

Homeland Security Director Tom Ridge sees expanded counterterrorism role for national labs

Technology has important role to play in war on terrorism, Ridge says during visit to Sandia

By Bill Murphy

The nation's national laboratories, including Sandia, will play a vital and increasingly important role in countering the terrorist threat against the nation. That was the assessment of US Homeland Security Director Tom Ridge, who offered his views during a news conference following several hours of briefings and hands-on demonstrations of Sandia's counterterrorism capabilities.

With Sen. Jeff Bingaman, D-N.M., and Rep. Heather Wilson, R-N.M., at his side during the news conference in the Bldg. 810 atrium, Ridge praised the lawmakers' long-term support for the national labs. "Now that I'm in this position [Homeland Security Director]," he added, "I'm even more grateful for your support of these labs."

Paul Robinson and Joan Woodard convey special thanks to Sandians from Homeland Security Director Tom Ridge. See sidebar note on page 5.

Ridge, along with Gen. John Gordon, administrator of DOE's National Nuclear Security Administration, which oversees the nation's nuclear weapons laboratories and production complex, toured Sandia Feb. 21 as part of a multistate trip to learn more about current and potential technologies that may be brought to bear in the war against terrorism.

At Sandia, Ridge received detailed briefings
(Continued on page 5)



WATCH THIS — Dave Nokes (5900), foreground, holds a mock-up of an explosive that will be used in a demonstration of Sandia counterterrorism technologies as he explains to Homeland Security Director Tom Ridge, third from right, what the group is about to see. Dave is Sandia's coordinator of counterterrorism and homeland security programs. Others in the photo are, from left, Frank Akers (face partially obscured), NNSA's liaison officer to the Homeland Security Office; Gen. John Gordon, Administrator of DOE's National Nuclear Security Administration; C. Paul Robinson, President and Director of Sandia; Rep. Heather Wilson, R-N.M.; Ridge; Joseph Allbaugh, Director of the Federal Emergency Management Agency; and Sen. Jeff Bingaman, D-N.M. To see what Dave was pointing at, check the photo at the top of page 5. (Photo by Randy Montoya)

Being there for the nation: State of the Labs address stresses post-9/11 efforts

Community leaders hear about Labs' response to war on terror

By Bill Murphy

Sandia Labs President C. Paul Robinson will always remember that phone call.

It was in mid-October of last year, coming at a time when the nation was still deeply shaken by the 9/11 terrorist attacks.

Gen. John Gordon was on the other end of the line.

"Paul this is a race, this is a challenge." Paul recalls the words from the administrator of the National Nuclear Security Administration. Gordon said the worst possible news had been confirmed: the spores in the envelope delivered to Senate Majority Leader Tom Daschle's office were, indeed, anthrax.

"Paul, you've got to get started on this right away." Gordon wanted his lead science/engineering laboratory — Sandia does engineer some 95-plus percent of all the parts in a nuclear weapon, after all — to come up with solutions, and fast.

The NNSA chief, who is intimately familiar with Sandia's capabilities, spelled out the chal-

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Sandia LabNews

Vol. 54, No. 5

March 8, 2002

Managed by Lockheed Martin for the National Nuclear Security Administration



Prototype detector could I.D. anthrax

New technique requires only a few minutes of FAME

By Neal Singer

Some deadly things don't deserve 15 minutes of FAME, let alone a few hours.

A prototype handheld detector under development at Sandia can recognize the fatty acid methyl esters (FAME) of anthrax in less than five minutes.

Like burning bacon

Identification of the bacillus in minutes, rather than the hours currently necessary, is a crucial step in alerting a building's occupants to flee the deadly bacteria, as well as in activating defenses such as anti-anthrax foam dispersal systems. The patent-applied-for detector, in which commercial interest has been expressed, would also aid security people making their rounds to locate point sources of the disease.

The technique works by preconcentrating airborne parti-
(Continued on page 4)

FAME-based anthrax detector uses micro-fabricated components. See the schematic on page 4.



CURTIS MOWRY is satisfied with only a few minutes of FAME. (Photo by Randy Montoya)

'Canary-in-a-coal mine' technology sniffs out contraband 3

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7 New NMR spectrometer aids in learning how materials age

10 Sandia, Kurchatov Institute prepare paper on global nuclear future

What's what

Got a couple of "sneaker mail" responses to a note from last time. Gary Phipps (5713) says the term goes back to the Internet precursor, when packets of information – "sometimes even in electronic form – were delivered by two-legged messengers clad in sneakers." It works exceptionally well, he says, "especially when the electronic network is down." Bet it would.

And Douglas Drumheller refines that a bit, noting that the correct term is "sneaker net. That's when your information network consists of people walking up and down the halls."

Now we know.

* * *

Robert Reese (2521) points out one of those innocently funny little non sequiturs that show up in language now and then. A news headline on the bet.com/news website proclaimed: "Vonetta Flowers becomes the first African-American, from any country, to win gold at the Winter Olympics." In case you missed it, Flowers handled the brake on the US two-woman bobsled team that won a gold medal in the just-concluded Winter Olympics in Utah.

". . . first African-American, *from any country*. . . ?"

Uhhhhh, doesn't African-American pretty much settle which country she's from?

* * *

When you work in a place like we do, you can run across some pretty esoteric information just walking down the hall to the water cooler. Just last week, for example, someone mentioned to a clump of us that that night's full moon would be at perigee – the closest the moon comes to Earth, about 50,000 kilometers closer than usual, and, therefore, present an image about nine percent wider than usual.

Translation: It would be the brightest full moon of the year.

And that reminded me of a quip from an old friend one time when we were camped high up in the La Plata Mountains in early fall. As we watched the moon ease up over the bowl defined by Shark's Tooth, Centennial, Lavender, and Hesperus peaks on the last evening before the full moon, he observed wryly that that was just about the prettiest 29/30ths moon he'd ever seen.

* * *

Since the last *Lab News*, the annual Labs Accomplishments section has been printed and distributed, and it's about as close to artwork as journalism ever gets. Every Sandian got a copy in the mail – or should have – and now you can find it online at http://www.sandia.gov/LabNews/LN02-22-02/LA2002/la02_story.htm in both html and pdf formats.

Have a look. You'll be impressed.

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

Arthur succeeds Glass at Albuquerque Operations Office; NNSA field offices to be reorganized

John Arthur has been appointed manager of the DOE/NNSA Albuquerque Operations Office, succeeding Rick Glass, who is joining a private sector firm in Tennessee.

NNSA Administrator John Gordon announced the appointment Feb. 25.

Gordon said that Arthur, currently the deputy manager, was selected because of his wide technical and management experience within DOE and NNSA over the last 24 years. "John Arthur has demonstrated his leadership skills by successfully managing complex environmental projects and nuclear weapons programs," Gordon said. "He is uniquely qualified to lead the Albuquerque Operations Office through its transition to the new NNSA organization structure of site offices and service centers."

"John Arthur has demonstrated his leadership skills by successfully managing complex environmental projects and nuclear weapons programs. He is uniquely qualified to lead the Albuquerque Operations Office through its transition to the new NNSA organization structure of site offices and service centers."

Gordon also announced on Feb. 25 a decision to eliminate a layer in NNSA's field management. Currently there are two federal field management layers — an Operations office and a local Area Office — between NNSA headquarters and contractors such as Sandia that carry out NNSA's mission.

Gordon said the Operations offices are to be converted to "Service Centers" to provide support to the eight NNSA site offices. He said the goal of the reorganization is to "move many key decision-making responsibilities from headquarters to the field, closer to where the work is actually being done."

According to a Feb. 25 NNSA briefing for employees, oversight in the new structure is simplified: Headquarters will only assess field federal systems; the Site Offices will assess the national laboratories and production plants. Still, exactly what all this will mean to Sandia and the current Albuquerque Operations Office and Kirtland Area Office probably won't become entirely clear until later this year when the realignment is fully implemented.

Arthur was DOE/NNSA Albuquerque Assistant Manager for the Office of Environmental Operations and Services from May 1995 to May 2001, before becoming first acting assistant manager and then acting deputy manager for Albuquerque. He has an MS in health physics from Colorado State University.



Sandia National Laboratories

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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



Employee deaths

Hugh Reilly of Solar Thermal Technology Dept. 6216 died Feb. 20 after an illness.

He was 47 years old.

Hugh was a member of the technical staff and had been at Sandia since 1986.

He is survived by his wife Erin, son Brian, and daughters Lauren Lopez and Lindsay Lopez.

Robert Asher, a technical manager in Advanced Concepts Group 16000, died Feb. 25 after a sudden illness.

He was 60 years old.

Bob had been at Sandia since 1983.

He is survived by his wife Linda and daughters Christina Buchanan, Kimberly Asher, and Heidi Giebel.



Retiree deaths

Willard Koone (age 88) Dec. 22
Dean A. Thornbrough (71) Dec. 26
Frank Fuentes (74) Dec. 28
Dwayne L. Mohrman (67) Dec. 31
Domenico Tavone (91) Jan. 1
Richard E. Palmer (57) Jan. 1
William Jackson (81) Jan. 3
Alice T. Marks (86) Jan. 5
Allen F. Hurford (81) Jan. 5
Johnnie G. Apodaca (76) Jan. 9
Barbara Nielson (69) Jan. 13
Wentzel W. Wagoner (79) Jan. 14
Ellen E. Martin (82) Jan. 15

Lee W. Schulz (81) Jan. 17
Neita K. Tucker (70) Jan. 17
Burton Bell (84) Jan. 19
Donald L. Collins (87) Jan. 21
Howard S. Bluestein (87) Jan. 26
Ralph O. Work (77) Jan. 29
Frederick Palkovic (78) Jan. 29

Sympathy

To Allison Davis (12142) on the death of her father, Stanley Jameson Watagh, in New York, Feb. 19.

To Ron Allman (1118) on the death of his father, Everett Allman, in Albuquerque, Feb. 26.

Incubator's first invention is nothing to sniff at

Ed Tarver's technology 'fingerprints' contraband with unprecedented sensitivity

By Nancy Garcia

It's time for the world to beat a path to Ed Tarver's door, because he has built a "better mousetrap."

"It's like a canary in a coal mine," he said about his invention, a compact, lightweight device that detects contraband (narcotics, explosives, and chemical agents) with 50 times the sensitivity and efficiency of current commercial devices.

Ed, a scientist in Analytical Materials Science Dept. 8723, has been working on the technology, Fourier transform ion mobility spectrometry, since his doctoral-student days at Washington State University in the late 1980s. Since coming to Sandia four years ago from a teaching position at Grambling State University in Louisiana, he developed further refinements. "We want to know if there's any [contraband traces] at all as soon as possible," he says.

Ed was the first person accepted into the Tri-Valley Technology Enterprise Center (TTEC), joining the business

"We want to know if there's any [contraband traces] at all as soon as possible."



LIKE A CANARY IN A COAL MINE — Ed Tarver holds his invention — a compact, lightweight device that detects contraband (narcotics, explosives, and chemical agents) with 50 times the sensitivity and efficiency of current commercial devices.

incubator in December. It was located in August in donated space at Lawrence Livermore National Laboratory. TTEC now also houses fledgling businesses of an LLNL employee and a Sandia retiree (Robert Schmieder, who is

you'd assemble a little model car."

The result, he says, will be an affordable device that provides greater confidence and fewer "false positive" readings. "It sniffs the air and you've got it," Ed says. "After 9/11, I knew this instrument was better than what law enforcement, customs, and the military have. All we have to do now is make them and sell them."

As early as October 2001, the federal government called for instruments of two pounds or less that test 50 percent of the available sample (compared to current instruments, which reject 99 percent of the sample and average multiple readings to build up a signal). Ed was asked to submit a proposal, which joined many other technology pitches parceled out to various reviewers based on the length of time projected to become commercially available.

Besides submitting that proposal, he's exploring a variety of funding avenues. For instance, with a sizeable order in hand, he could finance manufacturing with a business loan.

'Fingerprint' is ion velocities

The technology gains sensitivity by detecting ions traveling at a range of velocities — speeds that are characteristic of their structure, charge, and mass. A spectra of these velocities can be used as a "fingerprint." Current methods monitor only a single velocity by opening and shutting drift tube gates at a set speed, similar to the way some traffic signals are timed for one speed of traffic.

Ed's device (subject to an existing patent application) opens and shuts the entrance gate for equal lengths of time (thus keeping it open half the time), but successively increases those intervals from 10,000 to 40,000 times per second, thereby screening for ions of different velocities. There is only a "virtual" exit gate, which he likens to an electronic traffic officer with a radar gun. Through Fourier transform, information about the gate frequency is electronically converted to indicate speed of the oncoming ions.

Existing devices can be retrofitted with an electronic gate controller and software to use Fourier transform (to convert frequency information to speed) to improve resolution and provide an order-of-magnitude improvement in the signal-to-noise ratio, he says.

Sandia California News

R&D Focus: Cross-cutting talks launch new ideas, spur awareness, fight 'cultural seclusion'

Story-telling, which has been likened to an ancient technology for building community, came into play recently at a Sandia/California auditorium, where some 250 people all heard the same set of stories about research endeavors.

Division 8000 VP Mim John explained in a site-wide e-mail, "The directors and I have been concerned for a while that many of us — including ourselves — get so wrapped up in our own work that many of us may not be sure what the person in the next office is up to." Among members of the technical staff promoted to distinguished level, a similar interest emerged at a luncheon spent discussing opportunities to serve the site in a way that was unique from the roles of a manager. Mim challenged the group to see what they could concoct to help overcome "cultural seclusion."

The result was the first R&D Focus Symposium. Four researchers presented team projects, followed by a catered lunch. Hearing from our own staff at this forum was particularly encouraged by the site's Business Leadership Team as a way to build an esprit de corps, en masse. First, cleared individuals heard from Doug Gehmlich on W80 upgrades. Then biology was discussed by three more presenters. Joe Schoeniger (8130) presented a new Grand Challenge Laboratory Directed Research and Development project, Interfacial Bioscience (IBIG), which focuses on communication across cell membranes via protein interactions. Next, Julie Fruetel (8358)

talked about recent advances and future plans for the integrated chem/bio agent sensor, μ ChemLab. At the systems level, Susanna Gordon (8112) described the PROTECT program, a testbed for sensors deployed in public transit facilities.

Mark Allendorf (8361) put the symposium together with team members Wen Hsu (8356), Doug, Rene Bierbaum (8218), Dan Tichenor (8732), Howard Royer (8512), Mark Brynildson (8517), Neville Moody (8725), and Robert Holland (8516). Joan Bersie (8528) and Chris Andreski (8100) were responsible for the arrangements and publicity. Mark said people commented that they were glad they'd been encouraged to attend, that they derived a lot from the content of the talks, and enjoyed hearing a coherent set of three chem/bio presentations, too. Wen commented afterwards, "The feedback I've heard all around has been very positive. People thought it was a wonderful thing, and wondered why we haven't done this before." The game plan is to try to repeat the symposium semiannually.

That's not all the DMTS group came up with — Mim closed the meeting by announcing that they are also kicking off a new Distinguished Lecturer Series. The first invited speaker is William Perry, Secretary of Defense in the Clinton Administration, who may address Homeland Defense, or another topic of his choosing yet to be selected.

— Nancy Garcia

State of the Labs

(Continued from page 1)

lence: "Can you tell if an envelope has a powder in it without opening the envelope?" And, "Can you tell if that powder is anthrax?"

Paul started working the phones immediately, spelling out the challenge to a number of the Labs' lead technical folks.

Within 40 minutes, Paul says, he had in hand a number of viable approaches worth a deeper look. But the consensus was that the correct response would be to kill whatever was in the envelopes first, and then answer the other two questions. And Sandia knew how to kill the stuff, if it was there. Thanks to long-term work with irradiation technologies, including an important CRADA with the nation's meat industry, Sandia had the expertise to buy valuable time, make the mail safe. Subsequently, Paul says, Sandians have practically moved in with the US Postmaster General, serving as key science advisers as a practical irradiation system for the mail is perfected.

Paul shared this anecdote about the mail with an audience of some 300 business, community, and elected leaders, including Mayor Martin Chavez, last week during the annual State of the Labs address, held this year at the Sheraton Old Town hotel. It was the eighth such presentation, dating back to Al Narath's tenure as Labs President.

Paul told the story about the Gordon phone call to make a point: Sandia's goal is to have technology ready when the need arises, and consequently, "to be the laboratory the nation turns to first" to provide technical solutions to urgent national problems.



LABS PRESIDENT C. Paul Robinson and Albuquerque Mayor Martin Chavez share a light moment minutes before Paul and Executive VP Joan Woodard presented the annual State of the Labs address to 300 community leaders. (Photo by Bill Doty)

Executive VP Joan Woodard, sharing the dais with Paul, noted that Sandia's strategic planning process played a critical role. Because of that planning, she said, the Labs was able to respond crisply, not just to Gordon's request about the mail, but to a wide number of other homeland security, counterterrorism, and battlefield requirements.

"We're grateful that due to our planning we were able to be there when the nation needed us," Joan said. And she outlined a number of ways — recruiting, hiring, streamlining operations through a new governance model, laying down new "grand challenge" LDRD problems that will keep the Labs at the cutting edge of increasingly important sensor technology — in which Sandia management is working to make sure the Labs remains strong

enough to respond to the nation's call into the indefinite future.

In other remarks, Paul offered a sweeping review of Sandia's contributions to the nation's war on terrorism. He cited two areas of post-9/11 national concern that have resulted in increasing demand for Sandia's expertise: homeland security and asymmetric warfare (specifically in the Afghan theater). Some of the things Paul touched on included: Sandia's development and the subsequent deployment of chem/bio foam in response to the anthrax attacks of last fall; ongoing work on a broad suite of advanced sensor technologies; development of sophisticated vulnerability assessment techniques and technologies; refinement and enhancement of a wide range of robotics; synthetic aperture radar and other theater-based imaging technologies; and directed energy research.

In her comments, Joan talked about the successful and expanded role of partnerships among the Labs with universities and industry; advances in the Labs' manufacturing capabilities; the impact of the Labs on the state economies of New Mexico and California; the significant increase in Labs funding in FY02 and beyond; and the contributions of Sandians and Lockheed Martin to the community.

Preceding the presentation, Paul and Joan met with local media, offering highlights of their remarks and going into additional detail on such issues as new weapons-related work and the efficacy of the Labs' strategic planning process.

In a sneak preview of the community State of the Labs address, Paul and Joan did a presentation for Sandia employees. Both the employee and community presentations were preceded by a fast-paced video of Labs activities. It was produced for the occasion by Video Services Dept. 12610.

Anthrax

(Continued from page 1)

cles on a tiny hotplate that acts like a skillet on a stove. The hotplate immediately vaporizes the fatty acids in anthrax's cell walls to create the FAME that form a unique fingerprint of the bacteria.

"The process is a little like burning bacon," says lead researcher Curtis Mowry (1764) of the microchemlab. "The wafted gases are distinctive to a detector."

A small computer program correlates the amount of mass of each ester emitted in the analyzed gases at particular times — a process called elution — with already categorized elution peaks indicative of anthrax or other diseases.

The extremely low-power technique shrinks prototype suitcase-sized detectors to the size of a handheld device by using microdevices fabricated at Sandia. Pyrolyzation requires considerably less power — 150 milliwatts instead of 130 watts.

Components of the device have been individually tested, though not yet linked with a commercially available aerosol collector.

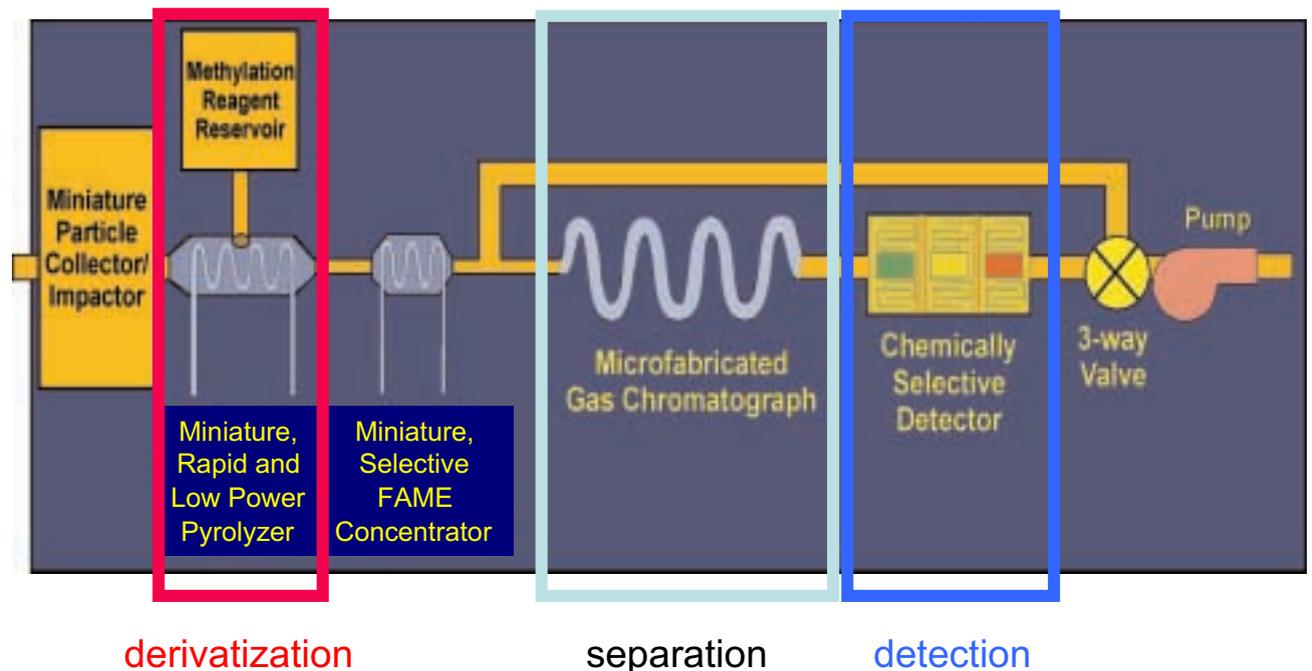
Faster is better

"The focus of the project is on increasing the speed of analysis in the microfabricated system while retaining enough information to distinguish between microorganisms," says Curtis.

Standard techniques require a lengthy extraction/derivatization step followed by FAME

"The process is a little like burning bacon. The wafted gases are distinctive to a detector."

Schematic for Biological Detection Based on Microfabricated Components



Fatty acids are found in all living organisms with cell membranes. Analyses of gases driven from the bacteria have been used to identify bacteria and other pathogens at the genus level, and often at the species level.

chromatography. Sandia's chemographic and surface acoustic wave analysis of gases driven from the bacteria enables far faster identification of anthrax and other diseases.

Fatty acids are found in all living organisms with cell membranes. Analyses of gases driven from the bacteria have been used to identify bacteria and other pathogens at the genus level, and often at the species level.

Other researchers include Catherine Morgan (1738), Quentin Baca, Ronald Manginell, Richard Kottenstette, Patrick Lewis (all 1764), and Gregory Frye-Mason, a former Sandian, now an outside contractor.

Sandia's Laboratory Directed Research and Development program supported the work. Initial results were reported at the SPIE conference in Boston in November.



BOOM — In a demonstration of counterterrorism technologies for Homeland Security Director Tom Ridge, this controlled explosion on the Bldg. 810 plaza dispersed a bright yellow chalk as a simulant of a biological, chemical, or radiological agent. In the second part of the demonstration, the “bomb” was surrounded by a tent and as it was detonated, an aqueous foam was deployed, capturing the dispersed agent and containing the “deadly” cloud safely. (Photo by Randy Montoya)

Ridge visit

(Continued from page 1)

on technologies to foil bioterrorism attacks, tools to aid emergency and first-response personnel, technologies and procedures for improving airport and border security, and tools and techniques to enhance intelligence-gathering capabilities.

After seeing the work that goes on here, Ridge said, “I am now more convinced than ever that the national labs have an important role to play [in homeland security].”

During their Sandia visit, Ridge and Gordon were joined by Bingaman, Wilson, and Federal Emergency Management Agency Director Joe Allbaugh. New Mexico Lt. Gov. Walter Bradley, representing Gov. Gary Johnson, joined the group for a news conference and demonstration.

Demonstrating technologies

After the briefings, the delegation, with a large contingent of Albuquerque news media off to their side, watched a demonstration on the Bldg. 810 mall of a how an aqueous foam technology can contain the dispersal of biological, chemical, or radiological aerosols. In the first portion of the demonstration, a small explosive dispersed a bright yellow cloud of chalk. (The chalk was used to simulate an airborne chemical, biological, or radiological agent.) In the second part of the demo, a similar chalk-charged explosive was placed in a surrounding tent. The aqueous foam was deployed within the tent before the explosive charge was detonated, containing and neutralizing the “deadly” cloud.

The group also saw an elaborate multipart demonstration of a bomb-sniffing robot inspecting a suspicious backpack (like the backpack bomb used in Centennial Park in Atlanta during the 2000 Olympics). After the robot gathered data confirming the presence of an “explosive,” a Sandia-developed Percussion-Actuated Non-electric (PAN) Disrupter was used to disable the bomb’s internal gadgetry, deactivating it without destroying its component parts. (This capability of the PAN Disrupter allows criminal investigators to retain critical evidence about the bomb’s construction.)

During the well-attended news conference after the demonstrations, Ridge noted that Sandia President and Director C. Paul Robinson was one of the first technology leaders he met after being named Homeland Security Director. He said Paul put his “extraordinarily talented team” of scientists and engineers at Ridge’s disposal to assist the nation in every way possible.

“Today,” Ridge continued, “Paul’s first words to me [during an introductory briefing] were — and I love this — the motto of this laboratory: ‘To help our nation secure a peaceful and



CHRIS CHERRY (5900) shows media representatives a mock-up of the infamous shoe bomb, disabled at Logan International Airport using PAN Disrupter technology developed at Sandia (*Lab News*, Feb. 22). (Photo by Randy Montoya)

free world through technology.’ ”

Ridge said he anticipates an expanded role for Sandia and other national laboratories, adding that the precise nature of that role “remains to be seen.”

Technology a force multiplier

One of the major responsibilities of his office, Ridge said, is to assess the risks and vulnerabilities the nation faces. “We do need to look at [labs-developed] technology” as one of the significant tools to address those concerns.

Technology, he added, is a vital “force multiplier” that can enhance the nation’s capacity to detect, to prevent, and to respond to terrorist threats.

Ridge expressed special appreciation for Sandia’s often-stated goal of “science with the mission in mind.”

“One of the interesting things about [Sandia],” Ridge said, “is that they have a staff of scientists and engineers who understand that the end game is an application of the technology.”

Thanks, Sandians, for ‘an amazing day’

Labs President Paul Robinson and Executive VP Joan Woodard sent a thank-you message to Large Staff in the wake of the successful visit by Homeland Security Director Tom Ridge. Here are some excerpts:

“Sandia has had a lot of visitors in recent weeks, but no visit was as important as today’s visit by Governor Tom Ridge, the Director of the Office of Homeland Security in the White House. In our days at Sandia, we’ve never been as impressed as today, and the Governor’s reactions were equally strong or stronger. He asked

us to pass along to everyone at Sandia his deep thanks for the preparations and the time spent with him. . . .

“Governor Ridge’s comments at the press conference were extraordinary, particularly when he praised Sandia’s core purpose: ‘Helping our nation secure a peaceful and free world through technology.’ We have gained a very strong supporter by this visit, and we thank each and every one of you for your contributions! It has been an amazing day, and we are very proud of our amazing team.”

New nuclear weapons design work signaled by NNSA's Gordon in Senate testimony

NNSA administrator calls for strong commitment to weapons R&D, weapons complex revitalization

Nuclear weapons remain an essential element of national security, and the R&D, infrastructure, and manufacturing capabilities that support that strategy require a strong commitment, National Nuclear Security Administrator John Gordon told the Senate Armed Services Committee in major testimony Feb. 14.

He also said three weapons refurbishment programs will proceed, an ability to design and build new weapons will be bolstered, and an ability to resume underground nuclear testing if ever required by new threats will be maintained.

"Our goal is to maintain sufficient R&D and production capability to be able to design, develop, and begin production on the order of five years from a decision to enter full-scale development of a new warhead," Gordon said.

As NNSA Administrator and also DOE Under Secretary for Nuclear Security, Gordon heads the nation's nuclear weapons complex. He testified on implications for the nuclear weapons program of the recent Nuclear Posture Review (NPR), a study carried out by the Department of Defense in cooperation with NNSA. Gordon said DOE Secretary Spencer Abraham and he fully endorse Defense Secretary Rumsfeld's December report to Congress on the NPR.

Nuclear weapons still key

"First, the NPR reaffirms that nuclear weapons, for the foreseeable future, will remain a key element of US national security strategy," said Gordon. "As a result, NNSA must continue to assure the safety and reliability of the US nuclear stockpile. Our stockpile stewardship program is designed to do just that, and to do so in the absence of nuclear testing.

"Second, the NPR reaffirms the stockpile refurbishment plan agreed previously between DoD and NNSA, which calls for three warhead refurbishment programs — the W80, the W76, and the B61 — to begin later this decade. As a result, NNSA must press ahead with its efforts to reverse the deterioration of its nuclear weapons infrastructure, restore lost production capabilities, and modernize others in order to be ready to begin those refurbishments on schedule.

"This raises a key point — the NPR will not reduce NNSA's costs or workload anytime soon,"



GEN. JOHN GORDON, shown here during a visit to Sandia last September, testified in Senate hearings Feb. 14 about the nation's nuclear weapons program.

Gordon said. "Near-term costs are driven not by the total number of warheads to be refurbished, but by the need to restore production capabilities in time to carry out the refurbishment of each type." He said any cost savings from a reduction in the nuclear stockpile — the NPR called for reducing the operationally deployed strategic stockpile to 3,800 warheads by 2007 and to 1,700 to 2,200 warheads by 2012 — "would not be realized until well into the next decade."

Gordon said the nuclear posture review endorsed several important NNSA initiatives:

- Enhance nuclear test readiness.
- Reestablish nuclear warhead advanced concepts teams at the national labs and at headquarters (see "Advanced concept groups to pursue possible new weapons design ideas" below right).
- Accelerate preliminary design work on a modern pit facility.

He said he believes NNSA, its labs, and plants are on track to accomplish those goals.

Robust R&D and industrial base

The nuclear posture review established as its centerpiece a "New Triad" of flexible response capabilities. That triad consists of non-nuclear and nuclear strike capabilities, active and passive defenses including ballistic missile defenses, and

R&D and industrial infrastructure for developing, building, and maintaining nuclear offensive forces and defensive systems.

"Perhaps more than in any previous defense review," said Gordon, "this concept of a New Triad reflects a broad recognition of the importance of a robust and responsive defense R&D and industrial base in achieving our overall defense strategy."

Gordon said the Cold War was ended in part because USSR President Gorbachev realized that the US strategic modernization program of the early 1980s had made arms competition with the US futile. "The US defense R&D and industrial base, including the nuclear weapons complex of national laboratories, production plants, and test sites that supported development of sophisticated warhead with build rates exceeding 1,000 weapons per year, permitted that modernization program to take place."

Although the Cold War is over, nuclear weapons still act as a deterrent, Gordon said. Whatever happens, he said, a potential foe must know that its buildup could not occur more quickly than the US could respond.

Innovating special-purpose weapons

"Alternatively, an ability to innovate and produce small builds of special-purpose weapons, characteristic of a smaller but still vital nuclear infrastructure, would act to convince an adversary that it could not expect to negate US nuclear weapons capabilities," Gordon said.

Added Gordon, "The development and subsequent modification of the B61-7 bomb — converting a few of them into B61-11 earth penetrator weapons — is a case in point."

As the numbers of nuclear weapons shrink, their safety and reliability and the flexibility "to field new weapons, if required," both become even more important, Gordon concluded.

"We must have the capability. . . to develop, produce, and certify new or modified nuclear warheads to meet new military requirements. Achieving these goals will require a strong commitment to the recapitalization of the nuclear weapons infrastructure — a smaller infrastructure to be sure, but one that is sufficiently modern and capable to fully support the NPR and, more broadly, our nation's defense strategy." — Ken Frazier

Tech Library launches high-tech/high-touch Cyberlibr@ry



CYBER RESOURCES — The Technical Library has established its Cyberlibr@ry in the Bldg. 858 Mezzanine where library staff is involved in "high tech/high touch" by working with Sandians to best use its digital resources such as electronic full-text journals, indexes, abstracts, standards, and the like available through the Library's homepage (<http://infoserve.sandia.gov>). The Cyberlibr@ry's mantra is ". . . if you are spending more than 15 minutes looking for information on the Internet without success, let us help." An open house for the Cyberlibr@ry was held Feb. 28 in the Bldg. 858 Mezzanine. Pictured here are, from left, Marcita Benavidez (1737), accessing information through its public work station; David Monroe (1737); and Lisa Wishard (9615), one of the librarians staffing the Cyberlibr@ry. (Photo by Bill Doty)

Advanced concept groups to pursue possible new weapons design ideas

NNSA has begun an initiative to reestablish small advanced warhead concepts teams at each of the national laboratories and at Headquarters in Washington, NNSA Administrator John Gordon announced in his Senate Armed Services testimony.

The initiative is endorsed by the new Nuclear Posture Review (NPR).

"The vision is for small, focused teams (involving both lab and HQ personnel), in coordination with DoD and the services, to assess evolving military requirements, investigate options, and ensure our DoD partners understand what is and is not possible," Gordon said.

"The teams will carry out theoretical and engineering design work on one or more concepts, including options to modify existing designs or develop new ones.

"In some instances, these activities would proceed beyond the 'paper' stage and include a combination of component and subassembly test and simulations to introduce an appropriate level of rigor to challenge our designers."

Gordon said this new effort will help train the next generation of weapons scientists and engineers and demonstrate capabilities for new warhead design, development, and production — "for example, to replace a failed nuclear warhead or to field a new system to meet new military requirements."

New nuclear magnetic resonance spectrometer allows researchers to better understand how materials age

Powerful instrument can characterize polymers, glasses, composites, ceramics — almost anything but metals

By Chris Burroughs

A new nuclear magnetic resonance (NMR) spectrometer is allowing researchers in Organic Materials Dept. 1811 to better characterize the molecular structure of materials and to gain a greater understanding about how they age and what gives them their properties.

Since the instrument was purchased and installed in a specially designed room in the Processing and Environmental Technology Laboratory (PETL) last year, Dept. 1811 has been characterizing materials from throughout the Labs, including polymers, glasses, and ceramics — almost anything but metals. They've also done some characterization work for industrial partners.

The NMR spectrometer at PETL is the third spectrometer at Sandia. New, with state-of-the-art technology, it is more powerful than its predecessors.

"Because of the power and capabilities of this new spectrometer, we can characterize materials with greater resolution and can determine chemical and physical properties of some materials not readily accessible before, like thin films for MEMS [microelectromechanical systems]," Roger Assink (1811) says.

Todd Alam (1811), who works closely with the instrument, cites some examples:

- Using the NMR technique, the group has employed selective isotopic labeling to gain a better idea of how materials age and degrade. For example, the stable oxygen isotope, ^{17}O , has been used to study the chemistry of oxidation, hydrolysis, and other environmental agents in organic and inorganic polymers important to the stockpile.

- NMR has helped researchers better understand the chemistry involved in a wide variety of ceramic materials. In collaboration with May Nyman (6118), NMR is being used to understand the structural and chemical changes that occur in oxide sorbents following the adsorption of cesium, including what structural changes can improve these uptake capabilities. These studies are geared toward nuclear waste legacy issues.

- NMR can help in predicting the aging of materials used for electrical cables in nuclear power reactors. Roger is working with Ken Gillen (1811) and the nuclear power industry to employ a smaller, less expensive NMR spectrometer that can be installed at nuclear power plants to test cables on site.

- In addition to determining the molecular structure of materials, their larger scale morphology, such as crystallinity and phase separation, can also be characterized. These properties often affect

the way in which a material degrades.

- Recent NMR studies on thin films of amorphous carbon, done in collaboration with Tom Friedmann (1112), have allowed the evolution of the bonding structure within the film due to processing at elevated temperatures to be studied. These studies pushed the sensitivity limits of the device but clearly demonstrated that NMR investigations of thin films are feasible.

- NMR is also being used to monitor the condition of elastomeric binders in solid rocket propellants. In this instance the dynamics of the material, rather than its chemistry, tells if the binder is degraded. This program is conducted jointly with Leanna Minier (9116), the Department of Defense, and Thiokol. Recent insights from Sandia's NMR work on

"Because of the power and capabilities of this new spectrometer, we can characterize materials with greater resolution and can determine chemical and physical properties of some materials not readily accessible before, like thin films for MEMS [microelectromechanical systems]."



ROGER ASSINK, left, and Todd Alam (both 1811) examine a sample that has been characterized by Sandia's newest and most powerful nuclear magnetic resonance (NMR) spectrometer. It can characterize materials with greater resolution and determine properties of some materials not readily accessible before. (Photo by Randy Montoya)

the mechanisms underlying the aging of polymeric materials have led to cover stories in two separate issues of the technical magazine *Polymer News*.

In the future, Todd sees even more uses for the NMR spectrometer at Sandia. "I hope we will soon be able to do three-dimensional mapping inside an intact sample of rubber or plastic, possibly at a resolution of 100 microns," he says. "In addition to mapping the chemistry, we will also be able to map processes such as reaction kinetics and water diffusion."

Making up the Nuclear Magnetic Resonance (NMR) spectrometer team are Todd Alam, Roger Assink, post doc Brian Cherry, and contractor Sean Winters (all 1811). Roger Clough is the department manager.

How NMR works

NMR is a close cousin of the medical technique, magnetic resonance imaging (MRI), only several times stronger. Cylinder-shaped and standing upright like a refrigerator, the spectrometer has a coil of wire cooled to 4 degrees Kelvin. Electric current is passed through the superconducting coil, creating a very stable magnetic field.

A small sample of material is immersed in the magnetic field and with the new capabilities can be spun at a fast rate — over two million rpm or as high as 83 percent the speed of sound, which allows better signal resolution by averaging inhomogeneities within the sample. Nuclei of certain atoms, such as hydrogen and carbon, contain magnetic dipoles much like that of a compass needle. The dipoles align with the magnet and flip over when hit by radio waves of the correct frequency. By seeing at which frequencies these different nuclei flip, researchers can characterize the structure of the molecules.

The magnetic field produced by the new instrument is 400,000 times stronger than Earth's magnetic field. Because of this, a specially designed shielded magnet was employed to prevent the magnetic field from escaping the confines of the room. Coming within eight feet of the spectrometer can cause credit cards in a person's wallet (or more seriously a heart pacemaker) to fail.

Navy STG visits Sandia, discusses reentry systems



NAVY STG VISIT — US Navy Rear Adm. Dennis Dwyer, Director of Strategic Systems Programs, center, is shown a Sandia-made neutron generator tube by Larry Pope (14404, left), and Weapons Systems VP 2000 John Stichman during a recent visit. Dwyer came to the Labs for a Sandia-hosted meeting of the Navy Strategic Systems Programs' Steering Task Group (STG) on the theme of reentry systems. Over a two-day period STG members had tours and briefings in the Center for National Security and Arms Control (Bldg. 810) and the Microelectronics Development Laboratory on reentry capabilities and other weapon-related matters.

(Photo by Randy Montoya)

Historic reverse on-line auction for new photocopiers marks a big first for Sandia procurement team

Attention rapt as bids arrive fast and furious with minutes ticking down; result: a good deal for Labs

Nearly 18 months of effort has come to fruition in a historic procurement to select a vendor to supply Sandia with a new fleet of convenience photocopiers.

The procurement was conducted Jan. 31 as an on-line "reverse auction" via the web. A reverse auction is similar to a regular auction except the price is bid downwards instead of up. The auction, conducted for Sandia by Exostar Corp., was the first-ever use of this method by Sandia to purchase goods and services.

Using this method was the brainchild of Matt Riley (10250). Matt had been investigating the reverse auction as something that Sandia Procurement might be able to use for some time. However, until now the department had not found either a customer who was willing to try it or a suitable procurement to use as a test case.

Lee Cunningham, Manager of Printing & Publishing Dept. 12630, has oversight of Sandia's convenience copier fleet. With help from Del Packwood of Computer Security Dept. 9327, Lee developed 55 specific requirements for replacing Sandia's current fleet of aging analog technology copiers with copiers incorporating digital technology. Doug Otts of Commercial Products & Services Dept. 10255 was designated the Sandia contracting representative. Doug thought the project might make a good candidate for trying the reverse auction. So Doug, Matt, and Lee formed a team to try this approach.

30 million copies a year

The current fleet of analog copiers was acquired on a cost-per-copy contract with Konica Business Technologies, Inc. that was negotiated and placed by Lockheed Martin Corp. back in 1995. At the time, Sandia determined that using the Lockheed Martin contract was appropriate for

Delighted with results; first copiers from novel auction process being installed this week

The Procurement Team were all delighted with the results of the novel live, on-line reverse auction and thankful to have gotten through a long and tortuous procurement.

"The first time is always the hardest," says Doug Otts. "Now that we've done it, we'll be much faster and better at it the next time."

While there are just a few details yet for Procurement to conclude, the race is not yet over for Lee Cunningham. "What a super price we got," he said afterward. "Having worked with Konica in the past, I am confident that the suite of digital machines they offered will make a tremendous difference in reliability and productivity for the line. The next hurdle is getting them installed and network connected. We have an opportunity to save significant dollars in the future with network-connected machines."

When will you begin seeing the new machines at Sandia? The first copiers have arrived and the first installations began this week. "The schedule calls for about six installations every business day for the first couple of months," says Lee. "By the 1st of June about 180 of the total will be here. We've tried to schedule the high-use locations and those where they have been having problems first."

Lee also expressed his relief. "I know that my phone has been ringing quite a bit for the last several months with calls from customers wanting to know when they would get their old copiers replaced. Now, I'll be able to give them a firm date."

"I want to thank everyone who had a hand in making this happen," Lee says. "We really did achieve a milestone here. And thanks to all those customers out there who have been patiently hanging on waiting for new copiers."

replacing the many copiers then on-site at Sandia, and in reducing both their number and maintenance costs.

Sandia then had nearly 500 copiers, running 30 million copies per year. Since November 1995 that number has been reduced to 313, running about the same volume. The maintenance savings alone each year have been approximately \$350,000 per year, Lee says. He says implementation of that contract proved very successful and allowed Sandia to fully track the use of copiers. Unfortunately, he points out, there was one drawback. The Lockheed Martin contract was competed in Florida, so local New Mexico vendors did not get an opportunity to bid, although the manufacturers they represent probably did. This caused some consternation among local vendors because Sandia's copying fleet represents one of the largest in New Mexico.

In keeping with Sandia's strong desire to use local vendors whenever possible, the Labs decided to advertise for the replacement of the current copiers in the local New Mexico market even though a current Lockheed Martin contract could be used. An initial inquiry sent to 21 New Mexico

potential vendors resulted in responses from nine interested in bidding. They were invited to the pre-bid conference and sent the Request for Quotation (RFQ). Seven responded to be considered as bidders.

Bids asked for 272 copiers

The RFQ called for 272 copiers composed of two models, one mid-volume and one low volume, to be installed over a period of three years with 60-month placement terms. Thus, the entire period of performance is eight years.

Lee developed an Excel spreadsheet program that required the bidders only to enter the line item-costs requested; the program instantly calculated the expected revenues to the contractor. Using this tool the bidder could easily see how adjusting one or a combination of rates would affect the bid total.

In all, seven Albuquerque-area bidders were registered with Exostar to participate in the auction. Exostar conducted some training and a dry run for each bidder to make sure it knew how to use the tool. The auction was finally set for 10 a.m. on the 29th of January.

Excitement builds as bids come in

Sandia was able to see the auction in progress in the Procurement Department's Computer Training room. The Exostar Reverse Auction page was projected onto a large screen so that the more than 50 attendees could watch the action. All the bidders at their locations were seeing exactly the same picture on their individual computers. The screen displayed the name of the bidder (not the company or manufacturer represented) and their quote. The progress of the quotes was also displayed graphically. The auction was scheduled to last only 30 minutes, but if a bid were received in the last two minutes, the auction would be extended an additional two minutes.

When 10 a.m. rolled around everyone in the room was watching in rapt attention. The first bid was posted in the first 30 seconds with the Sandia-specified opening bid total of \$1.4 million. For the first 20 minutes of the auction the bids came in about once a minute. Twenty-five minutes into the auction the bid total was down to about \$840,000. In the last five minutes the bidding became more furious.

When the 30-minute time limit was up the bid total was down to \$805,000. The final bid in the 30-minute period came in just before the time limit, so the auction was extended another two minutes. The pattern continued for seven or eight two-minute extensions. The final winning bid total, submitted by Konica Business Technologies, Inc. was \$730,000. This total was significantly under Sandia expectations.

As the final bid was certified and the auction ended, a rousing cheer went up from the entire crowd. There was much hand shaking and backslapping. In fact, the entire event was videotaped by Dave Sparks of Video Services Dept. 12610, so the anticipation, suspense, and joy was captured for posterity.

National Atomic Museum ships weapon trainer to French museum



VINTAGE B28 TRAINER HEADED FOR FRANCE — A 13-foot-long B28 weapon trainer is lowered onto its carriage at the National Atomic Museum Monday in preparation for its shipment by cargo plane this week to France, where it will be put on display at the Memorial De Caen Museum in Caen, Normandy. (Used for training, a weapon trainer has the look and feel of a real bomb, in this case of the 1960s-era B28 thermonuclear bomb.) It had just been refurbished to museum-quality condition. The loan came as a result of a high-level French request and involved, as one might imagine, considerable negotiations and paperwork. Merri Lewis (12660, center), assistant director of the National Atomic Museum, is flying to France this weekend to assist with the trainer's installation in the French museum's Memorial for Peace exhibit. Assisting in this photo are subcontractors Mike Moreno, left, and James Evans, right. The trainer is similar to the B28 casings that have been displayed in the Atomic Museum for years (Palomares 1966 bomb-recovery exhibit), but Merri says this particular one came from the Pantex plant in Amarillo. We will have a follow-up report after Merri returns from France.

(Photo by Randy Montoya)

A flag, a photo, and a poster that speaks to the heart of what Sandia is

'One-team' poster is call to arms for corporate governance, enabling services initiatives

By Rod Geer

Its image isn't yet ingrained in Sandians' minds. But to those who've seen it or who are a part of it, the new "One team delivering the whole job" flag poster that's increasingly gracing bulletin boards and display areas near water coolers does have true meaning.

"Really it's all about pride," says Sandia photographer Randy Montoya (12640), who composed and took the photograph — seven Sandians representing all parts of the Labs standing in dramatic profile in front of the American flag. Sandians got a sneak preview of the photo when the *Lab News* published it in color and full-page-width inside the year-end Dec. 14, 2001, issue. Now it has been converted into a poster being used by the Integrated Enabling Services (IES) Office (7000) as a sort of "call to arms" for the concurrent corporate-wide initiatives that office is directing.

One initiative involves taking the Labs' infrastructure operations (functions such as logistics, budget, auditing, benefits, HR, and information systems) to the next level and truly turning them into integrated enabling services. The other is the corporate governance project, which aims to produce an environment for mission excellence. (See Dec. 14, 2001, *Lab News*, plus the State of the Labs interview in the Feb. 22 *Lab News*.)



A VIRTUAL TEAM — These proud Sandians on a new Sandia poster illustrate what's meant by "one team delivering the whole job." They work in several business units (Emerging Threats, Energy and Critical Infrastructure, and Non-proliferation and Materials Control) and Integrated Enabling Service areas like Human Resources and Security. They include represented and non-represented staff and management. Despite their differing responsibilities, they all contribute to a common corporate goal. They are (from left) Michael McDonald (15221), Tina Nenoff (6233), Cliff Ho (6115), Larry Yellowhorse (9126), B. J. Jones (3030), Grant Aguirre (3114), and David Rogers (14181).

(Photo by Randy Montoya)

"We take pride in what we do because we know it's important," says Randy. "When we at Sandia share that pride, we all naturally come together as a team going in the same direction. That was the message I wanted to deliver through the picture. Doug Weaver [IES Office deputy direc-

"The feelings engendered by the poster speak to the heart of what Sandia is and what Sandians believe," says Ron Stoltz (12122), Government Relations officer at Sandia/California. "I've commented that Sandia is really a 'national security lab.' Americans are looking for traction in the war on terrorism, and I think we are helping in a really meaningful way."

"First and foremost the poster indicates that people are our most valuable asset," says Margie Tatro, Director of Energy & Transportation Security Center 6200. "More specifically, the breadth of Sandians' skills is what we rely upon to solve the nation's most challenging problems. The posture and facial expressions of the folks in the image tell me that we are serious about our jobs and we are looking forward to the next set of challenges that face the nation."

Herb Pitts, Director of Personal Computing, Library, and Records Center 9600, says the importance of service integration that the poster advocates can't be overestimated. "Sandians who do the mission work should not have to know how Sandians in the service side provide the needed services," he explains. "Nor should mission workers be required to serve as their own general contractors to piece service elements together. But they should know that other important members of the team will take care of that."

Lee Cunningham, Manager of Printing and Publishing Dept. 12630, says the poster reminds him of another Labs attribute that can best be displayed only through a one-team approach. He says it's Sandians' "collective wisdom" that is the "cause for the US to turn first to us to provide technological solutions."

Finally from Rosemary Dunivan (6001), business manager for the Energy, Information, and Infrastructure Security Division: " 'One team delivering the whole job' touches at the very heart of what makes Sandia the laboratory the nation turns to first. It takes all of us working together to solve the tough problems that face our nation. Each one of us can make a difference! "

Sandia Prize in Computational Science awarded to winners in New Mexico, California

The 2001 Sandia Prize in Computational Science were awarded in mid February to "the individuals or teams that perform the most significant simulations on the New Mexico and California C-Plant Machines." C-Plant is a Sandia home-grown super-computer assembled from off-the-shelf parts.

First-place awards at each site consisted of plaques and \$5,000 for the winning person or team. Second- and third-place winners each won \$2,500 and were presented certificates.

Twelve entries — seven from New Mexico and five from California — demonstrated the viability of solving a wide range of scientific and engineering problems on C-Plant. Entries offered improvements

in problems involving nuclear weapons, homeland security, and industrial applications (e.g., lithography, MEMS, and chemical vapor deposition).

A committee chosen by directors Bill Camp, Ken Washington, Tom Bickel, Art Hale, and Mike Vahle judged results.

The judges were Bill Camp, Ken Washington, Tom Bickel, Art Hale, Mike Vahle, Walter Bauer/Ken Wilson, Carl Melius (LLNL), Chuck Hartwig, and Sudip Dosanjh.

Winners, as well as others who entered the contest, were honored on Feb. 13 in New Mexico and Feb. 20 in California.

Sandia Prize winners are below.

C-Plant competition awards

New Mexico

1st: Molecular Dynamics Simulations on C-Plant using LAMMPS

Mike Chandross (1834), Paul Crozier (9235), Gary Grest (1834), Steve Plimpton (9209), Scott Sides (formerly 1834, now at UC Santa Barbara), Mark Stevens (9235), and Aidan Thompson (9235).

2nd: Large-Scale Transport / Reaction Simulations: Turbulent Pool Fire Simulations, Semiconductor Materials Processing Calculations and Chem-Bio Threat Analysis using MPSalsa on C-Plant

Tom Smith (9233), Gary Hennigan (9233), Roger Pawlowski (9233), John Shadid (9233), Andy Salinger (9233), Paul Desjardin (9132), and Bart van Bloemen Waanders (9211)

3rd: Peridynamic Modeling of the Kalthoff-Winkler Experiment

Stewart Silling (9232)

California

1st: Thermal Analysis and Optimal Design for Extreme UV Lithography

Christopher Moen (8728), Patricia Hough (8950), Juan Meza (8950), and Pamela Williams (8950)

2nd: Molecular Dynamics Simulations of Boundary Effects on Bubble Growth in Metals Due to He

Jonathan Zimmerman (8726)

3rd: Optimization of a GTS Forging Manufacturing Process

Mike Chiesa (8727), Reese Jones 8726, Ken Perano 8920, and Tamara Kolda 8950

Sandia, Kurchatov Institute to prepare joint paper

Kurchatov President Evgeny Velikhov comes to Albuquerque to fashion agreement with Labs

By Will Keener

Scientists at Sandia and at the Kurchatov Institute, in Moscow, have launched an effort to prepare a joint paper on the global future of nuclear energy as a point of departure for policy makers in Russia and the United States.

Discussing a variety of nuclear power issues on a video link in mid-February, a group of Sandia executives, including Labs President C. Paul Robinson, fashioned the agreement with their Kurchatov Institute counterparts. Joining Sandia executives in Albuquerque for the occasion was Kurchatov Institute President Evgeny P. Velikhov.

"We have survived 10 years of dark times and it is now appropriate that we have a revival that addresses energy, economy, ecology connected with straight thinking in the US and Russia about counterproliferation and nonproliferation," Velikhov said. He said Sandia and the world-class Kurchatov Institute are well matched, because both have worked historically to move from scientific discovery to solutions useful to society.

The two institutions agreed to develop an "executive summary" as a first step, including proposals for development of nuclear power based on points of agreement. A more detailed effort — making use of the strengths of the two research facilities — would follow.

"I think it's important that we look more holistically at the problem of power generation," Paul told his Russian counterparts during the link-up. "Working together, can lead to a solution."

Bob Eagan, Sandia VP for Energy and Critical Infrastructure, believes there are a number of areas where cooperation with the Kurchatov Institute can be beneficial. These include economic modeling and inertial confinement fusion research, he said. "We see a lot of similarities between the vision of a global nuclear future that [Senior VPs] Roger Hagengruber and Tom Hunter and I have developed and where Dr. Velikhov wants to go," Bob said.



RUSSIAN VISITOR — Kurchatov Institute President Evgeny P. Velikhov, right, makes a point to, from left, Kent Biringer (5324), VP 6000 Bob Eagan, and Larry Walker (5320) during his recent visit to Sandia. (Photo by Randy Montoya)

"We have survived 10 years of dark times and it is now appropriate that we have a revival that addresses energy, economy, ecology connected with straight thinking in the US and Russia about counterproliferation and nonproliferation."

Velikhov, who has advised Mikhail Gorbachev and now President Vladimir Putin, spent two days at Sandia, where he was briefed on a variety of technologies relevant to the future of nuclear energy. On his second day, he spoke for about an hour with a group of high-ranking Sandia executives on issues of nuclear power and the future. The

video-link discussion followed his talk.

In Russia, demand for electricity is expanding, while the country's fossil fuel infrastructure is aging and in disrepair. A natural gas infrastructure is nearly nonexistent, forcing energy experts there to look toward the possibility of a "California-type, energy crisis." Elsewhere, the developing world is also beginning to demand more and more power. In addition to global warming, health issues are more directly linked to power development. "In China, cancer from micro particles of coal is a major problem," Velikhov noted.

"Nuclear power is important for these situations. I think this is an opportune time for us

to work in parallel to understand the energy field. We have good agreement in our economic models, although there are some differences." Russia would like to make use of its materials, manpower, and experience to become a leader in developing global nuclear power. Velikhov said his government is taking important steps that will aid joint-nation collaboration. These include:

- A new national policy on secure, environmentally sound energy.
- Action by the Russia legislature to change laws on import of nuclear fuel important for non-proliferation efforts.
- Joining of the antiterror coalition with the US following the Sept. 11 attacks.

Velikhov also spoke at length about developments in fusion energy research, his own field. He called for the US to rejoin the international consortium for plasma fusion research, while continuing its promising research in inertial confinement fusion. "Controlled fusion is the long-term, inherently safe, ecologically attractive energy source of the future," he said.

Mileposts

New Mexico photos by Iris Aboytes
California photos by Lynda Hadley



Walt Ghio
35 8221



Jim Pergrossi
35 8514



Billie Self
35 5807



Dwight Soria
35 8513



Richard Smith
35 5328



Miles Clift
30 8723



Craig Deshields
25 8513



Paul Johnson
25 5817



Zane Lawson
25 6432



Richard Stulen
25 8700



Judy Tejada
25 8517



Ken Black
20 8120



Gary Concannon
20 10305



Robert Franssen
20 8225



Barry Hess
20 8910



William Hobson
20 8232

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

MISCELLANEOUS

HIKING BOOTS, Iron Age, \$45; Covelle dinnerware, \$25; 6 x 9 dhurrie rug, \$45; Kirby vacuum, \$25. Hubbard, 291-8643.

TALON HOME GYM, by Spectrum Fitness, model NG28/A, w/pec station, accessories, barely used, \$750. Jones, 856-1837.

WOOD-BURNING STOVE, LOPI model 1-5, excellent condition, \$300. Bailey, 821-4394.

ANTIQUA BEDROOM SET, mahogany double bed, w/mattress & springs, dresser, chest-of-drawers, \$200. Treadway, 345-7302.

TWO UTILITY SHELVES 6-ft., \$10; desk, \$20, dresser w/mirror, \$20; 2 tape racks (VHS, audio, CD, DVD), \$2. Lujan, 822-0205.

SURROUND-SOUND RECEIVER, Kenwood VR410, 100W X5, Pro-Logic, Dolby digital/DTS decoder, less than 1 yr. old, paid \$370, asking \$275. Rosales, 898-0766, ask for John.

UMAX ASTRA 610P SCANNER, "plug and play" color scanner, still in box, good condition, hardly used, \$35 OBO. Bristol, 843-9490.

SHEET METAL & TUBING, 2-1/2-in. tubing, ridged panels, flat painted sheets, \$100. Bentz, 857-0728.

REEL-TO-REEL TAPE RECORDER: AKAI GX-280, TEAC A4010S, \$50 ea.; bike carrier for car, \$10. Babb, 865-6843.

TOW BAR, for flat-bumper vehicle (like a Jeep), folding 2-in. ball, \$85. Gutierrez, 540-5641.

BROADCAST SPREADER, Scott's Speedy Green, hardly used, \$15. Kelly, 299-3527.

WASHER, DRYER, good condition, \$100. Martinez, 294-6365.

WOOD DOOR, 35" x 80", new, never used, must sell, valued at \$1,500-\$2,000, asking \$500. Chavez, 873-2365.

UPRIGHT PIANO, Lagonda brand, \$100. Stirbis, 299-8442.

GOLF CLUB, Tour Edge, Ultra-lite oversize head driver, graphite shaft, used once, \$75. Wells, 292-0179.

RING, size 6.5, white gold, pear-shaped, .50 tcw, color g-h, SI-2, paid \$1,100, asking \$800; Weimaraner-Labrador mix, very cute, ready on March 1st. Quintana, 286-0127.

TWIN BEDROOM SET, early American, \$450; dining set, \$350; rolltop desk, \$200; recliners, \$100 ea. McCarty, 823-2926.

MOTORIZED WHEEL CHAIR, new, retail \$8,600, asking \$4,300 OBO. Zelnio, 243-2652, ask for Jerry.

DESK & CREDENZA, rosewash, 4 lockable drawers, \$200; entertainment center, rosewash, holds stereo & 33-in. TV, \$350 or \$500 for both. Jones, 856-7439.

MICROWAVE OVENS: small, 7 cu.-ft., \$40; large, \$100; Epson 800 color inkjet printer, \$35; car-cover for Mazda 626, \$50. Wienecke-George, 292-5368.

HANDBAGS, Coach, Dooney, Burke, used, but in excellent condition. Miller, 293-2828.

PAPER SHREDDER, strip cut, w/basket, \$15. Smith, 299-6873.

SOUTHWEST AIRLINES TICKETS, roundtrip, w/drink coupons, \$240. Schofield, 292-7220.

MOVING SALE: living room furniture, bedroom furniture, clothes, toys, etc., call for details. Hoffman, 922-9641, ask for Brenda.

SOUTHWEST TICKET, 1 roundtrip, expires Sept. 2002, \$260. Lieberman, 299-7739.

RING, 1/4-ct. diamond, European cut, 14-ct. gold, size 7, valued at \$300, asking \$150. Pendall, 265-3008.

BASS AMPS: Gallien-Krueger 400RB, \$250 (head only); Acoustic 116 (1-15-in. combo amp), \$120. Smith, 249-8198.

NIKON FM CAMERA, Nikkor 50mm f2 lens, motor drive, flash attachment, case, \$150 OBO. Lorence, 237-1205.

MTX SP-15 SUBWOOFER, 15-in., 200W amp, manuals, remote volume control, 17 x 17 x 20, 4 yrs. old, original \$550, asking \$260. Dybwad, 296-9047.

SOUTHWEST AIRLINE TICKETS, 2 roundtrip, good through Nov. 2002, \$250 ea. Scott, 837-9775.

AB-DOER, exercise apparatus, like new, \$50; TV stand, never used, \$30. Gonzales, 294-6958.

MEDITERRANEAN WOOD BEDROOM SUITE, complete, \$550; dining room table, 6 chairs, 2 leaves, \$400; china closet, \$525. Burstein, 821-6688.

DESK W/HUTCH, new, custom knotty pine, lots of storage, ideal for home office/business. Levan, 293-0079.

TECHNICS CD PLAYER, 5-disc changer, remote control, \$50; NordicTrack Pro ski exercise, \$180 OBO. Holloway, 294-5815.

SOUTHWEST AIRLINE TICKETS, 4 roundtrip: 1 for \$280, 2 for \$540, 3 for \$780, 4 for \$1,000. Penn, 883-4195.

COMPUTER DESK, \$30; computer hardware & software, including Windows operating systems. Cocain, 281-2282.

SOUTHWEST AIRLINE TICKETS, 2 roundtrip, first expires July 2002, second Aug. 2002, \$250 ea. OBO. Anderson, 281-6975.

SOUTHWEST TRAVEL CREDIT, anywhere SW flies, expires April 26, valued at \$568, asking \$300. Lockwood, 821-6331.

TRANSPORTATION

'93 TOYOTA COROLLA, white, 5-spd., AC, PS, PDL, AM/FM, clean, blue book \$4,350, asking \$4,000 OBO. Smith, 293-3296.

'91 TOYOTA PICKUP, extended cab, AC, 5-spd., shell, 52K miles, one owner, \$6,200. Smith, 294-4531.

'85 OLDS CIERA BROUGHAM, 4-dr., 3.0 V6, PS, PB, AC, cruise, tilt, AM/FM/cassette, new tires, 79K miles, \$1,400 OBO. Swanson, 275-9495.

'95 NISSAN PICKUP, white, AT, loaded, w/custom camper shell, 43,500 miles, \$10,500. Gallegos, 864-1111.

How to submit classified ads

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

- E-MAIL: Michelle Fleming (classads@sandia.gov)
- FAX: 844-0645
- MAIL: MS 0165 (Dept. 12640)
- DELIVER: Bldg. 811 Lobby
- INTERNAL WEB: On Internal Web homepage, click on News Center, then on Lab News frame, and then on the very top of Lab News homepage "Submit a Classified Ad." If you have questions, call Michelle at 844-4902. Because of space constraints, ads will be printed on a first-come basis.

Ad rules

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

'99 SOLARA SLE, V6, fully loaded, CD, leather interior, sports package, 43K miles, excellent condition, \$17,000. Aponte-Rezach, 260-1317.

'86 FORD F150, 4x4, AC, sliding rear window, bed liner, dual tanks, 120K miles, looks great, runs well, \$5,100 OBO. Hofer, 281-8695.

'00 CADILLAC DEVILLE DTS, pearl white, excellent condition, retail \$32,000, asking \$28,000 OBO, estate must sell. Tillman, 798-9080.

'98 KIA SPORTAGE EX, 2WD, w/leather interior, tow package, new tires, 44K miles, \$8,400. Esline, 345-1019.

'96 FORD BRONCO, fully loaded, 41,500 miles, excellent condition, \$15,000 (will negotiate). Flannery, 255-7050, ask for Phyllis.

'95 JEEP GRAND CHEROKEE LAREDO, 4x4, 4.0L, loaded, new brakes, battery, coil, digital headliner, 67K miles, \$9,200. Bohman, 296-2967.

'70 MGB MARK II ROADSTER, 4-spd., w/electric overdrive, new engine, top & interior, \$5,500 OBO. Schweitzer, 281-6668.

'85 TOYOTA CAMRY, 5-spd., cruise, maintenance records available, 131K miles, runs well, \$1,800. Keiss, 299-6610.

'90 MAZDA 626 LX, 5-spd., 4-dr., cruise, sunroof, AM/FM, AC, PW, PL, 65K miles, \$3,500. Allen, 884-4859 or 890-6935, ask for Kevin.

'87 TOYOTA SUPRA, 83K miles, \$3,000. Pass, 823-6637.

'99 FORD F150, 4WD, Super Cab XLT, 17-in. wheels, ABS, white, 33K miles, immaculate, \$20,000 OBO. Schoenfelder, 293-7913.

'88 CHEVY SUBURBAN, AC, PL, PW, very clean interior, new tires, 79K miles, \$4,900. DeLara, 797-8126.

'94 DODGE DAKOTA, extended cab, 5-spd., V6, 82K miles, great shape, \$6,000. Roybal, 833-9588.

'70 AMC CONCORD SW, 6-cyl., white w/black strip, good running car for student, \$800. Cleland, 281-2228.

'88 TOYOTA COROLLA HATCHBACK, 5-spd., new timing belt, 117K miles, good condition. Bangs, 471-6277.

'83 MERCURY CAPRI L, 2-dr. hatchback, V6, AT, AC, PS, 63K miles, reliable, clean, \$2,000 OBO. Dudley, 271-1413.

'94 PONTIAC GRAND AM, quad overhead cam, 4-cyl., CD, new heater, tires, rakes, few dents, runs well, \$2,800 negotiable. Sanchez, 292-1982.

'94 HONDA ACCORD LX, 5-spd., 4-dr., AC, PW, PL, AM/FM cassette, champagne, spoiler, alarm w/keyless entry, 50K miles, \$9,000 OBO. Hatch, 271-4697.

'01 VOLVO S40 TURBO, cherry red, AT, PS, AC, PL, PW, CC, alarm, alloys, warranty, 8,100 miles, \$23,495 OBO. Davis, 323-2877, ask for Mark.

'92 FORD F250 XLT, 4x4, ext. cab, diesel, w/Banks turbo & 3-in. exhaust, 5-spd., PW, PL, CC, tilt, posi, receiver, 85K miles, \$9,500. House, 293-6016 or 980-8659.

'94 VOLVO 850 TURBO SEDAN, sport package, 1-leather, moonroof, traction control, new tires, must drive, \$8,850. Jacobs, 301-6440.

'92 PLYMOUTH GRAND VOYAGER LE, loaded, captain's chairs, clean, one owner, 63K miles, \$4,200 OBO. Turnage, 275-2772.

'92 CHEVY S-10, was hit-and-run, body in bad shape, engine & everything else runs well, \$600 OBO. Pier, 797-5376.

RECREATIONAL

'70 BULTACO SHERPA-T MODEL 49, classic Spanish Trials motorcycle, new sprockets, chain, cables, runs well. Baca, 299-4090.

ALUMINUM BOAT, 14 ft., trailer, trolling motor, battery, \$757; waterbed mattress, extra-firm, king, 4 yrs. old, \$75. Zirzow, 281-9896.

'92 TIOGA ARROW, 27 ft., 460 V8, Class C motorhome, sleeps 6, new awning, 61K miles, \$19,100 OBO. Hahn, 822-1341.

'76 GREAT DIVIDE TRAVEL TRAILER, 22 ft., tandem axles, good condition, \$2,500 OBO. Shope, 293-7697.

ASAMA/BAHAMA WOMEN'S BIKE, 15-spd., Shimano gears, purple & black, excellent condition, \$60; kiddie/pet expandable gate, \$15. Simon, 299-8468.

'99 WELLS CARGO ENCLOSED TRAILER, 6 x 10, w/rear & side-door access, \$2,800 OBO. Gutierrez, 869-3823.

GARY FISCHER MARLIN MOUNTAIN BIKE, new, low mileage, accessories, light, rack, pump, paid \$450, asking \$350 OBO. McDonald, 265-9140.

'95 SEADOO GTX, 80-hp, garaged, just serviced, cover, trailer, water skis, vest etc., complete, \$3,000. Sanders, 822-1486.

KIDS' BIKES: 20-in. Diamondback, 5-spd., \$20; 20-in. girl's Giant, \$20; 16-in. & 1 very small bike, \$10. Stromberg, 299-8591.

AMF SUNFISH SAILBOAT, trailer, spares, great condition, \$975. Stephens, 265-5341.

TWO BIKES, Diamondback Mini-Vipers, 16-in., \$30 & \$40; sturdy swing-set frame, free. Fritts, 299-5817.

'92 HONDA GOLDWING SE, teal blue, loaded, plus extras, good tires, excellent condition, 59K miles, \$7,500. Lambert, 281-5798.

REAL ESTATE

3-BDR. HOME, fenced acres, scenic views, large deck, close to shopping, schools, I-40, Edgewood, \$165,000. Brenkosh, 286-9497.

3-BDR. HOME, 2 baths, 3-car garage, 1,750 sq. ft., new carpet, huge backyard, outstanding Willow-Wood location, 11716 Kings Canyon SE, \$166,900. Skousen, 292-4428.

4-BDR. HOME, living room, den, large game room, pool, Northridge area, 3,300 sq. ft., \$265,000. Easterling, 298-7083.

3-BDR. MOBILE HOME, '97 Skyline Sabre, 14 x 70, 2 baths, wrought iron, excellent condition. Herrera, 203-5678, ask for Richard.

4-BDR. HOME, 2-1/2 baths, 3-car garage, 3,400 sq. ft., executive home, 3/4-acre, mountain/city views, Sandia Heights. Furaus, 856-9799.

4-BDR. HOME, 2-1/2 baths, 2-car garage, 2,581 sq. ft., nice, close NE neighborhood, \$164,900. Ferrell, 256-2531.

WANTED

FISHING BOAT, V-hull, 16-18 ft., seating for 2-3 people, 25-40-hp motor, trailer. Bode, 237-8061.

SEWING MACHINE, good condition, no frills, inexpensive. White, 294-5692.

YARD MAINTENANCE WORKER, raking, trimming, pruning, etc., part-time, weekends, high school, college student, \$8/hr. Maxam, 343-9409.

HOUSEMATE, 3-bdr. 2 baths, beautiful SW neighborhood, nonsmoker, no children, \$350/mo, 1/2 utilities & \$250 DD. Baker, 873-3978.

GOOD HOME for male and female ferrets, neutered and de-scented, w/free large cage. Rimmer, 298-6942, ask for Jim.

DUAL STROLLER, & outdoor play set (slide, tunnel, etc.) for children under 3. Varoz, 831-6093.



Feedback

Special visitor pass for family members allows limited KAFB access

Q: With the requirement for two photo IDs in order to enter Kirtland Air Force Base, my wife can no longer drive into the base for me. I usually ride the city bus but do occasionally need to be picked up at different hours. Would it be possible for the badge office to issue dependent IDs as they used to years ago? Perhaps IDs could be issued on "demonstrated need" basis, even if not a wide-open option for all family members.

A: Sandia/New Mexico has established a process for Sandians to obtain a KAFB visitor pass for family members /dependents to facilitate them

driving onto KAFB. The access is to facilitate transportation (drop off and pick up) for employees or children. The visitor pass limits the family member/dependent to only those areas on KAFB as shown on the visitor pass, such as a child-care facility and/or a particular Sandia tech area. This visitor pass does not authorize general access to other areas on KAFB. The Sandia employee will serve as the sponsor for the pass and must bring the family member/dependent to Bldg. 800 to be issued the pass. The employee must show his or her badge and must have a vehicle currently regis-

tered for the base access, and the family member/dependent must have a valid driver's license.

Children in the vehicle who are under driving age do not require any ID at this time. Children who are of driving age, plus any other adults in the vehicle, must be prepared to show a picture ID. We recommend great flexibility because these guidelines may change at any moment, based on world conditions, US Air Force direction, and/or interpretation at the KAFB gate.

— Al West (3100)

In the midst of a storm, some light shines through

Sandia's vacation donation plan can make a big difference

By Iris Aboytes

You wake up just like any other morning. The sun is shining, the birds are chirping. You never stop to think about what the day could bring that could possibly change your life.

Joy Martinez (3113) remembers only too well early last spring when her daughter Mariah, then 4, complained of a stomachache. Repeated trips to the doctor

found nothing. After all, what young child at one time or another, especially not wanting to eat his vegetables, does not fake a tummy ache.

Only after complaints of her leg hurting and marks resembling small bruises under her eyes, was a diagnosis made. Mariah had a tumor in her stomach.

Thanks to numerous Sandians who donated vacation time through Sandia's Donation Plan, Joy has been able to be with Mariah as she has endured six cycles of chemotherapy, numerous cycles of radiation, and three surgeries.

The Vacation Donation Plan was designed for emergencies like Joy's. It allows any employee with unused vacation to donate up to 40 hours of that time to another employee who has an emergency requiring an absence from work that otherwise would be unpaid leave.

Employees must wait until their vacation donation is needed. However, donors can submit their names in advance if they desire. All Sandia regular full-time and part-time represented and nonrepresented employees with at least six months of continuous service are eligible to participate.

"In the last three years more than 40 employees have benefited from over 4,000 hours of donated vacation," says Becky Statler (3143). "The Laboratory may have anticipated the needs of its employees by implementing the plan, but it is the generous and caring people at Sandia that have made it so successful."

Without donated vacation, life would have been even harder for the single mother of two.

According to Joy, even after all this, Mariah still has the energy of the Energizer Bunny. Back home after a visit at UCLA Hospital, Mariah has checkups every week and now weighs a "whopping" 30 pounds.

But Joy's faith is very strong. One of her friends after finding out what was happening suggested she had a lot of bad luck. Said Joy, "This is not bad luck, this is life."

Mariah's eight-year-old brother, Kevin, says, "We watch TV, play my Playstation, and stuff like that." When Mariah starts giving him a hard time, Kevin says, "OK! I can tell Mariah is feeling better today."

Mariah likes kindergarten. "It's fun. You can learn homework," she says. Right now, though, because she has virtually no immune system, she



MARIAH MARTINEZ

Coronado Club

Club News — C-Club now offers six-month memberships. Price for new members is \$70 for six months; \$60 thereafter.

Summer notes — The C-Club pool opens May 27; pool passes are available at a discount rate through May 18.

Forty Sandians volunteer at New Mexico Regional Science Bowl; 35 teams take part

First year Sandia has coordinated popular annual event



SCIENCE BOWL PARTICIPANTS — A team of high school students from Clovis answer some tough questions during the annual New Mexico Regional Science Bowl Feb. 16. For the first time Sandia served as coordinator of the event. (Photo by Bill Doty)

Some 40 Sandia volunteers asked questions, worked as timekeepers, and made sure everything ran smoothly during the annual New Mexico Regional Science Bowl held at the Albuquerque Academy on Feb. 16.

It was the first time that Sandia served as coordinator of the New Mexico event, which is sponsored nationally by DOE. Albuquerque Academy coordinated it for the past several years.

"We [Corporate Outreach Dept. 12650] organized the whole thing — recruiting schools and volunteers, and putting it together," says Patrick Milligan, bowl coordinator.

As part of the Science Bowl some 175 students from 35 teams representing 15 New Mexico high schools were bombarded with tough science questions, formulated by DOE. A round-robin tournament style was used in the morning, and by afternoon the top teams were competing in a double-elimination tournament.

Check out these stumpers

The types of questions asked were bound to stump even some of the brightest participants. Some examples:

- Multiple Choice: Name the fish caught for the first time off the coast of Africa in 1938 which was thought to be extinct for millions of years. Answer: Coelacanth.
- Multiple Choice: A toy balloon filled with

helium is attached by a string inside a vehicle. All the windows of the vehicle are closed. When the vehicle accelerates forward, which way will the balloon appear to move in the vehicle? (W) Backward; (X) Forward; (Y) It does not move; (Z) Down. Answer: Forward.

- Multiple Choice: Allotropic forms of carbon include all of the following except: (W) Fullerenes; (X) Graphite; (Y) Diamond; (Z) Alkanes. Answer: Alkanes.

The top four teams were Albuquerque Academy, first place; Albuquerque Academy, second place; St Pius, third place; and Eldorado High School, fourth place.

The top team won an all-expense-paid trip to Washington, D.C. — courtesy of DOE — where it will vie for the national title during two days of competition among 60 other regional champions.

Besides Sandia, local sponsors included Lockheed Martin, Public Service Co. of New Mexico, Intel, and Albuquerque Academy. Help from DOE, the Air Force, and the Middle Rio Grande Business and Education Collaborative brought the volunteer total to 60.

Patrick says the Sandians who volunteered found the event to be fun.

"Most everyone seemed so enthusiastic that we're bound to do it again next year," he says.

— Chris Burroughs

goes to home school one hour a day when she is having a good day. "I miss my friends and can hardly wait to go back to school," she says.

Donated vacation can be used only by Sandia employees and only after the receiving Sandian's current-year and carryover vacation and all Paid Time Off (PTO) is used. For all the Process Requirements go to <http://www-irn.sandia.gov/HR/Policies/Benefits/Time/vacdon.htm>.

Thank you Sandia

Joy wanted us to publish this thank you to Sandians:

"I want to thank all Sandians and all my friends for their support during these hard times. Words cannot express my thankfulness and gratitude to each of you.

Mariah is in remission and will start having radiation in March.

Thanks again for your donations of vacation, for donations to the Sandia account, for your positive thoughts and all your prayers."

A bank account has been set up to help Joy pay for expenses related to Mariah's illness. The account is No. 246340/0005 at Sandia Laboratory Federal Credit Union.

Your used eyeglasses can give others the gift of sight

Can you imagine having bad eyesight and not being able to have the resources to get glasses? In developing countries, a pair of glasses is both unaffordable and inaccessible, an eye exam costs as much as a month's salary, and a single doctor may serve a community of many thousands of people.

The Sandia OPQC Community Outreach Team asks your support in helping the Lions Club collect your unwanted prescription glasses. Your used glasses will be cleaned, repaired, and classified by prescription.

The campaign will be March 11-22. Boxes will be distributed throughout the Labs for your convenience. Deposit eyeglasses in the designated boxes provided in your area and if you can't find a special box, please call Diane McNabb (2907) at 845-7925 to find the closest one.

The team — Diane, Sandy Milliman (15200), Theresa Chacon (14402), and Monica Lovato-Padilla (14401) — thank you for your support.

