

# New 'smart' machines could fundamentally change how people interact with computers

**Sandia team develops cognitive machines that accurately infer user intent, remember experiences**

By Chris Burroughs

A new type of "smart" machine that could fundamentally change how people interact with computers is on the not-too-distant horizon at Sandia.

Over the past five years a team led by Labs cognitive psychologist Chris Forsythe (15311) has been on the fast track in developing cognitive machines that accurately infer user intent, remember experiences with users, and allow users to call upon simulated experts to aid them in analyzing situations and making decisions.

Although work is being coordinated through the Emerging Threats Strategic Business Unit (SBU), the team includes representa-

tives from organizations 5838, 8964, 9212, 9216, 12335, 15221, 15222 and 15311, as well as university and industry collaborators.

"In the long term, the benefits from this effort are expected to include augmenting human effectiveness and embedding these cognitive models into systems like robots and vehicles for better human-hardware interactions," says John Wagner, Manager of Computational Initiatives Dept. 15311. "We expect to be able to model, simulate, and analyze humans and societies of humans for DOE, military, and national security applications."

The program started with an effort led by Sabina Jordan (5838) on the Next Generation Security Simulation project. Chris developed a

framework for constructing individualized computer models that simulated how people apply their knowledge to make decisions in real-world settings. Subsequently, these developments provided the basis for an internally funded Laboratory Directed Research and Development (LDRD) grant through the Advanced Concepts Group in which the computer model was elaborated to include the influence of organic factors such as arousal and emotion.

## Synthetic human

The initial goal of the work was to create a "synthetic human" — software program/com-  
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## Unchecked cargo: Sandia security experts help secure US ports

**Labs team working with ports of Los Angeles and Long Beach**

By John German

Several Sandians are working with the port authorities and companies that operate and utilize the country's two busiest ports to reduce the potential threats to homeland security, the supply chain, and the world economy posed by sea cargo.

Forty percent of all goods entering the United States in containers by sea comes through the Port of Los Angeles and the Port of Long Beach.

The merchandise arrives in truck-sized metal bins — some 15,000 are processed by the two ports during a typical day — each packed in the Far East, the Middle East, and elsewhere.

Although the US Customs Service inspects a small percentage of the containers for terrorist threats and other contraband, relatively few of the incoming containers are opened until they arrive at their manifested destinations within the US.

## Gizmos on a pier

After consulting with security vendors and other experts, the Ports of Los Angeles and Long Beach in June 2002 asked Sandia to conduct a threat assessment and offer recommendations to improve the security of the ports and their supply chains.

"Everybody has a device that will solve the security problem," says Sandia port security program manager Charles Massey, Manager of International Borders/Maritime Security Dept. 5356 and former US Merchant Mariner.

"But rather than simply having vendors tell them they must put some gizmos on a pier, the ports wanted someone to understand the threats and ask, What is the combination of procedural and technical solutions that would cost-effectively address those threats?"

The Sandia team includes nonproliferation experts from International Security Programs Center 5300, whose specialties include detecting and preventing smuggling of materials needed to create weapons of mass destruction.

It also includes experts from Security Systems and Technology Center 5800, whose areas of expertise include protecting valuable assets by assessing security threats and correcting vulnera-

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# Sandia LabNews

Vol. 55, No. 8

April 18, 2003



Managed by Lockheed Martin for the National Nuclear Security Administration

## Positive changes already happening in Sandia's Protective Force organization

**First involve changing officers' work schedules**

By Chris Burroughs

Positive changes are already happening in Sandia's Protective Force program.

This comes on the heels of a March 20 news conference in which Labs President C. Paul Robinson raised some security management concerns — concerns he termed "disturbing" (*Lab News*, April 4). However, there was never any evidence that classified or sensitive material had been compromised.

Dennis Miyoshi, new Director of Security Center 12200; Jim Larson, new Manager of Protective Force Program 12210; and Joe Sandoval (12211), new Protective Force Operations Manager, have been studying the issues over the past several weeks and have come up with some initial changes.

Jim says that before he arrived to take over the job as manager, he heard there were some monumental problems with the Protective Force Program. "But after being here a short time, I have found that, although there are problems, they are not as monumental as they appeared, due to the good people here doing a good job and willing to make changes," he says.

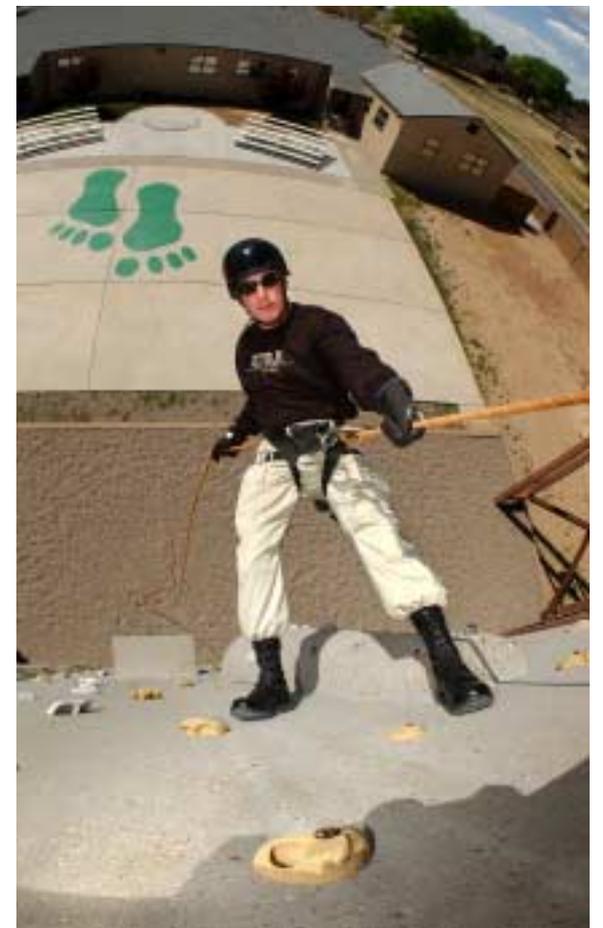
The first change, which goes into effect this month, is a switch from officers working four days on and three days off to working four days on and four days off.

"Officers work 12-hour days and frequently more, which is wearing," Jim says. "Giving them an extra day off will provide them the rest they need and more time with their families."

At a recent meeting where Jim announced the change to the North Force — officers who do security in Tech Areas 1, 2, and 4 — there were many smiles to be seen and officers were going up to Jim to shake his hand, says Lt. Chris Garcia (12210).

"It was a real morale boost after what we've been through over the past several weeks," Chris says. "We took a real hit with the news conference and media coverage. We needed something like

(Continued on page 6)



HIGH EXPECTATIONS — Special Response Team Officer Mike Tachias sharpens his rappelling skills from a 60-foot tower during joint training with the Air Force last Friday. He led an international parachute team for NATO last year while on an Army Reserve assignment in Bosnia for which he received the Distinguished Military Service Medal. "My Sandia training in emergency management was a critical skill for leading the protective force for the Bosnian theater," says Mike.

(Photo by Randy Montoya)

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12 Join our Betty Boop in donating blood for those in need

# What's what

Sandia is losing a landmark with the demolition of Bldg. 852. If that utilitarian label doesn't register with you, it's the building on the corner of F Avenue and 12th Street more widely known as The Dome or The Golf Ball.

Most recently part of the Labs' education group, The Dome has served a number of roles over the years. It has been home to Community Relations and Radio Sandia, and hosted tour groups in its small theater, among other things. And in a somewhat historic role, reporters were summoned there for the announcement in 1993 that AT&T was relinquishing its contract to manage and operate Sandia after 44 years.

The *Sandia Daily News* announcement about its impending demolition prompted Richard Bild (12870) to e-mail: "If memory serves me right, an earlier name for Bldg. 852 is Sphere of Science. This was the name of the building when it was new and housed the Sandia exhibit at the New Mexico State Fair (late 1950s or early 1960s)."

\* \* \*

*Telegraph Magazine*, the weekly magazine published by *The Telegraph* – the UK's "largest quality daily newspaper," according to someone who makes such arbitrary pronouncements – did a very nice piece about Sandia's work and its prevalence in protecting the security of the country.

And in the process, reporter Richard Grant had some. . . well, *interesting* things to say about the lab and the Sandians he talked to in developing the story. He wrote, for example, that he questioned and listened to researchers "day after day, in a small, cheaply furnished conference room."

Designating Mark Tucker (6245) "an expert on foams," he described Mark as "calm and earnest with close-cropped hair and a ruddy complexion." His host, Sandia spokesman Nigel Hey (12640), is "an expatriate Englishman with papery skin, a grey comb-over and a dry sense of humour." And Kurt Wessendorf (1732), who is working on a project to restore sight to some blind people, is "a fast-talking electrical engineer from upstate New York."

Labs homeland security coordinator T.J. Allard (50) "has cropped hair and a trimmed beard, a blue suit fits tightly across his bull-like shoulders. His personality is direct." And T.J.'s boss, VP Dave Nokes (5000), "is older, more thoughtful, more questioning and has a gentle, avuncular charm." Grant might ask some of Dave's old Soviet counterparts about that "gentle, avuncular charm."

And he says VP Gerry Yonas (16000) wears a "good-looking, well-fitted suit," but labels that "a rare sight at Sandia, where geek chic prevails."

Pretty funny, huh? No? Well, keep in mind a circulation of about 1.2 million. Funnier now?

\* \* \*

Labs Director Paul Robinson mentioned at a recent LLT meeting that he had been invited to sit in Mayor Martin Chavez's box for the first home game of the city's new baseball team, the Albuquerque Isotopes. Since two of the other expected guests – Sen. Pete Domenici and Gov. Bill Richardson – are former minor league pitchers and could be expected to explain the game's fine points, Paul said he assumed his role would be to answer the question: "Just what is an isotope?"

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

## Information Delivery in the Future

### Your views sought on info glut, future needs

Workers commonly complain about the 'glut' of information they must process in today's world. Information piles up, unorganized, and it takes more and more time to sort through all the e-mail, voicemail, faxes, and web-available data daily. What can we do besides throw up our hands in despair?

Mike Sjulín (9330), owner of Enable Work - Work Package 5 (Information Environment - Information Delivery Services), is concerned as well. "Our workers want more services, functions, and features. But they also want help in organizing and processing information to save time." How can this be accomplished?

In December a group of information providers met for a day to discuss how to help customers over the next three to five years in the area of information delivery. Experts from a variety of areas participated. Gary Shepherd (9335), who has held many focus groups at Sandia, facilitated the session and compiled all the data from the various providers.

Now it's time to present the information to customers from various constituencies around the Labs to see how they feel about all of this. How do you want to do business in the future? How would you like to receive and process information in a way best suited to the way you want to do business? What tools, concepts, and services appear to provide the best avenue for you to reach your information goals?

Gary will begin conducting Labs-wide focus groups soon. "Rather than having a mix of people in our focus groups," says Gary, "we find that having people of like interests and needs works very well. In this way we get a better representation of that segment of the population."

Gary is asking employees to participate in one of these two-hour sessions. There you can provide your opinions. A registration web site is available for you to sign up and indicate the population segment you might help to represent. You can choose from the list of categories provided, or add your own. You will then be contacted via e-mail about attending a future group. The registration site is: <https://sierratest-rc.ran.sandia.gov/infodelivery.nsf>.

Sessions will be held in New Mexico and California. Questions about the Information Delivery in the Future focus groups may be directed to Gary Shepherd, 845-8078, or via e-mail. You may also record questions and comments during the registration process.

## 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



### Sandia part-time employment now more flexible

Part-time employment has just gotten more flexible, reports the Benefits Department.

A change has been approved to Sandia's Part-Time Employment Policy, allowing nonrepresented part-time employees to elect a defined weekly work schedule that consists of any number of hours from 20 hours minimum to 36 hours maximum. Previously part-timers had only three options: 20, 25 or 30 hours per week; now employees can design more accommodating part-time schedules ranging between 20 and 36 hours per week.

Employees must obtain their manager's approval for part-time employment and can initiate the process for new part-time work hours on or after April 18. Some benefits for part-time employees are adjusted according to the number of hours elected. For additional details, please refer to the following URL: <http://www-irn.sandia.gov/hr/benefits/parttime/>.

### Recent Patents

Daniel Barnette (9224) and Curtis Ober (9233): Multiprocessor Computer Overset Grid Method and Apparatus.

Ronald Manginell (1764) and G.C. Frye-Mason: Chemical Preconcentrator with Integral Thermal Flow Sensor.

Robert Moore (6849): In Situ Barrier Formation of Magnetite to Form a Reactive Barrier for Radionuclide, Heavy Metal, and Organic Containment and Waste Stabilization.

### Vance Behr wins prestigious AIAA Knacke award for parachute decelerator work

The American Institute of Aeronautics and Astronautics (AIAA) has announced that Vance Behr, Manager of Physical Sciences Dept. 4932, will receive the 2003 AIAA Theodor W. Knacke Aerodynamic Decelerator Systems Award.

The award is presented every two years to "recognize significant contributions to the effectiveness and/or safety of aeronautical or aerospace systems through development or application of the art and science of aerodynamic decelerator technology."

Vance is being honored "for his significant contributions to the design of several high-performance parachute systems for NASA and the Department of Energy, and for his ongoing dedication to the education of the next generation of aerodynamic decelerator systems engineers."

The award will be presented at the 17th AIAA ADS conference May 19-22 in Monterey, Calif.



VANCE BEHR

# San Onofre reactor hosts experimental monitoring scheme that measures production of antimatter

By Nancy Garcia

A Sandia National Laboratories/Lawrence Livermore National Laboratory collaboration is exploring a new way to safeguard fissionable material, by building an antineutrino detector a few dozen yards away from the core of a reactor at the San Onofre Nuclear Generating Station in San Clemente, Calif.

Antineutrinos are created in fission reactions in which atoms split into lighter elements, which themselves decay, emitting pairs of electrons and antineutrinos in the process. The latter are subatomic particles so insubstantial that they pass through most matter without interacting. However, room-sized detectors like the one coming online at the San Onofre plant can detect a small fraction of the huge number of antineutrinos released from the reactor core. The detector, a pool of liquid laced with massive gadolinium atoms, emits two bursts of light generated when an antineutrino hits a proton. Photomultiplier tubes above the scintillation fluid detect the light.

Equipping the plant for the field trial has been an ongoing project for the past year. John Estrada (8120) joined the team as project lead at Sandia when he came here in April. He completed his doctorate in physics at MIT, where he researched antimatter.

"Reactors make lots of plutonium while making electricity," he says. "The purpose of this project is to measure antineutrinos to show the material has not been removed, or plutonium is not being produced at an abnormally high rate by modifying the operating parameters of the reactor."

Unlike standard monitoring practices of visits by inspectors, record logs, and video cameras mounted on fuel rods, the detector provides a continuous, direct, remote measurement of events inside the reactor core.

The tests will explore whether measurements

*Although they are hard to detect, plenty of antineutrinos are produced — 100,000,000,000,000,000,000 per second.*

can be done well enough to become a facet of safeguarding and surveillance. Factors being explored include detector volume, background shielding, the amount of photomultiplier tubes, and sophistication of electronics.

Rather than spotting diversion of material, John anticipates it would have a deterrent effect. "It's like a metal detector at an airport," he says. "People don't bring anything through because they know they'd get caught."

The device can also be used to independently measure the plutonium content in a spent reactor core destined for reprocessing or storage. In contrast, the international regime that currently safeguards civilian plutonium production relies on operator declarations and plant operating history to estimate plutonium content.

In the reactor, uranium in the fuel rods releases six antineutrinos per atom during radioactive decay. As electricity is produced, some plutonium is also created, which releases fewer antineutrinos per atom. By measuring the energy and rate of antineutrinos released, the researchers can watch for anomalies, such as an unexpected change in spectrum after a shutdown.

Although they are hard to detect, plenty of antineutrinos are produced — 100,000,000,000,000,000,000 per second. "It's a bigger number than anyone can imagine," John says. Of these, about 5,000 per day collide with protons in the detector volume, producing a neutron and a positron simultaneously. These final state particles each generate a flash of light in the liquid scintillator. The flash is detected by a

photomultiplier tube.

The overall detector measures about 15 feet per side and is located between the inner and outer walls of the reactor, about 25 feet from the core, in a ring-shaped room known as the "tendon gallery." It was partly due to the convenience and availability of this space that led research team member Adam Bernstein, a former Sandian who is now the project lead at Lawrence Livermore National Laboratory, to arrange for the project to take place at this reactor near San Clemente.

The project grew from an early study of antineutrino rates and spectrums from bombs, Bernstein said.

At the center of the detector is a cubic meter of scintillator fluid, surrounded by a water shield that screens out gamma and neutron backgrounds. Five sides have an additional shield that reduces the effect of muon particles, which can create antineutrino-like events.

The central core was recently redesigned. Final installation is being completed now. In May, the detector should be turned on to collect data for about a year to evaluate this potential approach to monitoring.

The technology has the potential of supporting verification of the Nuclear Nonproliferation Treaty, John said. "It can be used to help determine that countries aren't making more plutonium than they have agreed to make in a civilian reactor, and that this plutonium is not being diverted into weapons programs," he said.

Team members on the project include Mike Greaves (8120), Steve Haney (8731), Jim Lund (8233), Duanne Sunnarborg (8358), Mark Zimmerman (8731), and Dept. 8120 Manager Carolyn Pura.

**Sandia California News**

## New secure classified videoconference capabilities demonstrated



DEMO — A recent open house showed off classified computing capability funded by the ADAPT (Advanced Design and Production Technologies) Campaign. Secure IP videoconferencing uses the classified computer network and is available at a growing number of National Nuclear Security Administration sites, including Sandia, Kansas

City, Pantex, the Savannah River Site, Y12 and Los Alamos National Laboratory. Other sites, such as Lawrence Livermore, expect to add this capability in the near future. To find out how to schedule one of the Secure IP videoconferencing rooms, visit <http://www.sandia.gov/coco/scheduling/secure.html> or call 845-2000 for information.

# Machines

(Continued from page 1)

puter — that could think like a person.

"We had the massive computers that could compute the large amounts of data, but software that could realistically model how people think and make decisions was missing," Chris says.

There were two significant problems with modeling software. First, the software did not relate to how people actually make decisions. It followed logical processes, something people don't necessarily do. People make decisions based, in part, on experiences and associative knowledge. In addition, software models of human cognition did not take into account organic factors such as emotions, stress, and fatigue — vital to realistically simulating human thought processes.

In the first LDRD project, Chris developed the framework for a computer program that had both cognition and organic factors, all in the effort to create a "synthetic human" (see "Organic factors" below).

In 2001 two other LDRD grants were awarded. One, part of the Nonproliferation and Materials Control SBU, was to develop methodologies that allowed the knowledge of a specific expert to be captured in the computer models. Through this project, cognitive psychologist Ann Speed (12335) has developed unique approaches for obtaining both explicit and implicit knowledge and translating it into quantitative data necessary for constructing a computer model (see "Cognitive Collective" on page 5).

The second was for the Emerging Threats SBU to include episodic memory — memory of experiences — in the software. This would allow a synthetic entity to apply its knowledge of specific experiences to solving problems in a manner that closely parallels what people do on a regular basis.

## Strange twist

Chris says a strange twist occurred along the way.

"When I got the second LDRD grant, I needed help with the software," Chris says. "I turned to some folks in Robotics [Patrick Xavier (15221) and David Schoenwald (9216)], bringing to their attention that we were developing computer models of human cognition."

The robotics researchers immediately saw that the model could be used for intelligent machines, and the whole program emphasis changed. Suddenly the team was working on cognitive machines, not just synthetic humans.

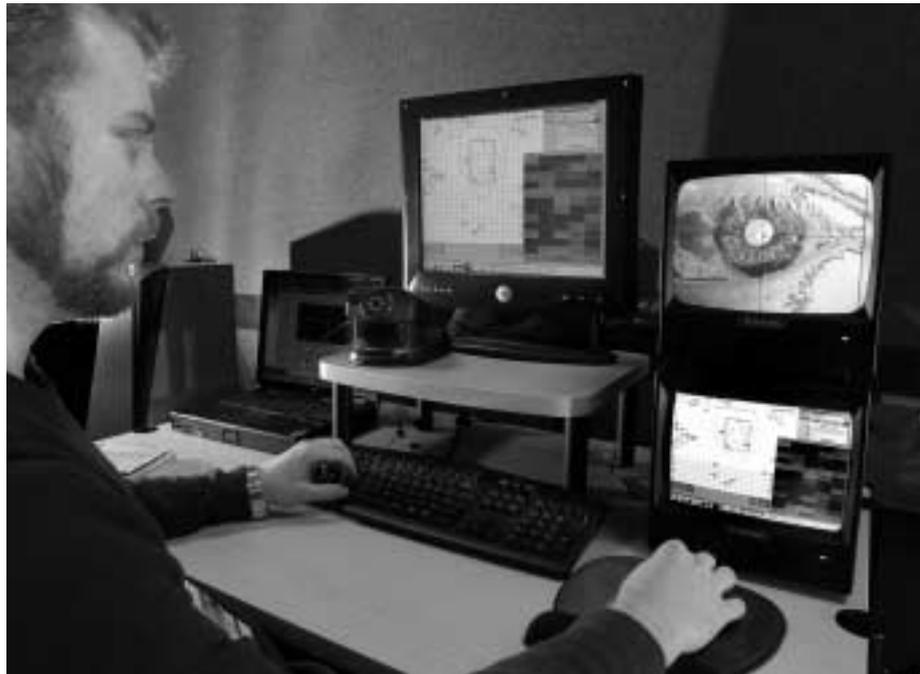
Work on cognitive machines took off in 2002 with a contract from the Defense Advanced Research Projects Agency (DARPA) to

## Organic factors

What does it mean to take "organic factors" and cognition into account?

Typically, computer models of human cognition and behavior make many simplifying assumptions. They may assume behavior is constant across time and settings. They may assume there is little or no individual variability.

In reality, many factors not only affect cognition on a moment-to-moment basis, but are essential to human cognition. For example, neurophysiological research has illustrated that when cognitive processes are separated from emotions due to brain damage, the person is able to thoroughly analyze a situation, but is rendered hopelessly indecisive. Similarly, without individual variability, simulations cannot reproduce the range of behavior, including creative solutions to problems, common at the level of groups and populations.



SOFTWARE DEVELOPER ROB ABBOTT operates the DDD-AWACS simulation trainer while a cognitive model of the software runs simultaneously. The cognitive model can detect when Rob makes an error and alert him to it. (Photo by Randy Montoya)

develop a real-time machine that can infer an operator's cognitive processes (see "Airborne Warning and Control simulation" below).

"This project is developing technology to fundamentally change the nature of human-machine interactions," Chris says. "Our approach was to embed within the machine a highly realistic computer model of the cognitive processes that underlie human situation awareness and naturalistic decision making. Systems using this technology are tailored to a specific user, including the user's unique knowledge and understanding of the task."

The idea borrows from a very successful analogue. When people interact with one another, they modify what they say and don't say with regard to what the person knows or doesn't know, shared experiences, known sensitivities, etc. The goal is to give machines highly realistic models of the same cognitive processes so that human-machine interactions may enjoy benefits similar to human-human interactions.

Recently a major car company has taken interest in real-time cognitive machines. The technology could adjust systems such as the brakes in response to the driver's cognitive state — talking on cell phone, or changing the radio — in real time. Also, a developer of PC desktop software applications has expressed an interest in the capability for the computer to know

what a user has done in the past so that current activities can be put in the context of experience. Computers would have a record of all their interactions with a user so that if a user starts to change a setting, it could tell him that he tried this before and it didn't work.

"It's entirely possible that these cognitive machines could be incorporated into most computer systems produced within 10 years," Chris says.

## Grand Challenge

Early this year work began on a Next Generation Intelligent System Challenge LDRD project. Russ Skocypec (15310) is the program manager, and Larry Ellis (6502) is the principal investigator.

"The goal of this Grand Challenge is to significantly improve the human capability

to understand and solve national security problems, given exponential growth of information and very complex environments," says Larry. "We are integrating extraordinary perceptive techniques being developed by John Ganter (6533) and his team with Chris' cognitive systems."

The intent of the cognition track of this project is to develop technology that will augment the capacity of analysts, engineers, war fighters, critical decision makers, scientists, and others in critical jobs to detect and correctly interpret meaningful patterns based on large volumes of real-time and archival data derived from diverse sources.

This may involve real-time systems that use simulated experts from different domains that singly and collectively assess immense volumes of data to alert engineers and analysts to potential problems.

The same technology would allow an individual to visualize the knowledge of experts and even compare experts to one another.

"We have already shown that engineers from different disciplines have quite different knowledge structures that allow them to look at the same data and reach somewhat different conclusions," says Chris. "Our intent is to capture these unique perspectives in a practical set

(Continued on next page)

## Airborne Warning and Control simulation

Activities in the Defense Advanced Research Projects Agency (DARPA) project centered on creating a capability in which a machine-based cognitive computer model provides a real-time awareness of the cognitive state of an operator. This capability provides the basis for systems that augment the cognitive capacity of an operator through "Discrepancy Detection."

In Discrepancy Detection, the machine uses an operator's cognitive model to monitor its own state and when there is evidence of a discrepancy between the actual state of the machine and the operator's perceptions or behavior, a discrepancy may be signaled.

To do this, Sandia's cognition team, in partnership with the Air Force Research Lab at Wright Patterson Air Force Base, used a Distributed Dynamic Decision-making (DDD) Airborne Warning and Control (AWACS) simulation. The Air Force uses AWACS in real situations to monitor where warplanes are located in a sector at a given time and to provide instructions to pilots.

Two Sandians, Mike Bernard and Marta Parnell (both 15311), were tapped to become proficient AWACS operators using the DDD-AWACS simulation trainer. After the training was complete, computer models for their

knowledge of the AWACS tasks were developed. The computer could then use these models to interpret events in the simulation as the operator completed mission scenarios. When the computer model was compared to the actual operator, there was an approximately 90 percent correspondence, indicating that most of the time the computer correctly inferred the operator's ongoing cognitive processes.

One of the interesting things discovered through this process is that Mike and Marta's knowledge of the AWACS task was quite different. "While they both exhibited very high levels of performance in this complex multitasking simulation," Chris Forsythe (15311) says, "they used different cues, responded to different patterns of cues, and used somewhat different strategies. This suggests that one-size-fits-all generic models may not work particularly well."

Chris believes this type of cognitive machine could be used by many people doing critical, stressful jobs such as pilots or emergency responders. It could watch them doing their jobs and alert them when they are on the verge of making a mistake. "These cognitive machines could be a safety catch net," Chris says, "because, unlike people, they never get tired, distracted, or upset."

# Port security

(Continued from page 1)

bilities. Critical infrastructure protection experts from Infrastructure and Information Systems Center 6500 are involved as well.

## Consequences to be avoided

The team began conducting the security assessments last fall with private funding from the Ports of Los Angeles and Long Beach through a work-for-others agreement.

A grant proposal submitted to the Transportation Security Administration (TSA) could provide additional support under the TSA's Operation Safe Commerce, one of several new government programs intended to help improve supply chain security at US transportation centers.

## Port closures among top security concerns

One consequence the Sandia port security team examined was the effect on business caused by the closure of a port for security reasons.

They found that the smooth flow of goods is a crucial element of not only the US economy but also the world economy.

A closure of a US port, they concluded, would back up shipments into the world's hub ports, such as Singapore, which in turn would affect shipping out of feeder ports in Indonesia, Hong Kong, and Pakistan, for instance.

"When one portal is shut down, the world suffers," says Charles Massey. "There's broad recognition among the carriers and the port operators around the world that this is not just a US problem. This interdependence is a big driver for all of them to take the threat seriously."

The Port of Hong Kong has signed an agreement with Los Angeles and Long Beach to assist their efforts to improve security, and members of the Sandia team have visited Hong Kong to begin discussions. Members of the team also have met with carriers and shippers from Singapore, he says.

The Sandians first worked with the ports to prioritize the consequences the ports wished to avoid (see "Port closures among top security concerns" below left).

One of the team's first questions was, How could a ship or cargo or persons aboard a ship be used to cause loss of life or denial of usage of the port?

Working backwards from each set of undesirable consequences, the team identified threats that could bring about those consequences and security vulnerabilities that could allow the threats to be realized.

The Sandians now are working with the ports to identify the most cost-effective means of dealing with the most significant vulnerabilities.

## Technology only part of solution

Although the team is looking at port security



RELATIVELY FEW of the containers coming in on cargo ships are opened until they arrive at their manifested destinations within the US.



SANDIA IS CONDUCTING a threat assessment and offering recommendations to improve the security of ports and their supply chains.

from a systems perspective, technology could be part of the overall solution, adds Charles.

Commercially available technologies and Sandia-developed seals, sensors, and information technologies might be useful, but their utility cannot be accurately assessed until Labs and port officials fully understand and prioritize the vulnerabilities and then identify technologies that can fill gaps, he says.

Procedural improvements, as well as training, are likely to be as important as technology improvements, he says.

Ultimately, he says, Sandia's recommendations to improve security at Long Beach and Los Angeles could be shared with ports around the world.

"What the ports and carriers hope is that improved security doesn't solely occur through expensive new government mandates," he says, "but rather through an industry-driven effort with independent recommendations adopted as best management practices."

Sandians involved in the project include Dick Wayne (5356, project leader), Larry Miller, Martin Sandoval (both 5849), Roger Case, Jennifer Jacobs, Wendy Clayton (all 5356), Jim Larson (9815), Nancy Orlando-Gay, and Robert Matthews (both 5302).

# Machines

(Continued from preceding page)

of tools that may in essence allow any given engineer to function as a team of engineers with different expertise and experience."

A primary emphasis of the Grand Challenge involves development of tools that will enable individualized knowledge to be captured by software running in the background, without the need to directly interact with the engineer or analyst. Currently, the rigorous methods required to develop an accurate model of an individual's knowledge of a domain are very labor-intensive. "Automated knowledge modeling," says Chris, "is the most challenging aspect in developing this technology."

However, the ability for a machine to automatically acquire accurate models of users' knowledge could have dramatic impacts. In the near-term, this would enable adaptive help systems that adjust to the specific knowledge of a user or technologies that allow a novice user to compare their knowledge to that of one or more experts.

"Looking into the future," Chris adds, "one may envision an economy in which an individual's knowledge and experience may be packaged and sold as a commodity — when an engineer buys their computer-aided design software they may select from a library of experts whose cognitive models come installed with the software not unlike going to a music store and selecting a stack of CDs of your 10 or 12 favorite artists."

Russ sees an exciting future for this work

and the impact it can have on Sandia

"One of Sandia's strengths is our expertise in understanding and representing complex physical behavior from a sound foundation basis," Russ says. "The efforts that we are now

undertaking in cognition are beginning to lay a similar foundation upon which we will build capabilities to represent human behavior, which is a difficult, yet critical, aspect of national security."

## Cognitive Collective

In the 2001 LDRD project funded by the Nonproliferation and Materials Control Strategic Business Unit, the cognition team, particularly Ann Speed (12335) and Sabina Jordan (5838), created a software program that gave the computer (cognitive machine) the ability to recognize patterns of behavior consistent with an insider threat (for example, an employee with the intent of stealing special nuclear materials). They used models based on experts from different domains.

Experts in counterintelligence, security vulnerability analysis, protective forces, and clinical psychology were chosen. The computer models for these experts could interact and recognize patterns that no single expert could recognize alone. This capability has been referred to as a "Cognitive Collective."

To validate the system, scenarios were created that involved behavior that could or could not be perceived to be suspicious. These scenarios were given to the computer models

and to the actual experts. In 90 percent of the cases, the computer model and the expert reached the same conclusion.

Afterward, the actual experts were brought together and given scenarios that they openly discussed to reach a group decision with regard to whether there was reason for suspicion. Once again, the computer model corresponded to the collective decision of experts with 90 percent accuracy.

For the Grand Challenge, this concept is being implemented as an integrated system using a fictitious population and simulations of 23 separate electronic data sources. However emphasis is being placed on an insider with the intent of stealing classified information. While the prototype again focuses on insider threat detection, there are countless other applications that involve immense volumes of data that cannot be fully understood by a single individual, but require multiple individuals with different expertise.

# Protective Force

(Continued from page 1)

this.”

Also, this month, supervisors, including lieutenants and captains, will go from working eight-hour days to 12-hour days in an effort to promote cohesion between them and the officers. Under the eight-hour workday for lieutenants and captains, many of the officers found themselves working for different supervisors in a single shift. The new schedule will ensure officers will report to one supervisor per shift.

One of the major issues has been officers working overtime, due largely to the fact that there are simply not enough people to work all shifts — especially when officers call in sick.

Dennis notes that Sandia has had 31 new-hire officers trained and in the queue ready to start work since July 2002. The problem is the amount of time required to obtain clearances for them. At this time nine are still awaiting their clearances.

Dennis and Jim, together with Personnel Security Dept. 3131, are working closely with NNSA's new Sandia Site Office (SSO) to encourage the FBI, which has been doing clearances since Sept. 11, 2001, to prioritize the new officers' clearances.

A partial resolution to the shortage of officers

will be the hiring of 10 to 15 security police officers from the Rocky Flats Plant, northwest of Denver, which is closing down its operations. They are already trained, have clearances, and are ready to work.

“They just have to be integrated into our system,” Jim says. “There are some outstanding people who have both the skill sets we need and who are enthusiastic about working here.”

Another priority will be more training for officers, especially those who work in areas where nuclear materials are located. Jim says that Al West, Director of the Integrated Safety and Security Center, and Terri Lovato, previous manager of the Protective Forces, had already increased training staff and expanded the training curriculum. Jim plans to build on that foundation to “continue and strengthen the training process.”

The training is intense. The officers have to be able to “protect the nuclear material against a specified design basis adversary threat established by DOE.” They are highly proficient in the use of a variety of weapons. They must be able to don gas masks, and shoot, move, and communicate with them on. Jim calls these “perishable skills” that can degrade if not maintained through continual training. “You fight like you train,” he says.

Dennis has found it relatively easy to implement the new changes, largely due to the cooperation and support he is receiving from various departments around the Labs. Payroll, Benefits, and Human Resources have all been willing to create flexible infrastructures that allow for the new shift schedules and speed-up of clearances.

One other aspect has made the changes move



**FAST SHOOTER ON THE SOUTH FORCE** — Because of the nature of the sites they are protecting, South Force officers — those who protect Areas 3 and 5 — must meet special requirements established by DOE. They have to be able to shoot on the move, be qualified to fire a machine gun, be able to do close-quarter battle, run a difficult obstacle course, and meet rigid physical requirements. One person who does all this well and has proven it over and over is Lt. Mark Quintana (12210), pictured above rapidly firing a Glock semiautomatic handgun. Last year he came in first in a national law enforcement shooting contest in Raton that involved people from several states. He competed in the gun match, which included shotgun, long rifle, and handgun. Mark grew up in Española and has been shooting since he was a child. Before joining Sandia two years ago, he was on the Los Alamos National Labs Protective Force. “I’ve had a lot of time behind the trigger,” he says. “It’s something I enjoy. It’s my hobby.”

(Photo by Randy Montoya)

ahead swiftly. It’s the fact that Dennis reports directly to Executive VP Joan Woodard.

“Knowing that security is of importance to Sandia Executive Management has expedited my ability to get things done,” he says.

In addition, he says, the officers, lieutenants, and captains have all been extremely cooperative. He could have run into negative feelings, but that has not been the case. It’s only been positive. “The Protective Force wants the opportunity to demonstrate their ability to perform at the highest levels,” he says.

## Diverse department

Lt. Chris Garcia (12210), who has been at Sandia since January 1999, says he truly enjoys working in Protective Force.

One of the reasons is that the department is very diverse.

“People here come from all walks of life,” he says. I started with the Bernalillo County Sheriff’s Department when I was 19. Everyone there were cops all their lives. Here at Sandia the people have done lots of things. There are ex-teachers, ex-military, ex-grocery store workers, you name it.”

He worked as a deputy sheriff for 11 years and then quit to run a flooring business. He says he’s a good example of the diversity.

## Very few bad apples

Everyone agrees that the problems with the Protective Force are due to a very small number of people.

“Ninety-nine percent of us know our job and do our job well,” says Lt. Anthony Ramirez (12210), who is with the South Force. “There are always bad apples — people who try to beat the system.”

He notes that morale took a blow caused by the negative publicity resulting from the press conference, but it didn’t “take away from our mission.”

Dale Martinez (12210), president of the Security Police Association, says that the most

important tack to take now is to support “Dr. Robinson and endorse the reorganization that is now taking place.”

Association Vice President Dan Funk notes, “We look forward to working together. We want to give it a chance.”

Lt. Chris Garcia (12210) says that when the officers first heard about the news conference, they “felt bad.” But they were then happy with a statement Labs President C. Paul Robinson made noting that the problems with security management “involved only a small fraction of employees and managers” (*Lab News*, April 4).

## Protocol has role

Every time an important visitor comes to Sandia, the Labs’ lead protocol Protective Force officer Lt. Martina Baldonado (12210) is there to make sure there are no security issues.

“I pull together the people in the Protective Force who I need, along with if necessary those from Kirtland Air Force Base,” she says.

In the case of very important visitors, like Homeland Security Director Tom Ridge or Secretary of Energy Spencer Abraham, she will make sure the areas they visit are clear.

During the recent State of the Labs event held at the Marriott where Sandia President C. Paul Robinson and Executive VP Joan Woodard spoke about Sandia’s accomplishments, Martina worked with the Bernalillo County Sheriff’s Office and Albuquerque Police Department to ensure that the facility was safe.

“I find it’s an honor to protect the president and executive vice president,” she says.

## Jim Larson and Joe Sandoval have security roots

Both Jim Larson, the new Manager of Protective Force Program 12210, and Joe Sandoval (12211), new Protective Force Operations Manager, have security roots.

In the 1970s Jim was a special agent for the US Secret Service where he was assigned to the Presidential Protection Division. He has also served as a supervising agent for the New Mexico Attorney General’s Office where he was responsible for an eight-state criminal intelligence collection and analysis agency. He later became deputy director for the Governor’s Organized Crime Prevention Commission.

At Sandia, where Jim has worked for 15 years, he has been involved in conducting reviews of security policy procedures, making

recommendations for operational changes that resulted in cost savings and favorable security audits. He has also conducted security and vulnerability (VA) analyzes, developed performance testing plans to validate these VA assumptions, and prepared Master Safeguards and Security Agreements between the Labs and DOE. He has been involved in the Russian Material Protection, Control, and Accounting Program where he assessed Russian sites to identify needed security upgrades.

Joe joined Sandia in 1985 where he was a member of the Protective Force. He served as a security police officer, communicator, security lieutenant, and security project lead. He later became a security systems engineer and led

teams conducting analyzes at DOE sites, US and NATO military bases, civilian nuclear facilities in Mexico and South America, and civilian and military nuclear sites in countries of the Former Soviet Union.

Prior to joining Sandia he was a Marine and several times he was named Marine of the Year. During his career at Sandia he took off to fight in Desert Storm. The 2nd Reconnaissance Battalion, 2nd Marine Division, selected him for meritorious promotion for actions during the war. “We have an opportunity,” he says, “to help build a Sandia Protective Force that has the respect of outside security agencies, that provides a valued service to Sandia, and one in which members take pride in their jobs.”

SANDIA NATIONAL LABORATORIES

# New Materials, Advanced Manufacturing Update Stockpile

**S**andia is pioneering technologies to manufacture small numbers of weapons components of the highest quality. This effort spans:

- New materials to better withstand hostile environments
- Computer design-to-manufacture of flight-quality parts and systems
- Fast prototyping, allowing for quick evaluation of many designs
- Nano- and biotechnology to fully utilize next-frontier technologies
- Intelligent robotics that remove people from dangerous environments and assist them in difficult tasks.

*An engineer reviews design specifications utilizing Archimedes™, a Sandia-designed software used for intelligent design and optimization of assembly procedures.*

Eighth in a series of 10 posters on "Stockpile Stewardship: Strength Through Science" prepared by Public Relations & Communications Center 12600 (design by Mike Vittitow; photo by Randy Montoya) in cooperation with the Nuclear Weapons Strategic Business Unit. All 10 posters are on display in the Bldg. 800 corridor.  
NOTE: This poster was prepared prior to the 9/11 terrorist attacks on the US. Subsequently, Sandia sensor technology has found growing application in counterterrorism and homeland security.



# Sandia provides benefits for those on military leave

With many Sandians now serving in the military in Iraq and elsewhere (*Lab News*, April 4), the Benefits Department has been fielding lots of inquiries. What benefits do Sandia reservists called into active military service receive? What can other employees do to help?

The Benefits Department has a complete package of information on time-off options as well as status of benefits during military leave.

At the most basic level, the Uniformed Services Employment and Reemployment Rights Act (USERRA) applies to all employers and covers returning veterans' and reservists' rights to reemployment, health insurance, pensions, and fringe benefits following a period of active duty in the US armed forces. It also prohibits discrimination on the basis of a person's military status. USERRA does not, however, require employers to pay reservists their wages while they are absent from work for military duty.

Beyond USERRA, Sandia has implemented additional assistance to Sandia reservists who

*Once Sandia active reservists exhaust their paid time off for reserve service and their own vacation, they are then eligible for up to 500 available hours of employee-donated or ceded vacation in Sandia's vacation-donation pool.*

have been called to service. In addition to the initial 88 hours of paid time reservists receive for yearly training, Sandia has approved another 88 hours for those on emergency call up, effectively doubling the time that other reservists would normally get paid. Once Sandia active reservists exhaust their own vacation, they are then eligible for up to 500 available hours of employee-

donated or ceded vacation in Sandia's vacation-donation pool. Currently there are enough vacation hours in the pool to accommodate military reservists' needs, but if a new need for donated vacation arises, Benefits will publish a request.

After reservists have used their own vacation, allotted donated vacation, and all paid-time off options, they transition into a Military Leave of Absence, during which time they receive pay differential for 180 days to compensate for the difference between their Sandia paychecks and their military paychecks. Reservists continue paying premium-share for benefits six months after they go on leave, so medical insurance remains uninterrupted. Reservists also continue to receive vacation credit and pension credit for time spent on military leave, and upon return to Sandia they will receive reinstatement to the same or equivalent position that they left.

For further information on military duty, contact Ann Murphy (3341) at 844-8853 or amurphy@sandia.gov.

## Labs volunteers lend their voices to fifth annual 'Read Across America' day



DR. WOODARD, DR. SEUSS — For the past five years on March 2, the anniversary of the birth of Theodore Geisel (Dr. Seuss), a "Read Across America Day" has been scheduled in schools across the nation. The idea is for every child to be reading in the company of a caring adult. At the Sandia Base Elementary School, Labs President Paul Robinson and Executive VP Joan Woodard (pictured above) read to students. Other Sandians who read to the students that day were Mike DeWitte, Darlene Leonard, Pam Catanach, Amy Tapia (all in Corporate Outreach Dept. 12650), Trudy Blake (01), Don Susan (1822), Jerry Rejent (1833), and Jane Lehr (1645, and a parent of a Sandia Base student). (Photo by Randy Montoya)

## Annual Earth Day celebration scheduled for April 22

- Tuesday, April 22
- 11:30 – 3 Exhibits
- 1 – 2 p.m. Speakers

Steve Schiff Auditorium and 823 Breezeway

\*\*\* Snacks Provided \*\*\*

BBQ Lunch for Purchase

Come and celebrate Earth Day. This year's event will highlight the environmentally related efforts of the Sandia community. There will be posters, demonstrations, and speakers addressing a wide array of environmental topics. A barbecue lunch will be available for purchase (\$6.75) between 11:30 and 1.

Speakers will be on stage from 1 to 2 p.m. Speakers and topics include: Gary Jones, "Energy, Sustainable Design and Terrorism Prevention," Al Zelicoff, "Energy Conservation," and Dick Thomas, "Water Budget Modeling."

Posters and demonstrations will address distributed energy, recycling of construction waste at Sandia, environmental remediation and stewardship, the Sandia Energy Contest, hydroponics research, water conservation, and "green" vendors.

Do you know you have an ecological footprint? You'll be able to calculate your footprint and earn a prize. How do you think you'll measure up? Find out if you are you Paul Bunyon or Johnny Appleseed. You can also win a prize for taking a quiz. Go to <http://www-irn.sandia.gov/esh/earthday/quiz.html> and bring your quiz results to Earth Day to claim your prize.

Sponsored by Sandia Pollution Prevention. Contact Margie Marley (284-3982) with questions.

## 'Your Thoughts, Please' offers a question about its own questions

It's time for another internal-assessment-type question posed by "Your Thoughts, Please," the web-based employee-comment initiative. (Go to <http://www-irn.sandia.gov/newscenter/news-frames.html> and click on the appropriate spot near the top left of that page.)

Since this program began early in 2001, 20 questions have been offered. An upfront ground rule has been that employee responses can be submitted signed or as "name withheld." To date about 37 percent of the responses to all questions have been signed.

Therefore, the current question asks Sandians to suggest questions — or types of questions — that they believe they'd want to answer and be willing — even eager — to answer with their names attached.

Rod Geer (12640), who began the program following discussions with members of the Laboratory Leadership Team and analysis of employee focus groups conducted during 2000, says, "There's never been a question to which the vast majority of respondents have wanted their names published and that includes ones I'd even describe as benign/issue-neutral questions. Hopefully responses to what we've asked now will provide that insight. It's basically research to improve the program for all Sandians, no matter their job."

The question most often signed — by 60 percent of employee responders — was: "If you were put in charge of a Sept. 11, 2002, Sandia program to commemorate the first anniversary of the Attack on America a year earlier, what would you do?"

The question that resulted in the lowest percentage of signed responders — just nine percent: "How do you believe your career at Sandia is affected, either positively or negatively, based on the visibility of the programs/technologies on which you work?"

### Lots of energy in recently posted responses

Also available for reading on the "Your Thoughts, Please" web site now are more than 30 responses to a question dealing with communications — what should or shouldn't be said — in the workplace.

Some excerpts:

"The idea that there is a standard list of things that shouldn't be said in the workplace is silly. (Oops — maybe I shouldn't say that.)"

"You did a really great job on your last project and I'm proud of you, but . . ."

"I wish I would never hear: 'Why are they talking (a foreign language)? That is rude. They must be talking about me. Why can't they just speak English?' Some Sandians seem threatened by others casually chatting with each other in another language."

"The mere fact that YTP is asking this question makes me cringe."

One response was signed by "The Staff of [Diversity, EEO and Affirmative Action Services] Dept. 3553." It read, in part: "Intentionally rude and insensitive comments have no place in a professional work environment. In fact, disparaging comments that focus on characteristics protected by federal, state, and local laws (e.g., race, national origin, religion, age, gender, sexual orientation, etc.) are expressly unacceptable at Sandia."

# Paul Robinson's Pake Prize acceptance speech touches themes of patriotism, love of research, science in the service of humanity

**Labs President calls Sandia assignment 'the best chapter by far of my life and career' and 'a dream job'**

[Note: The American Physical Society's George E. Pake Prize recognizes outstanding work by physicists combining original research accomplishments with leadership in the management of research or development in industry. Sandia President and Labs Director C. Paul Robinson is the 2003 recipient of the prize. His citation reads: "For his leadership roles as Director of the Sandia National Laboratories and as Head of the US Delegation to the US/USSR arms control talks in Geneva, and for his pioneering contributions to the development of high explosives lasers, e-beam initiated chemical lasers, and molecular laser isotope separation methods." Here are extended excerpts from Paul's acceptance speech at the APS meeting last month.]

My life and career as a physicist have always been a singular joy to me. . . . I have often told young students that the study of physics prepares you for a more interesting life — to better understand the world, and to be capable of making your own contributions to improve the world around you.

Let me clarify early on in this talk: no one achieves significant results all alone. The pursuit of science and technology in today's world is not at all a solitary undertaking, nor do I believe it was likely ever the case. . . . I have seen again and



LABS PRESIDENT and Director C. Paul Robinson.

ror, asking, "What can we possibly do about that?" and using every bit of knowledge within you to search for how to possibly counter or at least cope with such foreign developments. . . .

## A life of service

It is here that I want to bear witness to the nation that gave me birth, saw to my education, and supported me and so many others in our quest to defend peace and freedom. . . . I want to communicate just how strongly I feel

about the nation that is the greatest source of hope and refuge for peoples all over the earth. . . . Before I was asked to lead the nuclear weapons and national security programs at Los Alamos, I had already developed my own catechism that the best formula for peace is when the strongest weapons are in the hands of those who want peace more than they want power. It has been easy for me to devote much of my life to trying to ensure that the United States remains the most powerful nation, since it wields that power as unselfishly as is humanly possible. I am far from "Pollyannaish" in my patriotism — the United States has not yet achieved perfection — but I believe that we are striving to make both our nation and the world a better place. . . .

## Nuclear negotiations

[After leaving Los Alamos in 1985] I received [a call] from the Reagan White House asking if I would be willing to serve as the US Ambassador to the Nuclear Testing Talks in Geneva, Switzerland. For a

thereafter. At the Los Alamos Laboratory: Dr. Keith Boyer, Jim Henschel, Dr. Harold Agnew, Dr. Donald Kerr were crucial bosses and friends — but also Dr. Hans Bethe and Dr. Richard Garwin, who as frequent lab visitors were important advisors for much of my work. Although we frequently still disagree on political matters, together we developed common interests and great respect for cutting edge physics."

Paul also cited a course he took soon after joining the staff at Los Alamos National Laboratory. "I also was privileged to take the Classified Nuclear Physics course taught by one of the greatest teachers of all time, Sam Glasstone. It started for me what has been a lifelong pursuit — the application of science and technology for national security."

physicist, it was a heady request. What an amazing time to participate in arms control negotiations!

Looking back, I believe I had one of the best spectator seats to watch the Cold War come to an end; and not just to watch, but also to participate in so many activities — ministerials, Summits, as well as the steady 100-hour work weeks which all of us in the delegation put in during the long negotiating sessions. . . . Of course none of us, neither on the US delegation, nor the Soviet delegation, were aware of it at the time, but our work set the stage for the many lab-to-lab programs which we have carried out since then. They have served both to better protect and safeguard nuclear materials, and also to jointly work to achieve the conversion of the industries, originally built to make war, into engines of prosperity.

## Sandia years — culmination of a dream

The ratification of the treaties and protocols [I had helped negotiate] would never have been successfully concluded without the tremendous work of the many people from the US nuclear labs who served as technical advisors on the delegation. My experience with these tremendously knowledgeable and dedicated people convinced me that I too was — at heart — a "lab guy." I was lucky enough to receive a job offer from Sandia, and thus began what has been the best chapter by far of my life and career. . . .

In mid 1995, Sandia's President Al Narath asked me to succeed him as President and Laboratories Director, arguably the best science and technology job in the world. It continues to be a dream job today — the opportunity to lead such an outstanding staff of scientists and engineers in doing important work on behalf of the nation has never been more fulfilling. . . .

In Sandia's strategic planning two years ago, we developed a simple statement of the Laboratories' "core purpose". . . . Ours is "helping our nation achieve a peaceful and free world through technology."

I believe that we [at Sandia] are making significant progress in becoming the lab that the US, as the freest

nation on the face of the earth, deserves. Freedom is an enormous advantage in pursuing science and technology advances. . . . We are very much "mission-driven" laboratories, and our emphasis on applied science is the best service we can provide to the nation, and through it, to the world. The tenor of work and the new personnel we have recruited as a result of the September 11 tragedy has once again refocused us and all of our teams to strive to make the maximum contributions of which we are capable.

## A Postlogue on the future

[After citing Sandia's positive post-Cold War relationship with the labs of the former Soviet Union, and its efforts in focusing more attention to technology-based approaches related to "waging peace," Paul offered a final comment:]

This leads me to one final quote I must share with you before I sit down, because it is directed at physicists. For the past thirty years I have had these words on a plaque at the door of my office so I can read it periodically and remind myself of what we should be about. Albert Einstein made the following charge to a group of young physicists he had been asked to address. "Concern for mankind and its future must be at the center of all technical endeavors, in order that the creations of our minds shall be a blessing to mankind, and never a curse." He added, "Never forget this in the midst of all of your diagrams and equations." I pray that neither you nor I ever forget this.

*"Before I was asked to lead the nuclear weapons and national security programs at Los Alamos, I had already developed my own catechism that the best formula for peace is when the strongest weapons are in the hands of those who want peace more than they want power."*

again how some of the most worthwhile results arise as a result of multidisciplinary teams.

I have had great teachers. The best ones devoted themselves to teaching with an all-encompassing passion. . . . Most have never received either public recognition or such prizes as this. A share of the award is surely theirs! . . .

## The Los Alamos years

When I joined Los Alamos in 1967, as a young nuclear physicist, it was somewhat akin to entering heaven. . . . It started for me what has been a lifelong pursuit — the application of science and technology for national security. . . .

Throughout the years I have received what are commonly called "threat briefings." Over time, I have learned a lot — much more than I ever wanted to know about "man's inhumanity to man". . . .

One of the occupational hazards of such work is chronic insomnia. Over the years there have been countless sleepless nights of sheer ter-

## Paul Robinson cites mentors who made a difference throughout his career

In accepting the George E. Pake Prize from the American Physical Society, Labs President C. Paul Robinson said a share of the prize "surely" belongs to a succession of mentors, teachers, and colleagues with whom he has interacted throughout the course of his career. Here is the list of mentors Paul mentioned in his Pake Prize acceptance remarks:

"At Christian Brothers University [Paul's alma mater in Memphis]: Brother Luke Marelius, Dr. George Carney, and Dr. Van Hatz. At Florida State University: Dr. Edward Desloge, Dr. Ray Taylor, and my major Professor, Dr. Robert H. Davis the principal scientist at the Van de Graaff Nuclear Research Center — who gave me increasing responsibilities for running his research group. In a sense, he cast the dye for my career

*"My experience . . . convinced me that I too was — at heart — a 'lab guy.'"*

# Mileposts

New Mexico photos by Michelle Fleming  
California photos by Bud Pelletier



David Barton  
40 9612



Thomas Wedel  
35 14407



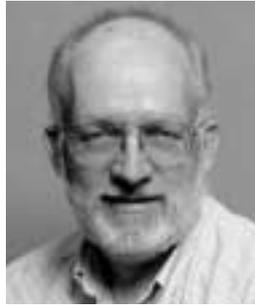
Olga Archuleta 25 2102  
Jose Archuleta 20 6850



Roger Hagengruber  
30 010



Gilbert Benavides  
25 14184



Richard Bild  
25 12870



Bryan Burns  
25 2340



James Clements  
25 1732



Robert Hill  
25 14404



David Tenorio  
25 12345



Gila Yaniv  
25 3501



Suzanne Burke  
20 10500



Donna Chavez  
20 1011



Waylon Ferguson  
20 10508



Mae Lambert  
20 2500



Sheryl Martinez  
20 1312



Paul Schlavin  
20 10824



Charles Shirley  
20 9620



Daniel Wahl  
20 5912



Berniece Willeto  
20 10503



W. Sue Williams  
20 5848



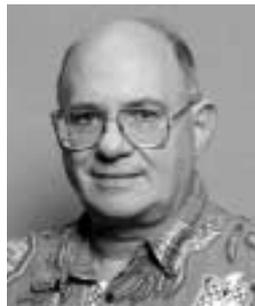
Harold Clay  
15 12210



Elizabeth Connors  
15 2111



Daniel Harbour  
15 12210



Lee Kauffman  
15 3128

## Sid Gutierrez named one of 50 Most Important Hispanics in Business and Technology

Sandia's Sid Gutierrez, Director of Monitoring Systems Center 5700, has been selected as one of the 50 Most Important Hispanics in Business and Technology.

The announcement came April 3 in a letter from Tyrone Taborn, Editor-in-Chief, *Hispanic Engineer* magazine, Baltimore, Md.

"The 50 Most Important Hispanics in Business and Technology list is one of the most prestigious honors in the Hispanic professional community," said Taborn. "Thousands of candidates are reviewed, and those that are selected stand out in areas such as professional achievement, technological innovation, and community leadership."

It said the honor "celebrates both Sid Gutierrez's career and the role that Sandia . . . has played in his success by creating an environment where Hispanic professionals can thrive. This recognition not only provides countless youth with an example of what a sound educational background can provide, it also sends a powerful message to your employees, job candidates, and customers that Sandia National Laboratories is the kind of organization that embraces the best, without regard to ethnicity."



SID GUTIERREZ prepares to videotape a message to students at a space conference held at Rice University. (Photo by Bill Doty)

The 50 Most Important Hispanics in Business and Technology will be published in the May issue of *Hispanic Engineer*.

Sid, an Albuquerque native and graduate of Valley High School, graduated from the US Air Force Academy in 1973 and then went on to a distinguished career in the Air Force as a test pilot for the F-16 and other aircraft. He received an MA in management from Webster College in 1977.

In 1984 NASA selected Sid to become an astronaut. He flew on two space shuttle missions. He was pilot of the *Columbia* on flight STS-40, a nine-day dedicated space and life sciences mission launched June 5, 1991. Three years later he served as commander of the 11-day STS-59 Space Radar Laboratory Mission aboard the *Endeavour*, April 9-20, 1994.

Sid retired at the rank of colonel from the Air Force and NASA in September 1994 and joined Sandia. He served as Manager of the Strategic Initiatives, Airborne Sensors and Integration, and Physical Sciences departments and was a Level II Program Manager for both Applied Technologies and Information Technologies before being named Center 5700 Director. He is active in community affairs and serves on many boards.

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

## MISCELLANEOUS

LIGHT FIXTURES, ceiling fan, matching Southwestern design, \$200; mantle clock, w/German movement, \$55. Harris, 822-0236.

FERRET CAGE, large, 4-story, white powder-coated, excellent condition, \$85. Gjullin, 898-6784.

SOFA, Broyhill, 3-pc. sectional, beautiful spring colors, floral pattern, 12 pillows, good condition, \$750. Miner, 828-1558.

ENTERTAINMENT CENTER, fits corner, holds TV & stereo, CD/video storage, excellent condition, \$40. Rule, 884-8762, ask for Mark.

PRINTER, HP Deskjet 692, good condition, \$10. Sinton, 828-9672.

WATERBED, king-size, black lacquer, 4-drawer pedestal, Hibernation Series mattress, w/tubes, \$150. Arris, 842-8709, leave message.

DAYBED, white metal frame, complete w/spring & mattress, excellent condition, \$100 OBO. Lesperance, 615-2850.

DVD R/RW CDRW, internal IDE, Cendyne DVR-104/OEM, Pioneer A04 2x DVD writer, w/software, \$140. Olsberg, 291-9786.

STAINED GLASS, 100 sq. ft., various supplies, many large pieces, \$400; rock climbing holds, 98 "rocks," \$250. Odom, 298-6822.

NOSE PROTECTOR (BRA), '00 Mitsubishi Eclipse, like new, \$50. Gajewski, 323-3774.

CLARINET, Yamaha, unused, \$125; electronic metronome, \$25, both, \$130. Ginn, 286-4425.

TREADMILL, Pacemaster SC-PRO, 2-hp, low miles, excellent condition, \$500 OBO. Schmitt, 281-6002.

ROTOTILLER, Troy-Bilt, Kohler engine, 7-hp, bumper guard, rower attachment, transferable lifetime warranty, runs great, \$900. Berry, 897-3652.

MOTORCYCLE TOURING JACKET, women's, medium, red/black, First Gear Kilimanjaro H-T, never worn, new \$340, asking \$200. LaPorte, 275-2067.

COUPON, \$250 off new GM car or light-duty truck, expires 1/18/04, transferable, free. Culler, 286-1855.

MATTRESS, queen-size, box spring, good condition, \$50. Reneau, 281-4710.

BREAKFAST TABLE, round, light-oak color, ~3-ft. diameter, w/2 chairs, \$75. Selves, 293-5388.

PRINTER, HP PCS all-in-one, excellent condition, \$85; 17-in. monitor, \$40 OBO; Pioneer 6 CD changer for auto, FM modulated, \$55. Portillo, 294-1305.

AIR CONDITIONER, Tradewinds, 4,500CFM, \$250; GE clothes dryer, \$60; 3/4-hp & 1/3-hp motors, \$25-\$35; vacuum cleaner, more. Brewer, 293-7192.

CAMERA, Hasselblad, lenses etc., excellent condition, \$1,300 for kit. Shields, 286-5917.

AREA RUG, Belgian, 7' x 10', beige & rose floral, excellent condition, paid \$350, asking \$75. Dewees, 890-1569.

WASHER, \$65; dryer, \$85; refrigerator, \$30; new ceramic molds/greenware, make offer; dog crate, medium, new, \$25. Cooper, 899-4227.

TABLE SAW, Craftsman, w/accessories, table & several blades, very good condition, \$200. Diegle, 856-5608.

ENTERTAINMENT CENTER, solid oak, storage, glass doors, roll-top TV enclosure, great condition, can e-mail pictures, \$450 OBO. Johnson, 250-3205.

GOLF CLUBS: Big Bertha C4 driver, regular flex, graphite shaft, \$300; metal woods, 1,3,5, graphite shafts, regular flex, \$100. Fajardo, 232-9303.

DINING TABLE, glass, w/black metal frame, 4 high-back chairs, excellent condition, \$200 OBO. Lopez, 864-1918.

ANTHROCART, 6' x 3', black metal frame, w/butcher block tops, lots of accessories, \$1,000 OBO. St. Clair, 293-2208.

SOUTHWEST AIRLINE TICKETS, 2 roundtrip, expire Aug. 2003, \$325 ea. Aragon, 239-4337.

SOUTHWEST AIRLINE TICKET, no black-out dates, no airport or security fees, expires June 7, 2003, \$300. Connor, 821-4349.

WORK BENCH, 4' x 8', w/steel top & pegboard riser, \$40. Smith, 294-9830.

LAWN MOWER, Craftsman, gas, 22-in., power-propelled, rear bagger, 4.0-reserved power, as is, \$35. Ehart, 296-7012.

FORMAL DINING TABLE, Heritage, rectangular, Sketchbook line, Windward finish, 46" x 75", extendable to 104-in., \$300. Hartwig, 797-8406.

GARAGE SALE, 2 families, Saturday May 3, GS teaching materials, collectables, misc., 1912 Buffalo Dancer NE. Holmes, 292-0898.

SOUTHWEST AIRLINE VOUCHERS, 3, \$325 ea. Smith, 254-7532.

SEWING MACHINE, antique, treadle, 1885 Davis, light wood cabinet, \$250 OBO. Douglas, 281-9843.

BIKE TRAINER, front & rear wheel rollers, \$20; sand blaster unit, 200-lb. pot, ceramic nozzle, w/deadman & hoses, \$500. Vigil, 271-1328.

SOUTHWEST AIRLINE TICKET, valid through 4/04, \$325; 2 new Corrian "L"-shaped counter tops, paid \$1,800 ea., asking \$950 ea. Baca, 294-0766.

GENERATORS: 3, 3,500W, \$350 ea.; 2, 2,500W, \$250 ea., excellent condition. Marquez, 228-4200.

BABY ITEMS: boy's clothes, newborn to 12 mos., etc. Maestas, 883-7617.

MOVING BOXES: 19, large dish packs; 5 wardrobe; 12, 30 x 18 x 18; 20, 16 x 18 x 18; 10 book boxes; packing paper, \$40. Nagel, 821-1881.

ENGINE, professionally built, 454, 60 over, all serious offers considered. Hughes, 281-2854.

ROCKS, gray, 1-in, front-yard-size, you haul. Walters, 857-9767.

OFFICE DESK, large, 3' x 5', 8-drawer, all wood, \$150; Maytag dryer, \$50. Harstad, 298-6551.

FLATBED SCANNER, Astra 2400S, 8-12" x 14", used only a few times, \$80. Gomez, 291-1062.

CARPETING, 90 sq. yds., gray, currently in use, installing new carpet, good condition, come see before removed, make offer. Vandj, 293-1249.

ENGINE/TRANSMISSION, TBI 2.2L, 5-spd. manual transmission, from '89 Dodge Omni, complete, runs well, \$300 OBO. Mulhall, 892-2131, ask for J.J.

ORGAN, excellent condition, \$1,200 OBO, trade for Baldwin piano; piano rolls, 10/11, \$1.75 ea.; Mystek scanner, \$79. Coe, 266-6579, ask for Nina.

WINDOWS, 2, double-hung, weather-stripped, wood frame, w/trim & sill, 59" x 36", \$20. Stamm, 255-2640.

ADJUSTABLE BED, Craftmatic, double, w/brass headboard, \$1,700; over-stuffed armchair, black leather, \$200, both like new. Campbell, 294-6000.

PUSH LAWN MOWER, Scotts reel-type, w/catcher, good condition, \$45. Aragon, 888-3473.

FREEZER CHEST, like new, 7.2-cu.-ft., 36L x 24W x 24H, \$100. Foster, 292-5044.

TWIN BED, frame, box spring, mattress, almost new, excellent condition, \$149. Locher, 266-2021.

MATTRESS SET, 3-pc., king-size, Sealy Posturepedic, 2 yrs. old, excellent condition, \$200 firm. Langwell, 293-2728.

SOFA, flowered print, mauve, white, & blue, \$250; black leather chair, \$65; swivel rocker, white leather, \$75. Smith, 275-1666.

DINING TABLE, 5' x 6'3", w/leaves, 6-ft. hutch w/glass front, set \$300; gas lawn mower, 5-hp, \$35. Kearns, 898-4122.

COMPUTER PARTS: CD-RW drives, \$15-\$50; CD drive, \$15; Zip drive, \$40; NICs, \$10; 17-in. monitor, \$65; more. Cocain, 281-2282.

DINING TABLE, Autumn Wood, solid oak, w/6 chairs, \$2,500 new, asking \$500. Jones, 203-2338, <http://mywebpages.comcast.net/Rjones420/OakTable>.

FESCUE SOD, ~1,000 sq. ft., good condition, free. Meeks, 828-9825.

BED FRAMES, steel, king, queen, single (2), w/casters, like new, \$10 ea. Barnard, 771-4620.

FUTON, oak frame, mattress, 3 covers, excellent condition, \$125. Mercier, 294-9334.

PUSH LAWN MOWER, Scotts, like new, no tools to adjust height, Lomas/Copper, paid \$160, asking \$80. Rogulich, 298-5261.

CONTEMPORARY SOFA, excellent condition, \$250; coffee table, solid wood, 2 end tables, \$75 ea., OBO. Hassan, 822-9544.

## 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.**

LIGHT FIXTURES: chandelier, \$100; hanging entry light, \$30; hanging kitchen light, contemporary, beautiful, excellent condition, \$30. Serna, 899-9618.

MOVING SALE, appliances, furniture, Sat. & Sun, 4/26-4/27, 8:30 a.m.-3:00 p.m., 11212 Santa Monica NE. Gonzales, 823-2081.

ALLOY WHEELS, 4, original, Jeep, w/almost new BF Goodrich tires, 225/75/15, \$800. Stafford, 453-6898.

WINDSURFING BOARD, O'Brien Excelerator, used '89-'91, storage since, \$900 new, make offer. George, 798-9329.

JVC COLOR TV, 27-in., AV-27850; Polk Audio Monitor Series speakers, \$150 ea. Soden, 867-3872.

WASHER/DRYER SET, Whirlpool, good condition, \$250 pair; Northstar water softener, electronic metering, \$100. Eldred, 281-0224.

MOTORCYCLE FAIRING, free. McConnell, 268-3109.

WATER COOLERS, 6, w/o bottles, working condition, \$50 ea. Chavez, 842-6374, after 6 p.m.

SOUTHWEST AIRLINE VOUCHER, anywhere Southwest flies, expires 7/03, \$300. Sanchez, 833-1558.

## TRANSPORTATION

'98 HONDA ACCORD LX, 4-dr., PW, PL, AC, tinted, warranty, white, 47K miles, great condition. \$10,800 OBO. Selever, 440-1951.

'01 CADILLAC DEVILLE, touring sedan, 4-dr., fully loaded, leather, pearl white, 2,580 actual miles. Kraft, 797-9700.

'00 LEXUS ES300, 4-dr., 6-cyl., loaded, sage, 28K miles, beautiful, below book, \$23,000. Garcia, 385-0286.

'00 INFINITI I30, V6, fully loaded, original owner, 54K miles, excellent condition, \$21,500 OBO. Martinez, 907-2632.

'74 CORVETTE, rebuilt engine, transmission, front suspension, brakes, needs paint & some interior, \$7,200 OBO. Raether, 298-7156.

'96 INFINITI G20, 4-dr., AT, CC, ABS, dual airbags, CD, PW, PL, black, 87K miles, good condition, retail \$8,200, asking \$6,200 OBO. Natha, 489-3194.

'90 TOYOTA 4RUNNER, V6, AT, PW, PL, CD, sunroof, red, 154K miles, good condition, \$4,900. Biffle, 293-0330.

'79 FORD F100, 302, AT, PS, PB, \$1,200. Browning, 265-9947.

'92 BRONCO XLT, 4WD, V8, 5-spd., PW, PL, new 33-in. tires, 130K miles, runs great, \$5,000. Dropinski, 881-6757.

'00 FORD EXPEDITION, Eddie Bauer, 5.4L, fully loaded, tow pkg., must sacrifice, \$20,000. Martin, 869-1212.

'93 DODGE DAKOTA 150, V8, 5.2L, 4x4, power, AC, needs paint, 139K miles, runs great, \$3,900. Knight, 856-6648.

'89 CADILLAC SEDAN DEVILLE, sedan, original owner, white, new tires & transmission fluid/filter, 21/27-mpg, 83K miles, excellent condition, \$3,000. Dwyer, 271-1328.

'94 CHEVY SUBURBAN SILVERADO, 5.7L, 4x4, 3rd seat, rear AC, power everything, blue/green, 156K miles, \$7,500. Powell, 452-1885.

'02 FORD FOCUS ZX5, 4-dr., 6-disc CD player, gray, great gas mileage, 15K miles, \$10,998. Snedigar, 332-9238.

'91 NISSAN 300 ZX, AT, T-tops, pearl white, well-maintained, 85K miles, excellent condition. Corbin, 296-4121.

'49 MERCURY, 4-dr., sedan, rebuilt engine, transmission, radiator, needs battery, tires, first \$4,000. Garcia, 881-4296.

'02 DODGE RAM 1500, \$18,000; '99 Lattyon 5th Wheel, \$11,000; Pellet Jack transporter, \$500 negotiable; utilities trailer, \$300. Sanchez, 344-9159.

'98 VW JETTA GLX, V6, 5-spd., 4-dr., AC, leather, Bose cassette, remote locks, alarm, 52K miles, \$10,000 OBO. Crafts, 343-0773.

'95 DODGE INTREPID ES, FWD, AT, power, leather, alarm, sunroof, trip computer, AM/FM/CD/cassette, 108K miles, \$3,500. Taganas, 379-3103.

'94 MAZDA MIATA, AT, AC, CD, white, black top, 58K miles, excellent mechanical condition, good body, \$7,200 OBO. Yesner, 858-3463, ask for Steven.

'02 CADILLAC ESCALADE, V8, leather, DVD, 2 LCD screens, sunroof, 5K miles, garaged, \$55,000. Harris, 298-0541.

'01 CHEVY CAVALIER, AC, PS, PB, AM/FM/CD/cassette, great gas mileage, 40K miles, great condition, take over payments. Gabaldon, 864-2409.

'00 PONTIAC GRAND AM, AT, AC, PW, PL, ~53K miles, bids accepted through 4/25/03, right to refuse, sold as is. Sandia Labs FCU, 237-7384.

## RECREATIONAL

'83 HORNET CAMPER, sleeps 4-6, refrigerator, heater, 4-burner, stove, oven, bathroom, \$1,500. Costin, 821-4961.

MOTORIZED SCOOTER, Go-Ped Bigfoot, gas-powered, clutch, disc brake, seat, off-road tires, fold down, like new, \$650. Kaiser, 828-1660.

'96 HONDA GOLDWING ASPENCADE, fully loaded, clean, 25K miles, great condition, \$10,500. Walter, 281-3103.

ROAD BIKES, 2, Trek 50cm & 56cm, aluminum frame/fork, new wheels, Dura Ace hubs, Shimano components, \$200-\$425. Rector, 286-1217.

'98 HONDA Z50, trail bike, great for first timers, low hours, runs great, \$600. Myers, 865-6371.

'76 MARK TWAIN, 16-ft., 50-hp Mercury, boat trailer, fish finder, great condition, \$2,000. Chapel, 869-2788.

'00 HONDA VALKYRIE, 1500cc, red/black, leather bags, windshield, garaged, 6K miles, excellent, \$10,500. Schaub, 298-3165.

'96 HONDA CBR600 F3, looks & runs great, only 12K miles, \$4,100. Barela, 321-4229.

'97 BAYLINER CAPRI 2052 LS, 20-ft. cabin cruiser, 210-hp, trailer, winter cover, excellent condition, \$9,900. Torres, 296-7336.

MOUNTAIN BIKES, boys' Diamond-back, black, 21-spd., 14-in. & 16-in. frames, \$50 ea. Sanders, 822-1486.

'00 KAWASAKI ZR-7, K&N filter, new tires, all dealer service, 11K miles, excellent condition, \$3,900 OBO. Castillo, 899-1956.

PACE ARROW RV, 29-ft., 454 Chevy engine, new exhaust system, AC, & refrigerator/freezer, Onan generator, \$6,850. Rivers, 720-4701.

"SOUTHWIND," 33-ft., rebuilt motor, 3K miles, excellent condition, must sell, health reasons, \$17,000 OBO. Padilla, 452-1653.

'02 HONDA XR650R, street legal, \$1,500 in conversion, call for details, \$5,300. Levenhagen, 821-7055.

## REAL ESTATE

2 ACRES, prime East Mountain lot, motivated, Paacho paved cul-de-sac, excellent views, all utilities, \$129,000 OMO. Blacker, 798-9095.

2-BDR. COUNTRY HOME, 1 bath, loft, 1,800 sq. ft., 23 acres, 10 miles south of Datil, phone, electric, solar well, barn, \$126,000. Jones, 877-9073 or 243-8604, <http://mywebpages.comcast.net/maj666>.

MOBILE HOME, details, photos at website. Padilla, 286-4466, <http://www.geocities.com/mobile-home@flash.net>.

TANOAN EAST HOME, immaculate, spectacular panoramic views, preview at website, FSBO. Henderson, 299-6083, <http://mywebpages.comcast.net/jhenderson78/home.htm>.

2-BDR. TOWNHOME, 2-baths, garage, \$92,000. Chaves, 259-0305.

MANUFACTURED HOME, tri-level, 3,330 sq. ft., finished basement, indoor Jacuzzi, sunroom, 10 acres, 2 garages, Edgewood, \$154,900. Wiseley, 286-9473.

3-BDR. HOME, 1-3/4 baths, NE Heights, 1,276 sq. ft., 1-car garage, updates, backyard access, immaculate, \$112,000. Henfling, 292-0794.

## WANTED

CRIB, inexpensive, preferably light oak, & small dresser. Brown, 872-2103.

CHILDREN'S SMALL PLAY TABLE, w/chairs if possible, clean. Wilcox, 884-0217, [dwilcox@byu.edu](mailto:dwilcox@byu.edu).

MOBILE HOME, used, 2-bdr., 1-3/4 or 2 baths, in good, livable condition, low price for college student. Carbajal, 294-8456.

INFORMATION on building '64 352 F/E engine, personal advice or spare parts would be great. Anderson, 822-9168.

VENDORS for "Cherished Creations" arts/crafts show, Cottonwood Mall, May 2-11, mall hours, free parking & admission. Self, 296-4137.

HOUSE TO RENT, 2-3-bdr., 1 story, garage, at least 12 mos., available 5/1/03, preferably ~\$750/mo. Rockwell, 321-7534.

TABLE TENNIS PLAYERS, play w/best in state, mention Lab News, get free playtime. Johnson, 296-3431, [mike1johnson@earthlink.net](mailto:mike1johnson@earthlink.net).

GOOD HOME, for cockatiel, male, whistles, w/nice black cage & stand. Rochau, 880-8585.

GOOD HOME, German shepherd, 7 yrs. old, excellent outside pet, good w/kids, neutered. Ferguson, 286-4390.

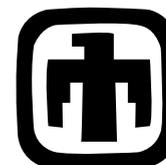
HONDA ACCORD, '92-'97, manual or AT, will pay up to book value for good condition, new Sandian. Griego, 400-4328.

NEED MANUAL?, person who bought 12-in. Delta planer, call if you want the manual. Mooney, 294-5161.

SUMMER HOUSING, quiet place, doctoral candidate, w/some privacy, June 20-Sept. 20. Pierce, 650-566-9151.

## SHARE-A-RIDE

EAST MOUNTAIN VANPOOL, has openings, no need to drive, Frost Rd., N-14, Tijeras. Burns, 281-3922.



# Sandia's own Betty Boop donates blood — of course!

By Iris Aboytes

Let's see, am I positive or negative? Am I A, B, AB, or O? Oh well, they'll figure it out — the phlebotomists, that is.

Today I did my ritual of donating blood through United Blood Services. That's the only good thing that came of my weighing over 110 pounds. (I just barely do. Yeah, right!) Going to go give blood is like getting a physical. The phlebotomist checks your blood pressure, temperature, and checks for anemia. To check for anemia, they drill a hole in your finger. Really! They do. (Actually all you will feel is a slight poke on your finger.) If your blood does not go down in the copper sulfate in 15 seconds, you are out of there.

Next come the questions. (Tell me again why I am doing this? OK. I am ready.) First question: How much do I weigh? Do you mean what I weigh right now, this minute? Are you sure you don't want to know what I weighed when I started giving? (Oh, the pressure! Should I cheat? I really haven't weighed myself in some time.)

The questions continue. No, I have never had malaria. No, none of my blood relatives have ever had Creutzfeldt-Jakob disease? (I am sure I would know!) Have I ever received any human pituitary-derived hormones, such as growth hormone? (Are you insinuating I am short?) Have I ever been in jail or prison? (When my job gets stressful I feel like I want to escape. Does that count?)

In the last 12 months have you had a tattoo applied? (My little grandchildren used a permanent marker and drew a castle on my arm. Would that count?)

Yea! We're finished.

Next step, hop up onto one of those V-shaped beds. Today, I was lucky enough to be in the brand-new Bloodmobile bus. The beds in it are a little higher, so I needed a boost to get up. (Hey, no laughing! This short person packs a punch.)

Here we go again. In front of a full busload of people, state your name and date of birth. See what I mean? All the personal stuff! Then, kind of like vampires, they check the veins on your arms (which one looks juicier?). Next comes, "Left arm or right arm?" (See, you make all the important decisions.) The needle looks about six inches long and two inches wide. Gotcha! (Actually, most times I just feel a slight prick, not a big deal, but don't tell them.) Ten to 12 minutes later I have pumped a unit (pint) and the phlebotomist gives you his spiel. Don't do anything strenuous. (Does that mean no aerobics today?) Be sure to make your next meal a hearty one. (Did you say



SANDIA'S OWN BETTY BOOP (Iris Aboytes) donates blood four to five times a year. Helping her out is phlebotomist David Eckstein. (Photo by Bill Doty)

## 250 pints of blood needed every day

According to Grethen Cody of United Blood Services, 250 pints of whole blood are needed on any given day.

United Blood Services furnishes blood to 42 medical facilities in New Mexico and the Four Corners region, a little in Colorado, Utah, and Arizona). Last year Sandians donated 1,612 pints. Their goal is to get 30 units on each visit to Sandia.

It takes 72 hours to perform 14 different tests on each unit of blood. After being tested, the blood is shipped to the different medical facilities. "Every day there is a crisis for someone," says Gretchen.

hearty? You are advising me for my health, right?) No exercise and a hearty meal — is this heaven or what?

Next comes more advice. Please help yourself to the juice and cookies. (Red dye with water and sugar and cookies that look like someone sat on them, just kidding! I think I will pass on the refreshments, but thanks anyway. They do look very tempting!)

OK! Now help me figure this out. I went willingly. I got poked twice. I thanked the phlebotomists. I skipped the juice and cookies. Why is it then that as I close the door, I am smiling? I have no clue who will receive my blood. I don't want to know. Why do I feel full of endorphins? None of this makes sense, but it works. It does for me.

All kidding aside, I go because then I can show the he-men in my group I have what it takes to get one of those color-coordinated stretch bandages on my arm. Do you?

## Tenth annual Sandia Take Our Daughters to Work Day set for April 24

Some 600 girls from ages 9 through 15 are expected to participate in the tenth annual Take Our Daughters to Work Day April 24 at the Labs sponsored by the Sandia Women's Action Network.

"It will be an opportunity for daughters, nieces, granddaughters, and female friends of Sandia employees to come see what the Labs does and get an idea of how science and engineering can fit into their lives," says Margaret Harvey, Manager of Diversity, EEO, and AA Services Dept. 3553.

An opening general session at the Technology Transfer Center Lobby (TTC, Bldg. 825) is planned, with remarks by Georgianne Smith (3000) followed by guest speakers giving science and technology presentations. Demonstrations and exhibits will be set up in the TTC from 6:30 to 9:30 a.m., and a barbecue and other activities are being planned at Hardin Field.

Girls and their sponsors are to register in the TTC lobby on April 24, between 6:30 and 9:30 a.m. (Badge Office thereafter). Each guest will be given a complete schedule of activities and an identification tag, which she will be required to wear while at

Sandia.

Don Blanton, VP for Human Resources and Protection Services 3000, says that consideration was given to combining Take Our Daughters to Work Day and Take Our Sons to Work Day this year, following the footsteps of the Ms. Foundation for Women, which established Take Our Daughters to Work Day. Take Our Sons to Work Day at Sandia is traditionally held in the fall.

"We decided against it — in part because of security issues," Don says. "If we combined the two days, we'd have more than 1,000 young people visiting Sandia at once, and the logistics of that number of kids on site becomes quite complex."

Also, studies show that boys and girls experience and view science differently, depending on the learning environment. The Take our Daughters to Work Day is designed to stimulate young girls' interest in science and technology using role models and experiences tailored to their interest.

More information about Take Our Daughters to Work Day can be obtained at the web page <http://www-irn.sandia.gov/HR/HomePages/3511/03todtwd.html>.

## Feedback

**Q:** Is there a way that we can suppress those annoying pop-ups when we browse the Internet (and yes, it was business-related)? If not, are there any efforts to filter these, much like the effort to filter SPAMS?

**A:** Thank you for bringing up an issue that causes frustration to a number of web surfers. The short answer to your question is that yes there are ways to do it. For example, the latest versions of the Netscape, Mozilla, and Safari browsers provide pop-up blocking features. Although the corporate standard browser, Internet Explorer, does not provide that capability, there are a number of third-party plug-ins for it that could be used to provide that feature. The reason we don't pursue a course of action to provide pop-up blocking capabilities is that these plug-ins are not sufficiently tunable for our environment at this time. In particular, the browser user has no mechanism for filtering out the bad pop-ups while letting the good ones through. Since there are a number of good reasons for using pop-ups, a trend that continues to increase, most users of capable browser configurations leave the blocking feature disabled anyway. The lack of filtering capability, as well as the fact that pop-up blocking occurs at the desktop and not at a central facility, prevents us from using SPAM-blocking strategies. — Bill Swartz (9329)

