



THUNDERBIRDS SOAR — The USAF Thunderbirds team headlined the Kirtland Air Force Base Air Show and open house last weekend. Tens of thousands of people came to the base to see static displays of many of the aircraft in the Air Force inventory, a CV-22 fly-by, a heritage aircraft flyover, and (of course) the Thunderbirds performance. Randy Montoya shot this photo during a special Thunderbirds show for media the day before the main event.

# Sandia LabNews

Vol. 58, No. 14

July 7, 2006



Managed by Lockheed Martin for the National Nuclear Security Administration

## Bike commuting picks up, but high gas prices only one reason

By John German

Chuck Fuller (1725) and Arlee Smith (1128) each have logged more than 100,000 miles bicycling to work. Jim House (4342) has ridden to the Labs every day, literally every work day — rain, snow, or heat wave — since February 2000. Roy Cuoco (10844) wheels in three days a week from Rio Rancho.

“Sitting in my car in traffic is torture for me,” says Roy, whose round-trip trek is 46 miles. To arrive by 7 a.m. he leaves home by 5:30. “I enjoy riding. It gives me something to look forward to at the end of the day.”

Chuck began bike-commuting to work 35 years ago because he didn’t have a car. He estimates he has ridden more than 149,000 miles. His current bike has some 81,000 miles on it. “I don’t drive at all,” he says. “I always ride a bike.”

*“I’ve just gotten tougher and tougher. . . . When it’s raining or the road is wet, the first few minutes are hard, but you can only get so wet.”*

Jim began commuting by bike after he lost his car in an accident. “I’ve just gotten tougher and tougher,” he says. “I dress for the weather. When it’s raining or the road is wet, the first few minutes are hard, but you can only get so wet.”

Chuck, Arlee, Jim, Roy, and Mike are among more than 700 members of the Sandia Bicycle Commuters Group (SBCG), says Frank Bouchier (6418), who, along with Ralph Wrons (10331) and Pete Oelschlaeger (5624) coordinate the group’s activities.

They say the number of people commuting to work by bicycle seems to be on the rise based on the number of requests for information they get via the website. Local bike stores report record sales, as well, due mostly to people who have recently begun riding to work.

Ralph estimates that hundreds of non-SBCG members cycle to work regularly, probably logging thousands of cycling miles a week, as well.

The group doesn’t meet, but its officers con-  
*(Continued on page 4)*

## Hot is the new cool: High-temp electronics open new era of devices, applications in energy, weapons

By Bill Murphy

After years of tantalizing, just-out-of-reach promise, the era of high-temperature electronics has arrived — and Sandia has abundant opportunities to embrace and advance the use of this special class of electronics across diverse weapons and energy applications.

That’s the message Sandia engineer Randy Normann shared during a Technology Symposium last week with some 100 Sandians at the Steve Schiff Auditorium and (via video link) the Bldg 904 auditorium in California.

Randy, a Sandia leader for more than a decade in the development and application

of high-temperature electronics, said, “This stuff is starting to become real; things are starting to happen.”

High-temperature electronics, as the name  
*(Continued on page 4)*



RANDY NORMANN (RIGHT) and colleague Joe Henfling with a hi-temp downhole tool they developed for geothermal and oil-drilling applications. (Photo by Randy Montoya)



**Rockwell Collins to develop Labs’ miniSAR technology as a commercial product.**  
*Story on page 5.*



**Adm. Bobby Ray Inman shares insights into post-Cold War intelligence challenges.**  
*Story on page 6.*

## What's what

There's a Sandia-developed recycling poster not floating around the lab that you won't see, because it isn't there. Since this space allows more latitude than in the straight news columns, I'll use that latitude and say it's a good promotional poster, showing aluminum beverage cans all gathered up for recycling.

It turns out that the poster sparked "concerns" among a few — apparently a very few — folks who saw it. Why? Because in the overflowing trash receptacle there were — among some very prominent Coke and Pepsi cans — three partially obscured beer cans. You really have to squint to see them, but sure enough, with enough effort the beer cans sort of materialize out of the background, the way one of those 3-D pictures emerges from a jumble of noise if you look creatively enough.



A DETAIL from the poster you won't otherwise see.

The point was made — and it's a valid point, let's agree on that — that consumption of alcohol on Sandia premises is prohibited. The implication was that use of this poster might seem to infer official tacit approval of alcohol consumption. But that seems to be a stretch. There's no suggestion that the trash can is a "Sandia" trash can or is on Sandia property. It's just a simple illustration making a point: recycle those cans! Anyway, based on that input, the poster was pulled.

Thinking about this, I googled (that's the first reaction for anything now, isn't it?) and found a 1999 *Journal of Studies on Alcohol* entry noting that beer accounts for 67 percent of the alcohol consumption reported in the United States. That's a lot of beer drinkers; there may even be a few Sandians among them in the privacy of their own homes. Getting all of them to recycle all of those beer cans would be a major accomplishment in the recycling campaign.

Don't get me wrong: I'm not blaming the folks who pulled the poster. And I'm not even blaming those who were offended. After all, being quick to take offense is a manifestation of the *zeitgeist*. Still, I'm troubled by how people feel entitled, even compelled, to let everyone know they are offended: offended by something the vast majority of their peers aren't even aware of, and wouldn't be offended by if they were aware. Just pick an issue — any issue — and you can find people on all sides of it.

Which brings us back to the poster. It's certainly OK to not like it and OK to make that dislike known to the person or group responsible for its creation. If you're in the communications business, you know that anything you present will get mixed reactions — some will like it, some won't.

But it seems worth saying that being "offended" by something raises that feeling to a level much greater than "I don't like that" or "I don't agree with that." Being "offended" by something moves us very quickly down the short, straight road to intolerance. And that's an outcome that ought to offend us all.

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

## Partnerships report focuses on *Partnering for a Strong America*

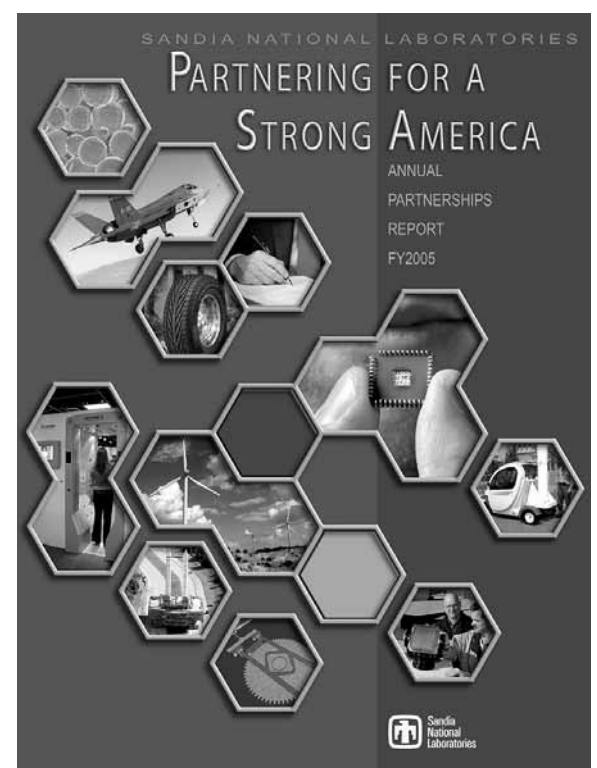
Sandia's commitment to partnering with industry, universities, and other government agencies is highlighted in the recently published FY2005 report titled *Partnering for a Strong America*.

The report, compiled and published by Sandia's Corporate Business Development and Partnerships team, contains program highlights and featured stories. The edition also includes opening remarks from VPs Al Romig (4), Rick Stulen (1000), and Frank Figueroa (10000). They each present their vision for partnerships at Sandia, substantiated by the reasons why a robust partnership function will be key in Sandia's and the nation's future.

David Goldheim, (10100) director of Corporate Business Development and Partnerships, says Sandia seeks to provide in-depth subject matter expertise in all areas of business and partnerships development and facilitates partnerships to enhance mission success.

"Our strategic partnerships and collaborations with industry partners contribute significant technical advances and commercial practices to Sandia's programs and, likewise, our technologies provide valuable discriminators to our partners and the nation," David says.

For electronic or hard copies of the report, contact Dick Fairbanks at 844-9462 or rrfairb@sandia.gov. — Michael Padilla



## Cowboys and UFOs: T-Bird retirees meet July 10

Sandia Thunderbirds (and all interested persons) will be regaled this month with a collection of five-to-10-minute short stories presented by Thunderbird members and a more extended Wild West story from the Cimarron country. The free program is scheduled for Monday, July 10, 2 p.m. at the Mountain View Club on Kirtland Air Force Base.

The program (preceded by an optional lunch and general meeting) will feature stories by: Jack Reed, the longtime Sandia field test meteorologist, who will recount his own personal UFO investigation; Bette Brown, who will share a short story from her past (and be ready for a surprise twist); Eddie Reyes, who will be strumming his guitar and singing a few Merle Haggard songs and a Reyes original; and Cimarron Canyon State Park ranger Jared Chatterley, who will share stories of the Wild West and the nasty demise of some notorious outlaws.

The Mountain View Club (formerly the Officers Club East) is located on KAFB at the east end of Club Road (turn east just inside the Wyoming Gate).

The Thunderbirds is Sandia's retiree club. Call Rod Boenig at 836-6977 for information about how to attend.

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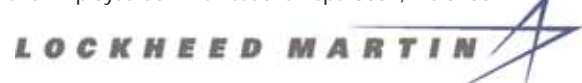
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Sandia National Laboratories is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin company, for the US Department of Energy's National Nuclear Security Administration.

Bill Murphy, Editor . . . . . 505/845-0845  
Chris Burroughs, Writer . . . . . 505/844-0948  
Randy Montoya, Photographer . . . . . 505/844-5605  
Nancy Garcia, California site contact . . . . . 925/294-2932  
Contributors: Janet Carpenter (844-7841), John German (844-5199), Neal Singer (845-7078), Stephanie Holinka (284-9227), Howard Kercheval (columnist, 844-7842), Will Keener (844-1690), Iris Aboytes (844-2282), Michael Padilla (284-5325), Julie Hall (284-7761), Rod Geer (844-6601), Michael Lanigan (844-2297), and Michelle Fleming (Ads, Milepost photos, 844-4902), Darrick Hurst (intern, 844-8009). Dept. 3651 Manager: Chris Miller (844-0587).  
Lab News fax . . . . . 505/844-0645  
Classified ads . . . . . 505/844-4902

Published on alternate Fridays by Media Relations and Employee Communications Dept. 3651, MS 0165



## Recent Patents

Tim Shepodd (8778): Cast-to-Shape Electrokinetic Trapping Medium.

Richard Schiek (1437): System for Generating Two-Dimensional Masks from a Three-Dimensional Model Using Topological Analysis.

Jonathan Weiss (1739): Optical Position Sensor for Determining the Interface Between a Clear and Opaque Fluid.

Timothy Tautges (1421) and David White (4340): Automatic Detection of Sweep-Meshable Volumes.

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# Public policy dean discusses future nuclear landscape

By Nancy Garcia

A feature that kept the final talk of a Sandia policy series from being too grim was the self-deprecating humor of the presenter, Michael Nacht, dean and professor of public policy in the Richard and Rhoda Goldman School of Public Policy at the University of California, Berkeley. His subject in this final installment was "The Future Nuclear Landscape."



MICHAEL NACHT

The seminar series began last fall at the California site, focusing on national security, and may continue in the coming year to include the broader security landscape, said Division 8000 VP Mim John. She added in her introduction that a condition of asking Nacht to arrange the series was having him speak himself, due to his deep insights into the topics at hand. The series has been shaped and arranged through the guidance and leadership of Systems Analysis and Engineering Section 8110 Senior Manager Pat Falcone.

## Nuclear weapon use 'likely'

Nacht's talk built upon thoughts from a recent two-day conference at the National Defense University. One of his messages in his Sandia talk was that the use of a nuclear weapon seems increasingly likely.

"After decades of really not expecting to see nuclear weapons used in our lifetime," Nacht said, "that attitude is now shifting, it's becoming more pessimistic. . . . I think it's fairly likely that there will be nuclear weapon use in my lifetime."

He described several elements in the new nuclear reality: Terrorists are pursuing nuclear or radiological weapons; rogue states are emerging as nuclear powers (and others may follow); and established powers are modernizing their nuclear forces while we do not. Dealing with the development of nuclear weapons capability by North Korea and possibly Iran is not only a current concern but will also create a critical precedent for the future, he said. Less imminently threatening are the modernization efforts by Russia and China, although their motives and actions need to be reevaluated.

## New responses

In terms of new responses, the Pentagon's master plan, the Quadrennial Defense Review, addresses the new nuclear realities with an emphasis, as he sees it, of finding nonnuclear-force solutions to potential nuclear threats. For instance, the US would like to modify submarine-launched Trident missiles with conventional warheads. Nacht said this has strategic merit for the US but consequences as well. The US would not have to wait more than 30 minutes to deal with a "problem on a North Korean launch pad" by moving surface ships or bombers into range. However, a number of other governments have already been negatively provoked by the concept.

"The Russians have said, 'How do we know it's not aimed at us? Just because you tell us it's not nuclear, are we supposed to believe it? Would you believe it?'" he asked rhetorically.

"There's no treaty on the books with anybody that says the US is prohibited from putting former nuclear forces into conventional status."

He thinks it will be a hard sell in Congress, which generally has not favored adjustments to US nuclear policy.

There also seems to be skepticism about

the effectiveness of building partnerships to combat nuclear terrorism.

"Wherever you look there's big trouble and it's not obvious how we're fixing some of these problems," Nacht commented.

## Nuclear terrorism

Meanwhile, it is unclear whether it is possible to both prevent and protect against nuclear terrorism, or if only one approach can be used. Nacht said he was a supporter of creation of the Department of Homeland Security but did not expect it to take the form it has.

"We're all going to suffer if the Department of Homeland Security doesn't get its act together," he said. We may be preparing for a small-scale nuclear attack but the effects would be ghastly, he predicted.

Nacht sees a deepening interest in nuclear weapons abroad at a time the United States has an unprecedented decline in interest, knowledge, and support in Congress, the Office of the Secretary of Defense, universities, and the public. Instead, national security is viewed as being about stabilization of countries, failed states, and terrorism.

## Nuclear business not where action is

"The nuclear business is just not where the action is," he said. "There is a kind of pee-wee soccer mentality; you go where the action is."

The US also finds that concepts employed during the Cold War — deterrence, compellence, and containment — are now being used against us. For instance, he does not think Seoul would welcome action against North Korea, since it is only 35 miles from the demilitarized zone where, just to the north, are a million troops and artillery that could decimate the city of 12 million people in 30 minutes.

He pointed out that China's president, Hu Jintao, made his first stop during an April visit to the US at the home of Bill Gates — and after

## Sandia California News

meeting with our leaders, next stopped in Saudi Arabia.

"They're using oil as a weapon, in part very artfully," he said. "It's a much more complicated world . . . and it's really sort of challenging."

## Energy and oil

Energy, oil, and economic policy are becoming more integrated into nonproliferation than ever before. Our February agreement with nuclear-weapons-capable India to help develop nuclear energy "wouldn't dissuade other countries," Nacht said. "This is hugely important. We want to be buddy-buddy with India. We're going to look the other way on the nuclear front and do business with them, even though they have a dedicated, active, deployed nuclear weapons program." This demonstrates that for us "strategic interests dominate nonproliferation interests."

## Nuclear proliferation

The incentives for nuclear proliferation are rising, in part, to counter US hegemony. He thinks US policy has substantially suffered from the war in Iraq, which has caused our international influence to wane due to concerns about intelligence credibility, having our forces stretched thin, and low domestic support.

He concluded that, "If you add it all up, the trends, the threats, and our capabilities are making for a very alarming situation. We have limited tools right now in an increasingly dangerous world."

His presentation can be viewed by visiting the Video Services streaming library on the internal web at <http://as54snlnt.srn.sandia.gov/mediasite/viewer/> and searching for "Nacht."

*"After decades of really not expecting to see nuclear weapons used in our lifetime, that attitude is now shifting, it's becoming more pessimistic. . . . I think it's fairly likely that there will be nuclear weapon use in my lifetime."*

Public policy scholar Michael Nacht

## Searching for life in the universe



INTELLIGENT LIFE — Division 8000 VP Mim John, left, invited Scott Hubbard, right, to give a talk at Sandia/California on June 21 about the search for extraterrestrial life. He is the Carl Sagan chair, SETI Institute Visiting Scholar at Stanford University. Serving almost 20 years at NASA, he directed the Ames Research Center and founded NASA's Astrobiology Institute. Hubbard said SETI's mission is to explore, understand, and explain the origin, nature, and prevalence of life in the universe, using tools on the ground, in the air, and in space. "The last decade has been really eye-opening to understanding how life can exist and be completely happy at extremes of temperature, acidity, pressure — extremes of all sorts," he said. Formerly known as NASA's Mars Czar for directing and restructuring the space agency's Mars program, he described how instruments were tested for future Mars missions in places like the Atacama desert in the mountains of Chile and Peru. "It never rains in the Atacama desert but there are living organisms all over the place that have adapted to that," he said. "This is what informs us about the possibility of life at places like the surface of Europa, places like the subsurface of Mars." Hubbard previously spoke at Sandia in 2004 about his role representing NASA on the Columbia accident investigation board.

## Hi-temp cool

(Continued from page 1)

suggests, are a class of electronics that function effectively at temperatures that render conventional electronics ineffective and unreliable, that

**“They fight to stay on the [down-hole] tool the way NBA players fight to stay in the paint.”**

is, at temperatures ranging from 350 degrees F to 600 degrees F. Currently, high-temperature electronics come in two flavors: SOI — silicon-on-insulator (in which an insulating substrate protects and shields conventional silicon components) — and SiC — silicon carbide, with intrinsic high-temperature-tolerant characteristics. While both approaches have merits, the newer SiC-based electronics can be fabricated smaller, and, as Randy noted, smaller means faster and faster means more efficient.

“That sounds like a good combination,” Randy said.

(A still-newer high-temperature technology, based on gallium nitride, is not very far along in the development process.)

Randy noted that several commercial suppliers have aggressively jumped into the high-temp electronics market to grab a piece of the action. The big market driver at the moment —

## Biking to work

(Continued from page 1)

nect with the Sandia bike commuting community with periodic e-mailings, through its website (see inset box below), and via special events such as Bike to Work Day.

Top reasons to ride to work rather than drive, in order of importance, as cited by SBCG members in a poll conducted a few years ago (before gas prices spiked): enjoyment, exercise, stress reduction, traffic, parking, and pollution prevention.

For John Garcia (10862), a new bike commuter, the cost of gas and a doctor's recommendation were among the factors that convinced him to try it beginning last summer. He says he'll continue riding to work even if gas prices go down.

“It's time to myself,” he says. “It's a good time to clear your head.”



THE SANDIA BICYCLE COMMUTERS GROUP is a peer-to-peer resource that aims to help Sandia bicycle commuters on cycling-related issues and concerns. The group's interactive, user-editable website is <https://bicycle.sandia.gov/bicycle>.

The SBCG, founded in 1995, promotes bicycle commuting by serving as a resource within Sandia and by resolving bike safety and access issues in coordination with the Sandia Traffic Safety Committee and the City of Albuquerque.

The group's website includes routes for commuting from various locations in Albuquerque, safety and equipment advice from recognized national cycling sources, KAFB bicycling regulations, locations of showers at the Lab, even a new Bike Buddy program where first-time riders can connect with experienced commuters.

“Riding to work is fun and I think it results in an improved quality of life,” says Ralph. “But it doesn't matter to us why people ride to work. We are here to help people who choose to do so. Planning can make it safe and more enjoyable.”

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(Writer John German is himself a bicycle commuter, which piqued his interest in this subject.)

## About Sandia's Technology Symposium



learning.

This forum provides an opportunity for staff members from diverse backgrounds and work experiences to interact with others, both inside and outside their areas of expertise. Through this

Sandia's Technology Symposium lecture series is intended to reinforce an emphasis on continuous learning. As part of the Labs' Strategic Education Initiative, Weapons Engineering Professional Development Dept. 2916 is dedicated to promoting a culture of information sharing and continuous

interaction, knowledge and experience can be shared on advancements in science and technology. Equipped with this new knowledge and insights, staff members are challenged to determine how these advancements might influence their own research and their organization's future direction.

The next lecture in the series, “Sandia's Light Initiated High Explosive Impulse Facility Capabilities and Techniques,” will be Monday, July 17, noon to 1 p.m. at the Steve Schiff Auditorium. Presenters are Gary Rivera and Tim Covert of the Explosives Technologies Group.

The Tech Symposium homepage is on the Sandia internal web at <http://www-irn.sandia.gov/organization/div2000/ctr2900/techsym/>

and it is a large one — is the well-drilling and downhole instrumentation market, but, as Randy made clear, there are a host of other applications that stand to benefit from the use of these new electronics.

Randy said high-temperature electronics is a win-win on both sides of the energy equation: On the supply side, it is an enabling technology for deeper oil and gas drilling, for geothermal drilling, and for use in specific application in extreme nuclear power plant environments.

It is also an enabling technology on the consumption side, with applications in aircraft, hybrid automobiles, and the power grid.

### Benefit to oil patch is obvious

The interest in this technology from the oil patch is obvious. As well-drilling goes beyond 35,000-foot depths with single offshore wells costing more than \$100 million, there is almost a money-is-no-object demand for better, more reliable electronics that enable drill-head steering and better data acquisition.

Downhole instrumentation makers, Randy noted, are fiercely competitive, always seeking the kind of edge that high-temperature electronics can give them. “They fight to stay on the [downhole] tool the way NBA players fight to stay in the paint.”

The aircraft industry, too, is beginning to show extreme interest in high-temp electronics. A bit of background: for several decades, the philosopher's stone of aircraft builders has been something they call “the more electric airplane.” The military is interested in the concept, but it is equally compelling to commercial

If you want to find out more about integrating HT electronics in your projects, Randy would love to talk to you about your options. Contact him at [ranorma@sandia.gov](mailto:ranorma@sandia.gov).

plane makers.

Regarding the more electric aircraft, an analysis done for the Air Force Research Laboratory in Dayton, Ohio, indicates that replacing many of the hydraulic, pneumatic, mechanical, and electrical systems in an aircraft with reliable SiC-based electronic components would reduce weight, volume, (thus saving fuel) along with reducing required equipment and support personnel. The future SiC-based “more electric aircraft” can save the military billions of dollars.

Randy asserted that “high temperature” and “high reliability” go hand in hand; that is, high-temperature electronics are simply more reliable than their plain-vanilla silicon cousins. That's why developers of some applications are interested in high-temperature electronics for use in locations where reliability (not temperature) is the critical factor.

Sandia, Randy said, can play a key role in the development, refinement, and deployment of high-temperature electronics. Their use is becoming pervasive in both weapons systems and energy, two of Sandia's key mission areas.

Sandians, meanwhile, are actively involved in helping to mature GaN technology and are tackling the high-temperature electronics packaging issue. Packaging — that is, how a particular piece of electronics interfaces with an application — differentiates market winners from also-rans.

## Lockheed Martin-sponsored materials science camp preps teachers



THE ASM MATERIALS SCIENCE CAMP for high school teachers was held recently at Sandia High School in Albuquerque. In the photo, Monique Nichols, a teacher from Helena, Ark. and Ronda Cole, education coordinator for the Air Force Starbase La Luz Academy, are observing the reactivity of different metals in a copper chloride solution. The “activity series” of the various metals can be determined by the rate at which the copper plates out of the solution. During the weeklong workshop, high school science teachers learn about metals, ceramics, polymers, and composites with labs which they can incorporate into their high school science curricula. The ASM Teacher Camp® is held annually in Albuquerque and is sponsored by Lockheed Martin/Sandia National Labs and ASM International.

(Photo by Pat Duda, Cibola High School)

# Teaming with Rockwell Collins sends miniSAR soaring

*Note: This story was prepared based on information materials written by Jerry Langheim, Director of Industrial Communications Center 5200, and Rockwell Collins media relations officer Nancy Welsh.*

"It's like a long-distance relay race: we're in it for the long haul and every member of the team covers a critical leg of the race."

That's how Sandia's Director of Industrial Communications Jerry Langheim (5200) and Rockwell Collins' Director of Business Alliances Steve Kennell characterize the newly expanded relationship between the two organizations. Jerry and Kennell are managers of the relationship.

Aerospace leader Rockwell Collins designs, produces, and supports communication and aviation electronics for commercial and government customers. The company delivers industry-leading surveillance solutions worldwide.

Rockwell Collins has announced that it will spend several million dollars over the next two years to turn Sandia-developed miniSAR technology into a product that can be deployed on a Shadow 200 tactical unmanned aerial vehicle. MiniSAR is a small-form-factor synthetic aperture radar system that can "see" through clouds and in the dark. (See "Synthetic Aperture Radar in a nutshell" at right.)

Sandia's Defense Systems and Assessments Strategic Management Unit (DS&A SMU) has worked with Rockwell Collins for the past three years to identify a viable market opportunity for miniSAR. Rockwell is now ready to move forward.

"The miniature SAR product is targeted for use on both manned and unmanned vehicle platforms, to provide small, persistent surveillance, intelligence, and reconnaissance capability to the military," says Ron Hornish, VP and General Manager of Sensor Systems for Rockwell Collins Government Systems. He adds that because of its compact size, the miniSAR product could free up payload space for additional communication systems and integrated systems products and services.

"Sandia's strategic objectives include partnering with industry to transition advanced capabilities developed at the national labs to the end-user," says Brett Remund (5340), Deputy Director, Microwave Intelligence, Surveillance, and Reconnaissance. "This partnership with



MINISAR — Sandia researchers, front to back, George Sloan, Dale Dubbert (both 5345), and Armin Doerry (5342) look at miniSAR assemblies. Rockwell Collins recently announced it will spend several million dollars over the next two years to turn miniSAR technology into a product that can be deployed on a Shadow 200 tactical unmanned aerial vehicle. (Photo by Randy Monoya)

Rockwell Collins provides a strong and complementary match to achieve these objectives, bringing advanced radar remote sensing capability to the warfighter."

"I can't overstate the importance of these kinds of strategic relationships," says DS&A VP Jerry McDowell. "Sandia's science, technology, and engineering can benefit the nation and our DoD customers through industrial alliances. We have great expectations for this alliance with Rockwell Collins."

## Industrial alliances integrate strategy and teamwork

"One of the keys to management of this relationship is its joint Steering Committee," says Jerry Langheim. Members from executive and technical communities of both Sandia and Rockwell Collins sit on this board and guide the direction taken by the alliance."

Sandia has had an umbrella CRADA (Cooperative Research and Development Agreement) with Rockwell Collins in place for several years. The steering committee concept was implemented at the time of the first project, which was jointly funded by Rockwell, Sandia, and DOE.

Numerous team members have been

involved in the process of discovery that has led to the identification of the miniSAR project as an ideal joint effort between Sandia and Rockwell. Sandia contributors to the successful establishment of this relationship include Michael Callahan (12300), Marion Scott (5600), David Williams (4500), Jay Jakubczak (1710), Kurt Sorensen (5345), George "Sandy" Sanzero (10116), Ann Adams (10116), and Sarah Low (10116).

In addition, Sandia and Rockwell Collins are collaborating on project/task statements in the following areas: human cognition, hypervelocity vehicle GPS (Prompt/Precision Global Strike), Chem/Bio, miniaturization, UMBRA modeling and simulation, and Anti-tamper. Rockwell Collins will also support future manufacturing needs for Monitoring Systems and Technology Center 5700.

"It takes teamwork to hand off the baton in a relay race and we believe that Sandia and Rockwell are uniquely suited to take miniSAR the distance together," says Rockwell Collins relationship manager Steve Kennell.

"We share a vision and expect to see more from this alliance in the future," says Jerry McDowell.

## Synthetic Aperture Radar in a nutshell

SAR systems take advantage of the long-range propagation characteristics of radar signals and the complex information processing capability of modern digital electronics to provide high resolution imagery. Synthetic aperture radar offers photographic-like imaging capabilities with minimum constraints on time-of-day and atmospheric conditions and through the unique responses of terrain and cultural targets to radar frequencies.

# With a little help from our friends: Sandia partner Goodyear wins a prestigious CIO 100 award

Long-time Sandia research partner Goodyear Tire & Rubber Company has won a 2006 CIO 100 award for its virtual design technology.

The award has a direct Sandia connection: To shorten product development cycles and reduce costs, Goodyear now designs and tests tires virtually using a massively parallel com-

puter with hundreds of processors, a capability made possible through the company's partnership with Sandia.

This virtual testing capability has made possible Goodyear's rapid-fire launch of innovative new products, including its Assurance line of passenger car tires, new additions to its Fortera and Wrangler light truck and SUV tires,

and the new Eagle with ResponseEdge and carbon fiber technology performance touring tire.

"Computational analysis tools have completely changed the way we develop tires," says Joseph Gingo, Goodyear's executive VP for quality systems and chief technical officer. "It has created a distinct competitive advantage for Goodyear, as we can deliver more innovative new tires to market in a shorter time frame."

The annual award program sponsored by CIO magazine recognizes organizations around the world that exemplify the highest level of operational and strategic excellence in information technology.

"The CIO 100 award recognizes IT's contributions in fueling Goodyear's new product engine," says Stephanie Wernet, Goodyear's vice president of information technology and chief information officer.

While Goodyear has received numerous awards for its products, this marks the second time it has won an award for its product development process. Last summer, the company and Sandia shared an R&D 100 award from *R&D Magazine* in recognition of the research and design work by Goodyear and Sandia National Labs in the development of the Assurance TripleTred tire. — Bill Murphy

## Sandia, Goodyear find mutual benefit in partnership arrangement

Goodyear Chairman and CEO Robert J. Keegan and Sandia Science and Technology VP and Chief Technology Officer Rick Stulen offered the Lab News the following perspective on the mutual benefit of the Sandia/Goodyear relationship, a relationship that dates to 1993 and has evolved to reflect the needs of both organizations.

### Robert J. Keegan:

"Part of our R&D strategy is to partner with others, like Sandia National Labs, to take advantage of technological capabilities without incremental investment. The joint work with Sandia has replaced our need to build, test, and repeat with a powerful set of simulation tools for design, prototype development,

and performance evaluation.

"The partnership with Sandia gives us a competitive advantage by facilitating the rapid introduction of innovative new products and processes."

### Rick Stulen:

"Our strategic partnership with Goodyear continues to pay significant dividends for advancing our science and engineering capabilities, especially in world-class modeling and simulation as part of the design cycle. In a future where time is the currency of the competitive marketplace, modeling and simulation are the differentiators that enable winning the engineering race."

# Truman lecturer advocates better intelligence to help limit nuclear proliferation

By Neal Singer

An unexpected insight into the widely known consequences of a failed intelligence venture was offered by Admiral (ret.) Bobby Ray Inman in his Sandia Truman Distinguished Lecture on limiting nuclear proliferation.

The lecture was presented at Steve Schiff Auditorium on June 22.

"We desperately wanted air samples from unexpected Soviet [atmospheric nuclear] tests but we had no means of access," he said.

So, he said, three very large balloons were built at substantial cost and loaded with sensors. The idea was to use the jet stream to float them close to the Soviet test site.

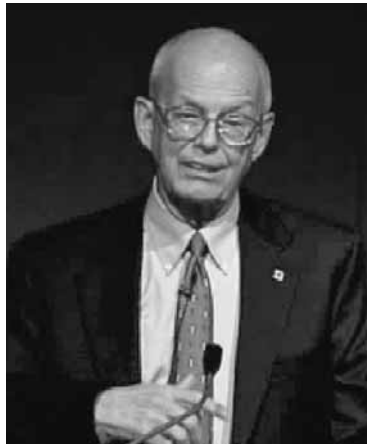
But on its very first test run, "One of the balloons had a problem," he said. "It crashed."

In Roswell, N.M.

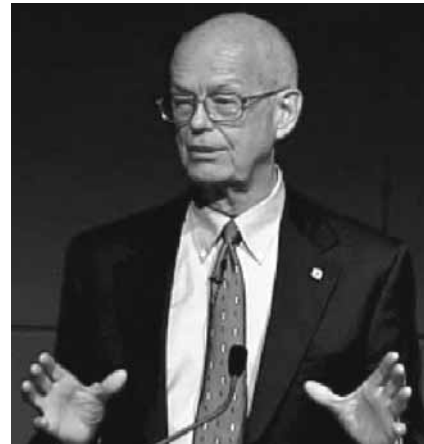
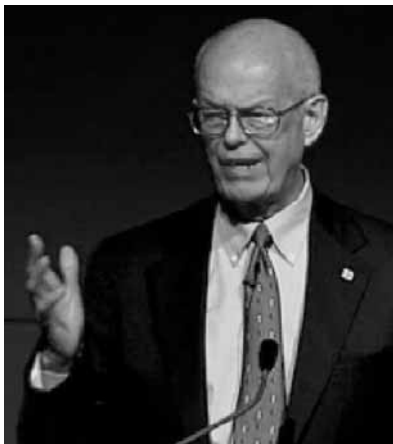
"For the first 24 hours," Inman said, "it was just a balloon."

But because it was a test project aimed at the

Soviet Union and special equipment was involved, the word went out to the military "to grab every piece of evidence as soon as possible."



BOBBY RAY INMAN delivers a Truman lecture at the Steve Schiff Auditorium on intelligence and nonproliferation.



"Thus," said Inman, "we have forever ... the extraterrestrials."

But it's not only amateur citizens who draw faulty conclusions, but professionals who may no longer be paid to be on the job enough hours in the day. When the Cold War ended, Inman said, the "peace dividend" suggested reducing the investment in intelligence monitoring from

around the clock to every other day. This dramatically lowered, over the years, US ability to get information of those countries intending to go nuclear.

Inman recounted the experience of a brilliant young intelligence analyst coming back Monday from a long holiday weekend, looking at intelligence pics, and saying, "India's preparing a nuclear test!"

The test had been performed on Sunday.

Said Inman, "You get what you pay for."

With the USSR, he said, US intelligence "had at least a probability of success, but with multiple countries, our resources are inadequate."

It was rare, he said, to have continuous human penetration of another country's effort to acquire nuclear weapons.

Verification that nations are living up their to obligations under the nonproliferation treaty — the basic tool for nuclear weapons control — is critical, he said, and the underlying key is intelligence.

Speaking particularly of North Korea's dissimulation in pretending to agree during the 1990s that it had stopped its efforts toward acquiring nuclear weapons, he said, "I draw some harsh judgments. Our intelligence efforts have been marginal, weak, and insufficient for the task."

But even trained intelligence agents on the job can reach faulty conclusions, he said in response to a question from Sandia VP Gerry Yonas, who asked for Inman's opinion about the apparently mistaken diagnosis delivered by US intelligence that Saddam Hussein's aluminum tubes were evidence of a nuclear development program.

Inman said that intelligence analysts, "burned" in the past by having provided overly positive reports, drew the worst possible conclusions from the tubes. While strong opinions are fine, Inman said, professionals are obligated to give other possible interpretations of available evidence, and this was not done.

His conclusions were that intelligence gatherers needed to be paid to work more hours. They also needed a deeper understanding of the technologies they were expected to locate. Finally, their methods should be kept as secret as possible, rather than revealed by gossip and subsequent news stories, so that they remain useful as long as possible.

Terrorists were a special case, he said, because their goals were different from nation-states.

Countries develop nuclear weapons, he said, for deterrence, power, or prestige.

Terrorists want nuclear weapons to use them.

Multilateral negotiations with nation-states were the best way of preventing the development, use, or transfer of nuclear weapons technologies. Such negotiations have been successful in deterring many states from attempting to join the nuclear "club."

But for terrorists, Inman said, "Force may be the answer if we are ineffective in denying them access to such weapons."

Inman, a former director of the National Security Agency and deputy director of the CIA, is a faculty member at the University of Texas, which has agreed to provide education for Sandians by drawing upon the expertise and curricula across their 15 campuses.

Says Wendy Cieslak (1010), "This lecture was a kick-off to a possible seminar series on topics of broad interest to Sandia by experts outside of our core expertise."

## No stranger to controversy

Admiral Bobby Ray Inman is no stranger to controversy.

Continuing the independent outlook that has led him to occasionally disagree with past and present administration positions, the former NSA chief spoke his mind when invited to deliver the recent Truman lecture at Steve Schiff Auditorium at Sandia.

His opinions will not necessarily be shared

by all Sandians, but they offer a particular view of the world developed from personal experience over decades of high-level work for the nation.

In addition to his work at NSA, Inman has served as Director of Naval Intelligence, Vice Director of the Defense Intelligence Agency, and Deputy Director of the Central Intelligence Agency.

## Feedback

### Energy savings begin to kick in as soon as you turn off lights . . .

### . . . but saving money's a bit more involved

**Q:** I have a question about energy savings. At what point do you gain an energy savings in turning your office/lab lights out?

I work in Building 905 and there are times that I am in the lab or moving back and forth from the lab to my office and I was curious at what point by turning the lights off is there an energy savings? I know that starting the lights all the time is not energy efficient.

**A:** To answer your question directly, as soon as you turn the lights out you are saving energy. However, you may not be saving money. A fluorescent lamp's life (mean time between failures, or MTBF) is rated for about 20,000 hours if operated on a "standard" ballast with three hours between on-off cycles.

If fluorescent lights are turned on and off several times per hour, that lifetime will be shortened and Facilities Maintenance must replace the lamps sooner than planned.

Thus, we must try to balance energy savings with reductions in maintenance parts and labor to achieve the lowest total life cycle cost for Sandia. Here's how the numbers work for us:

The definition for MTBF is that point at which half the lamps have failed — the "mean."

However, we cannot tolerate an office or lab with half its lights out, and so we schedule group relamping of an entire building at that point when the lights' end-of-life random failure rates cause the spot-relamping calls to begin to rise above a nominal level — or around 15,300 hours

of life and about five years since the last group relamping event, based on our present contract and in-house labor rates and materials costs. Pushing the lights much longer than that impacts the mission of the building's residents, and impacts Facilities' ability to plan its work so as to not work in crisis-response mode.

Therefore, any additional switching off of your lights that you wish to do for energy savings are welcome, as long as it does not shorten the lamp's lifetime from 20,000 hours to 15,300. If you leave the lights on for three hours at a time, or longer, there is no adverse effect.

If you visit your lab only occasionally so that the lights do not accumulate 15,300 hours during the five-year relamping cycle, there is no adverse effect.

So how often can you switch your lights? The actual minimum on time that we shoot for at Sandia is about 30 minutes, which is the value we try to set in occupancy-sensing switches for common spaces such as break rooms.

This is the value we have learned works best here, over six years of lighting maintenance experience on tens of thousands of fixtures. So, if you are leaving your lab or office and will be back in 30 minutes or less, leave the lights on to save maintenance dollars. If you are leaving for longer than that, turn the lights off to save energy dollars. And thanks for your efforts at resource conservation.

— Gary L. Hoe, Lighting Team Chair

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

## MISCELLANEOUS

CAMPER SHELL, Nomad II, '04 & up, short bed Dodge Ram, Atlantic Blue w/wiring & clamps, \$1,050 OBO. Moya, 286-0754.

SNOW TIRES, 4, Blizzak WS-50, 205/70R15, mounted on 5 lug, 4.5 bolt patterns, 15x6.5 wheels, \$199. Harper-Slaboszewicz, 797-2181.

CONSOLE TV, 25-in., color, RCA, old but good picture, \$80. Herrera, 833-5035.

CONSOLE PIANO W/BENCH, Baldwin Acrosonic, regularly tuned, original owner, excellent condition, \$1,100 OBO. Wagner, 823-9323.

LOVESEAT FUTON, custom mattress/cover, \$275; 2 matching La-Z-boy chairs, swivel, upholstered, \$125 ea., \$500 for all. Spangler, 898-5225.

REFRIGERATOR, Kenmore/Whirlpool, top-mount, good condition, best offer. Uri, 323-5127.

RECLINER COUCH, wall-hugger, full-size, burgundy red, excellent condition, \$350. Gideon, 453-2831.

TEA CART, antique, very good condition, \$150; sewing table, Singer, wood/wrought iron, collectable, very good condition, \$140. Romero, 296-8493.

BOOKSHELF SPEAKERS, Infinity Primus 150, 6 mos. old, used once, perfect condition, \$140/pair. Chang, 385-6158.

GOLDEN RETRIEVER PUPPIES, purebred, no papers, all blonde, 7 wks. old, 5 females, \$150 ea., 1 male, \$100. Olguin, 352-2615, ask for Chris.

HORSE TRAILER, Hale 2, new paint, diamond plate aluminum trim, good tires, \$1,100 OBO. Lesperance, 615-2850.

GYM SET, Smith Machine, weights, folding bench, weight rack, w/additional bar, paid \$700, asking \$300. Salton, 463-2024.

ELLIPTICAL TRAINER, Gazelle Freestyle, sells for \$187, asking \$75; Total Gym, sells for \$399, asking \$100, some accessories still in wrap. Carrasco, 803-3831.

WEDDING DRESS, new, Davis Bridal, white, size 8, w/bag, \$200; waterbed mattress, king, \$25. Gibson, 573-4567.

FULL BED, w/headboard, dresser, Sealy mattress, \$350; corner computer desk, \$50, pictures available. Carrillo, 610-4263.

TWIN CAPTAIN'S BED, Stanley, w/mattress, drawers, night stand, chest-of-drawers, perfect condition, \$650. Schofield, 292-7220.

SWAMP COOLER, \$75; floor furnaces, \$50; Kenmore dishwasher, \$75; fire-proof desk, \$100, Kenwood speakers, 2, \$50. Orendorff, 520-271-3223.

DINING ROOM SET, w/leaf, 6 chairs & hutch, real wood, excellent condition, must see, \$500. Ramirez, 280-8974.

SLEEPER SOFA, queen, tan w/small blue floral print, like new, \$475; golf clubs, w/bag & cart, \$80. Duvall, 881-4406.

ROOFTOP CARRIER, fits SUV or sedan, \$20; desk, student, easy disassemble for hauling, \$25. Borgman, 299-6010.

REFRIGERATOR, large, almond, used, works great, \$150. Ross, 417-6467.

MOWER, 5-hp, \$100; mountain bike, Fuji 12-sp. road bike, \$100 ea.; hand-woven wool rugs, \$250; Black & Decker blower/vacuum, \$35. Gluvna, 884-5251.

BASS GUITAR, 5-string, American Fender Jazz Deluxe, custom ash body, \$900. Hendrick, 296-2163.

WASHER, top-load, Whirlpool Estate, super capacity, good condition, \$100; futon, simple frame, \$50. Robinson, 294-0473.

APPLIANCES: gas range, refrigerator, washer, dryer, microwave, all good condition. Orlando, 345-3290.

REPTILE CAGE, good for large snake or lizard, w/heater, lights, humidity & temperature gauge, \$150. O'Neal-Jones, 246-2666, ask for Lara.

CRIB, \$30; Graco car seat w/base, \$40; OceanWonders swing, \$75; toddler bed, \$10. Sanchez, 823-1337.

EXTENSION LADDER, 16-ft., paid \$142, asking \$70. Yaniv, 294-4490.

HOT TUB, cedar, water & air pumps, gas heater, 220-V control system, instructions, you haul, free. Hansen, 898-3173.

WASHER & GAS DRYER, Kenmore, 10 yrs. old, great condition, \$65 ea.; metal file cabinets, 4 drawers, 52"H, \$55 ea. McGee, 857-0661.

DVD RECORDER, Toshiba, \$65; Zenith combination DVD-R/VCR, \$55; JVC DVD player, \$20. Hale, 298-1545.

CHAIN SAW, Poulan, 20-in., 3,450, AF anti-vibe handle, gear-driven, 72LXP auto chain oiler, 54cc, 3.3 cu. in. Sanchez, 898-9598.

SIBERIAN HUSKIES, 6-wks.-old at end of June, 4 females, \$225 ea. Gomez, 877-8482, ask for Terrie.

ELECTRIC MOBILITY SCOOTER, Sundancer, excellent condition, \$1,800. Harmony, 823-1012.

DISHES, Pfaltzgraff stoneware, Yorktowne pattern, 4 place settings, multiple accessories, platters, bowls, canisters, etc., \$150. Wells, 292-0179.

ANTIQUA FURNITURE: handmade mortise/tenon table, 50's rounded chair w/carved wood, Damask sofa, spindle tables, more. Sanchez, 243-7016.

SADDLE, Keyston, 15-in. western, show/pleasure, medium brown, 6 silver conchos, floral/leaf tooled leather, \$450. Flores, 263-8225.

WHIRLPOOL ICE MAKER, used 5 yrs., up to 30-lb./day, electronic air filter, cost \$1,100, asking best offer. Vittitoe, 299-9298.

CHILD CARRIER/BACKPACK, L.L. Bean, \$40; Homedics full-body mat massager, w/heat, \$50. Hooper, 281-4604.

OUTDOOR MERCHANDISE SALE, July 15-16, benefits Albuquerque Mountain Rescue, camping, fishing/hunting gear. Simmons, 292-1096.

BATHROOM COUNTER TOPS, w/built-in sinks, marble or Corian, \$150 OBO; cast iron bathtub, \$150, you move. Hinman-Sweeney, 275-3477.

DINETTE W/HUTCH, \$300; couch/love seat, \$200; end tables, \$10-\$25; wood futon, \$150. Howard, 615-5417.

X-BOX CORDLESS HEADSET, Logitech, brand new, factory sealed packaging, \$20. Vigil, 822-1868.

REFRIGERATOR, Whirlpool, side-by-side, water/ice in door, 22-cu. ft., 32"W, white, ~14 yrs. old, in storage for 2 yrs., \$350. Cordova, 869-1122.

EXERCISE GEAR: large body ball, stepper platform w/video, \$15 ea.; wall mount bracket for TV, \$20. Caskey, 298-6428.

INVERSION TABLES, great for back, good condition, call for more details, sells for \$180, asking \$75. Pape, 869-7200.

WEIGHT MACHINE, Body solid, \$150; 360-lb. weights, \$50; lawnmower, 4.5-hp Honda, \$100; bar stools, \$20. Dage, 205-0364.

COMPUTER ANTHRO CART, 3-tiered adjustable shelves, corner unit, black, photo available, \$250. Caton, 281-9420.

WEGA FLAT TUBE TV, Sony Trinitron, 36-in., dual tuners, 4 yrs. old, used little, \$600. Harris, 822-0236.

GYMPAC DP1500, hook to wall, roll away to closet, w/bench, works arms, legs, everything, \$75. Finch, 296-6663.

TREADMILL, True Fitness, small footprint, w/floor mats, leading manufacturer, excellent condition, \$750 OBO. Tipton, 828-2538.

CUSTOM TRUCK COVER, fits extended cab truck, long bed, paid \$350, asking \$175. Aldaz, 480-8125.

TIMESHARE, Ft. Lauderdale, odd years, plus 105,000 points transferable, \$7,500 OBO. Garcia, 280-5815.

FIREPLACE INSERT, steel & cast iron, used, free. Rackley, 275-1276.

GOLF CLUB, Nike 460 Sasquatch driver, new, \$220. Hurst, 896-4218.

ELECTRIC WHEELCHAIR/SCOOTER, 3-wheel, battery power, great condition, sacrifice for \$700. Hobbs, 856-9630.

HOSPITAL BED, semi-electric, w/extra grab bar & linens, \$300 OBO. Wolf, 856-8539.

SAXOPHONE, Yamaha, \$550; Panasonic stereo console: turntable, radio, cassette, \$25 OBO; Sears multifunction rower & bench press, \$25. Ashby, 281-1573.

VCR, GE, \$20; Lexmark color printer/scanner/copier, \$50; microwave & cart, \$60; Elan Shape skis, 184cm w/Saloman bindings, \$75. Hanks, 298-5339.

COMPUTER HARDWARE, out of storage, list available, all offers considered; XP Pro w. SP2, new, \$95 OBO. Cocain, 281-2282.

AIR CONDITIONER, Sharp, window unit, 5,000-Btu; 3 tub chairs, wicker sides, \$50 ea. Cazzola, 884-7106.

CHROME WHEELS, Foosie Design Lusso, 5-hole, 18" x 7-1/2", wheel-tire pkg., lug nuts & key, \$1,800 OBO. Saiz, 459-0783.

## 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. 12651)
- 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 (If you include a web or e-mail address, it will count as two or three words, depending on length of the address.)
2. Include organization and full name with the ad submission.
3. Submit 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 any ad that may be considered offensive or in bad taste.

CRIB/TODDLER BED/DRESSER SET, Childcraft, excellent condition, \$450; toddler bed, \$75; Graco dual stroller, \$60, other baby items. Perlinski, 286-5633.

DINING ROOM SET, Thomasville, pecan w/2 leaves, 6 chairs & china cabinet, \$895; other furniture. McCollister, 858-9898.

ROCKER/RECLINERS, La-Z-Boy, mauve, his & hers, excellent condition, \$100 ea. or \$150 for both. Garcia, 304-4094.

TWIN MATTRESS & BOX SPRING, extra long, like new, \$100. Rockwell, 250-3737.

BRIDAL VEIL, diamond white, w/crystal edge, fingertip length, beautiful, paid \$150, asking \$75 OBO. Schultz, 321-2618.

## TRANSPORTATION

'98 CHRYSLER TOWN & COUNTRY LXI, 6-cyl., leather, rear AC, many extras, 89K miles, good condition, \$6,975. Pendall, 265-0481.

'78 CORVETTE, AT, 350, T-tops, burgundy, garaged, 88K miles, looks & runs great, \$14,000 OBO. Seier, 263-8779.

CHEVY SILVERADO, 4-dr., CD, hard cover, bed liner, 1 owner, 12,300 miles, \$17,000 OBO. Jaramillo, 843-7749.

'95 JEEP WRANGLER, hard top, 5-sp., 4-cyl. Martinez, 296-9035.

'98 DODGE DURANGO SLT, 4x4, silver, new brakes, alloy wheels, tow pkg., 91K miles, good condition, runs great, \$7,500 OBO. Vanek, 417-4350.

'93 FORD MUSTANG LX, AT, 5.0L, AC, PS, PB, white, always garaged, 120K miles, like new, \$5,900 OBO. Abbin, 296-7678.

'00 MONTERO SPORT LS, 4WD, 110K miles, great shape, \$6,900 OBO. Pulling, 239-1008.

'92 FORD EXPLORER XLT, 4x4, V6, CD, Michelin tires, hitch, 143K miles, \$2,600 OBO. Beegle, 298-0330.

'73 VW SUPER BEETLE, new upholstery & tires, nice condition, \$2,000. Stinebaugh, 275-3170.

'05 PONTIAC SUNFIRE, AC, PS, PW, tilt, cruise, sun roof, A/FM/CD/MP3, 5K miles, excellent condition, \$11,995. Harris, 797-3597.

'77 PORSCHE 928, good condition, needs interior work, runs great, \$3,500 OBO. Jameson, 507-0324.

'85 TOYOTA TERCEL SR5, 4WD, 5-sp., good AC, 33-mpg, low 90K miles, excellent, \$1,500. Dempsey, 281-9101.

'00 TOYOTA TACOMA, Xtra cab, 4x4, grill guard, 3-in. lift, running boards, plus extras. Greeno, 353-1272.

'98 FORD RANGER SPLASH XLT, flairside, AT, AC, full power, V6, tilt, cruise, garaged, 62K miles, mint condition, \$8,000. Cuoco, 892-7181.

'64 MERCEDES BENZ 220S, 4-dr. sedan, 2 owners, original paint, no rust, well maintained. Estes, 797-0100.

'97 PONTIAC FIREBIRD, 3.8, V6, 27-mpg, AC, ABS, 145K miles, see at lemon lot, \$3,800. Siddoway, 867-0828, ask for Dave.

'80 SCOUT II TURBO DIESEL, Borg-Warner T-19, Dana 300 transfer, Dana 44s, black, \$2,995 OBO. Bailey, 550-5823.

'99 CHEVROLET SILVERADO LS, 5.3L Vortec, most options, matching shell, 92K miles, excellent condition, \$8,000. Brunt, 401-3351.

'91 FORD EXPLORER, PW, PL, power mirrors, new alternator, blue/white, fantastic condition, runs great, \$2,700 OBO. Burns, 321-0913.

'03 TOYOTA TUNDRA SR5, V8, 4x4, 4-dr. access cab, auto everything, Tonneau-top, 11,500 miles, \$22,500. Felix, 856-9196.

'98 DODGE RAM V10, Quad cab, 3/4-ton, 4WD, fiberglass shell, 77K miles, excellent condition, \$15,000. Luikens, 881-1382.

'89 TOYOTA 1-TON, dually box truck, 6-cyl. AT, AC, rebuilt engine & transmission, runs great, \$6,900 OBO. Campbell, 294-6000.

'79 FORD F350, 460ci, AT, AC, regular cab, dually, 9-1/2 ft. flatbed, \$3,995. Bailey, 507-2532, ask for Shirley.

'95 FORD F350, 4x4, AT, 4-dr., Power-Stroke diesel, long bed, CD, custom bumpers, 165K miles, \$11,500 OBO. Tulk, 263-5087.

'96 HONDA CIVIC HATCHBACK CX, 5-sp., AM/FM/cassette, red, great gas mileage, 120K miles, \$2,750 OBO. Portillo, 294-1305.

'00 MERCEDES CLK CONVERTIBLE, every option, always garaged, silver w/gray leather, 65K miles, perfect condition, \$24,500. Dwyer, 271-1328.

'00 BMW M5, 6-sp., 407-hp, South-west car, new PSRs, iceblue/gray, 68K miles, excellent condition, \$29,325 (trade-in value). James, 296-1029.

'03 JEEP LIBERTY SPORT UTILITY, 4WD, loaded, creampuff, 37K miles, book \$16,800, asking \$14,800. Jones, 323-2303.

'05 FORD ESCAPE XLT, 4WD, 4-dr., V6, 3.0L, 18/22-mpg, 6-disc CD, black/gray, 34K miles, excellent condition, \$20,200 OBO. Robideau, 379-0158.

'02 VW GTI, 5-sp., 30-mpg, ~40K miles, excellent condition, \$14,000 OBO. Martinez, 385-8792.

## RECREATIONAL

'93 HARLEY-DAVIDSON FXDWG, anniversary bike, 1,133 of 1,993, lot of chrome & extras, 21K miles, \$9,900 OBO. Tise, 892-3388.

'99 JAYCO EAGLE TRAVEL TRAILER, 30-ft., used only 20 nights, originally over \$20,000, asking \$10,500. Homan, 892-6741.

'05 FLEETWOOD FIFTH WHEEL, Pegasus 27RL Super Slide, used twice, new condition, below book, \$21,000 OBO. Webb, 869-8001.

'58 ALUMINUM BOAT, 14-ft., w/25-hp Johnson/Ev motor, electrical troll & fish finder, \$750. Nelson, 265-7482.

'03 HARLEY-DAVIDSON XLH 880, 120 miles, like new, \$5,200. Washburn, 294-5921, ask for Ron.

'01 HONDA CR250R, FMF pipe, new chain & sprocket, very well maintained, runs great, \$2,400. Salzbrenner, 275-3878.

CANOE, aluminum, 17-ft., paddles, etc., \$350. Nelson, 881-0148.

'96 AEROLITE TRAVEL TRAILER, sleeps 5, 25-ft., AC, refrigerator, stove, shower, new rims/tires, \$4,500 OBO. Kernaghan, 296-2036.

'03 SUZUKI GSXR600, 3K miles, like new, garaged, female owned/operated, impeccably maintained, title in hand, \$5,500. Stevens, 217-3909.

'99 EXCEL FIFTH WHEEL, travel trailer, 30 RLO, fiberglass, 2 slide outs, excellent condition, \$22,900. Reynolds, 281-4985.

'78 KAWASAKI KZ200, street bike, stored for years, needs a little TLC, \$650. Roeschke, 238-0362.

'97 HOLIDAY RAMBLER, Banks Power-pack Plus, new tires & batteries, garaged, excellent condition, \$26,000. Navalesi, 865-6373.

BICYCLE, children's Schwinn Falcon, like new, \$30. Cordova, 275-2085, ask for William.

## REAL ESTATE

3-BDR. HOME, 2 baths, 2-car garage, 1,424-sq. ft., Mirabella area, near KAFB, \$196,000; '98 Ford Contour, V6, \$2,400. Gonzales, 296-8006.

3-BDR. MOBILE HOME, 2 baths, den, 1,960-sq. ft., Four Hills MHP, many latest upgrades, \$38,000. Dvorack, 293-2547.

3-BDR. HOME, 1-3/4 baths, 1,700-sq. ft., near Altura park, hardwood floors, ceramic tile, Pergo, many upgrades, \$284,000. Gendreau, 266-7573.

4-BDR. HOME, 3 baths, 1-car garage, 2 living areas, 1,725-sq. ft., gated community, <2 yrs. old, many upgrades, near Eubank gate, \$275,000. Natha, 453-6345.

3-BDR. TOWNHOME, 1-3/4 baths, 1,850+sq. ft., upgrades, built-in backyard BBQ, Glenwood Hills, excellent condition, FSBO. Witkowski, 271-0773.

4-BDR. HOME, 2-1/2 baths, 2,640 sq. ft., 1 yr. old, high-end upgrades, La Cueva high school, must see, \$465,000. Hillis, 856-2041.

3-BDR. CUSTOM HOME, 2 baths, 1,882-sq. ft., Knolls of Paradise Hills, #295474, call to view/make offer. Gutierrez, 994-0921.

8-BDR. HOME, 3 baths, Cambridge MA, hardwood, central AC, large deck, landscaped, FSBO, \$1,200,000. Allen, 617-864-3531 or 617-868-3332.

3-BDR. "GREEN" HOME, 2 baths, North Valley renovation, 1920's adobe farm house w/wood floors, beautiful, \$299,000. Schwartz, 246-2929, ask for Mary.

3-BDR. HOME, 2 baths, 1,500-sq. ft., 2-car garage, near Intel, 6 mos. old, \$215,000. Polonis, 823-2471.

3-BDR. HOME, 2 baths, Rio Rancho, new roof, carpet & AC, large attached shop/garage, \$181,000. Trujillo, 896-6914.

3-BDR. HOME, 2-car garage, 1,410-sq. ft., gated community, 140/Unser, 2 yrs. young, below appraisal, \$167,000. Gaudlen, 459-2267.

## WANTED

'71 SANDIA HIGH SCHOOL YEARBOOK, will pay up to \$100. Langwell, 250-1209.

ROOMMATE, Livermore, Springtown, no pets, no smoking, \$625 + 1/2 utilities. Hubbs, 925-606-8420, ask for Susan.

FREE MOVING BOXES, relocating family due to divorce. Kuehne, 281-5446.

SPRINT CELLULAR PHONE, w/accessories, good condition, reasonably priced or donate to victim of arson. Lopez, 836-1946.

CRIB, changing table, dresser, preferably dark wood. Morales, 821-5417.

35MM SLIDE STORAGE TRAYS, metal, singles or doubles. Whitham, 266-9313.

NANNY, for 2 girls, Mon.-Fri., 8 hrs. daily. Bernal, 899-6471 or 249-8548.

GOOD HOME, 2 female black Labrador, very good dogs, 3 yrs. old. Brooks, 720-8976.

ALUMINUM FISHING BOAT, 14-16-ft., w/motor & trailer, all in good to excellent condition. Perrine, 293-1429.

TREADMILL, at least 2-hp. Martinez, 610-9174.



# Truman Fellowship Program announces scholars for 2006

## Two join in legacy of Truman's vision for 'exceptional service'

By Darrick Hurst

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Today, Sandia honors the memory of President Truman's challenge through the prestigious President Harry S. Truman Fellowship in National Security Science and Engineering. Currently in its third year, the program is a three-year appointment that allows scholars to perform postdoctoral research in their proposed topic area. That research must be related to national security and address a major scientific or engineering problem, or provide a new approach or insight to a major problem, thereby impacting their field of study.

This year's recipients are Whitney Colella and Hung (Jacques) Loui, who join the distinguished ranks of the five previous Truman Fellows (*Lab News*, June 25, 2004; May 27, 2005).

"We're proud to provide some of the world's finest research opportunities to these truly outstanding Truman Fellows," says Sandia VP and Chief Technology Officer Rick Stulen (1000). "Whitney and Jacques epitomize the best coming out of our universities and I'm confident they will both make important discoveries and contributions during their time at Sandia."

Whitney and Jacques were selected out of the many applications received from universities across the nation, including Princeton, University of California-Berkeley, Georgia Tech, MIT, Stanford, University of Texas-Austin, and others.

### Whitney Colella

Whitney has an outstanding academic record with a BS in mechanical engineering and a minor in public policy from Princeton, an MS in science and public policy from Sussex, an MS in mechanical engineering from Stanford, an MBA from Oxford, and a DPhil in engineering science from Oxford. She has been recognized with British Marshall, Fulbright, National Science Foundation, T.J. Watson, Gilbreath, and Overseas Research scholarships and fellowships.



WHITNEY COLELLA

"I am thrilled to have the opportunity to conduct research at Sandia," she says. "Pursuing my proposed research at Sandia under the Truman Fellowship was my first choice among several options. I am extremely impressed with Sandia as a national lab — especially its engineering focus. I am looking forward to the opportunity to work with some of the best researchers in the country. I have really enjoyed getting to know a few Sandians and am impressed with how down-to-earth, genuine, and intelligent they are."

Whitney's PhD thesis was an original experi-



mental systems model of fuel cells that considered heating, cooling, and the use of by-product heat. She developed concepts and control strategies that challenge conventional analysis of fuel cells and show that, with imaginative design, they have more immediate commercial potential than generally thought. One of her recommendations was adopted by DaimlerChrysler's fuel cell subsidiary. She has also designed an integrated fuel cell power and heating system for the Stanford campus. As an undergraduate, she developed and built the world's first fuel cell-assisted bicycle.

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In his PhD work, Jacques tackled a longstanding, unsolved problem in quantitatively describing the radio frequency characteristics of thick metal surfaces with arbitrary inclusions. To solve this problem, he developed, implemented, and tested an efficient computational method, which is a significant advance in the state-of-the-art for frequency-selective surface modeling. This formulation allows for the analysis of complex periodic and aperiodic structures over an extended fre-

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Each year, the Truman Selection Committee is made up of senior scientists who volunteer their time to review, rank, and interview applicants. This year's members include Ron Loehman, Chair (1815), Patrick V. Brady (6118), Jeff Brinker (1002), David Chandler (8350), David Gartling (1500), Lyndon Pierson (5616), Larry Rahn (8350), and Anita Renlund (2550). Final selection is made by Chief Technology Officer Rick Stulen (1000).

Sandia's University Research Office and Human Resources/University Partnerships teamed more than three years ago to create the new post-doctoral position and guide the processes necessary to implement the prestigious position.

Previous Truman Fellowship recipients: Youssef Marzouk (8351), Gregory Nielson (1769), Ilke Arslan (8756), Meeko Oishi (6226), and David Scrymgeour (1114).

## Feedback

**Q:** I frequently use Gate 16 and have noticed that it doesn't have the "NO CELL PHONES" sign to remind folks to check for cell phones before entering the area. It seems like the reminder signs are hit-and-miss around the TA. At some gates the turnstiles have a small sign located by the badge swipe, other gates have a large poster, and some have no signs at all. Is there a uniform policy on these signs?

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poster-size sandwich-style board signs at various gates to raise employee awareness about bringing cell phones into a limited area. The sandwich boards are mobile and allow us to randomly relocate the signs so they don't quickly become part of the background and thus lose effectiveness. The location of the signs is purposely designed to be unpredictable. There was a marked decrease of cell phone incidents the two weeks following the initial deployment of the signs. Since then, the effect has diminished somewhat due to the "commonality" of the signs around the site. Seeing a new sign for the first time is more effective than seeing the same message over and over at a specific location. I will ensure the sign rotation includes Gate 16 in the near future. — Todd Harrison (42342)



## Shocked ... don't be!

Electrical office equipment is potentially hazardous, causing shocks, burns, and injuries if the equipment is improperly used or maintained.

### Electrical Hazards Include:

- Ungrounded equipment and/or overloaded circuits
- Overloaded outlets
- Defective, worn, frayed, or cut cords
- Failure to disconnect equipment before cleaning/repairing it

### Helpful Reminders:

- Inspect cords, equipment, and outlets regularly
- Avoid tripping hazards—roll up excess cords and keep them out of traffic areas
- Use extension cords only temporarily
- Use equipment on/off switches: never pull a plug out by the cord



For additional Electrical Safety information:  
<http://zap.sandia.gov>



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SANDIA NATIONAL LABORATORIES  
Employee Communications Dept.  
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Albuquerque, New Mexico 87185-0165  
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