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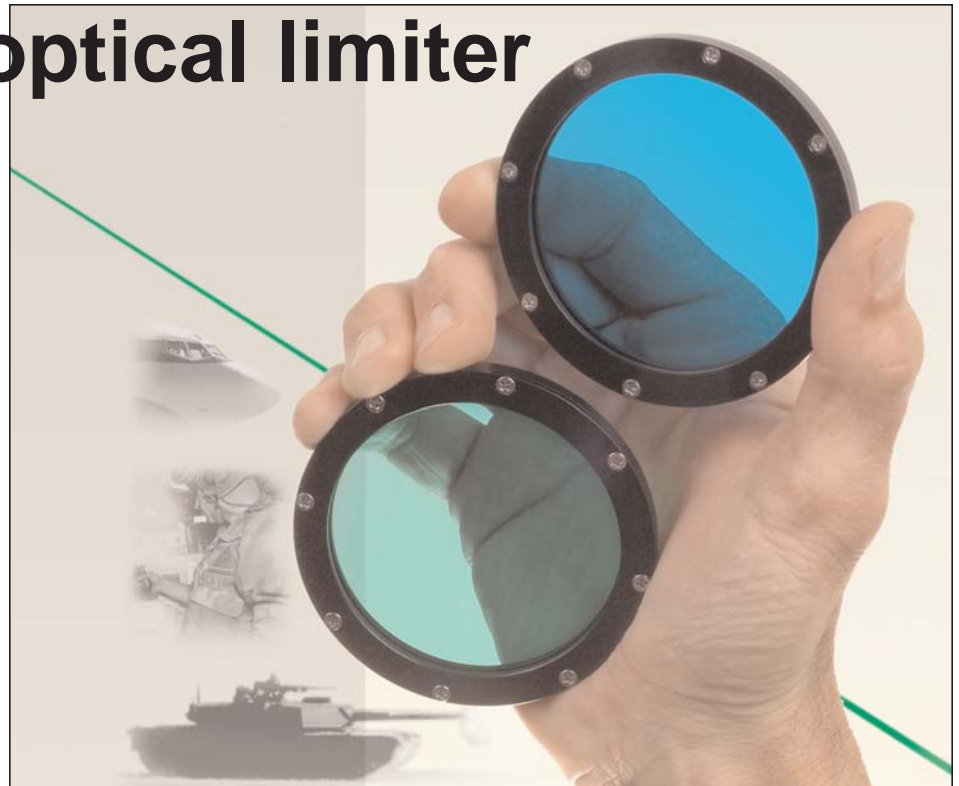
Solid-state optical limiter

by Todd Hanson

The R&D 100 awards program, now in its 39th year, is designed to honor significant commercial promise in products, materials or processes developed by the international scientific research and development community. Each year, R&D Magazine recognizes the world's top 100 scientific and technological advances with awards for innovations showing the most significant commercial potential. Over the years, the R&D 100 awards have become one measure of a scientific institution's contribution to society. Technologies are nominated in open competition and then judged by technical experts selected by the Illinois-based magazine.

An R&D 100 Award was received for the product of a Los Alamos collaboration with GEL-TECH Inc. of Orlando, Fla.; the Center for Research and Education in Optics and Lasers in Orlando, Fla.; and the U.S. Army. This collaboration developed a high-performance, solid-state optical limiter, a device capable of protecting the human eye from concentrated beams of intense light, such as those produced by lasers.

The optical limiter device looks like a simple colored lens, but it is capable of reducing, by as much as 400 times, the intensity of beams of light from devices like lasers. The limiter consists of a special dye embedded onto a polymer matrix. Because it is made from solid mate-



Although simple in appearance, the tandem-configured solid-state optical limiters shown above are designed to reduce by 400-fold intense beams of light from devices such as lasers. The U.S. Army has plans to place optical limiters on its tank periscopes and perhaps on other equipment such as rifle scopes and aircraft windows.

rials, optical limiters can be designed in many colors or shapes.

The optical limiter works much like photochromic eyeglass lenses, which automatically darken or lighten in response to changing daylight conditions. Unlike conventional photochromic devices, however, they respond to intense light much faster — a reaction time of less than a picosecond — and take only a millisecond to recover. The device offers protection from light even more intense than concentrated sunlight.

The Army Research Office funded the work under a Small Business Technology Transfer grant. Members of the Tandem-Configured Solid-State Optical Limiter team at Los Alamos include Hsing-Lin Wang, originally of the Chemistry (C) Division but currently in the Bioscience (B) Division; Duncan McBranch, formerly with the Laboratory but now with QTLBiosystems in Santa Fe; and Sam Xu, formerly with the Laboratory and currently with Lumenis Inc. of Santa Clara, Calif.

Rich Mah: The focus is on people

Editor's note: For the full text of Alison Grieggs' interview with Rich Mah, associate Laboratory director for weapons engineering and manufacturing, see <http://int.lanl.gov/taskforce/director/mah.shtml> online. Below are excerpts from that interview.



Rich Mah

With 1,700 people, the Weapons Engineering and Manufacturing Directorate is the largest organization Rich Mah has led. Its size creates challenges; Mah will put emphasis on the personnel issues first and then turn his attention to issues in the programs.

Integrating program offices into the divisions will increase the size of his divisions — Engineering Sciences and Applications (ESA) and Nuclear Materials Technology (NMT) — and Mah asks, "At what point does an organization's size become unmanageable? We have to ask if we need

more groups to strengthen the leadership and improve teaming and support. And after we get groups the right size, I have to look at how many groups we have in each division."

As an example of his approach when working in difficult circumstances, he offered the current realignment of the nuclear weapons program. Initially, people in program offices were forced to move quickly into divisions. There were time pressures on this reorganization because the new fiscal year started Oct. 1, and staff had to be assigned to new cost centers so they could be paid. Now that he has ensured time and effort reporting will continue, Mah is taking a personal approach. In his first three days in the new job, he held two meetings with division leaders from ESA, NMT, Chemistry (C), Dynamic Experimentation (DX) and Materials Science and Technology (MST) divisions to review a list of program staff. They discussed talents and opportunities, and

Mah praised how the leaders "stepped up to the plate" to ensure continuity and a sincere desire to have these employees join their organizations. "In a time of uncertainty, we are offering them an opportunity to make decisions and to take some control."

Mah sees a refined mission for the weapons manufacturing program. The Laboratory's manufacturing role will be highly visible, and it is important that auditors, the community and the public are comfortable with the Laboratory's approach.

"Ideally, our daily activities should be invisible to my boss by solving problems within our team and working

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Diversity in Action display participants recognized

A year after the devastating Cerro Grande Fire burned through Los Alamos and in and around the Laboratory, many stories of heroism, courage and sacrifice emerged. Some of those stories were captured in the "Diversity in Action: The Men and Women of the Cerro Grande Fire," display and project that recently was in Los Alamos. At a reception in the Los Alamos Research Park, Carolyn Mangeng, director of the Office of Weapons Planning and Analysis at the Lab, and New Mexico First Lady Dee Johnson recognized individuals who participated in the project. Maryrose Montalvo of the Nuclear Materials Technology (NMT) Division, Mary Margaret Lujan of the Materials Science Technology (MST) Division and Mary Jo Lujan of the State Risk Management Division's Loss Control Bureau created the 10-foot-by 20-foot lobby display commemorating the men, women and children that came together to help Los Alamos through the crisis. Laboratory employees recognized were Karen Hirsch of Advanced Nuclear Technology (NIS-6), Lisa Gutierrez of the Diversity Office (DVO), Richard Pearson of Integrated Information Management (FWO-IIM), Kim Corwin (formerly of DVO), Mary King of Actinide Chemistry Research and Development (NMT-11) and Gloria Zakar of Appraisals and Performance Analysis (AA-1). Montalvo said NMT and the state agency are promoting health and safety in the workplace and encouraging diversity as an important element for a strong work force. The Lab feels that supporting the project furthers the objective of being a good neighbor and practicing corporate citizenship, said Montalvo. Photo by Michelle Stump, Nuclear Materials Technology (NMT) Division



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Raising 'Godzilla' out of the ashes

by Rebecca McIntosh

On July 28, 2000, an explosion rocked the National High Magnetic Field Laboratory (NHMFL) as the 60 Tesla (60T) Long Pulse magnet, nicknamed Godzilla, failed at peak magnetic field. Although it is in pulsed magnets' nature to fail, this one was premature. After the failure, the explosion could only have been thwarted by using nearly twice the power consumed by the state of California. The 60T was destroyed, pancaking upon itself and shaking dust from the 6-foot thick concrete wall between the magnet pit and the NHMFL user labs.

Months later, the carcass could still be found, spread out in the lab for examination, its miles of inner copper coils exposed. Now only a few reminders remain, kept for further analysis, including inches-thick pieces of metal, their edges resembling ripped pieces of paper.

The Los Alamos magnet lab functions as the pulsed magnet facility of the NHMFL, which consists of three laboratories that work to develop and maintain high-magnetic-field research laboratories and programs. The other two labs of the NHMFL are located in Tallahassee and Gainesville, Fla., and all three are funded by the National Science Foundation.

The NHMFL-LANL maintains a number of pulsed magnets and operates as a user facility, hosting scientists from all over the world who wish to conduct measurements in pulsed-magnet environments. The span of research capabilities is practically endless, and the NHMFL encourages scientists from all disciplines to come to the lab. However, significant portions of the current research, both user and in-house, are about materials science.

The failure was a shock to scientists who expected the one-of-a-kind magnet to last for 10 times as many shots. Its destruction, however, did not destroy them. The NHMFL user facility still is bustling with scientists from dozens of countries, while the NHMFL staff is working toward some of their own research goals, including plans to bring the 60T Long Pulse



Chuck Mielke (seated) and Neil Harrison of the National High Magnetic Field Laboratory (NHMFL) prepare an experiment with a 60T short pulse magnet. The clouds are from the liquid nitrogen used to cool down the cryostat that holds the experiment inside the magnet. Mielke works with the data acquisition computer. Photo courtesy of NHMFL

back to life. In the meantime, one of the jobs the lab has taken on is to inspect and service the generator that powers the 60T magnet, which is the largest generator in the country, its capacity being two-thirds that of the Hoover Dam.

Pulsed magnets are used to subject samples of material to a strong magnetic field for a short amount of time and often at very low temperatures. During this time, measurements can be taken regarding the material's behavior and certain vital characteristics. When placed in a magnetic field, the properties of the material's electron system may

change, affecting its structure or function. Studying materials within a magnetic field is a valuable way to learn about the material's physical composition and characteristics. The 60T magnet was revolutionary for this type of research, not only because of its strength (a million times that of Earth's protective field) but also because of the "long-pulse" (one tenth of a second) during which hundreds more measurements can be taken than in a "short-pulse" (thousandths of a second).

"Much of the magnet lab's research is on condensed-matter physics in highly correlated electrons," summarizes NHMFL Center Leader Greg Boebinger. Correlated electrons occur when the interactions between a material's electrons cause them to move collectively, said Boebinger.

Some of the materials being looked at are superconductors. "A high temperature superconductor's normal state is rather abnormal," said Boebinger. He described that it is much easier to understand how a superconductor works by studying its normal state at a low temperature in a magnetic field. Superconductors are especially important for their ability to conduct electricity without resistance.

Staff member Chuck Mielke adds that other important areas of interest include quasi two-dimensional superconductors. Mielke explains that the "in-plane" resistivity, along one layer of the superconductor, can be less than the resistivity through all the layers. Mielke says that the magnet lab's radio-frequency technique is the only way to measure in-plane resistivity unambiguously.

Some materials being investigated have great industrial potential if they could be better understood. Manganites, one such material, could have a possible use for computer hard drives and anti-lock brakes. "Manganites are incredibly interesting," says researcher Dr. Marcelo Jaime, "they are like a textbook example of correlated electrons."

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For Laboratory closures, delays or early dismissal information, call UPDATE at 667-6622 or 1-877-723-4101 (toll free).

Lab purchases in Northern New Mexico top \$357 million

by Steve Sandoval

The Laboratory purchased more than \$357 million in goods and services from businesses in Northern New Mexico during the just-ended fiscal year.

The figure represents purchases made through Sept. 30, the end of the Laboratory's 2001 fiscal year, from businesses in Los Alamos, Rio Arriba, Santa Fe, Taos, San Miguel, Sandoval and Mora counties and Native American pueblos, said Bennie Gonzales, the Lab's Small Business Program Office manager. The Small Business Program Office is part of the Business Operations (BUS) Division.

The fiscal year 2001 figure is \$11 million more than the \$346 million in procurements the Laboratory made from businesses in the seven counties in the 2000 fiscal year.

Gonzales also said the \$357 million in procurements from Northern New Mexico businesses in the last fiscal year is nearly double the \$191

million in procurements from businesses in the seven-county region in the 1996 fiscal year.

The 1996 fiscal year was the benchmark the Department of Energy and University of California established for Laboratory purchases from Northern New Mexico businesses.

"The amount of goods and services the Laboratory purchased from small businesses in Northern New Mexico clearly demonstrates the Laboratory's commitment to the Northern New Mexico community and furthering the economic development in the region," said Gonzales.

Gonzales said goods and services include anything from the purchase of computers, office equipment and supplies, furniture, and machine shop fabrications, including support services from Johnson Controls Northern New Mexico and Protection Technology Los Alamos.

Contractual requirements for the purchase of goods and services from Northern New Mexico businesses is an "off-ramp" issue for the Laboratory as part of the university's contract to operate the Laboratory for DOE, said Gonzales.

The Small Business Program Office has in place a number of programs that support small business and economic development in the region. Some of the programs include the Northern New Mexico Preference Program, part of the Lab's Regional Purchasing Program designed to strengthen regional business enterprises, stimulate

greater regional employment and infrastructure, increase the business tax base in Northern New Mexico and reduce regional dependence on the federal government.

The Small Business Office this year also established the Historically Underutilized Business Program and has hosted several regional trade fairs to bring together small business owners with government and Laboratory procurement officials.

The Small Business Program Office also has conducted a number of workshops and training sessions for small businesses interested in doing business with the Laboratory.

"We're trying to make a real concerted effort to engage businesses in these counties," said Gonzales.

"We're going out there and talking to businesses to inform them of purchasing opportunities at Los Alamos and trying to find matches for some of those businesses and the Lab."

The Laboratory also is leveraging contracts with major contract companies by making them demonstrate how they will support small business through small business subcontracting opportunities and requiring them to develop plans for economic development and involvement with community based projects.

For additional information about Laboratory small business outreach efforts, call 667-4410 or write to sbo@lanl.gov by electronic mail, or go to <http://buynorthern.lanl.gov/> on the World Wide Web.



NEWS FROM UC

UC Davis analyzes air samples from attack site

To protect the health of clean-up workers at the wreckage of the World Trade Center, the University of California, Davis, is collecting and analyzing air samples from the site using state-of-the-art technology it has developed. The U.S. Environmental Protection Agency asked the Department of Energy for monitoring help, said Tom Cahill, UC Davis professor of applied science and atmospheric sciences. Robert Leifer, a senior research scientist at the DOE Environmental Measurements Laboratory in New York, called the UC Davis DELTA Group (for Detection and Evaluation of Long-Range Transport of Aerosols) to collaborate on sampling near the Trade Center site. For more information, go to http://www.news.ucdavis.edu/newsreleases/10.01/news_attack_air_sampling.html online.

Rich Mah ...

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together well." Mah said when asked about defining success. "We are part of the reason Los Alamos National Laboratory is here, and we show our excellence with accomplishments — not advertising," he added.

When Laboratory Director John Browne announced the new senior management team, he emphasized his goal of unifying the Laboratory around six corporate values: trustworthiness, excellence, public service, diversity, safety and security, and teamwork. Mah chose two of these values to highlight. One is diversity: "We need a broader definition of diversity — beyond the list we usually see. We need to embrace diversity of thought, background and experience." The other is teamwork. "Mentoring has my full commitment. Anybody who works with others can be a mentor, but you can't force it. The leader must pick mentors who enjoy working with people."

Laboratory honors Veterans

Gerald Geyer, left, of Protection Technology Los Alamos, helps raise the American flag at the Laboratory's Veterans Day ceremony on Nov. 13 in front of the Badge Office. At right is Roger Rodrigues. At far left in photo is Missy Orr, who sang the National Anthem. Next to Orr is Randy Mynard of Environmental Dynamics and Spatial Analysis (EES-10) and chair of the Lab's Veterans Committee. Photo by LeRoy N. Sanchez



Godzilla ...

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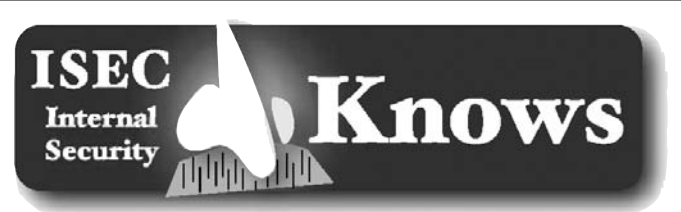
Other research at the magnet lab includes a new project to study plutonium, led by staff member and Laboratory Fellow Albert Migliori. "Some of the energy scales of plutonium are accessible in the magnetic fields," he says. He explains that the electronic structure of plutonium is made up of energy layers or scales, and these layers can be shifted dramatically in a magnetic field, thus enabling experiments to predict changes in properties. Migliori says the magnet lab is unique in its capability to study plutonium, and that the NHMFL is producing its own customized instrumentation in order to optimize data extraction.

Although a majority of the research conducted by users and staff members alike is in condensed matter physics, occasionally scientists from other disciplines visit the NHMFL pulsed facility. Alex Lacerda, head of the user program, notes that biologists from Washington State University recently published a paper in the *Journal of Food Processing and Preservation* regarding their measurements taken at the NHMFL on common food-borne bacteria such as *E. coli* and *S. cerevisiae* in continuous and pulsed fields.

As a user facility, the NHMFL hosts hundreds of visitors a year, whose research often leads to numerous publications in journals such as *Nature*, *Science* and *Physical Review Letters*.

The NHMFL also recently hosted the 2001 Physical Phenomena at High Magnetic Fields-IV Conference in Santa Fe. Around 150 scientists from around the world attended the conference, some of which were Nobel Laureates in physics, including NHMFL Chief Scientist Robert Schrieffer (1972 Nobel Laureate in physics for his contribution to the theory of superconductivity).

In spite of losing their most prized possession, the members of the NHMFL have made the best of the last 16 months without the 60T Long Pulse. They miss it though. Before the dust had a chance to settle on the fallen magnet last summer, NHMFL engineers were working to determine the cause of its demise. They now are utilizing this knowledge not only to raise the 60T out of the ashes, but also to better the design of their newest magnet project — a 100 Tesla pulsed magnet.



The OPSEC process

Step 2: Analyze potential threats

by Kevin Roark

In step two, you identify your adversaries, their goals, capabilities and intentions. The first step, identifying your critical information and the second step, analysis of potential threats, form a continuous cycle, where the needs and capabilities of the adversary are consistently evaluated against the critical information being considered. In other words, work back and forth between Step 1 and Step 2.

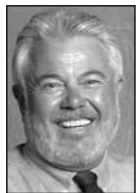
The folks involved with the plan or project must evaluate potential adversaries and their capabilities. It is then the Operations Security professional's duty to build a threat analysis that is based on the information provided. You need to find out

- what each adversary already knows.
- what each adversary needs to know to be successful.
- where each adversary is likely to go to obtain this information, remembering that often all facts, indicators or pieces of the puzzle are not located in one place, but,

if successfully gathered from different sources, will present a clear picture.

Threat is the capability of an adversary coupled with his intentions to undertake any actions detrimental to the success of your program activities or operations.

For more Information on OPSEC, call the OPSEC Program Office at 5-3372.



Chuck Pacheco

Chuck Pacheco, office leader for the University of California's Northern New Mexico Office, was chosen to be on the board of governors at the Santa Fe Community College.

Pacheco was one of 29 individuals who expressed interest in the board position held by retiring trustee Dr. Joe L. Hernandez. Pacheco's term on the board of trustees runs through March 2003. Pacheco, who has worked for the Lab 18 years, officially will be appointed at the board of governors Nov. 29 meeting. Pacheco has a bachelor's degree in Latin American studies and a master's degree in business administration, both from

the University of New Mexico. He has also served as a member of the Santa Fe County Chamber of Commerce, Santa Fe Economic Development Inc., Partners in Education and the Santa Fe Boys and Girls Club Foundation.

A nationally recognized expert in higher education, now living in New Mexico, is representing the University of California in its work with organizations and institutions in New Mexico to strengthen the quality of education in the state and improve educational preparation for students and their families. **Rae Lee Siporin**, for more than 20 years the director of undergraduate admissions and relations with schools at UCLA, has been retained by UC as special assistant

for education relations in New Mexico. In New Mexico, Siporin will concentrate her efforts in the northern region of the state, working in coordination with the laboratory's educational relations office and the UC Northern New Mexico Office. Siporin's particular interests and assigned responsibilities on behalf of UC in New Mexico range from working with policy makers to help increase the quality of educational preparation to visiting high schools and community colleges to meet with students one-on-one.

Siporin will report to Rulon Linford at the UC Office of the President in Oakland. He is UC's associate vice provost for research and laboratory programs and assistant vice president for laboratory programs.

Holiday safety tips from the American Red Cross

The Red Cross urges caution around the holidays when decorating with candles, cooking holiday meals and driving to and from holiday celebrations. The following tips released by the American Red Cross were developed to help Americans in neighborhoods across the country prevent injuries or even fatalities during the holiday season.

☞ **Beware of holiday lighting:** Take care when burning candles. Be sure they are kept away from decorations or other combustible materials. Don't leave children unattended in a room with lit candles, and always keep candles, as well as matches and lighters, out of the reach of children.

☞ **Test tree trimmings:** When decorating with lights, be sure to purchase only those labeled by a testing laboratory. Never use candles to decorate Christmas trees. For outside decorations, use only those lights labeled for outdoor use. Don't overload electrical outlets, and always unplug all lights before leaving home or going to bed. Never put electrical lights on a metal Christmas tree.

☞ **Keep Christmas trees fresh:** Choose a fresh Christmas tree and secure it in a sturdy stand. Place the tree away from heat sources and exits, and water it daily. If you purchase an artificial tree, be sure it is labeled as fire-retardant. If you plan to hang stockings on your fireplace, do not use the fireplace for fires.

☞ **Inspect fireplaces:** Have your chimney inspected by a professional before the start of every heating season and have it cleaned if necessary. Creosote, a chemical

substance that forms when wood burns, builds up in chimneys and can cause a chimney fire if not properly cleaned. Always protect your family and home by using a sturdy screen when burning fires. Remember to burn only wood — never burn paper or pine boughs, which can float out of the chimney and ignite a neighboring home. Never use flammable liquids in a fireplace.

☞ **Watch wood stoves:** Be sure your wood or coal stove bears the label of a recognized testing laboratory and meets local fire codes. Follow manufacturers' recommendations for proper use and maintenance. Chimney connections and chimney flues should be inspected at the beginning of each heating season and cleaned if necessary. Follow the same safety rules for wood stoves as you would for space heaters. Burn only wood, and be sure the wood stove is placed on an approved stove board to protect the floor from heat and hot coals. Be sure to check with your local fire department and check local codes before having your wood stove installed.

☞ **Be cautious with portable and space heaters:** Place space heaters at least three feet away from anything combustible, including wallpaper, bedding, clothing, pets and people. Never leave space heaters operating when you are not in the room or when you go to bed. Don't leave children or pets unattended with space heaters and be sure everyone knows that drying wet mittens or other clothing over space heaters is a fire danger.

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November employee service anniversaries

35 years

Barney Cushing, DX-8
Robert Piatt, ESA-WMM

30 years

Samuel Alexander, DX-DO
Veronica Atencio, FWO-SWO
Sylvia Herrera, ESH-2
Tom Ortiz, P-24
Edward Quintana, BUS-4
Theodore Reed, D-DOD
Floyd Segura, CCN-18
Warren Wood, NMT-15

25 years

Patricia Archer, BUS-3
Arthur Garcia, HR-DO
Benito Garcia, NMT-8
Alan Gibbs, NIS-2
Annette Houston, BUS-5
Mahavir Jain, S-7
Mary Martinez, BUS-3

Christopher Morris, P-25
James Roach, D-4
Phil Romero Jr., BUS-4
Jeffrey Roybal, ESA-DE
Margaret Sanchez, BUS-1
Jose Serna, MST-NHMFL

20 years

Louis Borrego, ESA-WMM
James Brainard, B-DO
Bernard Cameron, MST-7
Meredith Coonley, IM-1
Deborah Davis, HR-7
James Dearing, D-5
Joel Farnham, NIS-10
Eric Ferm, DX-3
Paul Giguere, D-3
Galen Gisler, NIS-2
Sharen Hickey, LC-GL
Daniel Hughes, LANSCE-FM
Mabel Jaramillo, BUS-8
Rudy Maez, NMT-4
Robert Ortiz, BUS-2

F. Coyne Prenger, ESA-AET
Michael Ryan, AA-1
Liza Tafoya, S-4

15 years

Cynthia Boone, IBD
Roger Bracht, ESA-WR
Christine Chandler, LC-LEL
Robert Quintana, CCN-18
Olivia Naranjo, ESH-2
Scott Richmond, ESA-TSE
Linda Riley, NIS-9
Virgil Sanders, STB-DSTBP
Sharon Seitz, NIS-7

10 years

Pedro Ayala-Rivera, BUS-5
Michael Carter, NIS-3
Lucille Gonzales, MST-DO
Bryan Henson, C-PCS
Patrick Longmire, EES-6
Thomas Meyer, D-DO
John Mosher, NIS-9

Thomas Nolen, LANSCE-FM
Andrea Palounek, P-25
Terrance Vergamini, ESH-1
Robert Villarreal, NMT-11
Mary Jo Waltman, B-2

5 years

James Ahrens, CCS-1
Frederick Bryant, ESA-WE
Steven Clement, NIS-6
Jeffrey Dare, NMT-DO
Carl Greeff, X-7
Ray Guffee, ESA-DE
Deborah Lewis, FWO-DO
Andrew Nunn, C-INC
Bart Parlman, CCN-7
Mark Schraad, T-3
Thomas Stepan, ESA-WMM
Richard Stupka, NMT-14
Raymond Thompson, ESA-WE
George Valdez, ESA-DE
Joseph Wermer, ESA-TSE
Xiaoning Yang, EES-11

Holiday safety tips ...

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☞ **Cook with care:** When cooking, do not wear loose fitting clothing. It can be ignited by hot burners. Always turn pot handles in. Don't store items on the stove top; they could catch fire. Keep kitchen appliances clean and in good condition, and turn them off after use. Don't overload electrical outlets, and don't use appliances with frayed or cracked wires.

☞ **Designate a driver:** When attending a party, always designate a nondrinking driver. If you are the host of a holiday gathering, be sure there are nonalcoholic beverages available for guests who are driving.

☞ **Buckle up:** During the holiday months, people travel more than ever. Wearing a seat belt is the easiest and best way to prevent injury in a motor vehicle collision. Ensure that all passengers also are wearing safety belts.

☞ **Prepare a winter storm plan:** Have extra blankets on hand and ensure that each member of your household has a warm coat, gloves or mittens, hat and water-resistant boots. Stay tuned for storm warnings by listening to NOAA Weather Radio and your local radio and television stations for updated storm information. It's also important to have your car winterized before winter storm season.

☞ **Enroll in a first aid and CPR course:** Although these tips can help prevent an emergency, it also is important to be prepared should an emergency situation arise. To enroll in a first aid or CPR course, contact your local Red Cross.

This month in history

November

1765 — Robert Fulton, inventor of the steamboat is born

1789 — First national celebration of Thanksgiving

1789 — French tax collector, theatre scene-painter, physicist and inventor, Louis Jacques Mande Daguerre, is born. Best remembered for his invention of the daguerreotype photographic process — one of the earliest to permit a photographic image to be chemically fixed to provide a permanent picture.

1799 — Andrew Ellicott Douglass witnesses the Leonids meteors from a ship off the Florida Keys, then makes the first known record of a meteor shower in North America

1863 — President Abraham Lincoln gave the Gettysburg Address

1938 — Singer Kate Smith introduces Irving Berlin's "God Bless America" on her radio program

1988 — The B-2 stealth bomber is displayed publicly for the first time at an Air Force plant in Palmdale, Calif.

1999 — Dan Stillman and Krik Krikorian are the first U.S. scientists from the nuclear weapons establishment to visit Arzamas-16 and Chelyabinsk-70 in the Soviet Union

Making science understandable and fun

by Judy Goldie

The Bradbury Science Museum, on the corner of Central Avenue and 15th Street in downtown Los Alamos, combines science with the “wow” factor to encourage an understanding of science and the research done at the Laboratory.

Part of the Lab’s Community Relations Office (CRO), the Bradbury is one of the most frequently visited museums in Northern New Mexico, John Rhoades, museum director, said. “The goal of the museum is to be a place where something exciting is always happening,” he added.

With exhibits that range from information on the Lab’s national security programs to interactive demonstrations on electricity and magnetism, there is a wealth of opportunity for visitors of all ages and backgrounds. The museum is divided into three “galleries”: history, research and defense.

Described as a “treasure of the region” by a recent museum visitor, the “gold” in the museum can be found in the eyes of amazed children, through an increased understanding of scientific research and as a haven for tourists or other visitors who cannot access the Laboratory.



In the defense gallery, visitors will find bomb casings of the world’s first nuclear bombs, Fat Man, upper right, and Little Boy. Photos by LeRoy N. Sanchez



In September, the Bradbury Science Museum initiated the “Science on Wheels” project that brings science, based on New Mexico state curriculum standards, into the classroom. The program is designed to enhance science education in the region and to pique the interest of middle school students to the wonders of science. The Museum on Wheels Science on Wheels program is booked through June, but Rhoades notes there is still room for one or two more stops — if schools contact the museum quickly.



Exhibits in the technology gallery reflect the varying ways in which Laboratory scientists and engineers have attempted to contribute to basic knowledge, increase the nation’s energy supply, solve environmental problems and develop advanced technologies.

All Laboratory University of California new hires are given a tour of the BSM as part of their new-hire orientation. Rhoades has provided tours for groups of 150 or for just one, from school children to Secretary of Defense Donald Rumsfeld.

“We’re always hopping,” notes Rhoades, when describing the various types of exhibits, events, movies, videos and demonstrations the museum encompasses. Doing much with a bare-bones budget, Rhoades tries to have at least one new, major exhibit a year — in addition to science education outreach. The museum hosts special programs, exhibits and events and has had book signings for authors with science- or Lab-related tomes.

Stuck for a place to take visiting Aunt Evangeline and Uncle Nickolas? Don’t know what to do with the kids on a Saturday afternoon or you need a break in your routine? The Bradbury Science Museum might be your solution. Closed only on Christmas, Thanksgiving and New Year’s days, the museum is open from 9 a.m to 5 p.m. Tuesday through Friday and 1 to 5 p.m. weekends and Mondays, and it is free.

For more information call 667-4444 or check out the museum’s Web site at <http://www.lanl.gov/worldview/museum/index.shtml>.

Los Alamos News Letter

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