Sandia’s MTI satellite completes its three-year mission

The Multispectral Thermal Imager satellite — the MTI — Sandia’s first fully in-house developed Earth orbiter, has successfully completed its original three-year research goals, and will continue to collect images for US government agencies. The image here shows Mt. Etna in Sicily during an eruption in August 2001. The image clearly shows lava flows, smoke, and gas clouds. The full image, along with images of Washington, D.C., and the Larson Ice Shelf in Antarctica, are reproduced on pages 6 and 7. John German reports.

Gov. Richardson’s visit to Sandia historic on several fronts

By Chris Burroughs

Bill Richardson visited Sandia last week for the first time in his five-month-old role as New Mexico governor. The visit was historic for two reasons: It was the first time a New Mexico governor has presented a colloquium at the Labs (although Richardson, of course, had spoken at Sandia as DOE secretary); and it gave Richardson an opportunity to add his support to an agreement executed by President C. Paul Robinson, representing Sandia, and Tom Brennan and Mark Benak, representing Zircle LP, that if all goes as hoped promises to

Wall-to-wall inventory a once-every-four-year Labs-wide sweep

By Chris Burroughs

Some 600 Sandia property coordinators, armed with new lightweight scanners, are sweeping the Labs this spring looking for 56,000 assets — computers, scientific equipment, and other high-tech gear valued at more than $1.1 billion. Their search is part of a “wall-to-wall” inventory review required by DOE.

“We are scanning every known space at all Sandia sites to make sure we find everything that has a barcode,” says David DePolo, Property Manager (10267). “That includes searching sheds, basements, attics, and storage areas, as well as the usual offices and laboratories.”

The goal is to locate 99.5 percent of the assets by cost by the end of July with tentative results in by mid-August. The final results will be turned in to DOE by Oct. 1.

MicroHound ‘sniffer’ goes to federal emergency response teams for evaluation

By John German

A Sandia team has developed a more capable “electronic nose” for sniffing out vanishingly faint concentrations of explosives.

The latest sniffer, called the MicroHound™, is the size of a totable toolbox and weighs just 12 pounds.

It draws in a bathtubful of air with each breath, collecting explosives vapors and particles on a metal filter.

The filter is heated, re-launching the trapped explosives into a much smaller puff of air, about a tablespoon’s worth.

This air is sampled using an on-board sensor called an ion mobility spectrometer (IMS), which detects and identifies the explosives. This “preconcentration” technique can be likened to netting thousands of fish from waters as vast as an ocean, releasing the catch into a pond, and then fishing the pond — with much increased odds.

The approach, pioneered and patented by Sandia in the mid ’90s, has enabled the development of highly sensitive sniffers, ranging from a drive-through vehicle checkpoint to a walk-through portal for screening airline passengers at airports, that catch the faintest whiffs of bomb-making chemicals.

By early 2000, the Sandia team had miniaturized the preconcentration equipment enough to create “luggable” devices for identifying trace concentrations of explosives at special events and crime scenes.

Installable, luggable, portable

The MicroHound™ (a.k.a. µHound™) — a collaboration of Security Systems and Technology Center 5800 and Microsystems Science, Technologies, and Components Center 1700 — is the latest evolution in smaller and cheaper explosives-detection devices, says project leader Kevin Linker (5848).

It is the first hand-carried sniffer that integrates in a single device Sandia technologies for the preconcentration, sampling, and detection of explo-

Inside . . .

Labs launches engineering fellowship at UC Berkeley

Asian Outreach chair sees progress, hopes for more

(Continued on page 4)
Discoveries are us at the US government's national security labs, and we made a really important one last week: We need the Internet and e-mail. If you're a New Mexico Sandian and weren't in the middle of the Southern Ocean in your sailboat last week, you experienced life at work without those two vital tools for most of three days right smack in the middle of the week. And if you don't work in the network/computer/e-mail corps and you were about to pull your hair out for those three days, try to imagine life inside that group of wizards.

It moved Marcus Martin (9235) to ask: "Is ISP a title, such as president or ambassador, that continues to be conferred upon an entity even after it no longer applies? ... Perhaps we should use something along the lines of the musician Prince and call [the Internet service provider company used by Sandia] "the company that formerly provided Internet service to Sandia.""

But by midday Thursday, all was well in our cyberworld.

Rod Geer (12640), who can actually remember watching Art Linkletter's 1950s television show Kids Say the Darndest Things, says parents can say some pretty darned things, too. His Mom, Mrs. Geer, for example.

She called him at the office one day last week and asked if he had retired. Two points about that call, he said: (1) Mom, if I'd planned to retire, I probably would have told you, and (2) if I had retired, I probably wouldn't have been here to answer the phone.

But I bet he shared that wisdom only with us in the office. Bet he didn't actually say that to Mom.

I don't know if Steve Trujillo (9112) was serious or just poking a little fun at me about my poking fun the last time around at the Santa Fe Police Department for offering a "reserve-an-arrest" option for City Differentials who might want to be on record as protesting during President Bush's visit, but couldn't actually be on the street.

"Why not just write, 'I hate Santa Fe' and be done with it? Just wondering," he wrote.

I answered Steve, and I reiterate here: I love Santa Fe. And mostly for just that "reserve-an-arrest" sort of thing, I mean, where else on the planet could you find such a laid-back option? No, Steve, I love Santa Fe. It's like Hollywood, Disney World, and Never Never Land all rolled into one, with touches of Greenwich Village, San Miguel de Allende, and Jimmy Buffetville thrown in.

Noisiree. ... I love Santa Fe.

And a quick note about the other part of last issue's column. My musings about trying to find a phone number for the Santa Fe Police Department for offering a "reserve-an-arrest" option for City Differentials who might want to be on record as protesting during President Bush's visit, but couldn't actually be on the street.

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And a quick note about the other part of last issue's column. My musings about trying to find a phone number for the Santa Fe Police Department so I could check on that "reserve-an-arrest" deal apparently reached out and touched someone.

And it's not a bad thing. The phone gurus are re-examining the decision to shut off access to 1-411 and 1-(area code)-555-1212 directory assistance. And having another look rarely hurts.

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

When Shannon Timpe arrived at his graduate research program at the University of California, Berkeley, in the fall with ample materials research under his belt, his advisor pointed him to a new research fellowship established by Sandia, the University of California, Berkeley Excellence in Engineering Fellowship.

“I was really excited about this stuff,” Timpe says about his research experiences as a mechanical engineering major at the University of Illinois in Champaign-Urbana. “I was in the right place at the right time.”

As the first recipient of the new fellowship, Timpe will apply the basic materials science training he received as an undergraduate to characterizing properties of microelectromechanical systems (MEMS). He has access to experimental resources in the mechanical engineering department laboratory of his advisor, Prof. Kyriakos Komvopoulos, a specialist in friction, and related labs under the direction of the renowned Berkeley Sensor and Actuator Center. Timpe also looks forward to presenting his work to Sandia researchers who have synergistic projects and to touring the facilities here.

“Obviously, Sandia is one of the leaders in the MEMS community,” he says. “It will be a tremendous learning experience for me.”

That interplay is one of the founding principles of the fellowship, says California Laboratory VP Mim John, who is Sandia’s UC Berkeley campus executive.

“The goal of the fellowship is to encourage innovation in science-based, multidisciplinary research through support for an outstanding doctoral candidate in engineering,” she wrote to Berkeley officials when announcing the fellowship. “In making this pledge, we hope to strengthen our partnership with the University of California, Berkeley to encourage a new generation of engineers who can contribute to engineering and high technology in areas of national interest and critical need.”

The fellowship provides $40,000 in annual student support for two years (renewable for a third year) through Sandia’s Laboratory Directed Research and Development program. Its implementation at Berkeley was spearheaded by mechanics of materials researcher Bonnie Antoun (8725). She worked with Wendell Kawahara (currently on leave to teach at UC Berkeley), and her manager John Garcia (8725) to place the fellowship. John and Bonnie recently visited Berkeley to receive a briefing by Timpe on his progress.

“He very quickly came up with a new design,” John says, “to measure the contribution of adhesion forces during static friction, a phenomenon that is prevalent in MEMS devices and based on the attraction between very flat surfaces, kind of like the property that causes contact lenses to adhere.”

Timpe also plans to study dynamic friction present when surfaces slide past each other. He is working on a comb drive mechanism that is just micrometers long. Some 20 to 25 of the devices fill a polysilicon chip that measures a square centimeter. Based on tests begun in April with the first version, he has devised a second-generation design.

To fabricate this more sophisticated device, John says, Timpe will look into using Sandia’s Microelectronics Development Laboratory (MDL), which has a unique MEMS fabrication process.

“Bonnie shares Timpe’s research interest in friction in MEMS. For the past 20 years, she has been serving as a lead experimentalist on an LDRD project led by Dave Reedy (9123) in New Mexico to develop high-fidelity frictional models for MEMS. She and John anticipate mutual benefits from their association with Timpe. “We can draw on their knowledge and expertise, which can help us move along in our understanding of MEMS friction,” John says. Timpe says the fellowship should form the groundwork for his master’s project that he will present to faculty and may also result in a publication. For doctorate work in his joint master’s/PhD program, he expects to focus on detailed aspects of the work.

Overall, the new fellowship should generate similar gains for Sandia and UC Berkeley in the years to come, Mim says. “We believe this will jointly strengthen our ability to attract outstanding people, enhance our institutional research, and help foster long-term, mutually beneficial relationships. We believe students and faculty will discover that the national laboratories are the place where they can come to solve the grand scientific and engineering challenges of the 21st century.”

AN OVERHEAD IMAGE of a complete device microfabricated in polysilicon is shown in this scanning electron micrograph.

Homeland Security S&T chief visits California site

ENLIGHTENING — Department of Homeland Security Undersecretary Charles McQueary, left, hears a briefing about the Extreme Ultraviolet Lithography (EUVL) program at Sandia/California. Rick Stulen, Director of Exploratory Systems and Development Center 8100, is at the center of the group, and Nanolithography Dept. 8730 Manager John Goldsmith is to the right. In the foreground is a display case holding an EUVL reflective mask. (Photo by Bud Pelletier)

Sandia Launches Engineering Fellowship at UC Berkeley

Shannon Timpe will work on MEMS as first recipient of Excellence in Engineering Fellowship

Sandia launches engineering fellowship at UC Berkeley Excellence in Engineering Fellowship Shannon Timpe will work on MEMS as first recipient of Excellence in Engineering Fellowship

By Nancy Garcia

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The design concept that fellowship recipient Shannon Timpe devised is shown in this AutoCAD drawing. This design is being used to test friction in microdevices.

The University of California, Berkeley is one of three regional campuses that Sandia/California is targeting for enhanced interactions. A broad group of managers and directors have been meeting in a Strategic University Partnerships Committee, and teams are being formulated that target each campus with specific action plans.

To launch the teams, Recruiting and University Partnerships Dept. 8524 has held a series of lunchtime gatherings for Sandians associated with each campus. In addition to UC Berkeley, Stanford University, and UC Davis are on the list; UC San Francisco may be added later.

Goals of the interactions include becoming well-known in the university communities as a Bay Area science and technology institution that is second to none, providing effective pipelines for attracting high-quality staff, increasing opportunities to collaborate on research, and helping Sandia and the campuses improve their visibility to their constituencies.

ENLIGHTENING — Department of Homeland Security Undersecretary Charles McQueary, left, hears a briefing about the Extreme Ultraviolet Lithography (EUVL) program at Sandia/California. Rick Stulen, Director of Exploratory Systems and Development Center 8100, is at the center of the group, and Nanolithography Dept. 8730 Manager John Goldsmith is to the right. In the foreground is a display case holding an EUVL reflective mask. (Photo by Bud Pelletier)
Wall-to-wall

(Continued from page 1)

David notes that due to the political climate, it is particularly important that Sandia meet its goal — and even do better — during this year’s wall-to-wall inventory.

“Even though a 98.7 would constitute a marginally passing score, the National Nuclear Security Administration (NNSA) is anxious to use our results, as well as those of other national laboratories. Sandia will inevitably be compared to others,” David says.

Inventories at Sandia operate on a four-year cycle. For the first three years personnel are appointed by department managers, usually OAs — conduct statistical inventories. In FY02 they located a sample of 2,300, out of the 56,000 assets — a sample size calculated by Sandia statisticians. The fourth year they do a wall-to-wall inventory where the emphasis is on accounting for all trackable assets by geographic scan. By focusing on work and storage areas, rather than asset lists, diligent property coordinators will locate items not necessarily assigned to them or even organized. If the new location data can be plugged into the records.

The statistical method used costs less, is less time consuming, and still provides information needed to maintain personnel in control systems without doing an extensive wall-to-wall inventory.

Though labor intensive, wall-to-wall inventories can be productive. After two months of effort this year some, $1.7 million worth of property was identified.
Zircle Brennan, and Sandia: A kind of partnership

Richardson (Continued from page 1)

Richardson noted that this new model will be used initially with Sandia, but later will be applied to other research institutions such as Los Alamos National Laboratory, University of New Mexico, New Mexico State University, and others.

“This agreement is not an exclusive one,” Richardson said, “and it will not stop others from participating in the new ideas we have to offer. But it is a whole new approach — and we predict a winning approach — that will change the road map of how the nation commercializes technology out of research facilities.” — Gov. Bill Richardson

Wall-to-wall

(Continued from preceding page)

any given year’s shrinkage is located in subse-
quent inventories.

This year the wall-to-wall inventory has been made easier with a new lightweight scanner. Con-
siderably smaller than scanners used in the past, the new scanner resembles a palm pilot. It tells users for example, when a product has been returned due to service life and how to locate addi-
tional information about the asset. Users can click on an icon with a stylus, which allows them to swim to different menus.

As of early this week, 93.68 percent of San-
dia’s assets were located, notes Barbara

“Assets can appear in the most unex-
pected places,” Barbara says. “We have to climb every mountain and ford every stream,” muses David DePolo, property manager.

Gov. Bill Richardson

GOV. BILL RICHARDSON

Richardson called Zircle a "new national model for economic development." New Mexico Gov. Bill Richardson said at the signing ceremony at Sandia. “The bottom line is that Zircle will directly financially benefit the national labs, the scientists, the technology industry, the State of New Mexico, our workforce, our communities, and our state.”

“I have a feeling that this will be a very

Richardson noted the way “Sandia has been a great citizen” of New Mexico and said the Zircle/Sandia mechanism is another way the Labs can help improve economic and educational condi-
tions in New Mexico.

Diverting from the topic, he briefly discussed his success at cutting taxes during the last legisla-
tive session.

“We sent the message that New Mexico is open for business,” he said. “We’re doing things differently. We are moving ahead. . . . I am trying to change the state.”

Responding to a question about working with neighboring states, he noted he is doing that, especially now that he is president of the Western States Governors Association.

The western states, he said, have many com-
monalities — water problems, shared transmission lines, education, immigration, with most of the immigration moving to the west.

“We have to work and we have to work cooperatively,” he said.
Around the world 17,300 times: Sandia’s MTI satellite completes its three-year orbital research assignment

Labs team continues to squeeze capabilities out of Sandia’s first satellite

By John German

Mission accomplished

The Multispectral Thermal Imager (MTI), the first full satellite and sensor system designed and built by Sandia, has successfully completed its three-year research goals, and the satellite continues to collect imagery for US government agencies, says MTI project manager Max Decker (5743).

Not only that, he says, but the satellite has been used in ways that were never anticipated by the design team.

The MTI’s telescopic camera captures imagery data in 15 spectral bands that reveal heat or light patterns not visible to the human eye. It does so in levels of radiometric accuracy never previously accomplished from space.

Mission wrap-up

Since its launch just over three years ago, on March 12, 2000, the satellite has orbited the earth more than 17,300 times. (See www.sandia.gov/media/NewsRel/NR2000/mtsuccess.htm for more about the launch.)

Operators at the Sandia/New Mexico ground station have contacted the satellite twice a day, 365 days a year. More than 440 gigabytes of raw imagery data have been downloaded from space, says Max.

The goal of the satellite’s three-year research assignment was to demonstrate the feasibility of using the satellite’s unique multispectral imaging technologies for both national security and environmental applications, he says, including treaty monitoring, mapping of chemical spills, studying vegetation health, and more.

As planned, the MTI’s imaging camera has collected in some cases more than 50 images of sites outfitted with equipment that allows researchers to compare the imagery data taken from space with data supplied by instruments on the ground—a calibration technique called “ground truthing.”

“We’ve collected large amounts of data in support of the DOE’s objectives,” says Max, “and the results have been shared with the DOE research community.

Research and more

Specifically, the MTI team has fielded a highly calibrated system and worked to understand how to keep it calibrated in space, says Max, a feat that had never before been accomplished to the desired accuracies.

The system has repeatedly demonstrated the ability to measure absolute temperatures from space to better than two degrees. It can measure temperature differences to much more precise levels.

The MTI team also flew a new kind of linear-array focal plane of three sensor chip assemblies each housing 15 detector arrays. Each detector array looks through a filter that defines its optical capabilities. The three sensor chip assemblies are aligned and mounted on a single focal plane, which is cooled to 75 Kelvin (minus 198 degrees Celsius).

The team also demonstrated use of a pulse-tube cryocooler, which kept the components at 75 Kelvin continuously for 30 months.

“This is one of the longest continuously running mechanical on-orbit coolers ever fielded,” says Max.

And they supported the research objectives of the MTI Users Group of more than 100 researchers from 50 national defense and civilian agencies. Among the MTI’s scientific contributions are new understandings of volcanic activity, arctic shelf breakup, and other natural and man-made phenomena.

(Lab’s team continues to squeeze capabilities out of Sandia’s first satellite)
MTI satellite

(Continued from preceding page)

The MTI imaging camera has proven valuable enough that both government and private industry are incorporating similar imaging technology in designs and proposals for future satellites, he says.

Hurdles overcome

The MTI’s mission has not been without problems. Shortly after launch a glitch in the satellite’s on-board power system resulted in unexpected battery discharges that prevented data from being collected and transmitted to the ground station.

It raised blood pressures at first, says Max, but the team soon learned to manage its power operations in a way that mitigated the problem.

Two other anomalies, a short in one of the satellite’s two solid-state recorders — its computer memory — and a faulty gyroscope forced the team to find other creative workarounds.

MTI helped NOAA, too

A second imager on board the MTI, a Hard X-ray Spectrometer (HXRS) sponsored by the National Oceanic and Atmospheric Association (NOAA) to study solar flares, didn’t quite last three years, says Max Decker.

It quit transmitting on Feb. 17, 2003, but managed to accomplish its planned mission first.

A letter from NOAA Director Ernest Hildner sent to Sandia praised the Lab’s assistance and called the partnership a success.

“I extend to you . . . our laboratory’s deep appreciation for [your] substantial assistance and cooperation in making the [HXRS] experiment to view the sun an overall success,” he wrote.

Exceeding the mission

Now that the mission goals are complete, the MTI has entered a bonus round, of sorts, collecting data on a routine basis for several government organizations.

To expedite data processing and improve efficiency, data processing responsibilities were formally transferred from Los Alamos to Sandia in late January, says Max. Sandia is now responsible for all aspects of the MTI system.

The satellite currently is gathering about nine images a day, 60 percent of which are requested by other government agencies for research purposes. The other 40 percent are being collected for NNSA labs.

A Sandia Spectral Image Processing and Exploitation team led by Jody Smith (5712) is squeezing ever more analysis capability out of the satellite, developing and experimenting with dozens of data processing algorithms and techniques that allow them to see more with existing instruments.

The new algorithms are providing data useful for cloud identification, terrain characterization, change detection, and more, says Max.

“What we’re doing now is trying to push the state of the art in spectral analysis tools,” he says. “We are experimenting with a lot of ideas.”

One trick, called “super sampling,” involves snapping four images during the time period one image would normally be taken, allowing the team to synthesize images with resolutions four times better than the typical 5 meters of resolution.

The MTI’s fate

This kind of experimentation will continue until the MTI is no longer useful, or until it plunges to earth, whichever comes first, says Max.

The satellite is expected to reenter the upper atmosphere in 2009 — or, rather, be captured by the atmosphere — during a solar max (expansion of the atmosphere) that occurs on an 11-year cycle.

Already the satellite’s orbit has decayed. Shortly after its launch three years ago the MTI was 590 km high; today it is about 560 km up. In addition, its sun angle has changed, altering the times of day the imager can acquire targets.

When it does fall toward earth, says Max, it is expected to burn up and disintegrate before it reaches the ground.

“Sandians supporting the MTI program have advanced the state of satellite technology as well as the analysis tools used to exploit the data gathered,” says Sid Gutierrez, Director of Monitoring Systems Center 5700. “They should be proud of these major contributions to our national security.”

The MTI’s development and on-orbit operations were funded by NNSA’s Office of Nonproliferation and National Security (NA-22). The satellite and sensor payload were developed by a Sandia, Los Alamos National Lab, Air Force, and industry team led by Sandia.

Favorite Old Photo

COWBOY ROOTS — These are photos of my grandfather’s (Dennis B. Lyons, deceased) homestead ranch in central southern South Dakota that was established in 1909. The man on the horse rearing up is my uncle, Richard Lyons, who still has the ranch with my Aunt Bernice. The other photo shows my grandfather tending cattle on the “Lyons Ranch.” Both photos were taken in 1946. My father (Robert J. Lyons, 81) grew up on this ranch. I grew up in Sioux Falls, S.D., and every summer we would go out to the ranch to visit and sometimes help with tending cattle. This is a real working open-range cattle ranch, which gave me many unique experiences. I will never forget rounding up cattle on horseback, branding, and vaccinating the herd. One time I had a cowpony lay down in a creek with me on the back, soaking me to the bone and causing significant excitement. Today it makes me realize that my family descended from real cowboys, a unique and often romanticized piece of Americana.

— Greg R. Lyons (2616)
More on Sandia’s endeavors at Yucca Mountain Project

The May 2 Lab News featured an article by Will Keener about Sandia’s work at Yucca Mountain, the proposed geologic repository in Nevada that will permanently store America’s high-level radioactive waste. Due to space limitations, the Lab News was unable to carry two dramatic pictures and a timeline associated with the project. We are presenting them to you now.

Timeline for Yucca Mountain Project

1982 Nuclear Waste Policy Act
1987 Amended Nuclear Waste Policy Act
2002 DOE Recommends site to President
2004 License application to the Nuclear Regulatory Commission
2007 Construction begins
2010 High-level radioactive waste arrives

The earliest possible date for operations.

Third Safety Forklift Rodeo called a big success

Logistics and Integrated Safety and Security once again teamed to host the 3rd Annual 2003 Safety Forklift Rodeo. This event gives employees a chance to compete and show off their skills using forklift equipment, while having fun. The rodeo was held in the 957 Complex May 5-8 with tryouts Monday through Wednesday and the final competition and an awards ceremony and barbecue lunch on May 9. There were about 40 participants. Five individual events were held, each including an inspection of the forklift. Here are the winners for each event:

Fun Course, Mike Salazar (10263); Low Boy/Semi Trailer, Paul Apodaca (10268); Grand Canyon, Mike Valles (3125); Valley of the Serpents, Chris Mehring (10263).

The one with the most points in all events is the overall winner; if there is a tie, the best time is the deciding factor.

The overall champion was Greg Vigil (10268), with 114 points. Chris Mehring was runner-up, and Bryce Gilbert (3125) was third.

In 2002 the champion was Chris Mehring (10263), and in 2001, the first year, Roberta Carroll (10263) was the champion. Because a female won the first forklift rodeo, it is now tradition that a female be passed on to the new champion.

“The safety awareness, the skills, and the knowledge that our personnel perform each working day is unbelievable and it showed during the competition,” says Carolyn Lucero, Manager of Receiving, Mail, and Material Movement Dept. 10263. “The support from all
Recent management promotions

**New Mexico**

Sharon Walker from SMTS to Manager of Facility Engineering and Support Dept. 6433.
Sharon came to Sandia in 1984 as a member of the first environmental department at the Labs. She has worked in many environment, safety, and health areas and has worked as a safety analyst for Sandia’s nuclear facilities for the past five years.
Sharon has a PhD from the University of New Mexico. She is board certified in toxicology and is a Diplomat of the American Board of Toxicology.

***

Jeff Wilcoxen from PMTS, Integrated Systems Dept. 2334, to Manager, Analog Electronics Engineering Dept. 5735.
Since he joined the Labs in 1976, Jeff has been involved in the design of analog and digital electronics for inter-vehicle guidance and control systems, supporting WR weapons components, advanced exploratory weapons, and space-based optical payloads.
Jeff has an MS in electrical engineering from the University of New Mexico.

***

Lalit Chhabildas from DMTS to Manager, Solid Dynamics and Energetic Materials Dept. 1647.
Lalit joined the Labs in 1976. His technical interest has been to conduct experimental research in the field of dynamic shock/shock properties of materials under high strain rates for a variety of materials. Research topics include strength of materials, hypervelocity launcher developments, isentropic and multi-axial loading of materials, fracture and fragmentation studies, shock-induced vaporization studies, and others.
Lalit has a BS in physics from the University of Bombay and a PhD in physics from Rensselaer Polytechnic Institute.

***

Jim Hudgens from DMTS, Integrated Microsystems Dept. 1738, to Manager, Photonic Microsystems Technology Dept. 1743.
Jim came to Sandia in 2001, and has worked in microscopy, optical science, optical science and technology, telecommunications, and Microsystems product development.
He has a BS and a PhD in ceramic engineering, both from Iowa State University.

John Pott from PMTS, Lethality and Threat Dept. 15417, to Manager, Materials Mechanics Dept. 9123.
John came to Sandia in 1984. His work has been in nuclear weapons research and development. He developed and applied the methods of solid mechanics and structural dynamics to the design of various nuclear weapon systems, including the W76, the W88, and the B61. John also developed and applied methods of solid mechanics to determine the lethality of US kill vehicles against representative hostile re-entry vehicles. In addition, he was the principal investigator for the thermal-mechanical Munson field test designed to investigate the stability of tunnels to be used to store the spent fuel rods from the nation’s nuclear power plants.
John has a BS in applied mechanics from the University of Illinois, Chicago, and an MS and PhD in theoretical and applied mechanics, both from University of Illinois, Champaign-Urbana.

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Jun Liu from PMTS, Biomolecular Materials and Interfaces Dept. 1141, to Manager, Chemical Synthesis and Nano-materials Dept. 1846.
He has a PhD in materials science and engineering from the University of Washington, Seattle.

Jesus Ontiveros from PMLS, CFO Direct Customer Support Dept. 10015, to Manager, Pay-roll Services and Financial Training Dept. 10502.
Jesus has worked in Sandia’s accounting organization since he came to the Labs in 2000. He has experience as a financial analyst, accounts payable manager, and manufacturing accountant.
He has a BBA from the University of New Mexico, Robert O. Anderson School of Management.

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Matt Riley from DMLS to Manager, Logistics Risk Management Dept. 10262.
Matt has worked in Sandia’s Procurement and Logistics organizations since joining the Labs in 1991.
He has a BA in finance and an MBA, both from the University of San Diego.

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Dan Schmitt from PMTS Intelligent Systems Center Dept. 15211, to Manager, Mechanical Systems Design Dept. 5714.
Dan has worked as a mechanical engineer and project leader since he joined Sandia in 1983. During his career he has worked on weapon components and done mechanical design for the pulsed power machines. Dan was most recently in the Intelligent Systems and Robotics Center, where he worked on a variety of projects, including sensor-based control of industrial robots and development of collective robotic systems.
He has a BS and an MS, both in mechanical engineering from Oklahoma State University.

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California

David Rosenzweig from PMLS, Recruiting and University Partnerships Dept. 8524, to Manager, Facilities Operations Dept. 8514.
Since joining the Labs in 1986, Dave has been the Staffing Team Leader in the Recruiting and University Partnerships Department, Business Office Leader for the ARM UAV Program, senior analyst in Budget and Finance, and an employment representative in Human Resources.
He has a BS in oceanography from the United States Naval Academy and an MBA from California State University, Hayward.

Greg Cardinale from SMTS, Nanolithography Dept. 8730, to Manager, Microsystems Design and Integration Dept. 8245.
Greg first came to Sandia as a student intern in 1993, did postdoctoral work in 1995, and became a limited-term employee in 1996. He became a senior member of technical staff in 1997. Greg went on entrepreneurial leave of absence in 2000 and returned to Sandia in 2002. His work at the Labs has been in microelectronic systems, MEMS, nanotechnology, advanced lithography, and business-of-technology.
Greg has a BS in materials engineering from Rensselaer Polytechnic Institute, an MS in mechanical engineering from Northeastern University, and a PhD in materials science from the University of California at Davis.

Retiree deaths

Dwight L. Allenworth (age 71) ...............Feb. 10
Irmal R. Olson (91) .................................Feb. 24
Harvey S. North (93) .............................March 7
Henry E. Gutmann (84) .........................March 10
Julian Silva (84) ...............................March 15
Donald Fogel (66) ..................March 16
Wilma R. Ash (96) ..............................March 18
Peter G. Rospopo (83) ................ March 19
Haskell V. Jacobs (91) ..........................March 20
James H. Jones (79) ............................March 20
Otto H. F. Simon (69) ..................March 23
James B. Ayers (86) .............................March 24
Alan Yates Pope (89) ..........................March 25
James B. Gibbons (88) .......................March 26
Benjamin L. Sewell (71) ....................March 27
Robert P. Stromberg (77) .....................April 1
Joseph J. Rodzewich (66) .....................April 8
Chester A. Tarne (88) ....................April 10
Willard E. Flowers (79) ......................April 12
Elizabeth F. Six (90) ............................April 15
June Juanita Moore (80) .....................April 15
Florence K. Bramlett (91) ....................April 16
Norman R. Grandjean (59) ............April 16
Roxley Eldon Kent (85) ......................April 16
Juan Jose Tafoya (76) ..........................April 20
Harold B. Thom (83) ..........................April 23
Marie B. Williams (97) ......................April 28

Sympathy

To Elsa Glassman (3521) on the death of her father, Herbert Glassman, in Boston, Mass., March 22.
One ad per issue. We reserve the right not to make offers. Multifamily yard sale, La Luz ECC, 6-10 a.m. – 4 p.m.

**DOG KENNEL**, 6 x 10; dog cage, XL, great condition. **DESK**, HON contemporary, steel case, 58 x 29 x 29-1/2, $150.

**ELECTRIC WHEELCHAIRS**, 2, $850 ea.; **TREE HOUSE**, Little Tikes, $80; Little Tikes 3-railings, free. Chavez, 265-7331.

**PHONICS GAME**, like new, great for summertime activity, $175. Beeler, 286-0644.

**TRAILER**, home-made, w/missing hitch, 8 x 22, 4300 lb., w/laminate top, light gray, $475; **printer**, HP LaserJet 4200, $125. Waldron, 226-9025.

**MULTI-FAMILY YARD SALE**, Las Cruces, 10 a.m. – 4 p.m.

- **38 HONDA GOLDWING INTERSTATE**, 81 cu. ft., works great, $169,000. Giersch, 259-0885.


**Bike**.

**CONVERSE** 10K, red, $70; **ADIDAS** jacket, 1-year old, $35. Gutierrez, 822-1669.


**STUDENT** 1 & 2

- **1995 TOYOTA CAMRY**, AT, PW, PL, AC, 39K miles, $4,000, both upgradeable. Wahlberg, 271-1337.

**BOAT**.

- **2001 DODGE DAKOTA**, 4WD, 4-dr., 3.9L, $16,000. Watson, 494-2756.

- **1999 VOLVO S80**, 4-dr., 2.9L, $15,000. VanDusen, 995-4113.

**P.O. BOX**.

- **T-MOBILE PHONE**, good condition, will sell for $40. Archuletta, 522-3683.
- **UPRIGHT FREEZER**, Sears Kenmore, white, 10 cu. ft., $425. Cooper, 899-4227.

**VISITOR**.

- **TEAC HS-M1000**, stereo, inc. speakers, CD changer, red, great condition, $120. Wahlberg, 271-1337.

**BUS**.

- **T-A-R-P**, new, 13; **DOG KENNEL**, 6 x 10; dog cage, XL, great condition. **DESK**, HON contemporary, steel case, 58 x 29 x 29-1/2, $150.

**ELECTRIC WHEELCHAIRS**, 2, $850 ea.; **TREE HOUSE**, Little Tikes, $80; Little Tikes 3-railings, free. Chavez, 265-7331.

**PHONICS GAME**, like new, great for summertime activity, $175. Beeler, 286-0644.

**TRAILER**, home-made, w/missing hitch, 8 x 22, 4300 lb., w/laminate top, light gray, $475; **printer**, HP LaserJet 4200, $125. Waldron, 226-9025.
It wasn’t that long ago — just three years this spring — that some very festering issues about the experiences of Asian Americans employed in the national laboratories came to a head.

Remember the context: The Wen Ho Lee espionage case in Los Alamos (almost all the charges against Lee, including the most serious ones, were ultimately thrown out) was the high-profile event that turned up the heat about Chinese espionage activities in the US.

Then there was the so-called Cox Commission report on Chinese espionage activities. Two of its three major issues were that: “1) People’s Republic of China (PRC) has stolen design information on the United States’ most advanced thermonuclear weapons. . . . and, 2) the PRC penetration of our national weapons laboratories spans at least the past several decades and almost certainly continues today.” That report cast a long shadow — until recently — on every NNSA/DOE employee of Asian/Pacific Island heritage.

Coalescing of factors

A final ironic note that added insult to injury: an Asian-American US Congressman, concerned over anecdotal reports of security-related profiling of Asian Americans at the national labs, was himself the subject of what would be racially inspired special screening when he attempted to enter Department Headquarters in the Forestal Building in Washington.

Little attention was paid to these matters, and the Asian Heritage felt that this coalescing of factors — the Wen Ho Lee case, the Cox report (and other similar high-level reports), the general national anxiety about an emergent China, and perhaps not a little political grandstanding — had the inevitable effect of sowing suspicion on all of them collectively. They came to work under a cloud. They felt their very patriotism was in doubt.

More and more a few decided enough was enough. After years of laboring quietly in their labs and offices, believing that once their “dyes” were paid, things would improve — and now this? Back to square one. The letdown was palpable. But this time, taking their lead from the civil rights playbook, the Asian-heritage labs employees throughout NNSA/DOE were determined not to go quietly into that good night.

Committees were formed. Grievances were aired. At the extreme end of the response spectrum, a California professor called for a boycott of the national labs by Asian grad students, an effort that has met with some success.

In the volatile and emotionally charged atmosphere, then DOE Secretary Bill Richardson did the right thing, demanding a “diversity standdown.” He appointed a headquarters-level ombudsman, Jeremy Wu, to handle ethnically charged complaints and other issues. He laid down the law:

• ALOC, for example, hosts an annual celebration at the museum.

It’s very hard for Asians and Pacific Islanders to be accepted,” Chui says. “To me, things that are going to take generations to change. We all have responsibilities — Asians and non-Asians — we all have responsibilities [to make our society more inclusive]. America is the most open society in the world; the most open to change. So I’m optimistic on that front. In the meanwhile, for us, when we really want to concentrate on things we can do.”

The group is also active in the recruiting arena. Chui doesn’t mince words in asserting that ALOC feels the Labs could be doing more to hire top Asian American and Pacific Island heritage prospects.

“We’re way behind in that,” she says. She makes her case by noting that the “availability pool” — the pool of top candidates from the best schools that the Labs is interested in — is about 30 percent Asian/Pacific Island heritage. The Labs makes offers to and hires about 5 percent Asian heritage graduates. By contrast, she notes that about 20 percent of Labs’ postdocs are of Asian or Pacific Island heritage. From this data, she infers that “we still hire [for full-time, regular employment] those we most comfortable with.”

Chui thanked Div. 6000 VP Bob Eagan, who is the LLT champion of ALOC and attends many of its meetings, for actively seeking from Labs recruiters the resumes of top Asian-heritage and other minority hiring prospects, setting an example that other VPs are following.

Chui says one of ALOC’s goals is to see the Labs devote more resources to actively recruiting minority prospects, money she insists would be well spent. “It’s not a political correctness issue; it’s a business necessity,” she holds.

Why work for Sandia?

Acknowledging that the sour taste in the wake of the Cox Commission and the Wen Ho Lee case, along with the on-again/off-again boycott effort, has had some effect on recruiting, Chui says that when a promising young grad student asks her why he or she should work for Sandia, she still feels she can make a compelling case, dispelling these misperceptions. Sandia, she tells them, is an employer that offers work that is a true source of pride, work that is important to the nation; it offers a competitive benefits package, a terrific location in New Mexico (and a Bay Area operation, as well), and an opportunity to work in a number of different arenas during the course of a career. And as for security requirements? That issue, she reminds prospects, is also very much a concern in the private sector, which is determined to protect its invaluable proprietary information.

Is the progress to full acceptance as fast as it should be? Well, is progress in that regard ever fast enough, if you’re on the receiving end of discrimination? But Chui does grant that, when looked at over the period of dozens of years, progress can be seen.

She recounts the story of a young Chinese immigrant, no one famous, no one you’d ever hear of, but someone whose experience was representative for most Chinese Americans just a few decades ago. The boy came to America at the age of 10 in the early decades of the century. His father started a Chinese restaurant. The boy worked his way through engineering school busing tables at the restaurant. He graduated at the top of his class. But he couldn’t get a job. Couldn’t get hired.

He worked as a chef in the family business. It wasn’t until after World War II — a couple of decades after he had graduated — that he finally found work as an engineer.

“It was a long, frustrating, sometimes heart-breaking uphill climb for him.”

“I don’t think it would work out that way today,” Chui says.

Chui says that other VPs are following.

By Bill Murphy

ASIAN LEADERSHIP OUTREACH COMMITTEE CHAIR

Chui Fan Cheng (6523, center), is joined by Redd Eakin (12660, left) of the National Atomic Museum and Margaret Harvey (3553), Manager of Sandia’s Diversity program office, during the May 17 “Salute to Liberty: Asian-Pacific Islander American Heritage Day” celebration at the museum.