



EXPECT TO SEE increased security at chemical plants, refineries, and storage areas, thanks to a vulnerability assessment project at Sandia.

(Photo by Randy Montoya)

# Labs experts helping evaluate security at US chem plants

**Recommendations based on vulnerability analyses to go to Congress by Dec. 21**

By John German

Long before Sept. 11, Sandia was helping US government and industry shore up their defenses against terrorism, developing systematic ways to identify the security weaknesses of buildings, dams, drinking water supplies, and other possible targets.

Now experts in Security Systems and Technology Center 5800 are helping assess the security vulnerabilities of industrial facilities that manufacture, store, or transport hazardous chemicals.

As part of a project funded by the National Institute of Justice (NIJ), Labs physical security experts are developing a scientific vulnerability assessment methodology (VAM) that could be used to improve security at more than 10,000 US chemical facilities.

The project includes visiting several facilities, reviewing current security practices, and developing a set of recommendations about how security might be improved at US chemical plants to prevent terrorist attacks or blunt their effects.

## Increasingly credible threat

The US Attorney General is to present Sandia's preliminary observations and recommendations in a report delivered to Congress by Dec. 21.

Project leader Cal Jaeger (5845) says most chemical plants currently employ security practices typical of those employed by other sectors of US industry.

Stephen Melvin of the Orange County (Calif.) Fire Authority's Hazardous Materials Services Sec-

*(Continued on page 4)*

## Big Lockheed Martin news

The Lockheed Martin Corporation has donated \$1 million to the Barelmas Job Opportunity Center in Albuquerque. See the full story on **page 7**. Also, after a several-years-long process, the Department of Defense has awarded Lockheed Martin the contract to build the next-generation Joint Strike Fighter. The contract could be worth upwards of \$200 billion. See story on **page 6**.



# Sandia LabNews

Vol. 53, No. 22

November 2, 2001

Managed by Lockheed Martin for the National Nuclear Security Administration



## Sandia-developed formulation among products being used to help rid US facilities of anthrax

**Foam used on Capitol Hill starting last weekend**

By John German

Sandia's decontamination formulation is among the products being used to help rid Capitol Hill buildings of anthrax.

Cleanup workers over the weekend used the formulation (often referred to as a decon foam) to decontaminate the postal room in the Ford Congressional office building in Washington, D.C. The postal room reopened Monday.

They also used the formulation to decontaminate portions of the Dirksen Congressional Offices during remediation operations.

Two Sandians — Larry Bustard and Mark Tucker (both 6245) — were on site in Washington as technical advisors when the operations began.

The formulation also was used to decontaminate portions of ABC News' facilities in New York last week.

The foam was first used Oct. 12 at a Denver-area post office (*Lab News*, Oct. 19), but the white powder it was sprayed on later proved not to be dangerous.

Sandia licensed rights to commercialize the chem-bio formulation to two companies last year — Modec, Inc. (Denver, Colo.) and EnviroFoam Technologies (Huntsville, Ala.) — following a five-year research and development project at Sandia funded by the NNSA's Chemical and Biological National Security Program. (For more about the formulation's development, see *(Continued on page 4)*)

## Labs well-poised to serve US in war on terror

**Briefing emphasizes Sandia's broad-based capabilities**

By Bill Murphy

Sandia, with its long history of systems engineering savvy and with several counterterrorism technologies in the R&D pipeline and in the marketplace, is well-poised to answer the nation's call in its time of need. And that's no coincidence: Labs Executive VP Joan Woodard said last week that Sandia's strategic planning going back several years has placed increasing importance — and funding, via discretionary mechanisms such as Laboratory Directed Research and Development dollars — on positioning Sandia to meet new unconventional threats to the nation's security.

In a briefing at Sandia for Rep. Tom Udall, D-N.M., Joan offered an overview of the Labs technical capabilities and technologies that may have relevance in the nation's war on terrorism. Udall's was the latest in a series of briefings for members of the New Mexico congressional delegation. Previously, briefings were provided for Sen. Pete Domenici, R-N.M., Sen. Jeff Bingaman, D-N.M., and Rep. Heather Wilson, R-N.M.

Joan acknowledged that since the Sept. 11 terrorist attack, "the phone's been ringing a lot" at Sandia as various government agencies contact the Labs to see if it can offer solutions to specific technical problems. Joan noted that other

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# This & That

**Sandia responds** – At times like these, Sandia's role as a national security laboratory comes strikingly to the fore. Concerns about terrorism at home have overnight changed from a remote, abstract, potential source of some future worry to an urgent, present, anxious, terrible reality. First the attacks on the World Trade Center and the Pentagon. Then the anthrax mailings and deaths and contaminations at multiple sites. What next?

We can take pride Sandia is being called upon in a variety of ways. Some can be discussed; many cannot. For obvious reasons, interest is intense in the decontamination foam Sandia developed a few years ago and subsequently licensed to two private companies. The foam kills biological agents like anthrax, and also destroys chemical agents. The interest has intensified even more since the first use reported in last week's *Lab News*. The foam has been used in New York City and, last weekend, in Washington.

John German's page one story reports the latest on that. Bill Murphy's story on a briefing by Executive VP Joan Woodard provides a quick roundup of some of Sandia's counterterrorism capabilities. Related pieces in this issue discuss Sandia's efforts to evaluate the security of chemical plants, workplace stress in the aftermath of the attacks, Sandia/California veterans' reflections about the attacks, and condolence messages Sandia has received from colleagues abroad.

\* \* \*

**Sudden relevance** – Many Sandians throughout the Labs are redirecting their efforts or finding their work that had been of only limited outside interest suddenly an urgent public priority. Senior Scientist Al Zelicoff (5320) has been everywhere, in Washington and in the national media, talking about bioterrorism and his Rapid Syndrome Validation Project to identify first signs of biological attack. Jeff Danneels (5862) has been kept hopping talking with media and agencies about protecting water distribution systems. There is new interest in microchemical sensor technologies of all sorts.

My media relations colleagues down the hall and in California, and many of their technical-expert contacts throughout the Labs, are still under incredible pressures fielding a continuing onslaught of media and public calls about these and related matters. In a quick hallway discussion the other day, John German said his phone was ringing every three minutes and he was trying to take a break. He got only one minute into the "break" before it rang again. . . and again.

Our colleague Bruce Hawkinson, who prepares the internal electronic *Sandia Daily News*, has been doing yeoman duty for weeks keeping employees informed. He reports that management's usual three-day Fall Leadership Forum was shortened last week to two quick half-day sessions. Reason? Sandia has been inundated with queries from federal, state, and local agencies seeking help or solutions to suddenly urgent national problems. "We need to be easily accessible if the nation needs us," Sandia President Paul Robinson said. "Wherever we can help, this is the time!"

– Ken Frazier, Editor (kcfrazi@sandia.gov, 844-6210)

## Sid Gutierrez named director of Center 5700

Sid Gutierrez (5932) has been named Director of Monitoring Systems Center 5700, succeeding Jerry Allen who is retiring this month.

Senior VP Roger Hagengruber (5000) made the announcement Oct. 22. The appointment becomes effective Nov. 9.

Sid came to Sandia in 1994 after a distinguished career in the Air Force and NASA, where he was an astronaut and flew on two space shuttle missions.

A native of Albuquerque, he is a graduate of the US Air Force Academy with a B.A. in aeronautical engineering and of Webster College with an M.A. in management. He became an Air Force flight instructor and test pilot, flying F-15's, F-16's, and a variety of other aircraft.

Selected by NASA in May 1984, he became an astronaut in June 1985. In his first space shuttle mission, he served as pilot of the *Columbia* on the crew of STS-40 Spacelab Life Sciences, a nine-day dedicated space and life sciences mission, June 5-June 14, 1991. On his second space flight, he served as commander of the *Endeavour* STS-59 Space Radar Laboratory mission, an 11-day flight, April 9-April 20, 1994, dedicated to the study of the Earth and its atmosphere.

Sid retired from NASA and the Air Force in 1994 with the rank of colonel, returned to Albuquerque, and joined Sandia. He served as manager of the Strategic Initiatives and Airborne Sensors and Integration Departments. He currently is manager of Physical Sciences Dept. 5932 and a Level II program manager for both applied technologies and information technologies.

## Feedback

**Q:** Please clarify contractor and student parking privileges. We periodically have both park in the visitor parking spaces west of Bldg. 878 and south of the Thunderbird Café.

**A:** Contractors, students, and employees must follow the same parking rules. They must park in properly designated parking places. To park in a visitor parking slot, the vehicle should not have a Sandia base decal. Also, to park in carpool spaces, the vehicle must display two placards issued by Sandia for carpool parking. Please notify the Security Desk Lieutenant at 844-3155 if vehicles are parked in the visitor slots incorrectly. Visitor slots are limited in number and are located in areas where short-term parking is required for others conducting business at the Laboratories.

— Ed Williams (7849), Chairman,  
Sandia Traffic Safety Committee

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**Q:** I was wondering why we have specified parking bumpers (i.e., visitor) when parking policies are not enforced. The bumpers in question are the visitor spaces at the south end of the old "water tower" parking lot.

**A:** Thank you for calling attention to the improper parking activities in the Bldg. 887 north parking lot. To park in a visitor parking slot, the vehicle should not have a Sandia-issued permanent base decal. Also, to park in a carpool parking slot the vehicle must display two placards issued by Sandia for carpool parking. Please notify the Security desk lieutenant at 844-3155 if you find vehicles parked in visitor parking incorrectly. Visitor slots are limited in number and located in areas where there is a business need to have short-term parking for others conducting business at the Labs. Contractors, students, and employees must follow the same parking rules. They must park in properly designated parking spaces.

— Ed Williams (7849), Chairman,  
Sandia Traffic Safety Committee

## Sandia LabNews

Sandia National Laboratories

<http://www.sandia.gov/LabNews>

Albuquerque, New Mexico 87185-0165  
Livermore, California 94550-0969  
Tonopah, Nevada • Nevada Test Site • Amarillo, Texas •  
Carlsbad, New Mexico • Washington, D.C.

*Sandia National Laboratories is a multiprogram laboratory operated by Sandia Corporation, a subsidiary of Lockheed Martin Corporation and a prime contractor to the US Department of Energy.*

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Lab News fax .....505/844-0645  
Classified ads .....505/844-4902

Published on alternate Fridays by Media Relations and Communications Dept. 12640, MS 0165

LOCKHEED MARTIN

## Employee death



1992 photo

HAROLD SPAHR

Harold Spahr, Jr. of Aerosciences and Compressible Fluid Mechanics Dept. 9115 died Oct. 16.

He was 66 years old.

He had worked in engineering sciences R&D at Sandia for 44 years.

He is survived by his wife, Priscilla, a Sandia retiree; and

two sons, Russell and Steven (a contractor in 5742).

## 'Ground Zero' dog-camera search photos, maps, other items on display in Bldg. 822

Richard Sparks of Security Engineering Dept. 5831 spent the three weeks after Sept. 11 assisting the search and rescue teams at Ground Zero of the World Trade Center disaster in New York. Richard equipped various search dogs with RF-linked cameras to allow the handlers to search locations personnel were unable to go.

Many photographs, maps, and other items that he brought back are displayed in the Bldg. 822 conference room lobby. They will remain on display during work hours until Nov. 9. Interested Sandians are invited to come by and see this material.

The *Lab News* plans a forthcoming feature about this effort.

# Sandia military veterans reflect on homeland attacks

By Nancy Garcia

The Sept. 11 attacks have changed outlooks by essentially putting civilians on American soil in harm's way.

Getting back to business as usual under the constant reminder of heightened security and a spontaneous proliferation of flags was difficult. Sandia's research into issues of asymmetric threats and protection of critical infrastructures brought home concerns even for those persons far from the damage in Manhattan, Washington, and Pennsylvania and the anthrax aftershocks.

A random sample of Sandians at the California site who've had military service were asked to reflect on the changing outlook (which has been described as akin to everyday civilians becoming veterans).

Lyle Hansen, a technical surveillance countermeasures specialist in Dept. 8511, had been called into active duty as a sergeant in the National Guard during Desert Storm. When he heard about the World Trade Center attacks, he says, "I had a brief flash of what I went through, but I didn't dwell on it. My first thought was that my son turns 18 in February and I didn't want him to be drafted — so I was like, 'Oh no, I went to war so they wouldn't have to.'"

## Calming youngsters' fears

As owner of the Internet Café on First Street in Livermore, where high school and college-age youth hang out, he's spent a lot of time trying to calm the fears of other young people in Livermore — some of whom, like his son, would prefer to go to college than to war.

With a father who had an Army career and served in Vietnam and a mother raised in a Navy family, Lyle spent the first 13 years of his life as an American around overseas bases, especially in Italy. He didn't experience dissent against the military, but rather awe for the country's political and social

freedoms since "you can be anything you want in America."

Now that the attacks have hit home, Lyle advocates just keeping on going rather than fearing being a target — but admits that, like living under the threat of earthquake or natural disaster, "We're playing the odds."

He was also called up by the state of California to restore order during the Los Angeles riots. Not knowing how the opponents were dressed or where they were coming from, he said, "I was more afraid than I ever was in the Gulf War."

"Not being able to recognize (potential rioters) was the biggest point of terror. You lose trust in everybody around you. They're willing to die, where we want more out of life."

## 'The evil itself is distressing'

Meanwhile, Lt. Doug Brown of Dept. 8511, who served as an Army sergeant in Vietnam and is currently a reserve officer at Camp Parks, has noticed a shift in sentiment with more visible patriotism and respect for members of the military. Likewise, Theo Pope (8945), who spent more than six months at a stretch on Navy submarines in the

and staying until 1994 because her work from Guam to the Pentagon, where she handled weapons issues, was fun.

"For a couple of days after Sept. 11, I was really unsettled," Linda recalls. "Then I realized that if I were in the military, I would know exactly just what to do, where to go. Putting up my flag was about the biggest act of defiance I could do." (As a flag "purist," she takes it in every night, which allows her to recall the reasons she is displaying it.)

Island defense exercises on Guam were encouraging, because it was clear that every person — man or woman — would be needed. "Continuity of government" plans at the Pentagon, however, were the kind of thing she'd never thought the country might ever need. The attacks at first had the strange quality of a Tom Clancy novel, being hard to sort out as they unfolded.

"Even though they tell us we have to get back on with our lives," she observes, "it doesn't seem like we should do it. I'm not sure where the happy medium is."

## 'The terrorists threaten everybody'

Duane Sunnarborg (8731), who served as a Marine Corps sergeant at the (now closed) El Toro air base in Southern California, noticed that closely following the television coverage seemed to raise his wife's anxiety.

"Just thinking about flying gives me the jitters," comments Tom Prast (8351), who served from Alaska to Hawaii in the Coast Guard from 1970-76. David Rosenzweig (8524), a naval lieutenant from 1972-79 (serving in the Arabian Peninsula when "we were friends with the Shah"), cur-

tailed some recruiting travel in the days following the attacks and still feels an impact, from fears of delays and missed airport connections to the added difficulty of bringing in interviewees.

Tom noticed a unifying sense of loyalty, as well.

"It's like we're a family — we may argue among ourselves, but when you mess with us, you mess with our whole family," he said. "The whole world was hit — 80 other nations were represented in the World Trade Center. The terrorists threaten everybody; our neighbors are right on our front doorstep."

The resulting heightened security, says Dept. 8945 Manager Ray Trechter, who served in the Far East as a Marine sergeant, had been something we'd expect to see elsewhere since "the US had always been a safe haven."

Looking ahead, Duane says, "People complain we're the 'policemen of the world,' but we may be the only ones who can straighten this out. If we just ignore it, it's not going to go away."

Linda expects a shift away from a fairly formal war with rules, saying, "We're not used to this more ruthless conflict." Doug predicts the conflict "is going to be long and low-key, with a lot of silent victories."

The attack also raised his fears of a potential backlash against others. "We'll have to work through this. I don't think America has all the answers, but it's still the best place to live. We have many freedoms, including the freedom of speech. We can at least talk about it."

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*"We'll have to work through this. I don't think America has all the answers, but it's still the best place to live."*

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Tonkin Gulf during the Vietnam war as an E-5, finds increasing patriotism heartening.

"We all see the vulnerability," Theo says. "There's no distinction here. The evil of it itself is distressing. People went to work just like we do here and they didn't come home. The buildings were huge and thousands died on American soil. Every day we're reminded by the increased security, having to walk farther to go to lunch [with access restricted]." Perhaps as a result, he's seen people more open about talking about faith, and was touched by a cartoon depicting children selecting between superhero and firemen's costumes for Halloween.

## Blackout curtains and victory gardens

Theo also talked with a fellow Sandian who remembers using blackout curtains and growing victory gardens during World War II — a time when individuals made sacrifices for the common good.

Donn Wright, Manager of Health and Safety Dept. 8517, worries whether citizens will continue to pull together under duress — but as an avid reader of bulletins on homeland defense and strategic forecasting, felt it was almost predictable that America would eventually become a target.

"You just kind of feel like, what can you do about it?" he said. A member of a US Marine Corps reserve unit from 1971-77, he says he has started thinking a lot more about what may be in store.

Linda Groves (8114) spent 25 years in the Navy — attracted by the G.I. bill after college in 1970,

## Materials Research Society to honor Norm Bartelt, Sandia surface science advances

Surface science has long been a core strength at Sandia. At the heart of competency is the close linking of theory with experimental observation. This approach is epitomized in the work of Norm Bartelt, a theoretical physicist in Dept. 8721, who has been awarded the 2001 Materials Research Society Medal for his contributions to understanding the statistical physics of materials.

Norm has worked extremely closely with experimentalists both in Livermore and Albuquerque to develop theories important in predicting the long-term performance and reliability of materials.

"Mostly, it's a tremendous amount of fun," he says. "What's interesting about the nanoscale is that we can look at a picture and say pretty much how it got that way." Microscopy has advanced to the point that changes at the nanoscale can be observed over time, which makes this research approach particularly interesting.

Norm and Matthew Mate of IBM Almaden Research Center have been selected to receive the 2001 MRS Medal awards on Nov. 28 for advancements that are expected to have a major impact on materials-related fields.

Norm was nominated for developing a set of theoretical models linking the evolution of surface structures to atomic forces and interactions. That work is recognized for significantly affecting how experiments are conducted and analyzed using real-time imaging.

A fellow of the American Physical Society, Norm joined Sandia in 1995.

— Nancy Garcia

## Feedback

**Q:** Why are there so many television sets switched on at Sandia? For example, look in the cafeteria. I think it wastes energy and causes distraction. Let's at least remove them from reception areas.

**A:** We periodically receive questions similar to yours. A survey in one area shows a 4 to 1 preference to have monitors available. And, based on requests to add additional monitors, we believe employees want this service. More than 14 monitors were installed during the past year — always at the request of customers. The most recent additions are the four in the cafeteria (removed during the renovation) we were asked to reinstall.

The primary purpose of the TV monitors is to

convey corporate information. They are useful for corporate-wide events and communication where it is impossible to get everyone into the auditoriums. They are also used to highlight lab accomplishments, as well as to show the Lockheed Martin LM1 video. Announcements of upcoming events, classes, and visitors are available on scrolls on the lower portion of the screen.

Some people consider reception areas as ideal places for monitors since they provide opportunity to catch up on the Sandia news or news of the world. Since watching the monitor is optional, we will continue to have them available for those who are interested.

— Lana Everett (12610)

## Chemical plants

(Continued from page 1)

tion, who is helping Sandia on the VAM, says some chemical plants' risk management plans already focus on accident and sabotage scenarios, and these facilities are generally well prepared and equipped with safety controls to prevent or mitigate catastrophic releases to the environment. Others that may not have focused on sabotage scenarios might be less prepared.

"We already know what could go wrong," says Melvin. "But now we have to look more carefully at the likelihood of a terrorist causing it. Today these facilities are considered a credible target."

The project began in January, long before the recent wave of terrorist attacks, adds Cal. But since Sept. 11, there has been increased awareness of vulnerabilities not only of the physical security of the plants themselves but also of the transport of chemicals and of the cyber systems that control the plants, he says.

The Chemical Facility VAM will take a look at all of these threats, he says.

### Reducing risk

Since January Labs experts have visited six US chemical plants, discussing each plant's operations with top executives and security managers and touring the plant sites with a terrorist's eye. They review security plans, study plant layouts and access controls, evaluate the use of security technologies, and gauge safety controls.

"We ask, if I am a bad guy, how would I do that," says Cal. "Then we evaluate the consequences and likelihood of each threat scenario."

They also have discussed the project with regulators, local law enforcement and emergency response authorities, and community groups. A key issue is how much information about a plant's security should be shared with local authorities.

The visits, along with the expertise of industry insiders such as Melvin, will form the basis of the finished VAM. More recent plant visits are providing chances to test the methodology.

In simplest terms, the VAM includes a characterization of the facility; an evaluation of the consequences if the plant is targeted; a determination of the attributes of the most likely threats; an evaluation of the effectiveness of the current security measures against the threat spectrum; a quantification of the risk as a function of likelihood, security effectiveness, and consequences; and a cost-benefit analysis of possible security upgrades.

"It will tell you how much you can improve your risk score given several options and their costs," says Cal.

The Chemical Facility VAM builds on

## How bad could it be? The Bhopal warning

The following information is excerpted from the US Chemical Safety and Hazard Information Board website about the Bhopal incident.

Just after midnight on Dec. 3, 1984, a pesticide plant in Bhopal, India, accidentally released approximately 40 metric tons of methyl isocyanate into the atmosphere. The incident was a catastrophe for Bhopal with an estimated 2,000 deaths, 100,000 injuries, and significant damage to livestock and crops. The long-term health effects from such an incident are difficult to evaluate; the International Medical Commission on Bhopal estimated that as of 1994 upwards of 50,000 people remained partially or totally disabled.

The Bhopal incident is cited as a factor in the development of industry standards like Responsible Care® under the Chemical Manufacturers Association and the development and implementation of US environmental legislation and regulations, including the creation of The U.S. Chemical Safety and Hazard Investigation Board.

The plant started to produce the pesticide SEVIN in 1969. Methyl isocyanate (commonly referred to as MIC) is an intermediate chemical in SEVIN production.

In August 1985, the Union Carbide sister plant in Institute, W.Va., released a cloud of methylene chloride and aldicarb oxide that affected four neighboring communities and led to the hospitalization of over 100 people. In the wake of this and the Bhopal incident, the U.S. Congress passed the 1986 Emergency Planning and Community Right to Know Act. This act, implemented by the Environmental Protection Agency (EPA), facilitates state and local accident contingency planning, public participation, and access by individuals and communities to information regarding hazardous materials in their locales.

In 1990, while developing the Clean Air Act Amendments, the Senate considered an EPA analysis that compared U.S. chemical incidents in the early to mid-1980s to the Bhopal incident. Of the 29 incidents considered, 17 U.S. incidents released



BHOPAL chemical plant in Bhopal, India.

(Corbus photo)

sufficient volumes of chemicals with such toxicity that the potential consequences (depending on weather conditions and plant location) could have been more severe than in Bhopal. Based on the incident review and existing State and Federal U.S. programs, the Senate concluded that accident prevention had not been given sufficient attention in the existing Federal programs.

As a result of this analysis, the Amendments tasked the EPA and the Occupational Safety and Health Administration (OSHA) to develop programs to prevent chemical incidents. Congress authorized EPA to promulgate the Risk Management Program Rule (40 CFR 68) for protection of the public, and OSHA to promulgate the Process Safety Management Standard (29 CFR 1910.119) to protect workers. The two programs share a requirement for covered facilities to develop accident prevention plans; other provisions are complementary.

The Amendments also established the independent U.S. Chemical Safety and Hazard Investigation Board (42 U.S.C. 7412). Using the National Transportation Safety Board as a model, the Amendments tasked the Board with investigating and reporting on the causes and probable causes of domestic chemical incidents. Moreover, the Senate recommended that the Board provide investigative assistance to other countries both as a means of helping and as a means of learning. Through its international outreach efforts to government and industry, the Board can ensure its safety research program, professional services and technical information accurately and adequately address the world's chemical safety.

methodologies developed to evaluate other infrastructure assets, such as dams, buildings, and water systems, says Gordon Smith, Manager of Public Safety Technologies Dept. 5861.

"We have a good foundation on which to create a prototype methodology," he says. "The long-term goal will be to create a methodology

and documentation that is useful to plant owners and security managers after some training."

Having an advisor like Melvin on the team "gives us great ideas and provides a reality check so we can make this methodology as usable as possible by the people who will have to use it," he adds.

## Foam

(Continued from page 1)

[www.sandia.gov/media/cbwfoam.htm](http://www.sandia.gov/media/cbwfoam.htm).)

EnviroFoam Technologies (EFT) was contracted Oct. 22 to supply its version of the formulation to support the Environmental Protection Agency-led remediation effort on Capitol Hill.

Over the weekend the Johns Hopkins Applied Physics Laboratory tested EFT's EasyDECON™ AB (anthrax blend). The test regimen, funded by the Defense Advanced Research Projects Agency (DARPA), confirmed the effectiveness of EasyDECON against anthrax. (For more about the EasyDECON product, see EFT's web site at [www.easydecon.com](http://www.easydecon.com). For more about theMDF product, see Modec's web site at [www.deconsolutions.com](http://www.deconsolutions.com).)

### Works against chem and bio agents

The Sandia-developed formulation, a cocktail that includes ordinary household substances such as those found in hair conditioner and toothpaste, neutralizes both chemical and biological agents in minutes. It can be applied to a contaminated surface as a liquid spray,

mist, fog, or foam.

Traditional decontaminating products typically are based on bleach, chlorinated solvents, or other hazardous or corrosive materials. Many are designed to work against only a limited number of either chemical or biological agents.

The Sandia formulation works against a wide variety of both chemical and biological agents and is nontoxic, noncorrosive, and environmentally friendly.

In multiple independent lab tests and military field trials, the formulation was effective against viable anthrax spores and chemical warfare agents. In lab tests at Sandia it also destroyed simulants of anthrax, simulants of chemical agents, vegetative cells, toxins, and viruses.

"It has performed well against biological agents as well as the most worrisome chemical warfare agents such as nerve and blistering agents," says Cecelia Williams (6245), a member of the development team.

Other Sandia team members include Rita Betty, Joanne Paul, and Caroline Souza (all 6245).

Foam co-developer Maher Tadros (*Lab News*, March 12, 1999) is now in the Advanced Concepts Group (16000).



ANSWER TO ANTHRAX — In this 1999 photo, researcher Mark Tucker (6803) examines two petri dishes: one with a simulant of anthrax growing in it (left), the other treated with a new decontaminating foam developed at Sandia (right). The nonhazardous foam begins neutralizing both chemical and biological agents in minutes. Next to Mark is a flask containing about a liter of *Bacillus globigii*, the nontoxic simulant of anthrax used in the experiments at Sandia.

(Photo by Randy Montoya)

# Counterterror

(Continued from page 1)

national laboratories have seen a similar increase in contacts.

Joan described how the Labs' research foundations — computation and informational sciences, engineering sciences, materials and process science, microelectronics and photonics sciences, and pulsed power sciences — can contribute solutions to a range of post-Cold War threat scenarios. Indeed, she said, the Labs' newly articulated vision statement, "Helping our nation secure a peaceful and free world through technology," is a logical extension of its Cold War nuclear weapons mission, one that seeks to leverage fully the research foundations that represent a 50-year investment by the nation's taxpayers.

Joan described under the heading "targets of terrorism" Labs capabilities in aviation security (work for the Federal Aviation Administration) and infrastructure protection (vulnerability-analy-

***"We aren't creative enough to think of every possible threat" a terrorist might concoct. As such, countering terrorism requires a systems approach — Sandia's strong suit.***

sis software, architectural surety, and other protective/preventive technologies, many of which emerged out of Sandia's nonproliferation work.)

Under the heading of "means of terrorism," Joan described a number of Labs-developed counter-technologies:

- World-class bomb detection and disablement expertise, which capitalizes on Labs sensor technologies and robotics technologies.
- Technologies that neutralize chemical and biological agents (the much publicized chem/biodecontamination foam developed at the Labs and now being deployed by licensees in the war on terrorism).
- Medical surveillance (RSVP, or Rapid Syndrome Validation Project, software, now being prototyped in New Mexico, enables doctors to discern bio attack and disease-outbreak patterns much earlier than otherwise possible.)
- Cyber security (software "intelligent agents" detect and foil sophisticated hacking attempts; a Red Team of Sandia "hackers" helps customers in government and industry identify weak spots in their cyber security systems).

Sandia's sensor technologies give counterterrorism fighters a powerful suite of tools to detect,



Don't let your Sandia Open Network (SON) system "get sick!" Your Computer Support Unit can help you keep your SON system system patches up to date. Call the Corporate Computing Help Desk at 845-CCHD (2243) for an appointment.

## Spiffy new Up 'N' Atom store at Winrock offers National Atomic Museum merchandise



UP 'N' ATOM store employee Luis Ernesto Castelán displays one of the store's unique gift items at its new Winrock Center location. Up 'N' Atom is the National Atomic Museum's official gift store. It moved from its Kirtland Air Force Base location to Winrock Mall in the wake of the Sept. 11 terrorist attacks. Since that time, heightened base security has made it impossible for the museum to host visitors. Proceeds from the store's sales go to the National Atomic Museum Foundation, which is heading up a fund-raising drive for a new Atomic Museum facility near the Albuquerque Balloon Park. Lockheed Martin has pledged \$1 million for the facility. Museum Director Jim Walther encourages Sandians to do their Christmas and holiday gift shopping at the store, which is open during regular Winrock hours. (Photo by Randy Montoya)

screen, monitor, and analyze a range of threats. Sandia sensors range from space-based thermal imagers to now-being-perfected microchemlabs (chemistry labs on one microchip) that are tiny, robust, versatile, and cost-effective enough to be widely deployed.

"I can't overemphasize how important sensor development is," Joan said. "It's just so important in so many areas."

Sandia's computer modeling and simulation capabilities are being brought to bear in the new National Infrastructure Simulation and Analysis Center. Sandia, along with Los Alamos National Laboratory, industry, and other government agencies, uses computer tools to model interdependencies of the nation's infrastructures. By understanding those connections, Joan said, planners can design systems that are resistant to the cascading effects of a failure or breakdown in one part of the system.

T.J. Allard of the Executive Staff Director office (12100) interjected that infrastructure surety, while vitally important, doesn't have a clear and immediate payoff for industry. "It is invisible to shareholders; it's hard to get the private sector to invest in this."

A number of Sandia technologies — chem/bio foam, bomb disablement technology, risk-analysis software, for example — are in the marketplace and are being brought to bear in the war on terrorism. And while other technologies

are poised for wider use, the Labs needs to proceed deliberately. As Joan noted, "It had better be foolproof; it had better work 100 percent of the time."

Joan noted that in thinking about terrorism threats, it is useful to consider them as systems problems.

"We aren't creative enough to think of every possible threat" a terrorist might concoct, she said. As such, countering terrorism requires a systems approach — Sandia's strong suit. (As an example, there may be a number of ways a terrorist might attempt to seize control of an aircraft; a systems approach would not try to come up with a counter for each scenario. Rather, it would make the air travel system itself more attack-proof.)

Joan said it is not yet clear what the long-term impact of the nation's war on terrorism will be on Sandia.

"In some areas, we'll expect increased work, but in other areas our work may decline," she said. "It's a matter of balancing federal priorities, and that's something Congress needs to do."

Joan said she is aware of a strong sense of purpose across the laboratories she visits.

"Every time I talk to anyone who's involved in this work, I hear the same thing: 'It's really sad that it took such an overwhelming event to jolt this nation, but we're glad we have something to offer.'"

## Feedback

**Q:** Since Transportation and Reapplication have joined forces, service has gone to the dogs. It appears that many people share the same view, as was evident when they slipped up this month [June] with picking up visitors from the Hyatt at Santa Ana and made a right old [mess] of the morning. We shall not trust this group again.

**A:** Thank you for sharing your issue regarding poor service. The Transportation Team was at fault for miscommunicating the pick-up time [in the incident cited], and I am profoundly sorry to have lost the trust of a valued customer. Because of our error, the tour missed breakfast at the Coronado club and the first stop on their itinerary. Attempting to rectify the mistake, Transportation provided breakfast to the group at the Hyatt and resumed the tour at the second scheduled stop. There is no excuse for our error. In response to this mistake, Transportation has increased cross-training to ensure excellent communication among the Dispatch Desk and the Team Leads. Thank you for bringing this matter to our attention. — Dave Palmer (10200)

# Two Sandia teams play key roles in AMSTE tests

*Labs' technology used to track moving ground vehicles and target them with missiles*

By Chris Burroughs

Two Sandia teams played key roles in separate tests that tracked moving ground vehicles and successfully targeted them with missiles.

The tests were part of the Affordable Moving Surface Target Engagement program (AMSTE), funded by the Defense Advanced Research Projects Agency (DARPA) and administered by the Air Force Research Laboratory.

As part of the program, Northrop Grumman and Raytheon competed to develop an inexpensive way to destroy moving ground vehicles from standoff ranges, using multiple radar systems with GMTI (ground moving target indicator) capabilities. These radar systems typically also have synthetic aperture radar (SAR) capability, which produces radar imagery of the terrain but is unable to detect moving targets.

A Sandia team from Synthetic Aperture Radar I Dept. 2348 supplied the Lab's SAR/GMTI testbed radar for Raytheon. Another team from Signal and Image Process System Dept. 15352 is developing robust algorithms for feature-aided vehicle tracking for use by Northrop Grumman in future, more complex tests.

In August the two companies conducted separate tests, placing radars with GMTI on airplanes and tracking remotely controlled moving ground vehicles — Northrop Grumman's was a step van and Raytheon's was a dune buggy. The radar information identifying the location of the moving targets and the generated targeting solution was transmitted to missiles launched from fighter aircraft. The missiles continued receiving target location updates during flight, making bull's eye hits in both cases.

Jim Redel (2348), project leader for Sandia's efforts with Raytheon, says having GMTI capabilities on a single plane monitoring a mobile ground target doesn't provide enough information to give precise target location information. But by triangulating radar data from two or



**MUNITION REMAINS** — The missile in the Raytheon test came very close to the remote-controlled dune buggy target. This hole in the ground is all that remained of the missile after the test. The customer considered the test a direct hit.



AN F-16 LAUNCHES a Maverick missile during the Raytheon test at China Lake, Calif., on Aug. 15. The Raytheon team completed the first AMSTE test.

three planes, the location of the moving target can be pinpointed.

"One plane equipped with radar by itself can't tell where the target is," Jim says. "You need the information from the different platforms to accurately track the target."

Hitting moving targets at night and in all weather with predictability and accuracy has been a long-standing military problem. Since GMTI works only for moving targets and SAR for stationary targets, move-stop-move scenarios — like at intersections — pose significant challenges. Situations where there are many vehicles moving in close proximity are challenging as well.

Technology being developed as part of AMSTE could assure a perfect hit nearly every time.

The Raytheon team completed the first AMSTE test, Aug. 15, at China Lake, Calif. The test used three radar-equipped surveillance aircraft — a U-2 with advanced SAR/GMTI, a Global Hawk UAV radar flying on a manned A-3 testbed aircraft, and the Sandia testbed radar on a Twin Otter simulating an advanced fighter. The weapon was a modified, GPS-aided, Maverick missile launched from an F-16. The missile came very close to the remote-controlled dune buggy target. The customer considered the test a direct hit.

Northrop Grumman's test came later in the month at Eglin Air Force Base in Florida and scored a direct hit on the target — a remote-controlled step van moving at 20 mph along a slightly twisting road — with the missile. SAR systems with GMTI were carried on two aircraft, a BAC1-11 and Joint-STARS E-8. An F-16 launched the missile, a Lockheed Martin GPS-guided munition.

Northrop Grumman was tapped by DARPA and the Air Force Research Laboratory to participate in the next phase of AMSTE.

Following the China Lake test, Stephen Welby, DARPA Program Manager for AMSTE, congratulated the team for a successful flight test.

"Yesterday's flight test was the first of its

kind . . . a real-time multi-laterated GMTI tracker directed precision weapon delivered against a moving target," he said. "This is a powerful transformational capability for US war fighters."

## Bruce Walker's comments about Sandia's AMSTE involvement

Bruce Walker, Level II Manager for RF Remote Sensing Dept. 2340, had this to say about Sandia's involvement in AMSTE:

"DARPA's Affordable Moving Surface Target Engagement (AMSTE) Program reached a key milestone . . . Aug. 15, when a Maverick missile was dropped from an F-16 at China Lake and was successfully guided to a moving target . . . The Sandia GMTI radar has been the standard performer, greatly exceeding the accuracy and reliability of the other radars in the test.

"A new standard has been set by the targeting accuracy and reliability of the Sandia GMTI, and as an indirect consequence of our participation in AMSTE, may lead to an improvement in other Raytheon radars."

## Team members

Working with the Raytheon team were Brett Remund (Manager of Synthetic Aperture Radar I Dept. 2348), Jim Redel, Barbara Mills, Jeff Hollowell, Grant Sander, Steve Reber, and Mike Taylor (all 2348). Jim was the Sandia project leader.

Working with the Northrop Grumman team were Drayton Boozer (Manager of Signal & Imaging Processing System Dept. 15352), José Salazar, and David Harmony (all 15352). José was the Sandia project leader.

## Lockheed Martin wins \$200 billion Joint Strike Fighter contract

The Pentagon has announced that an international team led by Lockheed Martin has won the competition to build the Joint Strike Fighter (JSF), a stealthy, supersonic, multirole fighter designed for the US Air Force, Navy and Marine Corps, as well as the UK Royal Air Force and Royal Navy.

This win signals a go-ahead for the team of Lockheed Martin, Northrop Grumman, and BAE SYSTEMS to produce an initial 22 aircraft in the program's \$25 billion System Design and Development phase. The total program is valued at approximately \$200 billion and will be a cornerstone of future defense capability for the US and its allied partners. Plans call for more than 3,000 aircraft over the life of the program. The Joint Strike Fighter is designed to replace the A-10, the AV-8 Harrier, F-16, and the F/A-18.

"We are most pleased and appreciative that the governments of the United States and the United Kingdom have put their faith in the Lockheed Martin JSF team," said Vance Coffman, chairman and chief executive officer. "We intend to honor that trust by building a truly remarkable, capable and affordable, next-generation multirole fighter, on schedule and on cost. On behalf of Lockheed Martin, I pledge our full commitment to this cornerstone of future defense capability."

"The success and safety of the JSF flight test program are a testimony to the outstanding job accomplished by the US and UK JSF Joint Program Office," said Dain Hancock, executive vice president of Lockheed Martin, and president of Lockheed Martin Aeronautics Company.

## Next AMSTE test planned for summer 2002

Drayton Boozer (15352) says his team has begun developing "training-on-the-fly" algorithms for DARPA and Northrop Grumman that are necessary for successful target tracking in complex scenarios specified for future AMSTE tests. It will not, however, participate directly in the next phase — called phase IIb — which will focus on tracking one target moving along with several other targets for at least 20 minutes. That test is planned for next summer.

It is more likely that Drayton's group will be involved in a third phase — phase IIc — that will involve complicated scenarios representative of operational conditions.

The August tests clearly proved that it is possible to track a moving target using multi-

ple aircraft equipped with radars with GMTI capabilities.

The more difficult task, Drayton says, is to track targets in complex environments such as multiple vehicles stopping and turning at intersections.

"The GMTI tracks moving targets, but when they stop, their tracks go off the screen," Drayton says. "It then takes many seconds for the SAR to make an image of the stationary scene and in that amount of time the target may have begun moving again."

Complex high range resolution algorithms being developed by Drayton's group may be used in the tracking of stopping and turning targets and targets moving in other scenarios representative of operational conditions.

## Sandians become good friends to Albuquerque Hispano Chamber

By Chris Burroughs

Good friends. That's what Ivory Alexander, Frank Martin, Jon Eberhart, Mark Schaefer, and Bruce McClure are to the Albuquerque Hispano Chamber of Commerce.

The Sandians helped the chamber ensure their new facilities and Barelás Job Opportunity Center on south Fourth Street had state-of-the-art communications and classroom technology.

The chamber officially celebrated the opening of the job opportunity center and their new headquarters in August, built at the former Bueno Foods warehouse.

The Sandia involvement started about two years ago with a meeting of Don Carson, Director of Public Relations and Communications Center 12600, with Hispano Chamber President Loretta Armenta and Sherman McCorkle, president of Technology Ventures Corporation.

"They showed me plans for the new facility," Don said. "I saw they had some technology needs and felt we could help."

He returned to Sandia and lined up several people with technical skills who were pleased to volunteer their services.

One was Ivory, Manager of MESA (Microsystems and Engineering Sciences Applications Project) Security and Telecommunications Dept. 1904, who was recommended for the project by Don Cook, MESA Project Center 1900 Director.



IVORY ALEXANDER examines wiring in the communications center at the Hispano Chamber.

"We were called in after construction on the project had already begun," Ivory says. "We saw immediately upon reviewing the plans that they did not meet the chamber's needs. The chamber folks wanted communications systems that were robust and flexible — something that would serve them for the next 20 to 25 years and wouldn't require them to rip out walls to make changes in the future."

He, together with several members of his staff — Frank, Jon, and Mark (all 1904) — proceeded to

redesign the communications systems plan, including the core of the telecommunications and Internet capabilities. They presented the redesigned plans to Armenta. She gave them to the Hispano Chamber's executive board. The board accepted the Sandia design and integrated it into the architecture.

Ivory says the system is very MESA-like in its approach and design — not surprising since his team is in charge of developing the communications infrastructure for the proposed new, state-of-the-art facility at the Labs that will design, integrate, and do prototype fabrication of microsystems for weapon components, subsystems, and systems for the US nuclear weapon stockpile.

Helping the Hispano Chamber in another way was educator Bruce

### About the Hispano Chamber & Barelás Job Opportunity Center

The Albuquerque Hispano Chamber of Commerce officially opened the Barelás Job Opportunity Center and the new chamber headquarters in August.

Loretta Armenta, chamber president, calls the opening a "historic event and a testament to the vision, dedication, and leadership of hundreds of individuals over the chamber's 26-year history."

It was early 1998 when the chamber learned it had been awarded the City of Albuquerque's bid to purchase the former Bueno Foods warehouse on south Fourth Street. Later that year in November the chamber in partnership with the city successfully competed for a grant from the Economic Development Initiative of the US Department of Housing and Urban Development.

Then Vice President Al Gore announced that Albuquerque was among 23 cities in the country to receive this grant. The money, which included \$420,000 in grants and more than \$800,000 in loans, was used as the seed money to develop the Barelás Job Opportunity Center. Today, through the commitment of many individuals and companies, the chamber has raised nearly \$1.8 million in capital campaign pledges. Lockheed Martin on behalf of Sandia contributed \$115,000 to the project.

The Barelás Job Opportunity Center, which is part of the new facilities, is expected to make a tremendous contribution to the revitalization of the neighborhood and to chamber members, says Armenta. The 15-desk classroom is equipped with state-of-art technology. The types of programs that will be offered include job listings for local, state, and national positions; networking workshops; small business workshops on accounting, personnel management, and business plan development; and legal seminars about labor law.

## Lockheed Martin donates \$1 million to museum summer science camp

The National Atomic Museum will expand its summer science camps for kids into Albuquerque's South Valley with a five-year, \$1 million donation from Lockheed Martin Corp.

Lockheed Martin President and Chief Operating Officer Robert Stevens announced the donation Oct. 20 prior to the National Hispanic Cultural Center gala at the Sheraton Old Town Hotel. The museum will work with the National Hispanic Cultural Center and the Albuquerque Hispano Chamber of Commerce to plan and implement the science camps.

The museum has offered the "Science is Everywhere—Summer Science Camp" for the

past three summers at its facilities on Kirtland Air Force Base. The additional funding will permit the program's expansion to the National Hispanic Cultural Center, 1701 Fourth St. SW, covering such costs as teachers and associates, training, transportation, supplies, activity fees, and some scholarships to offset the \$185 to \$195 tuition. The money also will support the hiring of 72 mentors from area high schools and universities to help work with the kids, said museum Director Jim Walther (12660).

"The donation is an incredible demonstration of how much Lockheed Martin Corporation is interested in youth in our community," Jim said. "Through the expanded summer science camp, Lockheed will be able to impact many young people over a long-term period to excite them about school, science, and careers in technologies."

The expanded weeklong camps each summer will reach about 500 youngsters, ages 8 to 12, an increase of about 160 kids over past summers, said museum spokeswoman Becky Kenny.

"The camps will foster positive attitudes about science and engineering and increase student leadership skills and self-esteem," said Virginia Salazar (12660), educator and camp director. "Through hands-on science activities with scientists and engineers as mentors and role models, students strengthen their understanding of science concepts and enhance their critical thinking skills." — Chris Miller



LOCKHEED MARTIN President and COO Robert Stevens, left, presents a facsimile check for \$1 million to Sandia Vice President Frank Figueroa (10000), who serves as president of the Hispanic Cultural Center Foundation Board of Directors. (Photo by Bill Doty)

McClure (12650). Don had initially asked Lynne Schluter, a civil engineer (now 10824, then in Center 12600), to help with the design of the classroom at the Barelás Training Center, which is located in the same building as the Hispano Chamber and is run by it. Lynne turned to Bruce, who worked in the area of training and development (then Dept. 3526).

"I met with the architect, looked at his plans for the classroom, and went to the site while under construction," Bruce says. "The designer of the training room had no background in training. I told him about what we learned about space allocations in building training rooms at Sandia, and we toured the Continuing Education Building at UNM [University of New Mexico]. All resulted in a redesign of the training room."

Bruce continues to work with the Hispano Chamber, serving on the organization's education committee.

Armenta, chamber president, says she and the board are especially appreciative of Sandia's involvement in helping make the new facilities technically up-to-date.

"Sandia was a critical player," she says. "They took over the job of building a fantastic technical center using the best minds at Sandia."



SANDIA volunteers who helped redesign the communications systems plan — including the core of the telecommunications and Internet capabilities — of the new Barelás Job Opportunity Center and Hispano Chamber are, from left, Ivory Alexander, Jon Eberhart, Mark Schaefer, and Frank Martin (all 1904).

# Ombuds, Labs' other helping professionals deal with workplace and emotional after-effects of terror attacks

By Bill Murphy

Now more than ever, what's called for is a bit of patience and understanding among each other in the workplace. That's the perspective that corporate Ombudsman Don Noack has arrived at in the weeks since the Sept. 11 terrorist attack on the nation.

"We need to cut ourselves some slack when dealing with others, and vice versa," he says.

Don and his colleagues in the Ombuds office, along with folks in the Employee Assistance Program (EAP) and the Ethics office, routinely deal with people at sensitive points in their personal and professional lives. And what they're seeing since 9/11, Don says, is that people's coping mechanisms are being stretched thin.

Sandia Benefits Director Dr. Larry Clevenger cautioned just days after the attack that the horrific events, "unprecedented in our collective experience," will have long-lasting impact.

"Over the next days, weeks, and months, this experience will undoubtedly expand," Larry said. "While our personal reactions and responses will be quite variable, it is clear that all of us will be engaged in processing our emotions for some time to come."

To help employees deal with personal issues, the EAP and ¡SALUD! have been offering a series of "stress response briefings" (see the EAP internal website at <http://www-irn.sandia.gov/HR/health/eapindex.htm> for details about the next briefing). And, of course, the EAP offers ongoing confidential assessment, referral, and short-term counseling programs for Sandia employees and their benefits-eligible family members at no cost to the employee. It is designed to help employees cope with personal issues that may affect their health, family life, or job performance.

Don says the cases he and other corporate Ombuds are dealing with since 9/11 aren't new or unusual — still the familiar workplace-related issues

## Signs could point to acute stress

Sandia Ombudsman Don Noack shares the following list of behaviors that are indicators of acute stress. The list has been circulating among professional Ombuds via the Internet. Don says he and his colleagues have seen most of the signs included on the list.

Workplace symptoms may include (but not be limited to):

- Impairment of concentration and short-term memory.
- Careless mistakes or accidents.
- Impatience and irritability.
- Inappropriate or unexpected emotional behaviors.
- Increased use of sick and vacation leave.
- Unexcused absenteeism.
- Lowered productivity.
- A concentrated (but short-term) increase in productivity.

that occur when people interact. What's new, says Don, are the "artifacts."

Since Sept. 11, Don says, "we're seeing that people's emotions are more intense. Their patience for a methodical approach to dealing with issues and finding resolution is lower. Wendell [fellow New Mexico Ombudsman Wendell Jones] and I are working a lot harder to keep people engaged."

Don and the other Ombuds aren't psychologists, but they understand relationship dynamics, and they've observed those dynamics have changed since 9/11.

Just as some people are less patient, others have responded to the terror attacks by an increase in tolerance, patience, and forbearance for the foibles of their colleagues.

"The ranges of responses seems stretched farther toward the two extremes," Don says

At one end of that range are workplace issues that in the past might not have exceeded a person's tolerance level. For some people that lower tolerance since 9/11 for what isn't working in their lives results in more cases at higher intensity landing in the Ombuds' offices.

The Sept. 11 attacks have been particularly traumatic for people across the nation, Don says, because so many people saw or heard the attack unfolding in real time. People saw the crashes, the fires, the people leaping from the windows, the buildings collapse.

"It affects everyone differently," Don says, "but everyone has some reaction," a reaction the individual may not even be aware of.

"Self-awareness is something we [in the Ombuds office] encourage people to develop," Don says. "We think it's a good idea for people to check out their reality with a friend. Check out your reaction to an incident, remark or situation: is it proportional to the trigger?"

"I often hear someone who comes to us say that he or she keeps their personal life and their professional life separate," Don says. "But that's really not possible. We're human beings; something as intense as the events and aftermath of 9/11 are never disconnected."

### Ombuds office contacts

Albuquerque Ombuds: Wendell Jones, 845-8301; Don Noack, 844-2145; Appointments: Jeanne Torres, 844-9763.  
Livermore Ombud: Geri Albright, 294-2065; Appointments: Patricia Burkhardt, 294-3655.

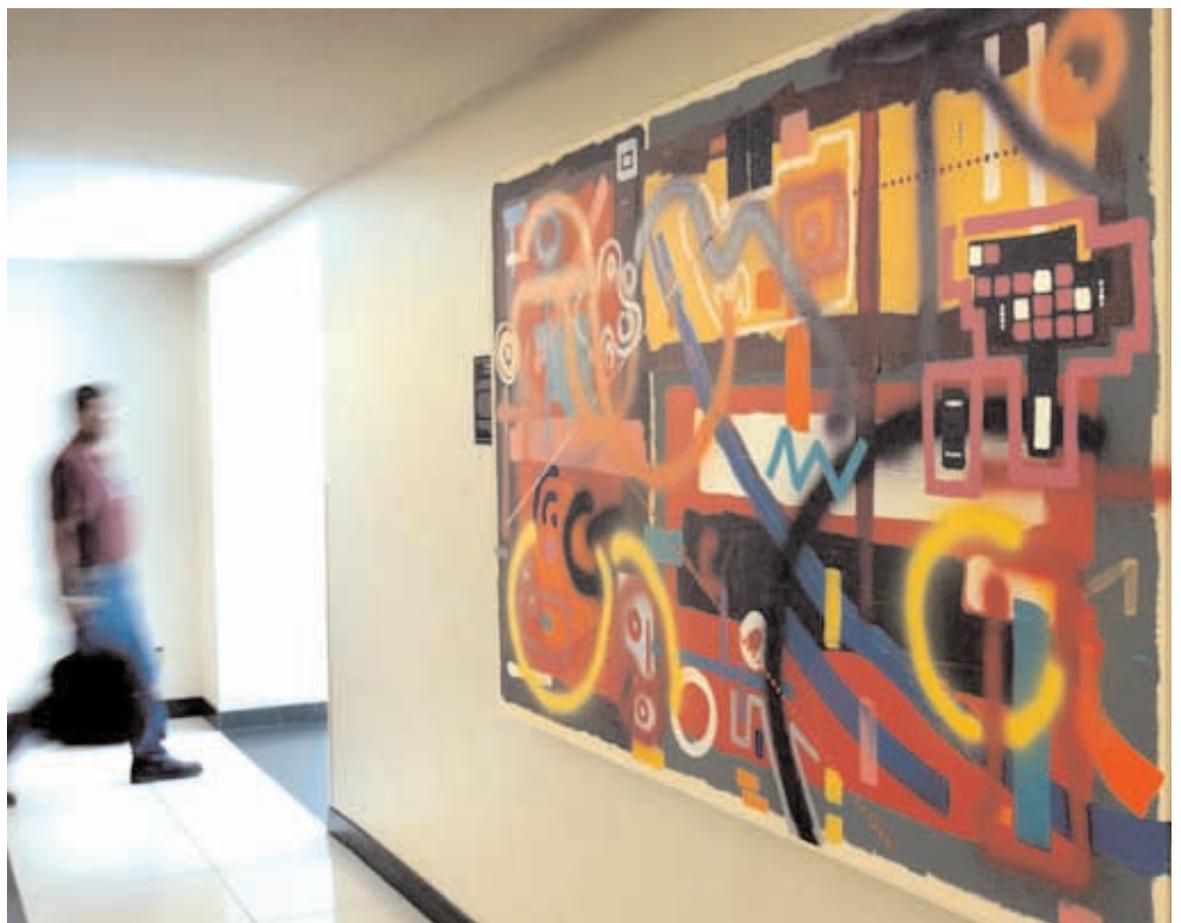
## Feedback

### Some consideration for wheelchair ramp access, please

**Q:** Outside Bldg. 891 there are two walkways at the southwest end, one along the street and another one closer to the building. Before 9th Street was repaved and the curbs and curbside walkways were replaced, these two walkways were joined next to the loading dock driveway. Now, there is a large gap filled with gravel. Each walkway has a wheelchair ramp into the driveway, but vehicles parking there often block the one nearest the building. The area in front of the ramp is not marked, although anyone with common sense should know better than to block a wheelchair ramp. Can something be done to correct the problem? Stripe the area as a no parking zone, connect the two walkways, issue citations, something? To be completely honest, I use that ramp to cruise my bicycle to the bike racks nearby and I can easily stop and lift the bike over the curb or even walk it through the gravel. But a handicapped person would not have those options and would be forced to make a lengthy detour around the obstruction

**A:** Thank you for calling our attention to this problem. We examined all of the handicap parking in the Bldg. 891 vicinity and we will relocate the west-end handicap parking to K Street. We will remove the current handicap ramp located in the loading area and make that area "No Parking." Parking in the current lot is not desired because of the loading dock and the need to access the dumpster located there. We will also submit a request to have the sidewalks on the north and south sides of the building extended to connect with the 9th Street walkways. As a reminder, please don't walk through the gravel areas. The number-one cause of injuries at Sandia is trips and falls, and walking on gravel is an invitation to join the list. — Ed Williams (7849), Chairman, Sandia Traffic Safety Committee

## Painting expresses artist's feelings about 9/11



**NEW YORK REQUIEM** — A Sandia passerby takes in Michael Newman's painting "New York Requiem," mounted in the Bldg. 802 lobby last week. Michael (2144) completed the 52.5-by-85-inch painting on the eve of the Sept. 11 terrorist attacks, but he says immediately after the horrifying events took place he viewed his work as a kind of premonition of the day that was about to happen. "It started out as a reflective foil of my passions and was originally titled 'Conversations With Myself.' However, as with some of my other paintings, the piece began to overpower me. . . . As the days and nights wore on . . . I began to sense something in the distance. Although I cannot to this day explain it, it was like sensing a far-off approaching storm." He says he completed the painting after midnight on Sept. 10. "On the morning of the 11th, after the attacks, the feelings of anticipation had vanished. I knew then what my painting was actually about. Hence 'New York Requiem' is a statement of my passions and judgments according to which my reality is given shape, structure, and meaning." (Photo by Randy Montoya)

# Sandia receives condolence messages about the terrorist attacks from colleagues around the world

*In the immediate wake of the terrorist attacks on the World Trade Center and the Pentagon, Sandia President C. Paul Robinson, Senior VP Roger Hagengruber, and other Sandia officials received many messages of condolence from colleagues in other countries. Paul asked that they be shared with Sandia employees through the Lab News. Here are excerpts from several of them:*

"I was in Washington, D.C., on the fateful day," Peter Ho, Permanent Secretary, Ministry of Defence, Singapore, wrote to Paul. "I was actually on my way back to the capital from a breakfast meeting when I saw the American Airlines plane swoop very low across the path of our car. Moments later, it crashed into the Pentagon. I do not think I will now ever be able to forget the image of the last moments of that aircraft.

"Things look grim now, but the US has the strength to recover from this blow. The terrorists have underestimated the will and unity of the American people. They have awakened a sleeping giant. The American people will unite in common cause and defeat this terrible evil. Please accept my condolences for this unimaginable and senseless tragedy that the American people have suffered. Your many friends in Singapore and all right-minded people around the world share in the grief and resolve that America is feeling now."

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"I think the terrorists have completely misunderstood the American people," said Lui Pao Chuen (P.C. Lui), Chief Defence Scientist, Ministry of Defence, Singapore, in an e-mail to Roger and Paul. "America can act in unison as shown in WWII. But it needed an event like Pearl Harbor

for the President to gather the people behind him. I am hopeful that the actions that the US will take to deal with terrorism at source will make the world a safer place for all of us. Please accept my expression of sorrow and condolence for the tragic losses that America has suffered."

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"On behalf of DSO National Laboratories, I would like to convey our deepest sympathy and condolences to the people of America on the loss of innocent lives, deep pain, and anguish that has resulted from these senseless acts of terrorism," wrote Quek Tong Boon, chief executive officer, DSO National Laboratories, Singapore. "We share in your grief. I have no doubt that the US will have the resolve and determination to deal decisively with the perpetrators. You have the whole civilized world behind you.

"At times like this, it makes the missions of Sandia and DSO in conducting R&D to enhance the national security of our respective nations so much more meaningful. On this note, I am glad to see good progress being made in the burgeoning relations between our two laboratories."

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Yevgeni Chikhray, a fusion materials researcher with the Nuclear Technology Safety Center at Almaty, Kazakhstan, e-mailed Wil Gauster (1110) and other US fusion colleagues: "I just now returned to my lab from two weeks staying in Kurchatov-city, and first of all I need to express my deepest sympathy to all Americans injured with that terrible terrorist attack. All these sorrowful days my heart is completely with America and with you all. Keep the courage!"

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Wil Gauster also received a letter from two

officials of the Fraunhofer Institute for Chemical Technology in Pfinztal, Germany — Peter Eyerer, President and CEO, and Karl-Friedrich Ziegahn, director general. "You are not alone with your sadness," they wrote. "The unbelievable act of terrorism in New York, Washington, and Pittsburgh has extremely shocked us as well as certainly all citizens of the civilized world. We feel very strong emotions and we are hardly able to express our deep mourning for the victims. . . . In these days of tragedy our hearts are with you, with all Americans, and especially with all our friends and partners in the United States of America. Please take our condolences as a sign of friendship and hope for a better and more peaceful future. We are with you during these painful hours, days, and weeks. In Germany and in Europe an uncountable number of people are demonstrating solidarity with the USA. . . . Please take this greetings as an expression of our deep sympathy."

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"I don't know how to describe my great astonishment, rage, and grief about the tragedy on Sept. 11," Yasumasa Togo, President of the Japan Nuclear Cycle Development Institute, wrote in a letter to Paul. "Please accept my sincere condolence and sympathy to your government and the people of the United States."

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"Over the weeks since Sept. 11," Paul told the Lab News last week, "I have continued to hear heart-warming stories of concerned people trying to comfort Americans after this awful tragedy. Besides learning that we have enemies in distant parts of the world, we also learned that we have many friends."

## Snows of Io and the closest flyby ever: Galileo's latest two successes

### Hardy spacecraft amazes scientists by sampling Io's volcanic snowflakes

By Ken Frazier

Even as NASA's Mars Odyssey spacecraft, built by Lockheed Martin Astronautics, entered orbit around Mars last week, other NASA planetary scientists were marking the latest two successes of NASA's Galileo spacecraft, with its radiation-hardened microelectronics chips built by Sandia.

The Galileo spacecraft emerged successfully from its closest ever flyby of Jupiter's moon Io, passing on Oct. 15 only 112 miles above ground level near Io's south pole. The trajectory carried Galileo once again inside the hazardous environment of Jupiter's intense radiation belts. But engineers at the Jet Propulsion Laboratory in Pasadena said signals confirming Galileo's basic health arrived within an hour after the flyby.

"Jupiter's radiation belts make flying near Io risky, but Galileo has come through for us again," said JPL's Eilene Theilig, Galileo project manager. Images and scientific data from the Oct. 15 flyby of Io will be transmitted to deep space network antennas on Earth over the next three months.

But this latest flyby will have to find something really spectacular to exceed the excitement created by Galileo's previous orbital pass of Io, whose results NASA announced on Oct. 15 as the new flyby was occurring.

In that previous pass, which took place on Aug. 6, Galileo flew through the plume of an erupting volcano on Io, a new volcano never before observed, gathering sulfurous snowflakes.

Scientists were delighted — and surprised. They hadn't expected the spacecraft to encounter volcanic "ash" so fresh and strange.

As Galileo sped past Io's north pole, scientists were watching for activity from a polar vol-

cano named Tvashtar, which had been spewing a plume several hundred kilometers high only seven months earlier. But this time Tvashtar was quiet. Instead, the spacecraft spotted a new eruption from a previously unknown volcano 600 kilometers away. The plume was the tallest on record, soaring 500 kilometers above Io's surface as Galileo passed through the ejecta's billowing outskirts.

Galileo's onboard plasma science instrument detected particles that had rushed out of a vent on the ground only a few minutes earlier.

"This was totally unexpected," said Louis Frank of the University of Iowa, the leader of the experiment. "We've had wonderful images and other remote sensing of volcanoes on Io before, but we've never caught the breath from one of them until now."

NASA explains that the volcanic particles Galileo caught weren't hot embers, but rather snowflakes. Snow on Io is made of sulfur dioxide that condenses within high-flying plumes. Io's volcanic vents are of course very hot, but the moon's surface is frigid (150 or more degrees below zero C) and, as NASA says, Io's thin atmosphere is "space-cold."

As a result volcanic gases that rise into the air quickly freeze. Snow forms in the plumes. Researchers think Galileo detected sulfur dioxide snowflakes, each consisting of 15 to 20 molecules clumped together.

Galileo has special microelectronics hardened against radiation that were designed, built, and delivered by Sandia (*Lab News*, Feb. 9, 2001). NASA says electronic components in Galileo's camera and elsewhere have been degraded by repeated exposure to energetic-particle radiation near Jupiter. Nevertheless it says Galileo has endured more than three times the cumulative dose of radiation it was designed to tolerate. "Mission planners marvel



GALILEO SPACECRAFT, equipped with Sandia-developed rad-hard electronics, encounters Jovian moon Io in this artist's conception. (NASA image)

at the craft's resiliency," said the Oct. 15 NASA announcement.

Galileo was launched by the space shuttle Oct. 18, 1989, and went into orbit around Jupiter Dec. 7, 1995. The mission was originally scheduled to end in 1997, but the craft's plucky performance has resulted in three extensions of the mission. Galileo will finally come to a dramatic end in September 2003 when the gallant spacecraft's looping orbit will plunge it into the crushing pressure of Jupiter's atmosphere.

# Mileposts

New Mexico photos by Iris Aboytes  
California photos by Lynda Hadley



Lawrence Greher  
25 11200



Sigfried Schneider  
25 5323



Clifford Sharp  
25 2331



David Tallant  
25 1822



Jeffrey Wilcoxon  
25 2334



Joseph Jung  
20 9126



Richard Kromer  
20 5736



Christopher Kureczko  
20 14402



Kenneth Mikkelson  
20 15342



Yolanda Padilla-Vigil  
20 3061



Carol Peterson  
20 10849



Channy Wong  
20 9113



Daniel Cantu  
15 2121



Linda Gillen  
15 5913



Esther Hernandez  
15 2300



Mitch McCrory  
15 1738



Lorraine Mendoza  
15 9140



Mary Ortega  
15 10263



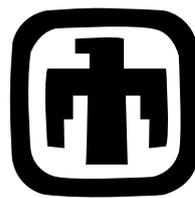
Michael Prins  
15 6532



Jessica Shaffer-Gant  
15 9616



Gary Tipton  
15 1747



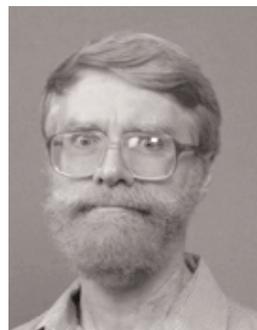
## Recent Retirees



Richard Anderson  
40 6849



Larry McConahy  
35 6525



Russell Humphreys  
22 2612



Carolyn King  
19 10502

## Feedback

**Q:** Can something be done about the lack of decent parking on the north side of the new PETL building? My scheduled workday begins at 8 a.m. and if I don't arrive before 7:50 a.m., there are no spots left in the paved lot. I now find myself having to park in the dirt lot to the east of the paved lot, but I have picked up two nails in my tires and, frankly, I'm fed up with the extra hassle and expense of having to deal with this. Theoretically, I could park in the lots for Bldg. 895 to the west or the old water tower parking lot to the southeast, or Bldg. 897 but these are usually either full too or else would increase my commute time by more than I think is reasonable. Could the dirt lot east of the paved PETL lot be paved and used for parking or some other parking added? Perhaps at least part of the PETL lot could be turned into a parking structure? I'd even settle for having someone clean the tire-damaging debris out of the dirt lot. Implementing some kind of solution here sure would relieve some frustration and hassle.

**A:** There are two new parking lots planned as part of the MESA construction that will be located south of Bldg. 897, one east and one west of the current parking lots. The dirt lot east of Bldg. 954 is

slated to be used as a lay-down yard for MESA construction in the very near future. As a reminder, KAFB and Sandia traffic regulations allow for parking only in designated areas, parking in nondesignated areas may result in a traffic ticket from the Air Force or Sandia Security Police in addition to the risk of flat tires. Recent parking surveys have suggested that there is sufficient parking currently available for the number of people permanently located in the Bldgs. 701, 887, 879 area. At this time, the cost per parking space makes a parking structure cost-prohibitive.

— Ed Williams (7849), Chairman,  
Sandia Traffic Safety Committee

## Take Note

Retiring and not seen in *Lab News* pictures: John Corley (1645), 27 years; Lorraine Elliott (6133), 17 years; Ron Garcia (2993), 17 years; Nigel Hey (12600), 24 years; Mike McConkey (9224), 20 years; Harold Post (6218), 34 years; Gary Reif (12336), 35 years; and Dick Shaw (15272), 30 years.

# Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads

## MISCELLANEOUS

HOTPOINT RANGE, w/self-cleaning oven, white w/black trim, works well. Spears, 266-9782.

LARGE COMPUTER DESK, \$30; ivory lace wedding dress, long sleeves, size 7, \$50. Stevens, 831-6628.

BEDROOM SET, bunk beds, chest-of-drawers, desk, shelf, \$350; dog kennel, large, excellent condition, \$75. Gibson, 275-6680.

KIDS ELECTRIC 4-WHEELER, Kawasaki style, very good condition, very strong, battery well maintained, \$50; Kenmore, glass countertop 5-burner stove, black, \$125. Pryor, 294-6980.

F150 SUPERCREW BED MAT, 6-mos. old, like new, less than half new price, \$25. Lott, 281-0702.

LARGE PLANTS, indoors & out, in Mexican pots; microwave, \$60; word processor, \$100; large garage cabinet, \$90. Ferrell, 256-2531.

SEGA GAMES, 22, \$20 for the whole shebang. Jennings, 268-8789, ask for Jillian.

COLOR TV, Toshiba, 36", 3 yrs. old, \$500; gas lawn mower, \$75; 2 bar stools, brown wrought-iron w/cloth neutral-color seats, \$100; Mac computer, w/17-in. monitor. Thorpe, 922-6091.

WASHER/DRYER, Whirlpool, 8-cycle, heavy-duty, about 6 yrs. old but like new, \$500/pr. Gentry, 771-0461.

WASHING MACHINE, \$100; dining room table w/4 chairs \$40; electric hedge trimmer, \$15. Dwyer, 271-0741.

TICKETS, roundtrip, transferable, anywhere SW flies, expire 1/2/02, \$225. Schofield, 292-7220.

HEAVY-DUTY WASHER, Kenmore, \$150; White Westinghouse chest freezer, \$100; boys mountain bike, \$20. Chan 460-6634, or 293-7808.

IN-LINE SKATES, Ultrawheels, USA-made, girls size 7, \$40 OBO; Sears garage door opener, \$25 OBO; pre-slimed 26-in. Presta tubes, \$4 ea. Mooney, 294-5161.

TWO GUNINEA PIGS, male, to good home, too busy to care for them. Bennett, 291-1912.

PICKUP TOPPER for '97 & newer Ford F150 short bed, fiberglass, tinted windows, maroon, nice, \$500. Davis, 323-2877.

WASHER & DRYER, Sears Kenmore, both work, \$100. Sansone, 296-7945.

EXERCISE EQUIPMENT, Weslo Cardio-glide \$75; Vitamaster ski machine \$75; Tunturi recumbant bike, \$150. Drennan, 897-7153.

WALKER, PVC Ultimate 99, \$300; shower chair w/back, \$50; commode, \$40. Olson, 296-8641.

ESTATE SALE, twin mattress, box spring, like new, \$100 OBO; GE washer/dryer, \$50 ea.; round glass-top coffee table, \$100; brass table lamp. Carroll, 255-7675 or 298-2827 evenings.

TICKETS, Lobo basketball, 2 ea., north basket, section 25, row 24, at cost, \$540, Sikorski, 281-9838.

DINING SET, w/leaf, chairs, tablepads, pecan finish, \$250; transferable GM Lawsuit certificate worth \$250-500, asking \$100. Zeuch, 296-4969.

JOINTER-PLANNER, Craftsman, 6-in., w/stand, \$200, Hillcrest Kangaroo caddie, battery-powered motorcaddie, \$350. Mitchell, 299-5144.

CHRISTMAS TREE, 7-1/2-ft. noble pine, medium/long needles, w/stand, \$35. Thomas, 237-0467.

ACOUSTIC/ELECTRIC GUITAR, Ovation 12-string, hardshell case, excellent condition, new battery/strings, natural finish, \$650 OBO. Schuster, 828-3415.

SPRINT PCS TOUCHPOINT 2200, 5 mos. old, includes vehicle power adapter, single-slot desktop charger, \$100. Garza, 271-0522.

SPINET PIANO, \$200; 5-string banjo, \$100; autoharp, \$100; all in good condition. Vernon, 892-6571.

RED FEMALE DACHSUND, 3 yrs. old, to good loving home. Maestas, 792-1979.

STARTAC CELL PHONE, \$50. Scott, 275-7429.

WATERBED, king-size, w/pillowtop mattress & 6-drawer pedestal, \$90. Lange, 856-1952.

TEXTBOOKS, College of Santa Fe, MIS230 Management Information Systems, \$45, Non-Designer's Web-book, \$20. Chavez, 265-7331.

DINETTE SET, \$50; dining room table, \$40; queen-size bed, \$40; champion juicer, \$40; other items. Asbury, 268-3540.

YARD SALE, 11/3, 8-noon, tools, home improvement, office, housewares, Copper east of Tramway, right on Parkside. Gruebel, 323-2414.

CRAFT SHOW/BLOOD DRIVE, handcrafted items, 140+ crafters, donate blood to United Blood Services, Cleveland Middle School, 6910 Natalie NE., Nov. 10, 9 to 4. Edgar, 884-8567.

PRIVATE ELK PERMITS, 3 ea., Unit 4, Hwy 64 between Tierra Amarilla & Tres Pidas. Maestas, 869-9295.

PLAYPEN, \$15; Fisher Price Portacrib, w/carry bag, \$35; Graco Tot Wheels II baby walker \$15. Stixrud, 298-0478.

FOOTBALL TICKETS, AZ Cardinals vs NY Giants, & Dallas Cowboys in Phoenix, 3 tickets near 40-yard line, excellent seats on visitor side. \$100 ea. Lucero, 856-7501.

EYEPIECE FOR TELESCOPE, 3.8 chrome Orion lanternum, \$95 OBO. Barnette, 861-2451.

FIREPLACE INSERT, 20" x 20" x 30", \$495; 7 small metal casement windows, free; SX62 Hallicrafter shortwave, w/speaker, \$150. Alexander, 291-8028.

SMALL ALBIZIA (MIMOSA) TREE, free, needs more space, low water use when established. Kepler 296-0402.

DINING TABLE, solid cherry wood, Queen Anne style, expands to 108-in. in length, w/protective glass table cover, \$625 OBO or trade for oak dining set. Limon, 890-4135.

CAMPER SHELL, fits long, wide bed. Sanchez, 293-8297.

THREE-PIECE QUEEN BEDROOM SET, very good condition, includes comforter set & sheets, \$500. Rezac, 281-1816, ask for Lorinda.

QUEEN-SIZE BED, w/box spring, frame, 2 mos. old, excellent condition, good sleep, \$200. Flemming, 268-1840.

ROLLBAR, for small truck, black, double/single, 1 piece, \$100. Yazzie, 281-2223.

TELEVISION, Zenith, 61", brand new, \$1,500 OBO. Abbin, 296-7678.

GROVES BOW, Fliteline II, 62", 30# at 20-in., excellent condition; left-hand golf clubs, irons, & woods. Spray, 821-5877.

YELLOW LAB X, sweet & intelligent, 19-20 mos. old, to caring family, shots, spayed, ID chip, igloo doghouse, will screen. Mora, 291-1250.

HI-FI SPEAKERS, Yamaha, pair, black, 16 x 10 x 12, both for \$80; Craftsman mower-mulcher, w/3 extra blades, \$80. Duke, 884-4593.

SINGER SEWING MACHINE, antique treadle, \$150 firm; metal white day bed & mattress, excellent condition, \$150 firm. James, 294-6837.

HP PRINTER, B/W hardly used; unused queen bedspread; 2 table lamps. Hill, 299-9416.

WASHING MACHINE, Signature by Norge, heavy-duty, 20-lb. capacity, beige color, about 8 yrs. old, free, you pick up. Dubes, 550-5827.

STEREO SYSTEM, Fisher, separate components, turntable, AM/FM tuner, dual cassette players, in glass-front cabinet; boxed stereo speakers, \$95 cash. Sherwin, 275-9134.

KING-SIZE MATTRESS set, \$125. Harris, 821-3001.

MUD/SNOW TIRES, Goodyear Eagle GA P185-65-R14, 4ea., used but very good condition, \$20 for the complete set. Buteau, 856-7705.

## TRANSPORTATION

'64 INTERNATIONAL SCOUT, 4-cyl., rebuilt engine, rebuilt transmission, rebuilt brakes, new seat covers, \$3,000 OBO. Aragon, 892-3033.

'93 FORD RANGER Super Cab, 82,274K miles, 5-spd., AC, green exterior w/beige interior, AM/FM, camper shell; bids accepted through 11/07/01; right to refuse bids; sold as is. Sandia Labs FCU, 237-7254, 7384, or 7386.

'96 FORD MUSTANG, V6, 5-spd., 57K miles, AM/FM/CD, new tires, very good condition, \$7,800. Lanes, 856-6237, or krlanes1@home.com.

'89 OLDSMOBILE CALAIS, original owner, AC, AT, V6, 88K miles, runs great, good condition. Mayberry, 293-4025.

'01 DODGE RAM 2500, HD QuadCab truck, 4x4, excellent condition, loaded, 14,800 miles, white, long bed, 5-spd., 5.9-liter, alloys, must sell, below loan value, \$20,000. Tekala, 271-1328.

'88 TOYOTA 4WD PICKUP, V-6, CD, black, 134k miles, good condition, \$3,800. Layne, 857-0989.

'71 240Z CLASSIC SPORTS COUPE, w/restored body, suspension, & driveline, fast & reliable, \$6,200 OBO. Gwinn, 281-9897.

## How to submit classified ads

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

- E-MAIL: Pam Welch (pawelch@sandia.gov)
- FAX: 844-4902
- 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 Pam 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.

'93 CAMRY LE, 4-dr., 4-cyl., moonroof, AC, AT, CD, 86K miles, new Michelins, extras, \$8,000. Little, 299-5992.

'64 PORSCHE 356C, project car, w/many extra parts & tow bar, \$3,500. Eshelman, 889-4380.

'90 HONDA ACCORD EX, 4-dr., AT, loaded, 130K miles, CD changer & security system, \$4,500. Plowman, 292-7939.

'96 CHEVY BLAZER LT, red, 4-dr., leather, V6, CD, PW, PL, 71K miles, hands-free phone, good condition, \$12,800 OBO. Briggs, 259-1984.

'94 BMW 530i, 84K miles, AT, CD changer, excellent condition, \$19,000 OBO. Goodnow, 858-1532.

'94 TOYOTA CAMRY LE, V6, PW, PL, AM/FM/CD, AC, tilt, cruise, 84K miles, 4-dr., very clean, tan w/tan interior, \$7,985. Wilson, 833-1139.

'97 FORD CROWN VICTORIA, 4-dr., dark green, luxury package, 64K miles, clean, excellent running condition, \$8,200. Mathes, 720-0294.

'93 TOYOTA 4RUNNER SR5, 4x4, 200K miles, new head, timing chain, tires, shocks, radiator, maintenance records, \$10,200 OBO. Lipka, 899-4236.

'98 BUICK SKYLARK, 75K miles, white, AT, AC, PW, AM/FM cassette, great condition, \$6,500 OBO. Kalinina, 507-8765, ask for Alex.

'94 DODGE RAM 1500, red/gray, V-8, 92K miles, Laramie SLT, alarm, AT, PS, PW, PL, LB, toolbox & cover, great condition, \$7,800 OBO. Miller, 293-4682.

'00 TOYOTA TUNDRA LIMITED, 4-dr., V8, leather, power seat/locks, liner, 15K miles, warranty, NADA trade-in, \$21,500. Brower, 856-1546.

'00 CORVETTE COUPE, 4,500K miles, Bose sound, high-performance upgrades, paid \$53,000 asking \$43,000. Gillingham, 281-1842.

'89 SUBURBAN 1500, Silverado 350, 4x4, loaded, maintained, good paint, recent tires, ready to go/tow, \$6,950. Moulton, 293-0373.

'01 PT CRUISER, 28F, 10,634K miles, loaded, excellent condition, health problems force sale, \$18,995. Smith, 857-0750.

'94 FORD F150 XLT X-CAB, 68K miles, 5.8L, V8, very clean, shell, tow package, cruise, AC, \$8,800. Benavides, 898-4373.

'87 TOYOTA TERCEL, 4-spd., runs great, clean body, \$1,500. Breckenridge, 797-4901, leave message.

'72 CHEVROLET PICKUP, 3/4 ton, 350, 4-spd., LWB, AM/FM, \$2,500 OBO. Turnbull, 842-5130.

'99 CHEVY S-10, extended cab, 2.2L, 5-spd., AC, AM/FM, bed liner, 20+ mpg, 16K miles, \$9,650. Finch, 296-6663.

'90 FORD PROBE, AM/FM/CD, 82K miles, new tires \$2,300 OBO. Martinez, 296-9035.

'79 GMC SHORT BED, 4x4 250CI straight-6, 2 tanks, runs well, \$800 OBO. Vasey, 892-0073, leave message.

'90 PLYMOUTH GRAND VOYAGER, AC, good condition, runs well, \$2,550 OBO. Ruby, 294-4834.

'96 DODGE EXT. CARGO VAN, 1-ton, AC, PS, trailer-towing package, excellent condition, \$7,800. Vandevender, 822-9295.

'95 VW JETTA GLX, dark green, black leather, all options, BBS rims, 40K miles, \$12,500. Chavez 385-2341.

'87 BMW 325i, 2-dr., convertible, excellent condition, AT, AC new tires, all power, \$5,500. Toledo, 899-1449.

'97 INTREPID, 3.5-liter, V6, books at \$8,875, asking \$8,000 OBO; '91 Suburban Silverado, 350, V8, great condition, \$6,500 OBO. Mooney, 294-5161.

'99 FORD F250, Superduty, Powerstroke diesel, 4x4, short bed, XLT, crew cab, Leer shell, loaded. Potter, 869-4716.

'79 AMC CONCORD SW, white w/black stripe, 4-dr., 6-cyl., runs well, needs a good home. Cleland, 281-2228.

'92 FORD TAURUS, AT, AC, PB, PS, cruise, good mechanical condition & appearance. \$2,000 OBO. Anderson, 293-2490.

'91 TOYOTA TRUCK, 4x4, extended cab, new engine block, heads redone, good truck, \$7,500 blue book, asking \$5,000. Garcia, 384-0013.

'94 FORD RANGER, 5-spd., new clutch, very good condition, 68K miles. Archibeque, 232-0419, ask for Andy.

'00 DODGE DAKOTA QUAD-CAB XLT, 4x4, V8, power everything, CD, camper, roof rack, grill guard, running boards, tool boxes, towing package, 22K miles, \$20,500. Mignardot, 254-9092.

'00 S-10 PICKUP, extra cab, 5-spd., AM/FM/CD, bed liner, cruise, 22K miles, excellent condition. Olguin, 867-5411.

'96 HONDA CIVIC LX, 4-dr., AT, PW, keyless entry, alarm, CD/AM/FM, like new, 37K miles. Dunlap, 884-0232.

'86 BRONCO II, excellent condition, 88K miles, great tires, paint, interior like new, seldom used off-road, \$2,950. Butler, 299-5626.

'00 TOYOTA COROLLA CE, white, 4-dr., AT, AC, PW, cruise, AM/FM cassette, 17K miles, good condition, moving must sell soon \$10,000. Makino, 271-0293 evenings.

'87 HONDA ACCORD LX, fantastic 1st car for high school or college student, excellent condition, \$2,000. Chavez, 275-0490.

'98 HONDA ACCORD EX, 4-dr., V6, sunroof, leather, loaded, low mileage, extended warranty, excellent condition, \$16,999. Tapia, 280-8888.

'71 CLASSIC CHEVY BLAZER, 350 V8, AT, towing package, looks good, runs well, \$2,500. Vasey, 768-2917, or 892-0073, after 6.

'91 CHEVROLET SUBURBAN, Silverado, 3/4-ton, 4x4, AT, AC, PW, new brakes, 107K miles, excellent condition, \$8,100. Johnson, 884-1728.

'99 OLDSMOBILE AURORA, loaded, silver w/gray leather, 25-mpg, 4-liter 250-hp, 30K miles, Bose CD w/12 pack, 4-yr./50K-mile warranty, \$18,500. Fuller, 293-6168.

'95 CORVETTE, white convertible, red interior, AT, 20,700 miles, excellent condition. \$22,000. Thalhammer, 298-8521.

'92 MAZDA MPV, V6, alarm, dual/AC, AT, PS, PB, hitch, sunroof, antenna/cell, 150K miles, very nice. Rea, 286-0286.

## RECREATIONAL

'99 HOLIDAY RAMBLER MOTORHOME, 34-ft. slideout, 15K miles, loaded, ACs, TVs, generator, awnings, more, \$72,000. Colson, 864-4308.

'00 HARLEY SUPERGLIDE, 95CID, performance cams, pipes, carb, tires, forward controls, windshield, more, 7K miles, \$18,500. Anderson, 292-8432.

CANOE, Coleman plastic, 15-ft., 2-person, good condition, \$100. Davis, 323-2877.

'94 HONDA SHADOW VT 1100, shaft-driven, new windshield & rear tire, excellent condition, \$4,500 OBO. Dubbs, 299-8350.

GO-KART, Manco model 388-15, 8-hp engine, for off-road use, new front tires, \$950. Figiel, 856-0042.

'76 SUNFISH SAILBOAT, on trailer, \$500 OBO. Shead, 839-9316.

'01 HARLEY DAVIDSON, Road King Classic, blue/silver, removable backrest/luggage rack, tach, stage 1 kit, bubs pipes, oil cooler, \$21,000. Young, 980-6862.

BIKES Trek 1400, White aluminum; Battaglin, black steel; both Cr forks, Shimano 105, w/Cyclo computers, \$100 ea. Olewine, 797-0189.

MOUNTAIN BIKE, men's 19-in. Diamond-back Topanga, Shimano 21-spd., good condition, \$40. Follstaedt, 299-5941.

'92 TIOGA ARROW, 27-ft., Class C motorhome, new awning, 460 Ford, clean, 60,600 miles, \$19,900 OBO. Hahn, 822-1341.

## REAL ESTATE

2-BDR. MARLETT MOBILE HOME, 1 bath, large landscaped lot, 2-car carport, 2 storage buildings, 6820 San Francisco NE. Wilson, 821-1570.

'78 MARLETT MOBILE HOME, 14' x 70', located in Romeroville, NM, near Las Vegas, good condition, \$5,500, OBO. Kearns, 898-4122.

3-BDR. BRICK HOUSE Huning Highland, 1 bath, 1,300 sq. ft., well landscaped, wood floors, recently remodeled, \$133,200. Cassidy, 924-2154.

4-BDR. ADOBE, 1-3/4 baths, fireplace, vigas, red brick floor, courtyard, near country club, parks, \$155,000. Nolasco, 248-1631.

3-BDR. TOWNHOUSE, 1 3/4 baths, 1,400 sq. ft., 5 yrs. old, alarm system, 2-car garage w/opener, close to base, \$109,000. Lenberg, 238-0362.

2-BDR. TOWNHOUSE, 2 baths, 2-car garage, FP, clerestory windows, covered patio, near base, park, children's center. Eckart, 299-3888.

DOUBLE-WIDE, many upgrades, great yard w/fruit trees, appliances included, Four Hills Mobile Home Park, \$19,500. Romero, 275-1737.

3-BDR. HOME, study, bright cook's kitchen, workshop, garden space, kid's yard, 2,640 sq. ft., alarm system, timed sprinklers, Matthew Meadows. Furnish, 884-6626.

4-BDR. HOME, 2,000 sq. ft., totally remodeled, excellent condition, great location, Eldorado High School district, \$179,000. Wilcoxon, 296-8295.

## WANTED

ROOMMATE to share North Valley adobe property, 4th/Alameda area, private quarters. Witkowski, 271-0773.

3-BDR. HOME, 1 or 2 baths in good condition, within bike or bus distance to UNM, fixer-upper OK if structure sound. Rockwell, 884-4206.

SPA, 5-6-person size, less than 5 yrs. old, good-excellent condition, must be set up & working. Sanders, 256-1797.

ROOMMATE, to share 3-bdr. house, 15-min. drive from Sandia, \$400 per month plus utilities. Richardson, 254-0342.

MASON JARS 1-qt., free or cheap, with or without lids. Sotelo, 298-0358.

DINING ROOM TABLE, w/6 chairs, adjust to seat 4. McIntyre-Pacheco, 873-0999.

SOMEONE GOING CLOSE TO BURBANK, Ill., to deliver 500 lbs. of collected rocks to an old friend, will pay, negotiable. Zirzow, 281-9896.

## LOST & FOUND

FOUNTAIN PEN, stainless-steel/chrome Mont Blanc, lost in Area 1, 10/19/01, extreme sentimental value, reward. Goetsch, 892-8366.

AWARD PIN LOST, 1960s vintage, Sandia 5-year, last seen at Bldg. 810, possibly Area 4. Morrow, 299-5588.



**2001 ECP drive ends Nov. 9**

# Can you help? Is it science or is it magic?

## Sandia/Lockheed Martin Family Science Night answers 'why and how' questions

By Iris Aboytes



PLEASE DON'T POP! — Fun science stuff demands this little girl's attention during Family Science Night at an Albuquerque elementary school.

(Photos by Bill Doty)

Science can mean a lot of different things to different people. Children, for example, sometimes see science as a yucky subject they need to take in school. If they study hard and if they are lucky, it just might make sense. Sandia and Lockheed Martin recently hosted a Family Science Night at a local elementary school.

That science night was about having fun.

Really, how could blowing up a balloon and then passing a skewer through it (and not popping it) be science? Or, how could crushing Total cereal and adding water be an experiment?

I asked two little girls if they thought it was science or if they thought it was magic. Of course, one said science and the other one said it had to be magic.

To the children it was not about polymers or iron supplements, it was just plain fun. It just happened to be a Family Science Night. They were told by Jim Redmond (9124), a Sandia Crosslinks volunteer, to have fun, make

messes, and we'll clean it all up. They left asking questions about "why and how" — the beginnings of a scientist.

Jim is but one volunteer from Sandia. Working with Sandia's Educational Partnership Program, he works with the elementary school on a regular basis to help kids and teachers with hands-on science. Sandia offers the Family Science Night at local elementary schools, even schools where Spanish is the first language. These are just a couple of examples of Sandia's partnerships with local schools, encouraging employee interaction with teachers and students.

Did you know that A280 time is available for many educational-volunteer activities? Many programs are looking for volunteers. You are not on your own — Educational Partnerships is there to offer guidance.

Why not join Jim and the many other Sandians and contractors who volunteer in the many different programs. You too can help answer the question: Is it science or is it magic?

See box above for volunteer opportunities. Contact Amy Tapia (12640) at 284-5207 for more information.

### K-12 Education Volunteer Opportunities

Program	Grades	Focus	Time	Comments
Crosslinks	K-5	Science	Negotiated	Classroom activities
Up N' Atom Mobile	K-8	Science/Math	Negotiated	Some travel around New Mexico
Science Days	9-12	Science/Math/Technology	3 days/year + planning	Presentations and demos
N.M. Super-computing Challenge	9-12	Programming/Scientific modeling	Negotiated	Mentor a team
Rocket Reader	1-3	Learning to read	45 minutes/week	Tutor at Chelwood
Junior Achievement	K-12	Business and free enterprise	Varies	Presentation and materials provided
Wise Men and Women and Big Brothers/Big Sisters	K-8	Mentoring	30-60 minutes/week	At school, training is provided
Speaker's Bureau	K-12	Career presentations, etc.	Negotiated	Presentations
Go Figure (JA)	7-8	Math	1 hour/week for 8 weeks	Grant Middle School pilot
MANOS, Dream Catchers and Hands On Minds On	6-12	Science, math and technology	2 - 4 hours/week for 8 weeks or less	Spring and summer workshops
School to World	8-9	All careers - booth format	1 day	March 9
Science Fairs	K-12	Judging	Up to a full day	Various schools



## A giving spirit

We recently received a letter from a retiree and wanted to share it with you. — Iris Aboytes, 2001 ECP publicity coordinator



My husband, a Sandia retiree since 1971, is now 90, an invalid on oxygen 75 percent of the time. I am 80 and crippled. We have a man living here on our ranch to care for both of us. A three-year drought up here has us unable to contribute to anything at this time. The September 11 victims of terrorism received a gift from us — all we had left to send. I am sick at heart that I cannot contribute at this time.

Sandia's annual Employee Contribution Plan drive runs through Nov. 9.

## Note from the Coronado Club

As a result of last month's national tragedy, increased security measures have been instituted at Kirtland Air Force Base. Only persons associated with activities that are essential to Sandia National Laboratories and the Department of Energy operations have been given base access.

The Coronado Club has been given the following operational directions:

**Lunch** — Monday through Thursday.

**Department of Energy / Sandia National Laboratories** — business and training meetings.

**Support Catering** — for meetings and training.

Coronado Club will close at the conclusion of its regular business day, 7 a.m.-5 p.m. The bar/lounge area remains closed. All evening activities are cancelled until further notice. The Club is closed on weekends.

## Roadrunner Food Bank Drive begins; donation locations offsite this year

This year's Roadrunner Food Bank Drive is now underway. The Office Professionals Quality Council (OPQC) Community Outreach Team and Corporate Outreach Dept. 12650 are partnering this year to conduct the 2nd Annual Sandia Roadrunner Food Bank Drive Nov. 1-15.

As one of our goals this year, we made a commitment to support Roadrunner Food Bank to feed the hungry in New Mexico.

Because of the current security rules, we are not allowed to conduct charity drives on Kirtland AFB and Sandia and therefore will partner with Sandia Labs Federal Credit Union and the National Atomic Museum. Roadrunner Food Bank will set up barrels for your donations at the SLFCU on Juan Tabo, and Ellison, and inside the Atomic Museum's new "Up N Atom" store at Winrock Shopping Center. Please drop off your donations at these locations.

We filled a semi last year. We're hoping we can do the same, if not more, this year. Posters and flyers will be placed in buildings around the Labs to announce the dates, and lists of most-needed items. The *Daily News* will carry announcements on the status of the pounds of food being donated.

This year Roadrunner has a "Food for Kids" program, and they have established food pantries in selected public schools. New Mexico leads the nation with 15.1 percent of people experiencing food insecurity on a regular basis, and many people, including thousands of children, are at risk of being hungry every single day.

The counties of Bernalillo, Sandoval, Tarrant, Valencia, and Santa Fe have the highest populations — therefore the highest numbers of people needing food. We appreciate your support in helping us to make this a success for our community, as well as our state, by donating to this worthy cause. For more information, please contact Darlene Leonard at 844-8024 or me at 284-3704.

— Paula Schoeneman, OPQC Community Outreach Team Leader