Evacuation team members keep all occupants inside the building and ask people they observe outside the building to come inside.

Lessons learned

(Continued from page 1)

protection equipment has been purchased for Labs first responders.

Coordination with local officials — such as with Kirtland Air Force Base, city governments in New Mexico and California, and representatives of companies in nearby communities — has been improved.

More and better communications

One major improvement has been in communications. During the Sept. 11 shutdown, for instance, Sandia's Emergency Operations Center (EOC) communicated via voicemail, Sandia Line (845-6789, an emergency call-in line), Radio Sandia (1640 AM), and a hastily set up "Sandia Under Heightened Security" web site in an effort to reach people at home.

Lessons learned about communications following Sept. 11 have become a

permanent part of Sandia's emergency preparedness procedures.

"We are trying to better inform people during emergencies and incidents," says Bill Wolf (3115), one of Sandia's Incident Commanders. "Sometimes good information is hard to come by, but the more people know, the safer they are and the less



LABS EMERGENCY PERSONNEL respond to a fictitious emergency. From left: Johnny Montano, Carol Bonney, Chris Mullaney (all 3115), Martina Baldonado (3114), Gary Baldonado, and Marvin Garcia (both 3115).

inconvenient the emergency is to them."

Obviously the most important messages during an emergency are those intended to protect people by informing them of safety actions they should take, he says.

To that end, the EM team has accelerated its effort to verify that all buildings have the proper Sandia Protective Action Notification (SPAN) equipment — a network of pagers and tone-alert radios that notify members of a building's evacuation team of protective actions requested by the EOC.

Training and practice in using the SPAN equipment, as well as in emergency procedures, is being provided to members of each evacuation team, says Steve Heaphy (3115), Incident Commander and SPAN project coordinator. Each team includes

a team captain and alternate and evacuation team members and alternates. (To find out if your building has an evacuation team or for a list of team captains and alternates in your building, call 844-0311 or 844-6515.)

Currently almost 100 evacuation teams have been identified and either are trained or soon will be trained. That's about 60 percent of the total that need to be trained. Steve is work-

ing with upper management to identify buildings and areas that need teams and says he needs your help in filling evacuation team positions.

"Together with better communications and trained local responders, we can more effectively get people informed and coordinated in the minutes after an event," he says.

9/11 lesson learned numero uno

If you were one of the more than 7,000 New Mexico Sandians sent home on the morning of Tuesday, Sept. 11, 2001, you might recall sitting in traffic, waiting to leave.

If you tried to exit through the Eubank Gate, you recall waiting for quite some time. The base unexpectedly closed the Eubank Gate for security reasons at precisely the same time Sandia asked people in a few divisions to leave for the day. Gridlock ensued.

If there had been a terrorist attack on Kirtland Air Force Base that morning, a lot of people might have been caught in the wrong place at the wrong time, says Bruce Berry (3115).

Lack of coordination between Sandia and the base was a culprit in that situation, and steps have been taken by both organizations to make sure it doesn't happen again.

A less-discussed culprit, however, was a lack of trust among employees.

As soon as a message went out intended to phase the departure of Sandia employees over a four-hour period, staggered by division, nearly everyone grabbed their belongings and skedad-

dled, says Bruce. It took almost four hours to untangle the mess.

Instead of an orderly departure with a thousand people leaving the base relatively smoothly every half hour — and most people reasonably well protected inside their buildings as they waited for their departure time — thousands of people were exposed for hours sitting in their cars, unable to go forward or backward, and without communication from emergency management professionals. Not good.

In an emergency situation, it is doubly important that people follow the instructions of emergency responders, says Bruce. The instructions are designed by professionals to protect the greatest number of people. Decisions are based on experiences by other organizations in real emergency situations, he says.

"This is probably the number-one lesson we can learn from Sept. 11," he says. "Please, for your own protection, stay tuned, be patient, and follow instructions. Acting in your own best interest is not always the same as getting out first."

If you have to think about it, report it

Sandia's emergency management infrastructure responds to more than 1,000 incidents a year, ranging from malfunctioning fire alarms, to suspicious packages, to small chemical spills, to full activation of the onsite Emergency Operations Center and field responders. A small fraction of those have the immediate potential to harm people, although a few more could become serious if Sandians do not take the proper actions.

By far the best way to prevent injuries and tragedies at Sandia is for every Sandian to remain aware of hazards in their surroundings and report anything unusual or dangerous, says Incident Commander Bill Wolf (3115).

"Small problems turn into big problems," he says. "If you have to think about whether it's an emergency, please report it, and don't hesitate to call 911."

The non-emergency hot line (311) is available if you need to report or request assistance for such problems as parking lot accidents without injuries, dead car batteries, unusual odors, dead animals, or to request 911 stickers for your phones or bomb threat procedure cards.

"But we would much rather have you call 911 and it not be an emergency than have you not call 911 at all," he says. "If in doubt, just call."

Increase your savvy

The EM team also wants individual Sandians to educate themselves about today's more sophisticated emergency procedures.

For example, every Sandian should know the differences among the four most common types of protective actions issued by the EOC — normal evacuations, quiet evacuations, directed evacuations, and shelter in place — says Bruce. (See "Emergency preparedness for the new millennium" above, left. In addition, Chapter 15 of the ES&H Manual contains more about evacuation team procedures.)

To increase Sandians' savvy during emergencies, an updated *Pocket Guide to Emergency Preparedness* is now being printed and will be available during the next few weeks. (See "Get your official pocket guide to emergency preparedness" below.)

More information about Sandia's emergency management operations is available at www-irn.sandia.gov/esh/depts/emerg_mgmt/. (See "If you have to think about it, report it" above.)

One of the most important things individual Sandians can do in an emergency is to pay attention to the Labs' and local officials' communications and heed their advice, Steve adds. Protective actions communicated by the EM team are based on a more complete knowledge of hazards and response techniques than are available to the average person.

"An emergency is not the time to get curious and poke around where it might be dangerous for you to do so," says Bruce, "or to think of better ways to respond than those being advised." (See "9/11 lesson learned numero uno" left.)

"Please, for your own protection, stay tuned, be patient, and follow instructions," he says.

Get your official pocket guide to emergency preparedness

Bruce Berry (3115) has updated a *Pocket Guide to Emergency Preparedness* first published at Sandia in 1997.

Fifteen thousand copies of the guide are being printed, and one copy will be available to each Sandia employee and contractor through Center offices during the next few weeks. Watch the *Sandia Daily News* for an announcement about its availability.

The compact guide succinctly details preparations, actions, and cautions for a variety of emergency situations, both at work and at home. Situations range from lightning and snow storms to hazmat accidents and terrorist attacks.

"It is not all-inclusive," says Bruce, "but it could come in handy for both preparedness and as a general guide during an emergency."

New miniaturized lipid biosensor has promise of rapidly detecting biological agents

Ultrathin double layer of fatlike molecules at heart of dime-size sensor

By Chris Burroughs

Ultrathin double layers of self-assembled fat molecules — resembling and acting much like soap bubbles — are at the heart of a new, dime-size biosensor being developed at Sandia by a team of researchers led by Bob Hughes (1744).

The biosensor has the promise of rapidly detecting a variety of biological agents, including viruses, anthrax, and other bacteria, in the field with the same sensitivity and specificity as standard laboratory procedures.

“This biosensor is part of Sandia’s biostrategy, driven in one context by our role in defending against the biothreat on the battlefield or at home,” says Sandia VP 1000 Al Romig. “One aspect of this defense is prompt and accurate detection of the threat. Our biosensor work, such as what Bob and his team are doing, is directed at such detection. Again, our unique contribution is the application of microsystems, materials science, and information technology to solving a problem in biotechnology with national security relevance.”

To this end Bob is adapting electrical impedance detection technology, which he has used for chemical sensors such as the chemiresistor, to biological sensing. Developing biosensors is a natural growth of Sandia’s chemiresistor program — coupling the exquisite sensitivity and selectivity of biological systems to the simple measurement of change in electrical resistance. Sensors with electrical detection, like chemiresistors, are integrated with other electronic components in a microsystem and typically operate at very low power.

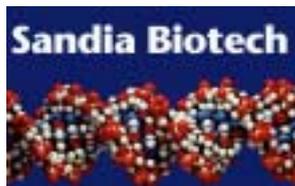
The chemiresistor has a base of wirelike electrodes on a specially designed microfabricated circuit. In past experiments Bob focused on volatile organic compounds (VOCs), depositing thin polymer films that detect specific VOCs by absorption. When the VOC molecules appear, the polymer absorbs them, causing the polymer to swell. The swelling changes the electrical resistance that then is measured and recorded, providing information to determine VOC type and concentration present.

Similarly, Bob’s new sensor, the lipid chip, has a base of wirelike electronics. However, instead of using polymers as the sensing materials, the new sensor uses organic lipid bilayers — self-assembled double layers of lipid molecules.

“Scientists have studied lipids, fatlike molecules, for many years and have a good understanding of their characteristics,” Bob says. “What is new is integrating them into a rugged biosensor that can detect biological agents.”

Tricky work

Working with the lipid bilayers is tricky, Bob says. They are very fragile, like soap bubbles, and have a characteristic that sets them apart from other organic molecules — their dual oil/water solubility. One part of a lipid molecule is hydrophilic, water-soluble; another part is hydrophobic, oil-soluble. The hydrophilic/hydrophobic characteristics allow the lipids to line up spontaneously (self-assem-



DARREN BRANCH conducts an experiment with the lipid bilayer biosensor that has the promise of rapidly detecting a variety of biological agents, including viruses, anthrax, and other bacteria. (Photo by Randy Montoya)

“Scientists have studied lipids, fatlike molecules, for many years and have a good understanding of their characteristics. What is new is integrating them into a rugged biosensor that can detect biological agents.”

ble). This layer of lipids, about five nanometers thick, is assembled across the electrodes.

“One of the first things we had to do was deal with the fragile nature of lipid bilayers,” Bob says. “We had to come up with a way to make them rugged enough to last through experiments and for use in the field.”

Bob and his fellow researchers attacked the robustness dilemma by several methods. One uses a thin film of sol-gel to act as a scaffold for the bilayers. The sol-gel scaffold containing the lipid bilayers are placed on top of the electrodes.

Templated sol-gel films are very thin (less than one micron), but very durable — much like glass, but formed from a jellylike mass of water, alcohol, and metal oxides. The films used in the lipid bilayer sensor were provided by Hongyou Fan and Darren Dunphy in Jeff Brinker’s (1846) material science group.

Another method, developed by Darren Branch (1744), uses a hybrid bilayer in which the layer next to the metal electrode is actually not a lipid but an organic silane that attaches to the metal, but still supports the upper lipid monolayer.

‘Gated channels’

Another challenge was to create “channels” — pores formed by proteins in the lipid bilayers that could open and close repeatedly in response to the presence of a specific biological agent. The interaction of the agent with the ion channels in the lipid bilayers is key to the sensor. In the presence of the biological agent, the ion channels can change the electrical impedance of the bilayer by allowing the conduction of ions through the bilayer. In this way the type and concentration of the agent can be identified by a measurement of electrical resistance.

The ion conduction property of these channels, when inserted in lipid bilayers, closely mimics their activity in living cells. The basic structure of the cell wall is a lipid bilayer, although there are many other complex structures also found in the cell wall. Gated ion channel proteins in the cell walls are often involved in exquisitely sensitive chemical detection (often a single molecule can cause the opening or closing of an ion channel).

The study of membrane-bound proteins is an active area of research including protein structure and function in bilayer assemblies and the potential applications in biotechnology, medicine, and biosensing. Sandia is actively involved in this area of research in the Interfacial Bioscience (IBIG) Grand Challenge (*Lab News*, July 12).

The challenge facing biosensor developers is how to trigger the proteins to recognize when to “open” or “close” their channels in response to a target agent. The ion channels don’t work at all if they are not bathed in the relatively fluid lipid bilayer, so it is not possible to use them as sensors in rugged polymer matrixes like the chemiresistors for VOCs.

Use of antibodies

The solution will ultimately be to attach antibodies or other molecular recognition molecules to capture the desired molecules on the ion channels. Bob uses anthrax to explain.

“If, for example, you want to know if anthrax is present, you would attach anthrax antibodies to the ion channel protein in the bilayer,” Bob says. “When an anthrax spore comes along, it would attach to the anthrax antibodies connected to the ion channel protein. The protein would change the bilayer’s electrical properties in response to the binding.”

Bob says the research team has come a long way in the short time it’s been working on the lipid bilayer sensor.

“We’ve accomplished many of our goals,” Bob says. “We’ve been able to build rugged lipid bilayers that last as long as three weeks. We’ve figured out how to introduce ion channels into the lipid bilayers. We’ve proven you can make ion channels selective to certain ions in the solution. Now we have to attach antibodies to the ion channels to show we can detect different biological agents. The antibody work may be our most difficult yet.”

Collaborators

Collaborators working with Bob Hughes (1744) on the lipid bilayer-based biosensor are Steve Casalnuovo (1744), Susan Brozik (1744), Darren Branch (1744), Darryl Sasaki (1141), Jeff Brinker (1846), Jeb Flemming (1744) and students Dhaval Doshi, Bridget Ray, Darren Dunphy (1846), and Hongyou Fan (1846).

Acoustic wave and photonic sensor platforms

The lipid bilayer is one of several electronic platforms Sandia researchers are working on in developing biosensors. One other is the acoustic wave sensor, a research effort led by Susan Brozik (1744).

Instead of using lipid bilayers, the acoustic wave sensor uses a thin bioselective material coated on a piezoelectric substrate. Acoustic waves are generated in the piezoelectric substrate when it is excited electrically. When microorganisms bind to the sensors, the waves

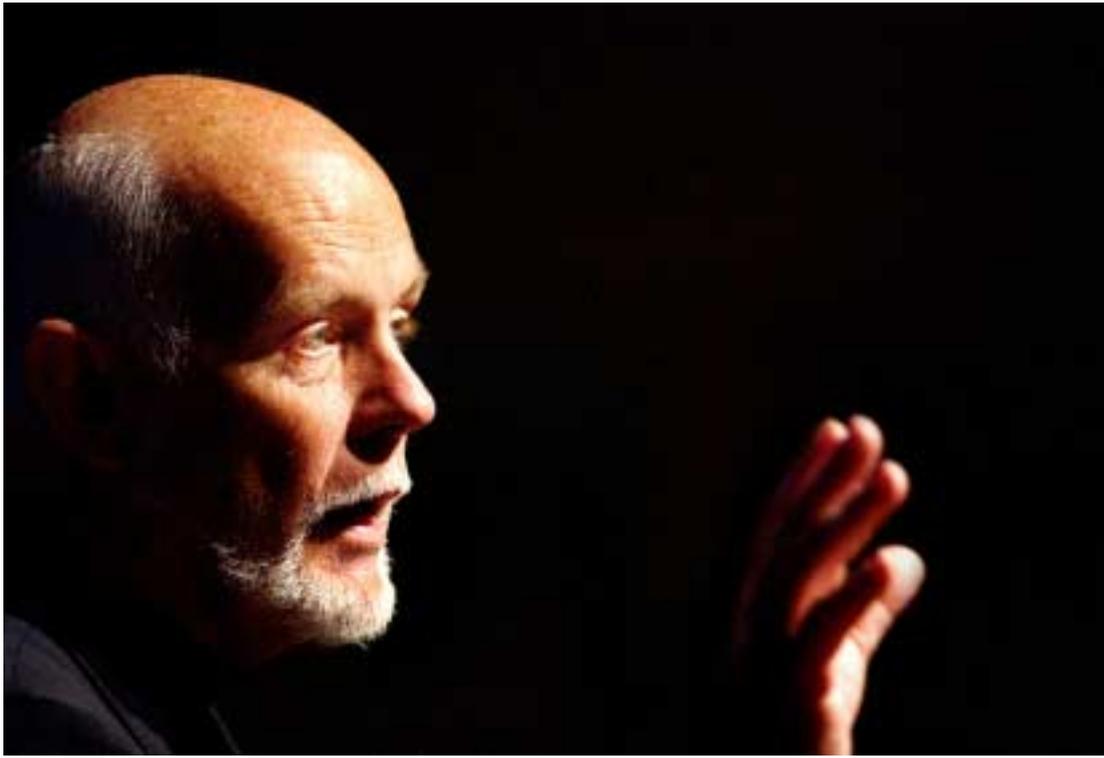
slow down, which is measured by sensor microelectronics. This information is then used to determine the type and concentration of the microorganism present.

It is anticipated that acoustic wave sensors will be able to detect the same types of biological agents as the lipid bilayer platform.

The photonic-based biosensor, a program led by Darryl Sasaki (1141), also depends on proteins bound in lipid bilayers (*Lab News*, May 3).

Invest massively in basic science to solve global energy challenge, Nobel laureate argues

Richard Smalley uses Truman lecture to make case for expanded energy R&D



NOBEL LAUREATE RICHARD SMALLEY talks to some 400 Sandia scientists last week as part of the Truman Distinguished Lecture series. (Photo by Randy Montoya)

By Bill Murphy

Nobel laureate Richard Smalley used the occasion of his Truman Distinguished Lecture at the Steve Schiff Auditorium last week to conduct an experiment: he used the audience of almost 400 Sandia scientists and engineers as a sounding board for a new idea he has recently developed that he thinks could breathe new life into America's investment in basic science.

He told his listeners he hoped they'd let him know if there is any "lifeforce" in his idea, one he described with some passion over the next 45 minutes.

As with all experiments, Smalley began by spelling out the nature of the problem: A lot of people in the auditorium, he said, were originally turned on by science in the heady days of the early space race. American students, he said, were flocking to the sciences.

"US funding for science — for basic science — peaked in the 1963-65 period; by 1969 we were on a downward slope. And we've largely been on a downward slope ever since, both in the amount of investment [in basic science] as a percentage of GNP and as a percentage of our American boys and girls who choose to pursue careers in science."

Smalley, a distinguished professor of chemistry and physics at Rice University in Houston, said "it's been a struggle" over the past 15 years or so to interest American students in the sciences. "Often," he said, "the best students [in physics and chemistry classes] aren't even the science majors."

Today's generation, he said, needs a challenge — one that can be addressed via science and technology — that resonates with the same sense of mission and romance that the space race offered for students of his generation.

And that challenge, he suggested, is energy.

To make his case, he asked the audience for its help: "Give me the top 10 challenges humanity faces over the next few decades."

With ideas coming from every corner of the room, Smalley wrote out and displayed the suggestions on a Powerpoint slide. The list included such issues as energy, food, health, water, population, disease, climate change, wealth distribution, biowarfare, and pathogens.

With the list completed, Smalley asserted that almost every problem posed by the audience could be traced back ultimately to an energy solution.

"If you solve the energy problem," he said, "you'll find that you've answered many — perhaps most — of the remaining problems on this list. . . . This line of thinking leads me to conclude that energy is the single most important challenge facing humanity today."

To meet that challenge, advocates for science need to make the case in the political and public opinion arenas that a massive increase in the nation's investment in basic science — up to \$10 billion a year in new spending — should be applied to the energy challenge.

"I'm talking about the need for revolutionary new advances, not just a little bit more wind power or an incremental increase in the efficiency of current solar technology."

In 2002, he said, solar, wind, and geothermal power account for less than 1 percent of the world's energy production — a "laughably small amount." By 2050, he said, "we need that number to be at 50 percent, and we don't know how to get there." But *if* we get there, he said, it will be as the result of breakthroughs developed through basic science R&D.

He speculated that with a mission of such environmental and economic resonance, "we can solve the 'American-boys-and-girls-in-science' problem. This is a mission they will embrace."

Smalley, who said the Bush administration is in "CO₂ denial," daydreamed that President Bush could make an electrifying impact on the issue by going to Rice University next May and making a speech echoing the cadences of John Kennedy's speech committing America to the Apollo Program. "I believe, before this decade is out. . . ."

He said President Bush has a singular opportunity to turn the country in the direction of profound new energy research.

"If you solve the energy problem, you'll find that you've answered many — perhaps most — of the remaining problems on this list. . . . This line of thinking leads me to conclude that energy is the single most important challenge facing humanity today."

"I'm talking about the need for revolutionary new advances, not just a little bit more wind power or an incremental increase in the efficiency of current solar technology."

Sandia and Los Alamos sign agreement on new nanoscience center

Following the Truman lecture by Nobel laureate Richard Smalley, Sandia Labs Director C. Paul Robinson and Los Alamos National Laboratory Director John Browne signed a Memorandum of Understanding marking the labs' commitment to work together on the new Center for Integrated Nanotechnology (CINT).

Paul recounted that when he first came to Sandia and was getting up to speed on many of the Labs' avenues of research, one of the things a number of people were interested in was called "atoms-up engineering."

"I thought that was a cute phrase," he said, "but it sure seemed fanciful to me when I first heard it." Now, with the advent of CINT, he said, nanotechnology at the national laboratories is coming into its own.

CINT is a new DOE Office of Science-funded national user facility with operations both at Sandia and Los Alamos that enables university, industry, and government researchers to explore the rapidly emerging field of nanotechnology (*Lab News*, Aug. 9).

Paul said CINT's greatest strength is the collaboration between Sandia and Los Alamos.

"We and Los Alamos partner better than anyone else," he said.

CINT, Paul said, should be considered as a strategic investment tool for the nation. For perspective, he noted that "the Japanese this year are spending \$600 million on nanotechnology, and what's more important, they're on their way to \$2 billion. . . and 30,000 researchers. With all of the enormous economic implications of this technology, that is certainly something for us to watch very carefully."

Browne said CINT is a perfect match for the core mission of both Sandia and Los Alamos. The core mission ("writ large," as Browne put it) is to use science and technology to develop solutions to nation's problems.

"CINT will bring together the best of both of our labs in very complementary ways," he said. "It puts us on the map in nanotechnology and nanoscience," and that will help the labs attract the next generation of top-flight researchers.

Facilities team seeks to

Sandia's Facilities operation works hard to generate positive lore about its programs, deeds

Streamlined IGPP building concept, service request effort evidence of progress; more improvements in the works

By Rod Geer

Lore — accumulated facts, traditions, or beliefs about a particular subject — fills the hallways, test labs, and research sites of Sandia. Sandia lore is repeated in the nation's capital and in newsgathering centers.

Much of it addresses Sandia's technical know-how: "Without Sandia there wouldn't have been a Project Galileo to Jupiter."

"Sandia/California was the first place where scientists really tried to understand the phenomenon of combustion."

"When the nation needs to unravel a scientific mystery — like what caused the tragic explosion aboard the USS *Iowa* in 1989 — it turns to Sandia."

But — oops! — some Sandia lore conjures up negative images, and the Facilities organization — in its various incarnations — has long been a target.

There's Facilities folklore like: "It always takes seven years to get a building at Sandia." "Facilities charges \$5,000 to hang a whiteboard in a conference room." "Facilities would rather tell the customer what they're planning than listen to the customer's needs." "Facilities doesn't plan."

Stan Harrison (10820) freely, although not proudly, admits he's heard many of these comments about the Facilities Management and Operations Center.

"We know there's a lot remaining to do, but we also know we've made progress that eventually will create a new folklore about Sandia facilities," he adds.

And word from many Sandians who rely on this diverse group — just one of the Labs' many Integrated Enabling Services — seems to verify that upsurge in Facilities' reputation and performance stock (see "I could write a novel" at lower right).

Bldg. 751 setting the tone

"Design, development, and construction of Bldg. 751," says Sid Gutierrez (5700) "is an outstanding example of how things should be. This is a project that ought to impress anyone familiar with construction."

After some frustrating delays, DOE approved Bldg. 751 early this year. Located just inside the northern section of Tech Area 1 between Bldgs. 862

and 864, it's a key facility for the Labs' growing intelligence and satellite work. Construction started in April. Occupancy will occur in October when it will become home for about 80 members of Centers 5700, 5900, and 6500.

"That's a construction-to-occupancy period some four to six months shorter than what had come to be the previous Sandia benchmark for this sort of building," says Ed Tooley (10853).

Bldg. 751 represents a new approach to the long-established General Plant Project effort, which Sandia President Paul Robinson touted in his State of the Labs comments earlier this year (see *Lab News*, Feb. 22, page 6). This emerging brand of construction has been christened the Institutional General Plant Project (IGPP) effort, and it features several major improvements.

The IGPP concept began crystallizing, Ed explains, back in 1999 "when Sandia started seeing space consolidation simultaneously with growing employee numbers and complicated by a lack of funding for capital projects. Luckily, we had already recognized the need for a more innovative way to fund space and we'd been working with folks like Frank Figueroa (VP 10000) and the leadership group of DOE's Office of Kirtland Site Operations [then called KAO].

"Simply put, that approach, which comes with some specific, but reasonable strings attached, is the new ability to build a capital project using indirect dollars," Ed says.

A new-school, incentive-based contracting arrangement with Summit Construction and its architect-engineering firm subcontractor (SMPC Architects) helped keep total project time for Bldg. 751 to a minimum.

Effectively cutting steps

It actually is the second IGPP facility. "Bldg. 750, just outside Tech Area 1 and near the Personnel Building, came first," says Rico Ortiz (10824). "It also was constructed by Summit, with which we'd struck a multiproject deal based on its good performance. That means we didn't have to go out to bid for Bldg. 751 — a real time saver."

"Also we used a 'design-build' approach rather

than the more traditional 'design, bid, build.' The result: Summit could begin digging foundations before a complete set of drawings existed," Rico explains.

"Actually the Sandia Facilities operation has been piloting this IGPP concept for DOE," Ed adds. "The real success story here is that this new facility funding concept, pioneered by a joint team from the Facilities, Controller, and Procurement organizations, has been approved by DOE for extension to the rest of the complex."

The notion of Facilities developing long-term relationships with vendors à la IGPP also is being applied to the much smaller Customer Service Request (CSR) effort, headed up by Israel Martinez (10825).

The CSR program, developed by Israel's team, began just over a year ago to handle about a thousand yearly activities at an average cost of \$500 to \$1,000. "These are, in a way, the handyman-type jobs," he says. "Moving anthrochairs and large bookcases, relocating furniture and other things for customers to reapplication, painting soon-to-be-occupied offices, hanging whiteboards."

The CSR team has instituted a number of practices designed to keep costs down and customers happy. "First, we're developing long-term relationships with contractors who will get to know the Labs well and who will interact directly with customers," Israel explains. "For example, the assigned contractor is to call the customer within 24 hours of receiving an order to arrange a convenient work schedule."

Directly addressing customer complaints

"And we've figured out how to get costs billed to customers in a timely manner — a matter of days versus a couple months." This directly addresses a core complaint leveled against Facilities of not keeping customers informed about what they've spent.

Finally, there's now a straightforward, user-friendly "Facilities Express" web page (www-irn.sandia.gov/facilities/proj_express/listofservices.htm) where CSRs can be initiated. "And on that page," Israel stresses, "we print our costs, like \$115 for a white board installation." (See "Customer-friendly web sites that do business" at left.)

With all of these process-streamlining approaches, Stan Harrison says, Facilities has passed along a reduced overhead rate for CSRs, which is down from 15 percent to 5 percent.

In another branch of the Labs' Facilities organization, people like Jim Kadlec (10844) and the present Custodial Services Management Team of Jim Rush, Vicky Blackberg, Ron Maes, Mary Wagner, Charles Hollis, and Lavone Cobb (all 10848) have been working hard to keep custodial services costs down — even to cut them.

And they believe they've got the cold, hard facts to prove that's occurring in their world, which encompasses about 3 million cleanable square feet and 480 buildings at Sandia's Albuquerque site.

But first the challenge, as described by Jim Kadlec, who until recently managed the Labs' custodial program. (Jim Rush is now in that position.)

Custodial becomes a better buy

"Back in 1999," Kadlec begins, "we had a process that was inconsistent and out of control. No two custodial closets were the same. In those various closets we could find about 125 different types of chemicals. Cleaning methods varied widely. Customers were extremely dissatisfied. We needed major changes."

Customer-friendly web sites that do business

"As a user of the old top-level Facilities internal web site," says Linda Chavez (10853), "I had a real hard time finding things and getting things done.

"Perhaps I could find something once, but then I couldn't find it again. And if I couldn't figure things out, surely customers outside of our organization would have been having difficulty," Linda adds.

Experiences like this led Facilities to overhaul its home page on the internal web. Designing a customer-friendly web site took time and thought. "We asked Facilities managers what they thought customers needed," Linda explains. "We queried customers and analyzed unsolicited customer input [much of it could have been classified as complaints]. This revealed that the Facilities web page had lots of

information but didn't provide what the customer needed to get work done."

The new design — <http://www-irn.sandia.gov/facilities/> — lets customers navigate the site with a few mouse clicks. Buttons provide easy access to one web page that lists all services offered by Facilities and another that allows them to check the status of work in progress.

"But even with the improvements we know we can make it better," Linda stresses. "For instance, we want customers to be able to request any service with a single on-line form. Right now customers have to choose from several forms, depending on the job needed.

"We really want to use the web to help our customers do their work, not just to provide data," Linda concludes.

put ancient lore to rest



I CAN SEE CLEARLY NOW — Custodial staff team up to clean Microelectronics Development Laboratory under new custodial team approach.

(Photo by Randy Mon-

Now Sandia uses Operating System 1 — a complete custodial management scheme, which requires annual audits and whose performance can be benchmarked against entities such as the International Sanitary Supply Association and the Building Owners and Managers Association (BOMA) International. (Other large operations that also subscribe to this business approach include the universities of New Mexico, Texas, and Massachusetts, Boeing Company, and the Delta Center in Salt Lake City, where pro basketball's Utah Jazz plays its home games.)

One key to improvements is the custodial team approach (see *Lab News*, Dec. 15, 2000), which is used in about 80 percent of the Albuquerque site's facilities.

But the proof is in the stats, believes Kadlec, who joined Sandia in 1977 as a custodian, but who in years most recent has worn a manager badge.

"From 1995 to the present we have reduced the number of custodians from 94 to 77, give or take a few each day. Our yearly budget has dropped from \$5.9 million to \$3.7 million, yet we've been able to reduce our cleaning costs per 'cleanable square foot' from \$2.19 to \$1.23, which is lower than the US Southwest Regional average for 30- to 39-year-old buildings [which meets the definition of a "typical" Sandia building].

"And we are continuing to examine customer feedback on quality of service to make sure we achieve the right balance between cost and quality," Jim Rush adds.

'I could write a novel'

Over the past several years Mike Hurst (1673) has had enough time getting to know the Facilities organization that he says, "I could write a novel."

He likely would call it "Unlike Humpty Dumpty, Z-Beamlet Came Back Together Again." Its story line: the great news that Sandia would get a gigantic laser from Lawrence Livermore National Laboratory; the challenges of taking apart the machine, crating it up and shipping it 1,035 miles, and storing it until a building to house it could be readied; uncrating it, matching up its parts and putting it back together again; and finally getting it to work.

The *Lab News* has chronicled the technical prowess of the Z-Beamlet and parts of this get-it-from-LLNL-to-SNL story over the past months. (See articles in these issues: Aug. 28, 1998; Aug. 24, 2001; March 22, 2002; and June 14, 2002.)

But Mike says Area 4 wouldn't have this pioneering piece of equipment if it hadn't been for the key roles played by Facilities folks in Albuquerque and Sandia/California.

Eight months, 25 truckloads

"The disassembled laser came to us over the course of about eight months during 1999 and 2000 in 600 crated boxes that required 25 semi-truck shipments. Facilities people — like Steve

Fritz (10824) and Israel Martinez in Albuquerque and Bob Clevenger (8513) at Sandia in California — were there for all of that," Mike recalls.

Plans for how to install and use the laser morphed regularly. Originally the Area 4 and Facilities team thought it'd go into a corner of Bldg. 983 that houses the Z machine.

"But as things evolved," Mike adds, "and we learned more about just how much we were getting from LLNL we realized we'd need things like a Class 100,000 cleanroom space throughout, some moving Class 100 space, laminar airflow throughout the building, and a plus or minus 1 degree F temperature tolerance from floor to 25-foot ceiling.

"By this time we'd also realized we'd have to put the laser in Bldg. 986, which is south of 983. As originally designed, with a warehouse in mind, that building had swamp coolers and radiant heaters — things not really amenable to the environmental conditions now required.

"With all of these changes, Facilities needed a rapid-response and flexible approach to accommodate evolving technical needs. In the past that was sort of out-of-the-comfort-zone thinking for Facilities and there was some initial reluctance, but I saw an almost-overnight change in approach and if that had not occurred I'm not sure we'd have Z-Beamlet today," Mike says.

CAMU begins on-site treatment of soil from Labs' Cold War-era Chemical Waste Landfill

By Bill Murphy

When the front-end loader last week thudded its first load — the very first load — of soil from the Chemical Waste Landfill into the hopper of the low temperature thermal desorption (LTTD) soil treatment unit, members of Sandia's Corrective Action Management Unit (CAMU) team didn't so much as exchange high-fives.

Instead, assistant CAMU task leader Bob Helgesen (6134) simply nodded across the way to the action at the treatment unit and said, almost casually, "That's a historic moment there. It took a lot of years to turn that [LTTD unit] on."

The LTTD unit, brought on site and operated for the CAMU by URS Group Inc., heats contaminated soil to from 400 to 700 degrees F to cook off volatile organic compounds. The special machine, the size of a couple of Peterbuilts with their reefers on, captures the resulting particulates and scrubs and neutralizes (through a catalytic process) the acidic gases produced. The final emission coming out of the unit's exhaust stack contains water vapor, CO₂, and CO. The LTTD can handle some 10 tons of contaminated soil per hour. At that rate, says CAMU task lead Mike Irwin (6134), it'll likely be operating on site 20 hours a day for the next three to six months treating soil from the Chemical Waste Landfill.

Tucked away in Tech Area 3

Sandia's Chemical Waste Landfill, tucked away on a bit less than 2 acres in the far southeast corner of Tech Area 3, was the repository of chemical wastes from 1962 till 1985. In the midst of waging the Cold War, Sandia's — indeed, the nation's — attention was focused not so much on environmental concerns as on countering the Soviet nuclear threat. As such, sites like the Chemical Waste Landfill weren't designed or operated with the same level of care for the environment that would apply today. The chemical residue of Sandia's weapons work went into the landfill. Now, some 9,000 cubic yards of bulk soil from the landfill will be treated with the LTTD unit. An additional 24,000+ yards of soil, contaminated with metals, will be treated via soil stabilization. Among organic compounds in the soil are:

- 1,1,1-trichloroethane, a solvent used for degreasing electronic equipment.
- Aniline, a chemical used in making resins, dyes, and varnishes.
- Bis(2-ethylhexyl)phthalate, a plasticizer for resins.



THE KEY TO ON-SITE TREATMENT of chemical waste-contaminated soils from the Chemical Waste Landfill is the Low Temperature Thermal Desorption unit operated for Sandia's CAMU by URS Group Inc. After several years of preparation, the CAMU site at Tech Area 3 was activated last week.

- Acetone, another solvent for resins, and a degreaser.

- Polychlorinated biphenyls, or PCBs, were banned by the Environmental Protection Agency for most applications in 1979. They were used as plasticizers and as an insulating medium and coolant for large electrical equipment.

"It was a different era, a different world," says ER for Landfills and Test Areas Dept. 6134 Manager David Miller, explaining the origins of the Chemical Waste Landfill and its less-than-enlightened (by 2002 standards) approach to chemical waste control.

In 1989, as the urgencies and expediencies of the Cold War began to be looked at in a different light, attention turned to environmental restoration. Along with several other sites — the Mixed Waste landfill, the Classified Waste landfill, and others, the Chemical Waste Landfill was identified early on for remediation. After initial soil sampling, it was estimated that to excavate the Chemical Waste Landfill and move the contaminated soil — some 37,000 cubic yards of it (that's enough dirt to bury a football field 30 or so feet deep) — would cost in the neighborhood of \$280 million. That cost seemed prohibitively expensive, even for as

worthy a task as environmental restoration.

Fortunately, at the time these decisions were being made, the US EPA had approved the establishment of an on-site waste management approach — the CAMU. The CAMU option, which turned out to be perfectly appropriate for Sandia's Chemical Waste Landfill, will have an estimated lifetime cost of \$30 million (the lifetime cost is based on 30 years of EPA-mandated oversight of the CAMU facility).

Public supports chem-waste CAMU

A series of public hearings about the proposed CAMU has indicated strong public support, David says. "They're very much behind us on this."

Mike, who assumed the role of task leader after previous leader Scott Schrader passed away after a long bout with cancer (*Lab News*, Aug. 11, 2000), says the latest CAMU milestone is the culmination of "a lot of work by a lot of people over the past few years."

Despite the palpable sense of accomplishment and satisfaction among the CAMU team as the switch on the LTTD unit is thrown in earnest for the first time, Mike says there won't be a team celebration just yet.

How the Sandia CAMU in Tech Area 3 treats chem-waste soil

Soil excavated from Sandia's Chemical Waste Landfill is stored at the adjacent CAMU site in the so-called bulk waste staging area. Soil is stored in one of several bays depending on the treatment it needs:

- Soils requiring no treatment.
- Soils requiring stabilization because the concentration of metal contaminants exceeds treatment criteria.
- Soil requiring low-temperature thermal desorption treatment (i.e., 300-750° heat treatment) because organic contaminants exceed treatment criteria.
- Soil requiring stabilization and LTTD treatment.

Soils containing PCBs (some 4,000 yards) are stored in Sprungs™, Quonset hut-like buildings, there to await soil stabilization treatment and placement in the CAMU disposal cell.

From the bulk staging area, soil is moved to the treatment phase. That is where it undergoes LTTD treatment (organic contaminants), soil stabilization (metallic contaminants), or both (organic and metallic contaminants).

In stabilization treatment, metal-contaminated soil is mixed with cement and water to bind the soil and metals in a solid which has structural strength and low potential for leaching.

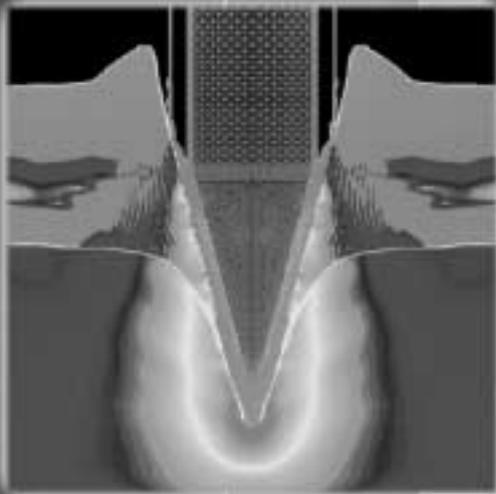
After treatment, the soil is resampled to make sure it meets regulatory requirements. If not, it is re-treated; otherwise, it is moved to the containment cell, where it will stay under an engineered soil cover and be monitored for at least 30 years. The cell has been designed so that soil moisture and soil gas levels beneath the containment cell can be monitored for potential contamination on a regular basis.

The CAMU operates under four permits from the New Mexico Environment Department, a permit from Albuquerque/Bernalillo County Air Quality Emissions Board, and a permit from the US EPA (for handling of PCBs).



Although the CAMU's permit does not permit rad-wastes at the site, the EPA granted one small exception: trace amounts of tritium, below the level allowed by EPA in the US drinking water standard, are allowed in the site.

Pushing Computing Speeds to New Limits



Computer simulation of an earth-penetrator weapon.

Advances in supercomputing—from 300 billion operations per second in 1996 to a goal of 100 trillion operations per second in 2004—are needed to fully model the behavior of the nuclear arsenal in all environments.

Sandia has made two crucial breakthroughs in large-scale parallel computing:

- ◆ making thousands of processors work together
- ◆ proving that extremely large problems can be solved efficiently.

These advances are revolutionizing the computer industry and improving the way America develops everything from automobile tires to the human genome sequence.

Sandia's first teraflops computer, developed for the Department of Energy's Accelerated Strategic Computing Initiative (now called the Advanced Simulation and Computing Initiative).

Fifth in a series of 10 posters on "Stockpile Stewardship: Strength Through Science" prepared by Public Relations & Communications Center 12600 (design by Mike Vittitow; photo by Randy Montoya) in cooperation with the Nuclear Weapons Strategic Business Unit. All 10 posters are on display in the Bldg. 800 corridor.

Grassroots energy conservation could add up to meaningful savings, say Labs' power-save gurus

More ways you can join the movement to trim Labs' power use

By John German

The Bldg. 810 Energy Nag isn't the only one counting kilowatts.

Labs energy management program manager Ralph Wrons (10823) and his Facilities colleagues always have an eye on Sandia's power bill, which approaches \$1 million a month, often more during the summer.

And although the Facilities team has toiled for years to make Sandia a leaner energy consumer (with some impressive results, see "Sandia already way ahead of DOE reduction goals" below right), a large untapped source of energy savings resides at the plugs and switches within individual Sandians' offices and laboratories, he says.

"If 7,000 Sandians took it upon themselves to each save \$50 a year in energy costs — and we could do that without much sacrifice — we can save \$350,000 right off the bottom line," he says. (See "How you can cut \$50 out of the Labs' annual power bill" on next page.)

Some energy consumption facts

Fact #1: Power consumption for Sandia's Albuquerque site averages more than 17 million kW-hours per month, which equates to each employee and contractor using the monthly consumption of about three typical Albuquerque homes. The California site uses about 3 million kW-hours per month.

Fact #2: Even at night and during weekends, the New Mexico site draws more than 22,000 kilowatts continually (see chart below), enough to meet the peak power needs of an 18,000-person town. That's about two-thirds of what the site peaks at during a typical work day. Although much of this nighttime power consumption is probably necessary, a lot of it clearly is nonproductive, says Ralph.

"I'm all for productive power use," he says.



"But I'd like people to come here in the middle of the night and see dark buildings."

Although lights are obvious, they aren't the only culprits, he says. At night the Labs' vacant hallways are humming with the sounds of thousands of printers, monitors, computers, copiers, clock radios, and other gadgets. (See "Nocturnal power pilferers" on next page.)

In fact, lighting accounts for about 20 to 25 percent of the energy load of a typical Sandia building with offices and light labs. The rest is HVAC systems (45-55 percent), office equipment (7-10 percent), and process loads (10-15 percent).

Don't forget, adds Ralph, lighting and office equipment produce heat. For every 5 kilowatts turned off, you're avoiding the need for about 1 kilowatt of air conditioning in the warmer

months. This is a needless drag on the Labs' cooling systems during non-working hours.

"If we could shut down just the nonproductive use at night and on weekends, that would be a great start," he says.

Work-a-day waste

But energy waste occurs right under our noses as well, adds Ralph.

Lights are left on in conference rooms and restrooms all day. Offices typically draw as much power when their occupants are out as when they are in. Copiers suck electricity for hours at a time without making a single copy.

Here are some daytime energy-saving tips that could help trim the Labs' power consumption.

- Set power-management functions (enable sleep and/or auto shutdown modes) on computer monitors and other office equipment.
- Turn out the lights when you leave your office for 20 minutes or more, or when daylight meets the need.
- Leave conference-room and other common-area lighting off when the areas are not in use.
- In the lab, shut down fume hoods, fans, compressors, vacuum pumps, and other equipment when they are not needed.
- Purchase office equipment that is Energy Star-compliant.
- Consider power strips with occupancy sensors that automatically turn off monitors, printers, and other plug-in appliances when you leave the room. (One such power strip, called the Wattstopper, is available through JIT.)
- Optimize heating and cooling in your office.

Dress to compensate for minor increases or decreases in office temperature.

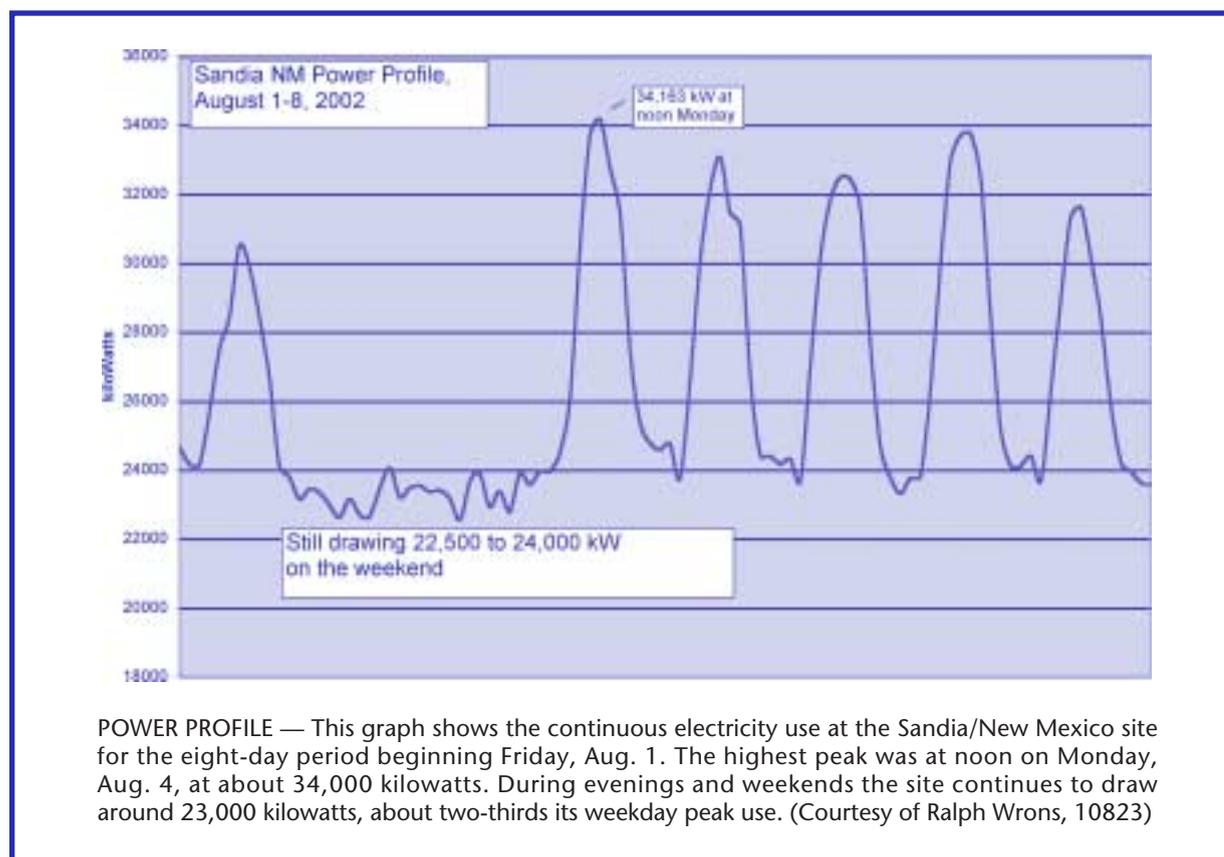
(For more ideas, see the Energy Management web site at www-irm.sandia.gov/facilities/engn_proj/tips.htm.)

Conventional wisdoms discarded

But what about the wear and tear on computers and lights that occur when they are continually turned on and off, you ask?

Don't assume wisdom valid ten years ago is valid today, says Ralph. Modern computing components are built to withstand more than 15,000

(Continued on next page)



POWER PROFILE — This graph shows the continuous electricity use at the Sandia/New Mexico site for the eight-day period beginning Friday, Aug. 1. The highest peak was at noon on Monday, Aug. 4, at about 34,000 kilowatts. During evenings and weekends the site continues to draw around 23,000 kilowatts, about two-thirds its weekday peak use. (Courtesy of Ralph Wrons, 10823)

Saving energy: What's in it for you? Healthier budgets

If the Energy Nag's recent pleas to cut back on energy waste (in the last two issues of the *Lab News*) in the name of national security and the environment aren't quite enough to get you going, here is one more reason to save energy, says Ralph Wrons (10823).

Cutting kilowatts can be good for your line organization's budget. Because the Albuquerque site's total electricity consumption

is metered at primary buildings and charged to individual organizations based on how much square footage they occupy in each building, savings achieved in your building are kept in your center's budget. Electricity is about 85 percent of your center's annual energy costs, he says. (Sandia/California does not charge organizations for electricity use by square footage.)

Sandia already way ahead of DOE reduction goals

In 1985 DOE issued an agency-wide mandate that its sites reduce their per-square-foot energy consumption by 20 percent by the end of FY2000. By then Sandia had reduced its use by 35 percent. The extra 15 percent reduces Sandia's energy costs by about \$2 million in FY00 dollars.

These energy savings have been achieved, says Ralph Wrons (10823), by incorporating energy-efficient features into new building designs, instituting advanced building cooling and heating (HAVC) control systems and optimizing them, replacing and consolidating chilled water plants, installing more efficient lighting systems, re-roofing old buildings, and reducing losses from high-voltage transmission and distribution systems.

The upgrades have lowered organizations' energy costs and out-year maintenance costs.

"We've done a lot already at the facilities engineering and operations level, and we'll continue," says Ralph. "But we need to do more at the individual level to reduce energy waste in our buildings."

New fuels now available, earn praise for Sandia

By Will Keener

Sandia earned praise for its leadership as it took another step toward a cleaner environment with the addition of two new alternative fuels for its Albuquerque vehicle fleet. Officials from the state, DOE, the General Services Administration (GSA), Land of Enchantment Clean Cities Coalition, and the City of Albuquerque joined Fleet Services employees and other guests Aug. 27 for a ceremony to mark the availability of E-85 and bio-diesel fuels.

The Albuquerque fuel station (just east of the Thunderbird Café) now offers three alternative fuels, including compressed natural gas, says Ed Williams, Fleet Services Dept. 10849 manager.

"The addition of the new fuels moves us very close to goals we have set for 2005 to satisfy Energy Policy Act requirements," he says.

Bio-diesel is a product made using soy or other vegetable oils, blended with diesel. The fuel noticeably cuts the characteristic black smoke of diesel engines, Ed says. E-85 is a blend of 85 percent ethanol, made from corn, and 15 percent gasoline.

Vehicles using the E-85 alternative are "flex-fueled," meaning they can run on gasoline or E-85, depending on availability. Sandia has one of two E-85 stations in the city. However, DOE and GSA are working through a program called "Land of Enchantment Clean Cities" to bring five new E-85 stations and an additional bio-diesel station

"The addition of the new fuels moves us very close to goals we have set for 2005 to satisfy Energy Policy Act requirements."

to the northern part of the state.

About 145 Sandia vehicles are equipped to use the E-85 fuel. Several hundred pieces of equipment at the Labs will use bio-diesel. These include forklifts and heavy construction equipment as well as vehicles, such as buses. Sandia is also using an increasing number of so-called Neighborhood Electric Vehicles (NEVs), powered by batteries but with capabilities beyond those of the ubiquitous EZ-Go carts. (For example, NEVs can be driven on public streets to a speed of 35 miles per hour.)

"My approach is that we can't wait for the perfect solution to energy independence and security. You've got to get out and use the approaches that are available and see what works. Sandia has taken a leadership role and we should. It's the forté of what we do as a laboratory," Ed says. "These fuels are available and now we need to establish an example and convince other people to use them."

Peg Baca, manager of fleet services for DOE's Albuquerque Operations Office, praised Sandia's program, saying it is leading the way. "Sandia is setting an example and establishing a pace for others to follow."

Chris Wentz, representing the New Mexico Minerals and Energy Department, told the dedi-



PUMPING ETHANOL — Chuck Kearns of Sandia's Fleet Services Dept. 10849 pumps E-85, a new alternative fuel, into one of Sandia's "flex-fueled" vehicles. These vehicles can operate on E-85, which is a mixture of 85 percent ethanol with unleaded gasoline, or traditional fuels. Sandia's motor pool fueling station also offers bio-diesel and compressed natural gas fuels. (Photo by Randy Montoya)

cation audience that alternative fuels offer state residents benefits beyond a cleaner environment. Use of these fuels can mean jobs and revenues for the state, while reducing use of expensive foreign oil, he noted. Congress and New Mexico's own legislature have noted this and are working to create tax credits, new standards for fuel, and other efforts to encourage these trends.

GSA administrator Bill Heffner of Fort Worth, Texas, said he sees his job as providing the tools needed by federal agencies to meet administrative mandates to clean up the environment through a number of measures. "I take pride in what you are doing in New Mexico," he told the audience.

Nocturnal power pilferers: CPUs, monitors, printers, etc.

Here are typical power draws of current-generation common office equipment (actual measurements):

- CPU, 50-60 watts
- 19-in. CRT monitor (17-in. viewable), 105-115 watts
- 19-in. CRT monitor, with screen saver running, 95-105 watts
- 19-in. CRT monitor, in sleep mode, 20-25 watts

- FPD (flat panel display) monitor, 17-in. viewable, 25-30 watts
- FPD monitor, 17-in., in sleep mode, 6-8 watts
- Laser printer, 5-30 watts in ready mode
- Copier, 75-120 watts in ready mode

The improving energy efficiency of office equipment has helped offset the energy consumption increases resulting from Sandia's continuous increase in the number of such devices, says Ralph.

(Continued from preceding page)

on-off cycles, which translates to about 4 cycles every day for 10 years. That far exceeds the time we keep our computers, says Ralph.

So unless your CSU recommends leaving your CPU on, turn it off at the end of the day. And certainly turn off monitors, printers, and associated equipment when you step out.

Also, lamp manufacturers' data show you can turn off fluorescent lights as many as six times a day before lamp-replacement costs override energy savings, and turning lights off has no affect on the ballast, says Ralph.

Contests coming

The Energy Management Program, in cooperation with the Pollution Prevention Program, is planning to launch a contest in October — DOE's National Energy Awareness Month — to encourage

building occupants to save significant amounts of energy in their buildings. Look for details in the *Lab News* and in the *Sandia Daily News*.

Regular updates crediting the buildings achieving the greatest percent reductions in electricity use also will be published in the *Lab News* periodically beginning in January.

In addition, a snack and information session is being planned for volunteer Energy Nags at the New Mexico site. Look for an announcement next week in the *Sandia Daily News*.

Copycat Nags already have identified themselves in Bldgs. 962, 895, 807, and 811, Ralph adds. He stands at the ready to help new Nags at any time (from any Sandia site) with building energy-use data, energy saving tips, and other support.

If you've begun nagging your neighbors or want to, Ralph asks that you call him at 844-0601 or e-mail him at rjwrons@sandia.gov to let him know you're there.

Feedback

Can't we do something — anything! — about visitor parking in front of Bldg. 800? Yes.

Q: I have a concern regarding the lack of visitor parking spaces in the parking lot immediately west of Bldg. 800. This is due to the loss of visitor parking spaces on 5th Street as it was barricaded for security reasons. As a result there aren't enough "visitor" spaces in the adjacent lots to serve customer needs.

Yesterday I hosted visitors from the Boeing Company. They had to report to Bldg. 800 to pick up badges. They ended up parking in the lot just east of Kirtland's Fire Dept. because of the lack of visitor parking spaces in the parking lot immediately west of Bldg. 800 or any adjacent Sandia parking lots. Sandia looks like an amateur operation that can't provide visitor parking for visitors from outside companies. Could we eliminate more of the "regular" parking spaces west of Bldg. 800 to accommodate more "visitor" and "employee on official business" spots? I realize this will upset some Sandians who want close parking, but shouldn't we look more professional to our outside customers and clients? As a Sandia employee, I accept that I may need to walk a quarter mile or so from my building to my car, but our visitors shouldn't have to do that, especially at the Badge Office, their introduction to Sandia.

A: I understand the importance of our customers and the need to make it convenient to do business with Sandia. The parking situation at Sandia is today difficult at best. We must balance the needs of our customers, employees, handicap, medical, supplier, and other visitor parking needs. All of the previously designated visitor parking slots in front of Bldg. 800 were eliminated due to security considerations and proximity of vehicles to the building. We have reviewed the parking needs in that vicinity and will establish four visitor parking slots. They will have a one-hour limit and be designated for badge office visits only. Thank you for reminding us that things as simple as a place to park are an important part of how Sandia represents itself to customers and other visitors.

— Ed Williams (7849)

How you can cut \$50 out of the Labs' annual power bill

- Shut off 150 watts of office equipment every night and weekend: \$30/year
- Shut off 150 watts of lighting every night and weekend: \$30/year
- Shut off hallway lights every night and weekend: \$200-\$2,200/year
- Shut off conference room lights every

- night and during weekends: \$30-\$115/year
- Shut off the office copier every night and weekend: \$25-\$40/year
- Close fume hood sash when it is not in use: \$500/year
- Shut off office lights when natural light meets the need: \$15/year

Mileposts

New Mexico photos by Iris Aboytes
California photos by Bud Pelletier



Norman Corlis
40 15419



Marcella Madsen
40 5830



David Shirey
40 15252



Forrest James
35 14181



Charles Healer
35 2334



Timothy Taylor
35 5711



Kenneth Varga
35 14409



James Hubbs
30 2541



Daniel Sanchez
30 2554



Martin Stevenson
30 2616



Allen Camp
25 6410



Christopher Flores
25 2541



David Stout
25 5951



John Baney
20 5744



Karla Causey
20 3053



Mary Chapel
20 15405



Theresa Chiarella
20 3100



Phyllis Lusader
20 3132



Jerome Rejent
20 1835



C. David Turner
20 1642



Carol Adkins
15 14101



Samuel Cancilla
15 9517



Vern Koonce, natural bodybuilder and part-time personal trainer

WINNING BODY — Vern Koonce, a technologist in Systems Analysis and Development Dept. 5845, is a natural bodybuilder and part-time personal trainer. At the National Physique Committee (NPC) New Mexico/Mid-USA Bodybuilding Championship June 8 he placed 1st in the Bantam weight class for New Mexico State, 1st in Bantam weight for Mid-USA, and 3rd in Master's Division 45+ (ages 45 and up). In a subsequent American Natural Bodybuilding Conference competition on June 22 he had a 2nd-place Grand Master's (age 45-54) division finish. The Mid-USA 1st-place finish qualified him for nationals July 26-27 in Las Vegas. The NPC is the amateur organization under the professional International Federation of Bodybuilding (IFBB). As for his Sandia responsibilities, Vern tells the *Lab News* he is working on a project called SAFE (Secure Automated Fast Entry) for the Air Force Battlelab, where he performs modeling and simulation analyses on traffic flow onto bases.

(Photo by Randy Montoya)

Feedback

Q: After seeing the optician for safety glasses, I decided to call the JIT Sandia contracting representative (SCR). The frames seemed too large and very out of style. The SCR said that the originator of the contract could not be identified and there were numerous problems with adding new frames to the contract or removing the ones from the 90's. Who is looking out for the employee in a matter such as this? Can a remedy be found for this problem?

A: Sandia's safety glasses are procured through a JIT contract that is piggybacked off an existing Lockheed Martin contract. Hence, any changes to our list of frames must fall within the pricing structure that was negotiated by LMC. Sandia Purchasing is negotiating with its supplier, Aearo Safety, to add additional frames to the contract. Hopefully, we will have some additional frames to offer within the next few weeks. Thank you for bringing this issue to our attention, and for your patience in the length of time it has taken to respond to your concern. We wanted to have a remedy identified and underway before responding. — Al Bendure (3122)

Q: Why aren't Sandia Directory employee photos visible by default? These photos are underutilized resource that could help employees recognize people in key positions such as ES&H Coordinators, Computer Security Representatives, Building Owners, etc. At a very minimum, all managers, project leads, and secretaries should be visible.

A: As you noted, not all Sandians have their picture posted in the Sandia Directory. The reason for this is that each employee can make a personal decision as to whether or not to display his or her photo. The current default is not to display the photo to protect employee privacy. Since the IIS organization (9500) owns the Directory database, you can pursue this matter further with them if you wish. — Al West (3100)

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

MISCELLANEOUS

MAKITA ANGLE DRILL, 9.6V, cordless, close quarter, w/charger & battery, new in metal box, \$115. Barnard, 856-1952.

WEDDING GOWN, never used, size 10, Christina Collection, ivory, mate satin, off shoulder, originally \$800, asking, \$250. Ney, 332-8760.

VCR, Panasonic, 4-head, manual included, \$60. Hayes, 299-1200.

HOME GYM, Universal Fitness, new, never used, \$300. Hayes, 867-1752, ask for Dave.

BEDROOM SET: full-size bed, new mattresses, dresser w/10 drawers, chest of drawers, brown, 15-yrs.-young, \$250. Aragon, 255-8451, ask for Gilbert.

GIRL'S BEDROOM SET: 4-poster twin bed, dresser w/mirror, desk, \$350; upright Weser Bros. piano, \$250. Atencio, 897-2189.

HOME & GARDEN SPRAYER, 1.5-gal. polyethylene pump, never used, still in box, \$15. Vigil, 271-1328.

BABY BED & DRESSER, \$350; day bed spring & frame, \$25; bicycle, \$25; wicker rockers, \$25; small truck long-bed cover, \$25; old LPs & turntable, \$10. Detmer, 897-4145.

CERAMIC TILE, architectural sample, approximately 100-sq.-ft.-plus, must take all of it, free. Couto, 765-9047.

ELK PERMITS, ranch only, either sex, unit 6, San Pedro Wilderness, excellent hunting, \$800 OBO. Morales, 289-3042, after 6 p.m.

KITCHEN CABINETS, new, retail \$1,150, asking \$400 OBO; shed, new, 8x10, w/floor, \$120. Shields, 286-5917.

LAWN MOWER, Murray, 5-hp, rear bag, self-propelled, excellent condition, \$85; mountain bike, GT, \$80. Klavetter, 299-4299.

ROLLER COASTER, Step2, 10-ft., lots of fun for ages 2-5, \$30; 20-in. girl's Giant bicycle, \$20. Stromberg, 299-8591.

STUDENT DESKS: 40" x 20" x 29", w/drawer, \$30; 42" x 20" x 28", w/file & pencil drawers, \$40. Rentzsch, 281-5017.

STUDDERED TIRES, like new, 4, 185/70R14, Wintermark steel radials w/12/32 inch remaining, \$125. Hesch, 350-9903.

UPRIGHT FREEZER, Tappan, white, 20-cu.-ft., barely used, \$400; satellite internet system, \$190. Hott, 865-1859.

SOUTHWEST AIRLINES TICKET, roundtrip, transferable, expires 9/18/02, \$280. Montano, 363-2906.

HABITRAIL HABITATS, 4, w/tubes, balls & other accessories, originally \$200, asking \$120 OBO. Heald, 281-7885.

SHIMANO PD 7401 PEDALS, LOOK-style cleat, cleats not included, good condition, \$20. Dwyer, 271-1328.

TIRES, 4, LT235/85R16, B.F. Goodrich TOs, 7/32 tread (16/32 new), \$100. Beer, 350-3455.

SLEEPER SOFA, queen-size, small tear on front, originally \$650, asking \$300 OBO. Potter, 292-5224.

COMPUTER DESK, industrial-grade metal, & 4-drawer filing cabinet, \$50 ea. OBO. Cook, 275-3692.

MEMORY, laptop computer, two 64MB SODIMM modules, 144-pin, from Dell laptop, excellent condition, \$20 both. Molecke, 296-5850.

LASERJET TONER, for HP4-HP5 series printer, \$10; desk set: 60-in.-wide desk, hutch, lamp, floor mat, \$60. Hales, 298-1545.

BAR STOOLS, 5, solid wood, dark stain, good condition, \$100/set. Lange, 294-3629.

BEDROOM SET, 5-pc., w/full-size headboard, nightstand, chest-of-drawers, dresser, mirror, 2 yrs. old, good condition, \$400 OBO. Hampton, 896-3218.

COMPUTER DESKS: 1 large, \$25; 1 small, Ikea, disassembles & packs flat, \$35. Schroeder, 856-1825.

TEMA BAR STOOL SET, mid height, black vinyl & silver metal, \$40. Lyon, 980-1889.

SOLOFLEX, w/butterfly & leg attachments, stationary recumbent cycle, Ab-doer & Ab-roller, \$300. Turner, 238-3964.

LOFT/BUNKBED SET, cherry, w/dressers, 8 yrs. old, w/1-yr.-old mattresses, \$250. Astle, 891-0995.

LADIES WATCH, Cyma, diamond dial, blue face, 18K sapphire xtal, worn twice, \$800. Gottlieb, 298-9859.

DRESSER, armoire, entertainment center, solid wood, never used, \$450. Gonzales, 890-5614.

BEDROOM SUITE, walnut, 5-pc., \$600; daybed, mattress & bedspread, \$150. James, 294-6837.

TREADMILL, NordicTrack, new in box w/warranty, never used, purchase price \$800, asking, \$600. Webb, 869-8001.

SOUTHWEST AIRLINE TICKET, valid through 11/21/02, \$300. DiPrima, 275-3479.

SNOWBOARDING BOOTS, Salomon, size 10, tan-gray, lace-up, strap bindings, used 2 seasons, good condition, \$20; boards also. Rector, 286-1217.

MOTORIZED WHEELCHAIR, Leisure-Fit PaceSaver Scooter, teal green, basket, new batteries, runs well, retails, \$2,999, asking \$1,200. Sanchez, 898-9598.

TRANCEIVER, Kenwood TS-440S, hand mic, PS-50 power supply, cables, very good condition, Mars. Mod. \$500. Bierly, 296-2029.

CHAIN-LINK FENCING, 25-ft., 5' height, w/posts & gate, you haul it. Gruebel, 323-2414.

GARAGE SALE, Saturday, Sept. 14, 8 a.m. to 3 p.m., 13809 Indian School NE. Lunsford, 459-8842.

DINING TABLE, w/6 chairs, well made, contemporary Formica, 41" x 52" (expansion 72"), \$95; large computer desk, \$45. Newman, 266-6928.

MICROWAVE, Sharp Carousel, 25 x 16 ext. w/operation manual & cookbook, great features, works great, \$35. Norwood, 292-0072.

LAWN & GARDEN TRACTOR, John Deere, 17-hp, w/mower, blower, blade, wagon, \$2,500 firm. Dean, 281-3489.

GARAGE SALE, September 7, 9 a.m., 1103 Madison Street SE, microwave, men's/women's clothing, household, plants, misc. Cook, 256-5196.

BASKETBALL GOAL, freestanding, excellent condition, will help disassemble & transport, \$45, you haul it, \$35. Randall, 299-3935.

CARPET CLEANER, Big Green Clean Machine, \$25; microwave, large capacity, \$30. Barton, 268-7349.

LAPTOP, Dell Latitude CS, Pentium III, 400 MHz, 128 MB RAM, 6.0 GB-HD, 2CD-ROM, docking station, extra battery, carrying case etc., \$500. Gabaldon, 897-2817.

BACKPACK, Jansport, full framed, very nice, used once, \$60. Ewen, 836-3563.

DISHWASHER, Whirlpool, runs great, \$80; 1950s-era Formica kitchen table, best offer. Doser, 323-2786.

COLLECTIBLE, World War II German ceremonial sword, perfect condition, \$800. Starkey, 505-289-3076.

DIGITAL CAMERA, Nikon Coolpix 5000, lots of accessories, 6 mos. old, paid \$1,700, asking \$1,150. Lutheran, 550-8386.

WINDOWS, 3-8x6-0, 8 x 8 x 16 blocks, metal folding doors, thermal storage rods, 80-gal. HW storage tank, small HWs. Talbert, 298-9036.

MOVING SALE, Sept. 6-7, 9 a.m.-4 p.m., 418 Gavilan Place NW, tools, chairs, misc. Middlesworth, 344-4726.

SOLAR TUBES, 4, new Kalwall tubes, 63" x 18" diameter, \$50 ea. Homer, 836-5043.

SOUTHWEST AIRLINE TICKET, roundtrip, good anywhere Southwest flies, expires 7/03, \$300 cash. Sanchez, 291-0524.

SOUTHWEST AIRLINE TICKET, roundtrip, expires 3/19/03, bonus book of drink coupons, \$300 cash. Cancilla, 298-8741.

SOUTHWEST AIRLINE TICKETS: expire 03/09/03, \$300; expire 7/26/03, \$300. Ortiz, 610-3278.

GARAGE DOOR, 12 x 10, \$300; microwave stand, \$10; washer/dryer set, \$600; glider rocker, \$40; coffee table, \$30. Howard, 873-3038.

BULK ELK LICENSE, 6-A, unit wide, 1st or 2nd rifle or muzzleloader hunt, \$1,500 OBO. Chavez, 565-2188.

CANON 75-MHZ PC, 8MB RAM, monitor, printer, 812MB/HZ, joy stick, computer desk, more software, \$225. Schofield, 292-7220.

OKIDATA OL400 PRINTER, legal & letter, Canon BJC2010 color printer, cables & manuals included, data switch, \$120. Pitts, 293-5481.

REFRIGERATOR/FREEZER, Kenmore side-by-side, 26.6 cu. ft., ice & water through the door, excellent condition, \$400. Lauer, 286-8977.

How to submit classified ads

DEADLINE: Friday noon before week of publication unless changed by holiday. Submit by one of these methods:

- E-MAIL: Michelle Fleming (classads@sandia.gov)
- FAX: 844-0645
- MAIL: MS 0165 (Dept. 12640)
- DELIVER: Bldg. 811 Lobby
- INTERNAL WEB: On Internal Web homepage, click on News Center, then on Lab News frame, and then on the very top of Lab News homepage "Submit a Classified Ad." If you have questions, call Michelle at 844-4902. 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. Submit the ad in writing. No phone-ins.
4. Type or print ad legibly; use accepted abbreviations.
5. One ad per issue.
6. We will not run the same ad more than twice.
7. No "for rent" ads except for employees on temporary assignment.
8. No commercial ads.
9. For active and retired Sandians and DOE employees.
10. Housing listed for sale is available without regard to race, creed, color, or national origin.
11. Work Wanted ads limited to student-aged children of employees.
12. We reserve the right not to publish an ad.

ORLEY WOODSTOVE, 16-in. diameter, 24-ft. long firebox, w/Magic Heat, some pipe, puts out heat!, \$450. Zirzow, 281-9896.

TEAK FURNITURE: dining room table & chairs, china cabinet, twin bed w/headboard w/shelves, dresser. Esherick, 299-8393.

STATIONARY BIKE, Tunturi Model F515 recumbent, includes meter for speed & time, \$100. Jones, 899-0642.

ANTIQUE HALL SEAT, huge, bench w/storage, glass door bookcase above, dark wood, European. Ross, 332-0659.

PIONEER PREMIER P430, car CD, \$140; Blaupunkt Nevada, \$125, both like new in box, all accessories. Andrews, 858-0569.

MATTRESS/BOX SPRING, twin-size, frame, blue metal headboard, excellent condition, \$80. Rightley, 293-9780.

CANON INKJET PRINTER CARTRIDGES, BCI-21, new, never opened, 2 black, \$12, 1 three color, \$18. Harris, 858-0667.

FURNITURE CREDIT, Sofa Mart, valued at \$410, asking \$360. Williams, 344-9276.

BEDROOM SET, hand-painted Southwestern, coral/green, no mattress, \$600. Hubbard, 291-8463.

TRANSPORTATION

'01 JEEP WRANGLER, 4x4, 5-spd., 4-cyl., hardtop, cloth, steering & convenience groups, good condition, 21K miles. Dudley, 255-3626, pete.dudley@comcast.net.

'00 CHEVY BLAZER S-10, take over payments, \$327, balance of \$14,900, negotiable \$1,000-\$800. SAFCU, 363-1280 or Gutierrez, 281-5882.

'97 GMC SONOMA SLS, 3-dr., extended cab, alloy wheels, all power, CC, GM bed liner, keyless entry, \$8,250 OBO. Gluvna, 884-5251.

'99 SATURN SL1, 4-dr., AT, AC, remote entry, dual air bags, cruise, like new, 24K miles, \$8,700 OBO. Konkel, 298-4033.

'99 FORD F250, 4x4, Lariat, short bed, 4-dr., ext. cab, 7.4L, towing, tool box, custom wheels, 3-in. lift. Sanchez, 238-5363.

'92 MITSUBISHI MIGHTY MAX, 100K miles, \$1,475 OBO; '84 Pontiac Parisienne, only 75K miles. Barbera, 275-2562.

'91 JEEP CHEROKEE, 4WD, 4-dr., 160K miles, good condition, runs great, \$4,000 OBO. Dye, 897-0304.

'86 MAZDA 626 LX, sunroof, 150K miles, \$2,000 OBO. Magee, 453-7805.

'91 GMC SUBURBAN, 4x4, AT, PW, PL, 350, 145K miles, excellent condition, \$1,000 below book at \$3,999. Reese, 281-6658.

'97 NISSAN MAXIMA, loaded, 65K miles, good condition, \$12,700 OBO. Harris, 453-4677.

'96 CHEVY SILVERADO Z71, 4WD, ext. cab, bed liner, matching camper shell, tow package, alloy wheels, green/tan, excellent condition, \$15,750 OBO. Dwyer, 271-0741.

'85 JEEP CHEROKEE, 4WD, 4-spd., new battery, radiator, hoses, belts, 85K miles, \$2,500. Newcom, 293-5180.

'91 NISSAN SENTRA, 4-dr., AT, AC, new tires, runs well, good transportation. Padilla, 873-3870 or 203-8224, ask for Liz or Joseph.

'02 BUICK RENDEZVOUS, AWD, loaded, leather, less than 9K miles, save more than \$6,000, only \$27,950. Simonton, 332-0777.

'97 SUBARU LEGACY L, AWD, 4-dr., AC, tinted windows, burgundy, great condition, \$11,000 OBO. Carmignani, 839-4203.

'88 HONDA CRXsi, 5-spd., PS, sunroof, alloy wheels, black/black interior, extra clean, runs great, \$4,000. Ledwith, 821-0154.

'93 JAGUAR XJ6, black w/tan leather interior, AT, AC, runs great, 156K miles, \$8,500. Woodard, 856-0785.

'86 TOYOTA PICKUP, 4x4, 22R, manual transmission, new tires, runs great, 156K miles, \$3,700 OBO. Kaup, 323-0660.

'98 TOYOTA COROLLA CE, 4-dr., PW, AT, AC, white, non-smoking, low miles, great condition, under book, \$7,000. Atkins, 266-3082 (day phone) or 821-7989.

'95 TOYOTA COROLLA DX, standard, power, AC, AM/FM/cassette, good condition, 101K miles, \$3,900. McRee, 898-5030.

'69 FORD FALCON, 4-dr., red, 112K original miles, \$3,500 OBO. Hrzich, 352-6754.

'92 JEEP CHEROKEE SPORT, 5-spd., many new parts, runs great, 190K miles, \$2,000 OBO. Williamson, 332-7399.

'87 ACURA INTEGRA LS, 2-dr., CD, silver, very nice looking, runs great, 197K miles, 30-mpg, \$1,000. Stanley, 265-4298.

'94 NISSAN SENTRA XE, 5-spd., AC, good tires, new brakes, gray interior & exterior, good condition, 130K miles, great car for students, \$2,800. Giersch, 328-0628.

'98 TOYOTA TACOMA, X-cab, red, SR5, AC, PS, PB, cruise, tilt, AM/FM cassette, bed liner, alarm, new brakes, 90K miles, \$10,500. Brangan, 866-1563.

'02 JEEP LIBERTY LIMITED, 4WD, AT, 4W ABS, silver, leather, tow package, less than 1K miles. Van Deusen, 291-8196.

'92 TOYOTA COROLLA GT, AT, AC, AM/FM, tinted windows, 87K miles, runs great, \$3,300. Gillis, 341-0596.

'68 FORD MUSTANG, 289 V8, headers, 4bbl Edelbrock, dual flowmasters, white, \$6,500 OBO. Sondreal, 363-6265.

'92 GMC SUBURBAN, 4WD, AC, PW, PL, cruise, tow package, new radiator & brakes, original owner, very good condition, below book, \$8,750 OBO. Gallagher, 823-2674.

'98 DODGE GRAND CARAVAN SE, power everything, front/rear AC, dual sliding doors, new tires, excellent condition, \$9,650 OBO. Carriaga, 315-5886.

'98 ACURA INTEGRA, 5-spd., tint, leather, sun roof, bra, cover, custom wheels, silver, very clean, 47K miles, \$13,400 OBO. Garcia, 869-6241.

'93 LINCOLN CONTINENTAL, door operator, alarm, aluminum wheels, Michelin tires, recently rebuilt engine, leather, garaged, pearl white, excellent condition, \$7,800. Hall, 858-1669.

'65 GMC PICKUP, V6, Dana rear end, 318 Dodge V8 engine, both for \$400. Little, 883-9329.

'96 HONDA ACCORD EX, 4-dr., all power, sun roof, silver, an extraordinary auto, 13,100 miles, \$12,375. McIntosh, 292-3740.

RECREATIONAL

'98 TROPICAL MOTOR HOME, 35-ft., all extras, 454 Chevy, slide out, twin AC, like new condition, 13K miles, going on assignment, must go. Terry, 237-2288.

SANDRAIL, rolling frame w/VW engine, both need work, \$400 for both, w/o engine \$300. Ziska, 221-8971.

'99 ALLEGRO MOTOR HOME, 33-ft., 15K miles, wide-body w/slide out, many extras, excellent condition, reduced to \$52,000. Barnes, 294-8968.

'97 VESPA, 150 cc, gas gauge, electric start, about 740 original miles, spare tire, excellent condition, \$3,000. Griffith, 266-8191.

ROAD BIKE, Schwinn Sprint, large frame, 27-in., near new condition, \$70. Linn, 271-0336.

REAL ESTATE

3-BDR. HOME, 1-3/4 baths, large 2-car garage, 1,160 sq. ft., beautifully remodeled, Carnuel, \$104,900. Freshour, 275-2206.

4-BDR. HOME, 2 baths, shop, RV space, two 24x36 sheds, overlooks Navajo Lake, 110 acres. Dungan, 970-883-5464.

2-BDR. MOBILE HOME, 2 baths, enclosed patio, carport, across from golf course, big backyard, family park. Philippsen, 823-2515.

1/2 ACRE, Rio Rancho, mountain & city views, \$20,000 OBO. Montoya, 345-0512.

4-BDR. HOME, 1 bath, 2,050 sq. ft., renovated kitchen, great views, 2520 Madre Drive, FSBO, \$207,500. Maestas, 275-2766.

HOME, fully upgraded, near schools, KAFB, 1,350 sq. ft., carport, privacy fences, xeriscaped front, landscaped backyard, FSBO. Lopez, 265-3296.

3-BDR. CUSTOM HOME, 3 baths, 2,655 sq. ft., High Desert, beautiful views, front/back decks, beautifully landscaped, \$380,000. Rivera, 980-4136.

2-BDR. HOME, 2 baths, many deluxe amenities, clean, great value, Four Hills Park, compare, \$21,900. Padilla, 332-8248.

WANTED

PUSH MOWER, in good condition. Brown, 265-0406.

TUTOR, Algebra II, in my home or yours, 2-3 times a week for my high school senior. Prieto, 897-2764.

BABYSITTER, varied weekend hours, requires training, 18 or older, Far NE Heights, creative, intelligent, must love kids. Olewine, 797-0189.

OUTDOOR PLAYHOUSE, good condition; twin-size captain's bed, very good condition. Rezac, 281-1816.

SMALL DIRT BIKE, scooter or Moped for pit bike at minimum expense, need not be working. Smith, 292-4684.

WEIGHT SCALE, USDA preferred, for weighing up to 10-25 lbs. of produce. Paules, 345-4006.

BOWFLEX and a Bernina sewing machine. Sayers, 873-2815.

SOCCER PLAYERS, all skill levels, weekly: M/W/F, noon, Hardin Field; T/Th noon, Club Road Field; Sat., 10:30 a.m., Club Road Field. Campbell, 291-0899.

"PROJECT W-47" by James Les Rowe, one or two copies of used book, will pay nominal fee. Lemons, 266-5801, leave message.

KILN, w/temperature control up & down, max temp at least 1,300F, glass working tools. Kennicott, 286-9288.

GOOD HOME, short-hair, gray, kitten, 4 mos. old, very affectionate & cute. Roberts, 275-2941.

HOUSEMATE, for apartment in private home, nice residential area, private entrance, convenient to Sandia, \$350/mo. Smith, 298-7365 or 292-1976.

VISUAL BASIC 6, (possibly Learning Edition), & VB6 books & programs for mid-school students, cheap; pool table, 8-ft. Kimberly, 293-5835.



Sandia retiree Ed Sisneros rides into sunset . . . and the dawn, the State Fair, the . . . well, you name it

Sandia's Stetson-hatted, jingle-bob-spurred cowboy retiree still sits tall in the saddle

By Iris Aboytes

From a little pueblito (village) of about 50 people, to the big city, retiree Ed Sisneros sits tall in the saddle as he rides his horse Frijolito in the grand entry of the New Mexico State Fair. Wearing his black Stetson, he has a big smile on his face that reveals his love for what he is doing.

Ed retired from Sandia in June 2001 after 36 years and 9 months. Retirement is a meaningless word with Ed. He is still a contractor at Sandia; his band, The Desperados, has a contract with the City of Albuquerque to play for senior citizens' dances; he helps out at the cattle auction; takes his horses for show-and-tell at his grandson's school; and still makes time to participate in the New Mexico State Fair.

Where does he find the energy and time? Ed says he got his work ethic from his dad. "My dad was a very strict parent. He kept us busy doing assigned chores and more. Whenever he had to go to town, we did not get a day off. He had us go and help the neighbors with their work. He was afraid we might get bored."

"I still remember one thing that he would say to us. 'A man is only as good as his word. If he tells you he is going to be there, you should count on it or he better have a good explanation why he was not!'" Revealing his pride in his dad, Ed says, "My dad was winning head-and-heel roping jackpots at 75."

Growing up without electricity, there were obviously no material riches to appreciate. He contributed to his family of five sisters and two brothers since age 12. He and his older brother went with their uncle to hoe cotton in Texas. He got paid \$72 a month. Of his first paycheck, he kept \$2 and gave \$70 to his mom for the family.

"My mom has dedicated her entire life to her family," he says. "She is the kind of mother every



GRAND ENTRY — Retired Sandian Ed Sisneros for many years has led the grand entry during the New Mexico State Fair Rodeo. The well-known New Mexico horseman will be performing similar duties again this year. The Fair runs Sept. 6-22.

kid should have." Like the song by Dolly Parton, "Coat of Many Colors," they had shirts and dresses of many colors. Many of the fabrics came from flour sacks, so they did not always match, but they were clean and ironed.

His dad moved the family to the Martinez-town neighborhood in Albuquerque thinking it afforded them a better opportunity for a better life. When Ed was a junior in high school, he scored the highest in the state in an exam but turned down the scholarship to Rochester Institute of Technology because he could not afford the room and board.

In 1964 Ed earned his big break as he was accepted into the Sandia apprenticeship program. He had been taking all the home study courses he could in electronics. His big break came only after he worked as a janitor, dishwasher, and dietician at the Bernalillo County Medical Center and assistant manager at Piggly Wiggly.

While at Sandia, Ed worked in Electronic Fabrication, Instrument Repair, and then Motion Picture and Video Services Dept. 12610. He says his favorite job was with Video Services, where he got to travel and had the opportunity to work with talented Sandians.

Working during the week was not enough for Ed. On weekends, he worked at a local business fixing television sets. He wanted his three children and his wife, Edwina, to have everything they needed.

Al Lujan, one of his coworkers, says, "I consider myself really lucky to have worked with a person like Ed. Not only was he a mentor, but also the most giving person I have ever known. He was most generous in his sharing."

According to Richard Sanderville, his coworker of 19 years, Ed was well

known and very respected in the industry. At the National Association of Broadcasters, the biggest tradeshow in the world, Sony, JVC, and others all recognized him as the cowboy with the black Stetson. In the middle of the Stetson full of pins was an "I love my dad" pin, a gift from his daughter.

Ed's music has always been close to his soul. His five-piece group plays rancheras (Spanish country), country, and of course the oldies. His face lights up as he says his accordion player sounds just like Flaco Jimenez (a well-known rancheras accordion player). He says, "The Desperados can really jam! Come, listen, and dance *para que se alegre el corazon* [to make your heart come alive]. Besides, if you are a male, there are plenty of female partners at senior citizen dances wanting to make your acquaintance. Ha! Ha!" The Desperados also play for weddings, graduations, and other social gatherings.

He shares a little advice with today's youth: "Young people today should know that money doesn't grow on trees. They should apply themselves by contributing with the chores at home, stay in school. Don't waste time taking the easy subjects, take all the math and science classes and prepare for college. Education is the key to success."

Is there anything he would like to do to enhance his present life? "Maybe I could learn to play other musical instruments, like the violin or steel guitar," he says.

What does he do for relaxation? He says he relaxes with his music and often takes his horse Frijolito to show off his new shoes in Old Town and pose for the tourists.

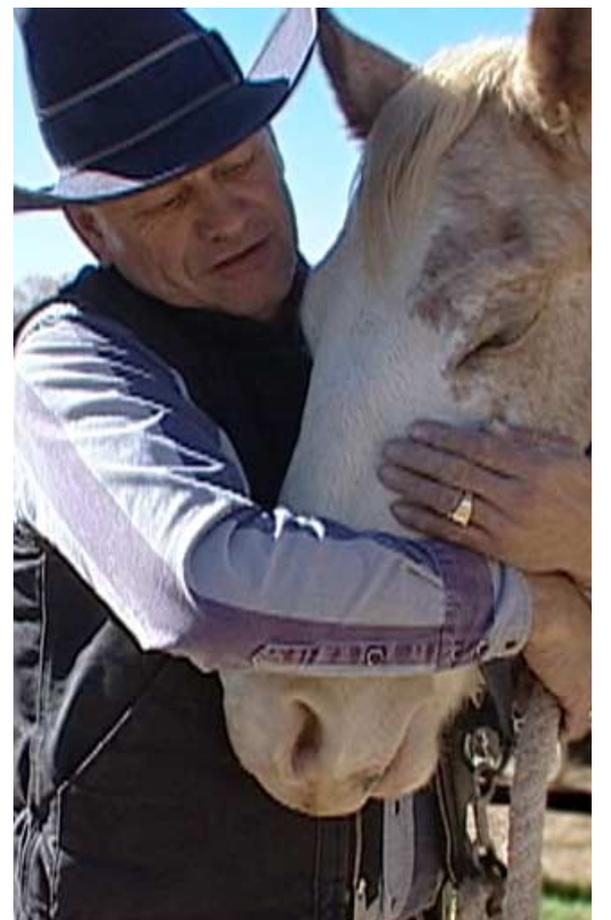
Asked when he will really retire, he first says, "When it is not fun anymore." Then almost immediately points up and says, "*Haya esta el quien sabe*" (only He knows).

When you attend the State Fair parade or rodeo, wave as Ed rides Frijolito, Reno, or Linda, all his horses; and by all means please notice his special-ordered jingle-bob spurs.

Big pour means big step for Labs' big MESA project



CONSTRUCTION CREW MANAGES a huge 80-yard concrete pour at the east end of Micoelectronics Development Laboratory to form a Specialty Gas Room for the MESA project. The pour was done on Aug. 23.



ED SISNEROS hugs his beloved friend Reno.