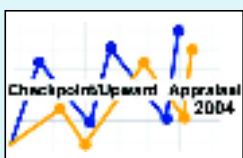


Newsletter

Week of Oct. 11, 2004

Vol. 5, No. 21

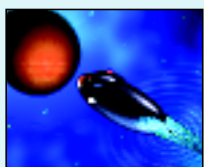
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A traveling-wave engine to power deep space travel

A Laboratory scientist working with researchers from Northrop Grumman Space Technology have developed a novel method for generating electrical power for deep-space travel using sound waves. The traveling-wave thermoacoustic electric generator has the potential to power space probes to the furthest reaches of the universe.Page 3



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9/11 Commission report helps educate the public

The aim of the 9/11 National Commission report is not to assign specific blame. Previous administrations thought the threat was mostly overseas, said Michael Hurley, senior counsel and director of the Counterterrorism Policy Review of the National Commission on the terrorist attacks of Sept. 11, 2001.Page 5



Lab researcher explores the geology of the American Southwest
 In this issue, Scott Baldrige of Geophysics (EES-11) talks about his new book titled "Geology of the American Southwest: A Journey Through Two Billion Years of Plate-Tectonic History."Page 8

Director names seven new Laboratory Fellows

by Kevin Roark

Seven distinguished scientists have been named Laboratory Fellows by Director G. Peter Nanos. Recipients of the annual honor have demonstrated the highest level of excellence in programs important to the Laboratory's mission, made significant scientific discoveries that lead to widespread use, or have been recognized as leaders in their fields both inside and outside of the Laboratory.

Laboratory Fellows are expected to continue to play an important scientific or technical role in the Laboratory and to contribute in significant ways to Laboratory programs and initiatives. Fellows are often called upon to provide critical analyses of significant issues affecting Laboratory programs and the work force, particularly any highly technical issues. Only 2 percent of the Laboratory's current technical staff members can hold the title of "Fellow" at any one time.

Nominations were submitted to the members of the Laboratory Fellows Screening Committee, which reviewed the nominations and then submitted their recommendations to Nanos, who then selected these candidates for the honor.

"The Fellows are one of the more important bodies at the Laboratory in terms of demonstrating and maintaining the scientific excellence of our institution," said Nanos. "Our newest Fellows represent the scientific brilliance of our entire technical staff, as well as the dedication to national security shared by all the men and women at the Laboratory. They are truly a distinguished group."

The Fellows for 2004 are Alan Bishop of the Theoretical (T) Division, Joseph Carlson of Theoretical Astrophysics (T-16), Richard Epstein of Space and Atmospheric Sciences (ISR-1), Victor Klimov of Physical Chemistry and Applied Spectroscopy (C-PCS), Byron Goldstein of Theoretical Biology and Biophysics (T-10), Brad Meyer of Gas Transfer Systems (ESA-GTS) and Dimitri Mihalas of Material Science (X-7).

Alan Bishop



Alan Bishop is an internationally recognized leader in condensed matter theory, statistical physics and nonlinear physics. He has made major contributions in the areas of solitons and low dimensional materials, quantum complexity, nonlinear excitations in structural and magnetic transitions, collective excitations in low-dimensional materials and complex electronic materials with strong spin-charge-lattice coupling. He is a Fellow of the American Physical Society, a recipient of the Department of Energy's E.O. Lawrence Award and a Humboldt Senior Fellow.

Joe Carlson

A former Oppenheimer Fellow, Joe Carlson pioneered the field of the theoretical simulation of the properties of light nuclei. He has nearly single-handedly developed numerical techniques accurate enough to test all significant components of the nuclear force. He used Monte Carlo mathematical techniques to solve the four-nucleon problem in the early 1990s and can now calculate ground and excited states for systems with 12 nucleons that are of astrophysical significance. Carlson is an APS Fellow and a recipient of the Los Alamos Fellows' prize.



Richard Epstein



Recognized as an authority in theoretical astrophysics, Richard Epstein is considered to be the pioneer of two distinct fields: high-energy astrophysics-cosmic rays, neutron stars and Gamma-ray bursts; and nuclear astrophysics -supernova and the origin of elements. He has also made substantial contributions to the field of optical cooling of solid-state media. "Optical refrigeration," a field that Epstein and his colleagues pioneered, has great practical implications, including the ability to reliably and efficiently cool satellite components — a mission-critical need. He is an APS Fellow and also a recipient of the Los Alamos Fellows' Prize.

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Workers proud to be associated with Lab

2004 employee survey results in

by Steve Sandoval

Nearly eight in 10 University of California Laboratory employees who completed the 2004 Checkpoint survey are generally proud to be associated with the Laboratory and are satisfied with their work.

And nearly seven in 10 respondents said they would recommend Los Alamos as a good place to work.

The findings were compiled recently by Information Technology and Data and Analysis (HR-ITDA), which analyzes and distributes the results to Lab managers. Division-level results are available for employees in the division offices.

Group leaders have received results from the survey specific to their groups. Managers are encouraged to share the results of the survey with employees.

"The survey, conducted since 1994, allows employees the opportunity to give feedback to their managers and provides Lab leaders with

data on how employees feel about the Lab," said John Pantano, HR-ITDA group leader. "Over the last few years I have seen the Laboratory be more interested in identifying areas for improvement and then trying to address them.

"The Checkpoint Survey is one of the tools to gather data the Laboratory needs to identify potential problems," Pantano said.

Forty-three percent of the surveys sent out to UC Lab employees were completed and returned to HR-ITDA, the same response rate as last year.

The survey had 52 questions about career development, communication, diversity, job satisfaction, management, pay, productivity, performance management, safety and security. Employees could respond by checking agree, tend to agree, neutral, tend to disagree, disagree and don't know.

As in previous years, safety and security received the highest marks from employee respondents. Ninety-seven percent of employee respondents said they are personally responsible and accountable for performing their work securely. Eighty-three percent, a decrease from 2003 of 2 percent, said corrective action is taken when unsafe conditions are brought to management's attention; 76 percent feel safe reporting potential security incidents that they are directly involved in; and 89 percent of employee respondents said their group management ensures a safe work environment and use of safe-work practices, up slightly from last year.

In the area of job satisfaction, 79 percent of employee respondents said they were proud to be associated with the Laboratory, down 4 percent from 2003 and 7 percent from 2002. Seventy-eight percent of employee respondents said their work gives them a sense of personal accomplishment. Sixty-nine percent of employee respondents said they would recommend the Laboratory as a good place to work, however, the figure is down 6 percent from a year ago and 11 percent from 2002.

Group morale continued to draw low marks: 40 percent of employee respondents said morale in their group is high, a drop of 2 percent from 2003 and 10 percent from two years ago.

In the area of communication, 64 percent of



employee respondents said the Lab keeps them informed about matters affecting them. This was a drop from 72 percent on the same question in 2003, but equivalent to the response rate in 2002. Forty-six percent of employee respondents said that existing channels for employee communication with upper management are adequate, which is about the same as the previous two years.

Sixty-two percent of employee respondents said group management communicates decisions to employees, about the same as last year, while 47 percent of employee respondents said their division management communicates decisions to them, up 5 percent from last year.

Sixty-seven percent of employee respondents said they feel safe stating their opinion in their group, up 2 percent from last year but down 1 percent from 2002. However, only 30 percent of respondents said they believe division management seeks their opinion on important issues impacting their jobs. This figure has hovered around 30 percent since 2002.

And 59 percent of employee respondents said they were satisfied with their involvement in decisions that affect their work, down from 65 percent in 2002.

In the area of career development, employee responses were mixed. For example, 59 percent of employee respondents said their group is interested in their professional development, down 3 percent from 2002. But 61 percent of employee respondents said they have a reasonably good understanding of possible career paths at the Lab. The figure is 2 percent greater than in 2003.

Additionally, 52 percent of the employee respondents said the Lab provides adequate training to assist them in career development, down 5 percent from 2002. And 57 percent of

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Correction

The National Nuclear Security Administration's toll free telephone number for NNSA and Laboratory employees who have concerns about work-related issues is 1-800-688-5713.



Los Alamos NewsLetter

The Los Alamos NewsLetter, the Laboratory bi-weekly publication for employees and retirees, is published by the Public Affairs Office in the Communications and External Relations (CER) Division. The staff is located in the IT Corp. Building at 135 B Central Park Square and can be reached by e-mail at newsbulletin@lanl.gov, by fax at 5-5552, by regular Lab mail at Mail Stop C177 or by calling the individual telephone numbers listed below. For change of address, call 7-3565. To adjust the number of copies received, call the mailroom at 7-4166.

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Los Alamos National Laboratory is operated by the University of California for the National Nuclear Security Administration (NNSA) of the U.S. Department of Energy and works in partnership with NNSA's Sandia and Lawrence Livermore national laboratories to support NNSA in its mission.

Los Alamos enhances global security by ensuring safety and confidence in the U.S. nuclear stockpile, developing technologies to reduce threats from weapons of mass destruction and improving the environmental and nuclear materials legacy of the Cold War. Los Alamos' capabilities assist the nation in addressing energy, environment, infrastructure and biological security problems.

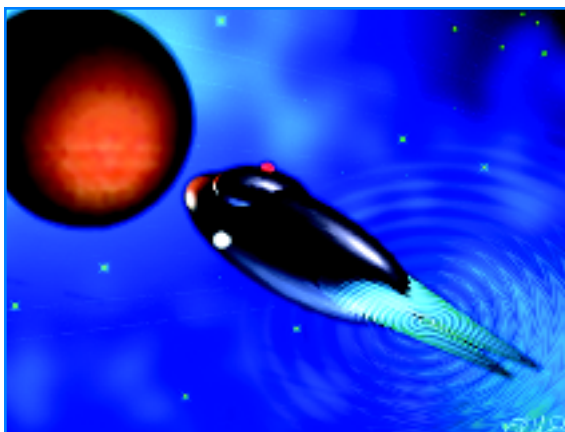


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A light moment at SET retreat

Laboratory Director G. Peter Nanos, right, John Immele, the Lab's deputy director for national security, and Sue Seestrom, left, associate director for weapons physics, in a lighter moment at the Sept. 30 Senior Executive Team retreat in the J. Robert Oppenheimer Study Center at Technical Area 3. Nanos addressed retreat participants, and SET members also gave reports on programs, goals and objectives in their directorate. The next quarterly SET retreat is scheduled for mid-December. Photo by LeRoy N. Sanchez



A traveling-wave engine to power deep space travel

by Todd Hanson

A Laboratory scientist working with researchers from Northrop Grumman Space Technology have developed a novel method for generating electrical power for deep-space travel using sound waves. The traveling-wave thermoacoustic electric generator has the potential to power space probes to the furthest reaches of the universe.

In research reported in a recent issue of the journal *Applied Physics Letters*, Laboratory scientist Scott Backhaus of Condensed Matter and Thermal Physics (MST-10) and his Northrop Grumman colleagues, Emanuel Tward and Mike Petach, describe the design of a thermoacoustic system for the generation of electricity aboard spacecraft. The traveling-wave engine/linear alternator system is similar to the current thermoelectric generators in that it uses heat from the decay of a radioactive fuel to generate electricity, but is more than twice as efficient.

The new design is an improvement over current thermoelectric devices used for the generation of electricity aboard spacecraft. Such devices convert only 7 percent of the heat source energy into electricity. The traveling-wave engine converts 18 percent of the heat source energy into electricity. Since the only moving component in the device besides the helium gas itself is an ambient temperature piston, the device possesses the kind of high-reliability required of deep-space probes.

The traveling-wave engine is a modern-day adaptation of the 19th century thermodynamic invention of Robert Stirling — the Stirling engine — which is similar to a steam engine, but uses heated air instead of steam to drive a piston.

The traveling-wave engine works by sending helium gas through a stack of 322 stainless-steel wire-mesh discs called a regenerator. The regenerator is connected to a heat source and a heat sink that causes the helium to expand and contract. This expansion and contraction creates powerful sound waves — in much the same way that lightning in the atmosphere causes the thermal expansion that produces thunder. These oscillating sound waves in the traveling-wave engine drive the piston of a linear alternator that generates electricity.

NASA funded the traveling-wave thermoacoustic electric generator research.

'No taxation without representation'

by Tom Bowles, chief science officer

"No taxation without representation!" This famous expression that was born during the American Revolution has just taken on a new meaning at the Lab. [Recently] Director G. Peter Nanos directed that any proposed new policies and procedures must be signed off on by the chief science officer as having an acceptable impact on science and by the chief financial officer for the validity of the business case. This is a definite change in the wind — science now has a formal mechanism to ensure that new requirements are reasonable.

This change is not an isolated one. The CSO position was proposed by staff and created by Nanos as a means of ensuring direct input to senior management on issues that impact science. A month ago, a new implementation procedure for an improved approach to Integrated Work Management was put forward. Nanos had the associate directors walk through representative cases to understand the impact on science. I constituted a representative group of staff to review our approach. These activities identified some important issues, all of which were addressed in changes to the implementation procedure. It is now shorter than the previous one and takes an approach that reflects the needs of research. The scientific staff who have looked at it feel that, while not perfect, the new procedure is workable. We will review it again in three months to make further improvements. I plan to extend the model of obtaining staff and technician input to other existing policies and requirements so that we can make them more workable, while still retaining full accountability.

Director Nanos has said that a new Laboratory will emerge from the suspension of operations. I am starting to see the first signs of that. Science is being raised to the fore in our decisions about operations. There is increased cooperation between the Laboratory, the University of California and the National Nuclear Security Administration. I see commitment to truly reducing the cost of doing business. We still have a very long way to go, but we have started taking the first steps toward placing science back on track.



Tom Bowles

2004 Laboratory Fellows ...

continued from Page 1



Byron Goldstein

Byron Goldstein is an internationally recognized authority in the field of mathematical immunology and cell biology. These fields are multidisciplinary frontiers where physics, chemical engineering, mathematics and computer science are combined quantitatively with biology. He is a pioneer in modeling cell signaling cascades, pursuing cutting-edge research in cell activation, cell-signaling, cell surface receptor-ligand interactions and the generation of allergic responses. He is the recipient of a National Institutes of Health MERIT Award, which includes 10 years of new funding.

Victor Klimov

An internationally recognized solid-state physicist, Victor Klimov has produced ground-breaking research in the area of semiconductor nanocrystal quantum-dot photophysics. He has made seminal contributions to the field of quantum dots, both in time domain studies of ultrafast energy transfer and Auger processes, as well as in the development of the quantum dot laser. Klimov's research comprises an important cornerstone of the Laboratory's efforts in nanoscience and technology and he is a scientific thrust leader in the new Center for Integrated Nanotechnology. He is a Fellow of both the American Physical Society and the Optical Society of America. He, too, is a winner of the Los Alamos Fellows' Prize.



Brad Meyer

Brad Meyer is a world-renowned expert in the mission-critical area of gas transfer systems, where he has made substantial contributions over the past 25 years. Meyer has personally provided multiple significant breakthroughs in the development of safe and reliable gas transfer systems needed by the Nuclear Weapons program. Specifically, Meyer led the successful design and development leading to implementation of Acorn reservoirs, in addition to playing a key role in the theoretical design of Terrazzo reservoir technology and design. Further, Meyer identified a neutron source that is now used for nuclear weapons certification activities — an accomplishment that has had a huge impact on the nuclear weapons complex.

Dimitri Mihalas

A pioneer in astrophysical computational physics, Dimitri Mihalas is a world leader in the fields of radiation transport, radiation hydrodynamics and astrophysical quantitative spectroscopy. Mihalas' research has had significant impact on the quality of the Laboratory's radiation transport simulations-of critical importance to weapons certification. Mihalas is a member of the U.S. National Academy of Sciences.



Gutierrez: Safety is mission critical

Former astronaut details five safety philosophies

by Brooke Kent

“Safety must be part of your mission, inherent in everything you do,” retired U.S. Air Force colonel and former astronaut Sid Gutierrez said at a Hispanic Heritage Month talk in the Physics Building Auditorium.

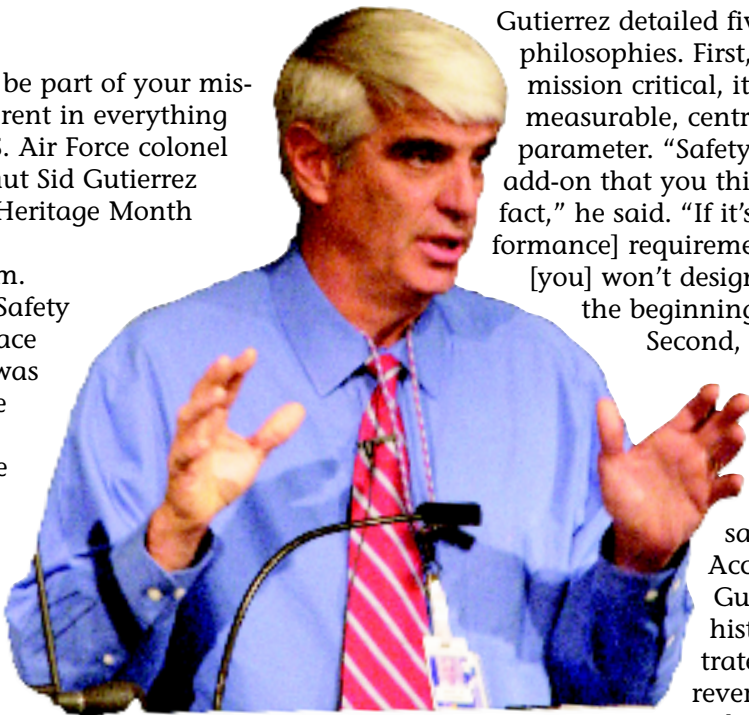
The talk, titled “Safety Culture and the Space Shuttle Program,” was co-sponsored by the Hispanic Diversity Working Group, the Diversity/Affirmative Action Board and the Diversity Office (DVO).

“Why should you listen to me [about safety]? Because I’m still alive,” joked Gutierrez, whose résumé included dangerous stints as a parachutist, flight instructor and astronaut before joining Sandia National Laboratories as manager of its Airborne Sensors and Integration Department.

To audience laughter, Gutierrez said, “Sometimes you survive because you were lucky, and sometimes you survive because you were smart ... I’ve counted seven times I survived because I was lucky. If I were a cat, I’d need to be really careful.” He added that this was precisely why he took safety so seriously.

An Albuquerque native and graduate of Valley High School, the Air Force Academy and Webster College, Gutierrez was the first Hispanic to both pilot and command shuttle missions. He later served on NASA’s Safety Advisory Panel, which helped investigate the Feb. 1, 2003, Columbia space shuttle disaster.

Drawing on his space shuttle experience,



Retired astronaut Sid Gutierrez talked about the importance of paying attention to safety in all aspects of an assignment or project at a talk at the Laboratory. The talk is part of the Lab’s celebration of Hispanic Heritage Month. Photo by LeRoy N. Sanchez

Gutierrez detailed five safety philosophies. First, since safety is mission critical, it must be a measurable, central performance parameter. “Safety can’t be an add-on that you think of after the fact,” he said. “If it’s not a [performance] requirement, then [you] won’t design it in from the beginning.”

Second, safety must serve as an independent conscience, strong enough to step up and say “no go.”

According to Gutierrez, NASA historically illustrated just the reverse. Prior to the Columbia disaster, safety officers reported directly to project managers; one project manager viewed safety as so detrimental to achieving his

performance, cost and schedule objectives that he told his safety officer, “the best thing you can do for this project is be hit by a car,” Gutierrez said.

Third, safety is a cumulative process, rather than a single event. “NASA from the beginning of the manned flight program has looked at safety as individual events ... But in the case of the space shuttle, you are putting together thousands and thousands of individual failure modes and effects analyses,” he said. Instead, Gutierrez advocated a cumulative risk analysis, which concludes that the space shuttles harbor a demonstrated risk of catastrophic failure (between 1:57 to 1:88), and that only by installing a full-envelope crew escape system will this risk be reduced significantly.

Fourth, safety is a never-ending process. “You never finish with safety,” said

Gutierrez. “You always need to be looking at safety ... calculating the risks and knowing what [benefits] you are getting for the risks you encounter.”

Finally, Gutierrez concluded that accidents are never a single event: multiple chances always exist to stop an incident. To seize these opportunities, Gutierrez encouraged employees to pay special attention to any information that fails to align with the rest of their data. “This might be the most critical piece of information you have,” he said. “Work it harder than any other piece of information ... because that piece of information may indicate that you are about to get into trouble.”

Hispanic Heritage Month is observed nationally from Sept. 15 to Oct. 15.



ISEC KNOWS

The following is part one of four topics discussing new electronic technologies and vulnerabilities.

New technologies, new vulnerabilities

Wireless systems, e-mail, instant messaging and Internet protocol have opened security concerns

Only a few years ago, e-mail, the Internet and wireless networks were emerging technologies. Now e-mail has branched out in directions ranging from instant messaging to spam. The Internet is the pipeline not just for data, but for phone calls and even video surveillance. Yet with technological progress, comes new threats.

Instant messaging

Instant messaging is another technology that is getting a grip on several government agencies. Instant messaging really comes in two flavors: enterprise software and consumer implementations from companies like AOL and Yahoo.

In 2002, the Federal Emergency Management Agency and the Department of Homeland Security launched an instant messaging service for first responders throughout the country. Other agencies that have acknowledged formal instant messaging deployments include the U.S. Air Force, Navy and Army.

Yet informal on-the-job use of consumer instant messaging packages is hardly unknown in either government or business. There have been problems with the consumer products, as many of them lack information system administrative tools or encryption.

But instant messaging is so quick and convenient that it’s hard to get employees to give up the technology, once they have discovered it.

Meanwhile, instant messaging software makers are starting to take security seriously. New products have been introduced specifically for enterprise instant messaging, including Bantu, Sprint, Microsoft, Sun, IBM’s Lotus, and both AOL and Yahoo.

Other vendors are integrating enterprise instant messaging with other technologies. Mediachase, for example, uses secure instant messaging as part of its program management software. Government customers include the U.S. Postal Service.

For more information on Operations Security (OPSEC), call 5-6090.

University of California President’s Council meets at Los Alamos



Laboratory Director G. Peter Nanos, right, greets Lawrence Livermore National Laboratory Director Michael Anastasio at a University of California President’s Council meeting at the Laboratory. The meeting was one of two involving UC committees recently at Los Alamos. The UC Office of the President Blue Ribbon Security Review Panel also was at the Laboratory, and after completing its agenda held a working lunch and executive session with UC President’s Council members. Photo by LeRoy N. Sanchez

9/11 Commission report helps educate the public

by Kathryn Ostic

The aim of the 9/11 National Commission report is not to assign specific blame. Previous administrations thought the threat was mostly overseas, said Michael Hurley, senior counsel and director of the Counterterrorism Policy Review of the National Commission on the terrorist attacks of Sept. 11, 2001.

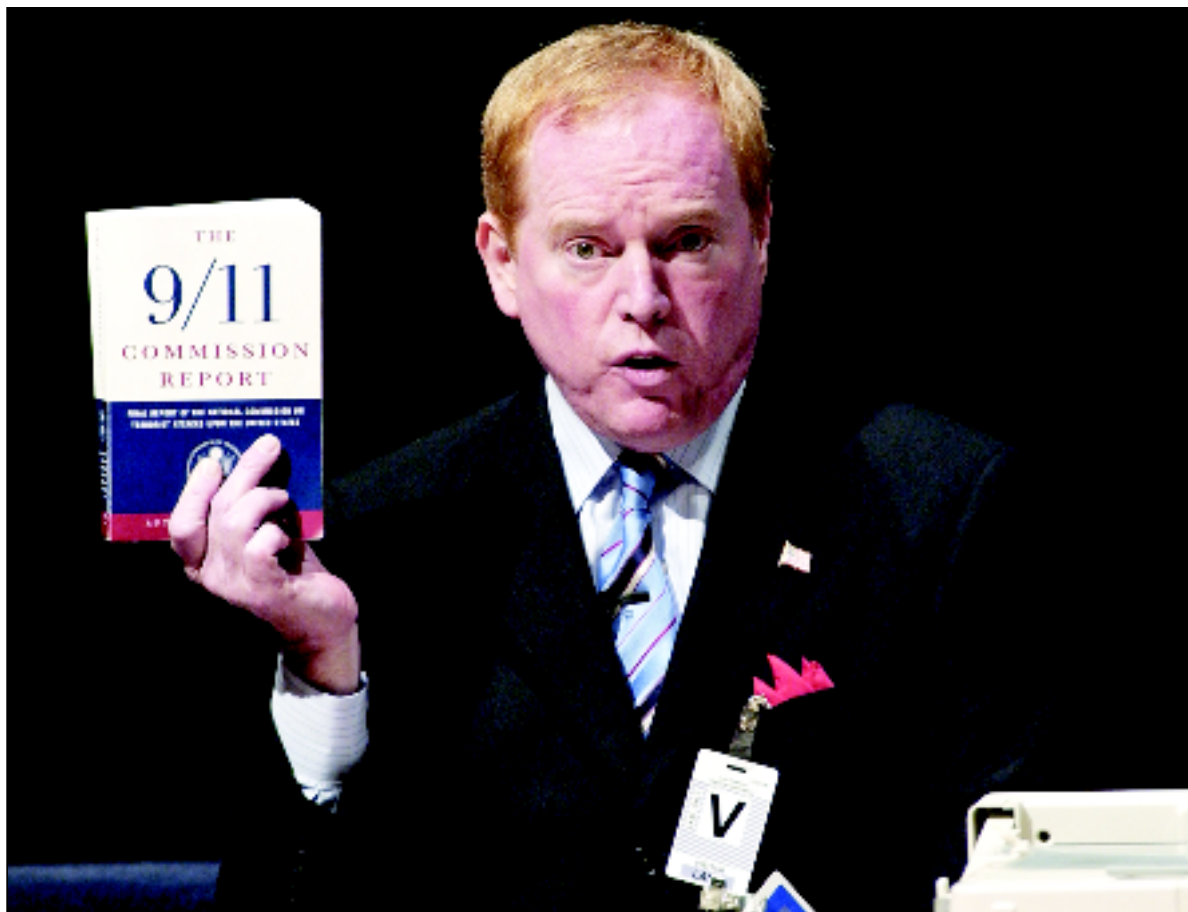
Hurley spoke at the Laboratory about the National Commission's key report findings. Hurley's talk, "Every American needs to understand what our federal government is doing and is not doing in combating terrorism."

The talk was sponsored by the Lab's Internal Security (ISEC) Office.

After the Cold War ended, the country was adjusting to new lethal adversaries, and Americans that were killed were military personnel or diplomats, Hurley said. He referenced the alleged terrorist attacks on the USS Cole where 17 died while docked in the port of Yemen in 2000, and the 1983 Marine barracks attack in Beirut where 241 were killed. "Initial terrorist attacks persisted because administrations didn't respond [to the incidents]," Hurley said.

According to Hurley, the government missed some specific opportunities to detain individuals who were involved in the Sept. 11, 2001 attacks because of

- the failure to link the arrest of Zacarias Moussaoui, currently being held by the federal government and alleged to have been involved in the 9/11 attacks, and his interest in flight training for the purpose of using an airplane in a terrorist act;
- lack of communication between federal intelligence and national security agencies;
- agencies' lack of response to the no fly list;
- failure to investigate false statements on Visa applications; and
- not hardening aircraft cockpit doors or taking other measures to prepare for



Michael Hurley holds up a copy of the 9/11 National Commission report during a talk at Los Alamos. Hurley said the report is recommended reading for keeping the country safe, is factual, non-judgmental, readable, engrossing and written strictly from the documents. "Good history should be good literature," said Hurley, senior counsel and director of the Counterterrorism Policy Review of the National Commission on the terrorist attacks of Sept. 11, 2001. Photo by LeRoy N. Sanchez

the possibility of suicide hijackings.

The report lists five major recommendations for achieving successful unity of effort and resources:

- unifying strategic intelligence and operational planning against Islamist terrorists across the foreign-domestic divide with a National Counterterrorism Center;
- creating the position of National Intelligence Director;
- unifying the many participants in the counterterrorism effort and their knowledge in a network-based information-sharing system that transcends traditional governmental boundaries;
- strengthening congressional oversight to improve quality and accountability; and
- strengthening the FBI and homeland defenders.

"The report should be required reading for all Americans," said Hurley. "Each time I read the report, I learn more and I'm moved

beyond belief. It is important for Americans to know about national security and few governments allow this type of report to be written," he said. Public debate is needed, which is one of the values of the report, he added.

"Put effort into getting behind the headlines; do not just take what's served up to us [referring to societies' sound bite news culture]," said Hurley. More people watched the O.J. Simpson trial than the World Trade Center attacks of 1993, he said.

The 9/11 recommendations won't be enacted into law unless citizens act as watchdogs and advocacy groups request change. Hurley said he had a sense he was looking through a keyhole of history, because the report allows facts to tell a story, he said.

"Read the report; the country is doing much better, but there is so much more to do," Hurley continued. "Good people and strong leadership will best serve the country. Let us go forward together."

Hurley also urged people to read these books: "Ghost Wars" by Steve Coll; "Nuclear Terrorism" by Graham Allison; "America the Vulnerable" by Stephen Flynn; and "Pinning the Blame" by Elizabeth Drew.

The 9/11 National Commission report is available at bookstores, public libraries and electronically at www.911commission.gov/report/index.htm online.



University of California researchers garner Nobel Prize in chemistry, physics

Irwin Rose, a researcher in the University of California, Irvine College of Medicine and two colleagues were recognized by the Royal Swedish Academy of Sciences with a 2004 Nobel Prize in chemistry for discovering a key way cells destroy unwanted proteins. The scientists' research, conducted in the late 1970s and early 1980s, provides the basis for developing new therapies for diseases such as cervical cancer and cystic fibrosis.

"The breakthrough work of Professor Rose will help us create medicines and therapies enabling people to live longer and live better," UC President Robert C. Dynes said. "It illustrates how the discoveries from our research universities, such as UC, make a real-world difference and contribute to enhancing our health and to our quality of life."

Another UC researcher garnered a Nobel Prize this year. David J. Gross, director of the Kavli Institute for Theoretical Physics at UC Santa Barbara, and two of his colleagues are recipients of the 2004 Nobel Prize in physics. They were honored for their explanation of the force that binds particles inside the atomic nucleus.

With their discovery, the researchers "have brought physics one step closer to fulfilling a grand dream, to formulate a unified theory comprising gravity as well — a theory for everything," the Royal Swedish Academy of Science said in announcing the prize.

Gross, who received his doctorate from UC Berkeley in 1966, joined the Kavli Institute in 1997. Earlier this year, Gross was selected to receive France's highest scientific honor, the Grande Medaille D'Or, for his contributions to the understanding of fundamental physical reality.

"Professor Gross, an alumnus of the University of California, has been a superb researcher and teacher throughout his career, and the awarding of the Nobel in physics today underscores his significant contributions to the field and his achievements in the creation of new knowledge," said Dynes. "This award underscores, once again, the major contribution that research universities make to our understanding of the world. My heartfelt congratulations to my colleague and a fellow physicist." This is the 14th time UC scientists have won the prize in physics.

With the awards to Rose and Gross, 48 researchers affiliated with the University of California have won Nobel Prizes.

Are you leaving the Laboratory?

Have you disclosed or submitted for a patent?

If so, you may be entitled to royalties in the future, and the Technology Transfer (TT) Division will need to know where to find you. Contact TT Division at 5-7677 to provide them future contact information.





Mikki Osterloo

Osterloo represents Lab at NASA workshop

Mikki Osterloo of the Center for Space and Science Exploration (ISR-CSSE) and member of the Water and Mars team recently represented the Lab at NASA's 16th annual Planetary Science School at the Jet Propulsion Laboratory in Pasadena, Calif.

The one-week workshop hosted 40 graduate and postdoctoral students from all over the nation and a few from other countries interested in planetary science. Acting as

principal investigators, project managers and mission and system designers, the students work together to plan a successful space mission. The mission concept topic is selected by the team and changes every year.

This year's workshop consisted of two teams investigating the icy moon Europa through an orbiter or the Mars lander mission. "Since I work on the Thermal Emission Imaging System from Mars Odyssey at the Lab, I chose to work on the Mars related mission. I chose propulsion, which I didn't know anything about because it was a good learning experience," said Osterloo.

"I highly recommend this workshop for those interested in learning about the mission design process," she continued. "I now know more about what makes missions possible or impossible, and I understand what science objectives are reasonable. I also am very proud to represent the Lab and I believe the knowledge that I've gained through working with the Water on Mars team has greatly aided my long-term goal of becoming a planetary geologist and scientist," Osterloo said.

Osterloo works with advisers Herb Funsten of ISR-CSSE and Steven Brumby of Space and Remote Sensing Sciences (ISR-2) on the Water on Mars team. "The team really opened my eyes to planetary geology and to the countless possibilities for research, and I look forward to a long and exciting collaboration," Osterloo said.

Osterloo received her bachelor's degree in environmental science from Indiana University. She is currently working on her master's degree at Indiana University in the geological sciences with a concentration in remote sensing and structural geology.

For more information about the Summer School for Planetary Sciences, go to <http://www2.jpl.nasa.gov/pscischool/> online.

In Memoriam

Robert 'Bob' Bradshaw

Laboratory retiree Robert "Bob" Bradshaw died on Sept. 6. He was 77.

Bradshaw was born in Estancia, N.M. in 1927. He served in the U.S. Navy and graduated from the University of New Mexico with a bachelor's degree in electrical engineering in 1949.

Bradshaw began his career in the former Field Testing (J-6) in 1960. He worked for various organizations at the Lab, including the former Engineering (ENG) Department, the former Operational Security/Safeguards (OS) and Nuclear Materials Technology (NMT) divisions. He retired from the Lab after 30 years of service in 1990.

A memorial service has been held.

John 'Jack' B. Panowski

Laboratory retiree, Jack Panowski, died Sept. 14. He was 88.

Panowski joined the Laboratory in 1947 as a chemist in the former High Explosives and Implosion Systems (GMX-3). He retired in 1977. His projects at the Lab included developing a slurry process, which is still used for making plastic-bonded explosives.

Panowski and a team of engineers and chemists developed flexible foamed polyurethane plastics, and later, silicone foams that would stay flexible at low temperatures. Panowski played an important role in developing all of the Laboratory-formulated explosives that exist in the current U.S. nuclear stockpile.

Panowski earned a bachelor's degree from Northern Illinois University. During World War II, he worked as a chemist at the B.F. Goodrich synthetic rubber plant in Louisville, Ky.

He is survived by his wife, Eileen Thompson Panowski, a former Lab employee in the former Field Testing (J) Division; sons, Thomas, a former employee of the former Nonproliferation and International Security (NIS) and Engineering Sciences and Applications (ESA) divisions; Bruce of Water Quality and Hydrology (RRES-WQH); daughters, Daryl Lopez and Lynn Ensslin, recently retired from Applied Physics (X) Division. He also is survived by four grandchildren.

A memorial gathering will be held at 2 p.m., Oct. 16, in the chapel of Central United Methodist Church, 1615 Copper Ave. N.E., in Albuquerque. In lieu of flowers, donations may be made to the Presbyterian Hospice, 8100 Constitution Ave., Suite 400, Albuquerque, N.M. 87110-7625.

Linda Sanchez

Laboratory employee Linda Gay Sanchez died on Aug. 19. She was 49.

Sanchez was born in Wiesbaden, Germany in 1955. She was a resident of Los Alamos for more than 20 years. She began her career at the Laboratory in 1995. Sanchez worked in Accounting (CFO-1), which was previously BUS-1 for nine years as a reservationist.

Sanchez is survived by her life partner Sammy R. Garcia and her daughter Heather Kirkland.

A memorial service has been held.



Part of annual environmental monitoring program

Greg Helland, left, of Water Quality and Hydrology (RRES-WQH) collects a sample from the bank of the Rio Grande as Amy Yactor, also of RRES-WQH, assists. A team of RRES-WQH employees rafted the Rio Grande from the Otowi Bridge to Cochiti Reservoir to collect samples. The water sampling is part of the Laboratory's environmental monitoring program, in place since 1970, and is required by the Department of Energy. Representatives from San Ildefonso Pueblo's

Department of Environmental and Cultural Protection and the New Mexico Environment Department Oversight Bureau also took part as observers. Monitoring of springs, surface water and sediment along the Laboratory's eastern boundary provides an opportunity to determine the extent of potential Laboratory environmental impacts on the Rio Grande. The RRES-WQH teams visited 22 spring locations, five surface water sampling sites and collected 14 sediment samples from the Rio Grande and from drainages that enter the Rio Grande after crossing the Laboratory. Photos by LeRoy N. Sanchez

Hecker receives 2004 *Acta Materialia Inc. J. Herbert Hollomon Award*

Siegfried Hecker, a senior fellow and former Laboratory director, received the 2004 J. Herbert Hollomon Award from the journal *Acta Materialia Inc.*, which covers timely and cutting-edge research in materials science.

The Hollomon Award recognizes outstanding contributions to understanding the interactions between materials technology and societal interest, as well as contributions to materials technology that have had a major impact on society. A committee of judges appointed by the journal's board of governors selects the recipient. Past winners include Cyril Stanley Smith, Sir Alan Cottrell, Robert Jaffee and Frederick Seitz.

"I have always been fascinated with understanding and identifying material characteristics," said Hecker. "I extend my heart-felt thanks to *Acta Materialia* for crowning a life-long scientific pursuit with this prestigious award."

The committee of judges acknowledged Hecker's extensive work in the materials field. At General Motors, Hecker helped to identify the materials characteristics for sheet metal forming, while also developing key testing techniques to measure these characteristics. Additionally, he engaged in pioneering work in large-strain plasticity and multi-axial deformation to help elaborate the fundamental scientific underpinnings for these applied technologies.

At Los Alamos, Hecker has successfully brought together the metallurgical and condensed-matter physics communities to help explain the notorious instability of plutonium metal and its alloys, and why plutonium defies conventional metallurgical wisdom. He has made seminal contributions to understanding phase instability and phase transformations in plutonium, while applying this knowledge to help ensure the safety, security and reliability of the nation's nuclear weapons stockpile.

Thaddeus Massalski, executive secretary of *Acta Materialia Inc.*, congratulated Hecker on his selection. "I am absolutely delighted that [he is] about to join this very special group of Hollomon winners."

At the award luncheon, held on Sept. 27 as part of the Materials Science and Technology conference in New Orleans, Hecker spoke about the new threats and different challenges that a changing nuclear landscape presents.

"We must continue to pursue ways in which scientists and engineers can provide for a safer and better world. Research is no excuse for cloistering ourselves away from reality; rather, it must be our impetus to and means for solving real-time, real-life problems."



Siegfried Hecker

Workers proud ...

continued from Page 2

employee respondents said they weren't worried that their skills would become obsolete, which is about the same response rate from the last two years.

In general, Laboratory employees responded favorably when asked about diversity issues in the work place. Eighty-five percent of employee respondents said their work environment is accepting of ethnic/cultural differences, and 66 percent said employees are treated with respect, regardless of their position. Also, 84 percent of employee respondents said their work environment is accepting of gender differences, the same response rate from 2002 and 2003.

Seventy-one percent of employee respondents said their group management recognizes the value of diverse perspectives and backgrounds, up 4 percent from 2003. And 62 percent of the respondents said their division provides management opportunities independent of ethnic, cultural and gender differences. The figure is up 4 percent from last year.

Regarding employee perceptions of management at the Lab, 59 percent of employee respondents said their group management generally understands the problems they face on the job, while 63 percent of employee respondents said there is sufficient contact between group management and employees in their group.

However, less than six in 10 respondents feel group management is doing well in establishing priorities at the group-office level, and only 37 percent said there is sufficient contact between division management and employees in their division.

Seventy-three percent of respondents said their immediate supervisor is held accountable for their actions by the next level of management, up slightly from 2003. But only 46 percent of the employees who responded to the survey said Lab workers are held accountable for unethical behavior, a drop of 5 percent from 2003. This question wasn't asked in 2002.

And more than eight in 10 respondents to the survey said their supervisor is competent in the technical aspects of the job.

In the area of pay and employee benefits, 54 percent of respondents said that compared with other people performing similar work, they think they are fairly paid. Fifty-six percent said they understand how their pay is determined. And 60 percent are satisfied overall with their compensation, including benefits. The responses in this area are similar to last year.

About half of the employee respondents think health-care benefits at the Lab are as good or better than those in outside companies or organizations, which is nearly identical from last year's (50 percent) results.

Forty-seven percent of employee respondents believe the goals by which their performance is evaluated are specific and measurable. The figure is up slightly from last year.

Eighty-three percent of employee respondents said they have a clear understanding of their job responsibilities, and 57 percent, up 2 percent from 2003, said their supervisors provide regular feedback on their performance.

In the area of productivity, 46 percent of employee respondents think productivity has increased in their group during the past year. The figure is down 2 percent from last year and 10 percent from 2002. Pantano of HR-ITDA said that generally speaking, productivity correlates with morale and both have trended downward recently.

Additionally, 67 percent of employee respondents said inadequate Laboratory infrastructure and facilities hinders their productivity. And 56 percent of employees said work objectives change so frequently that they have trouble getting work done. Fifty-six percent of the survey respondents said the Laboratory encourages and supports innovation and creativity, which was down 3 percent from 2003.

Viewgraphs on the employee survey results can be found at <http://hrweb.lanl.gov/WDA/pdfs/04checkpoint.pdf> online (Adobe Acrobat Reader required).



Bargains abound at United Way book fair kickoff

Giving campaign runs through Nov. 12

Joanne Roybal of Institutional Budget (CFO-2) browses through some of the merchandise available for purchase at the Laboratory's United Way book fair at Fuller Lodge. Books Are Fun Ltd. holds the book fair and donates 10 percent of the proceeds to the Lab's United Way giving campaign. The fair kicked off the Lab's 2005 United Way giving campaign, which continues through Nov. 12. For more information on the Lab's 2005 United Way giving campaign, go to <http://www.lanl.gov/orgs/cr/unitedway/index.shtml> online. Photo by LeRoy N. Sanchez



Lab researcher explores the geology of the American Southwest

by Brenna Moore

People living and traveling in the Southwest often wonder how their magnificent surroundings were formed, but don't realize how much happened throughout geologic history to create the land they see today.

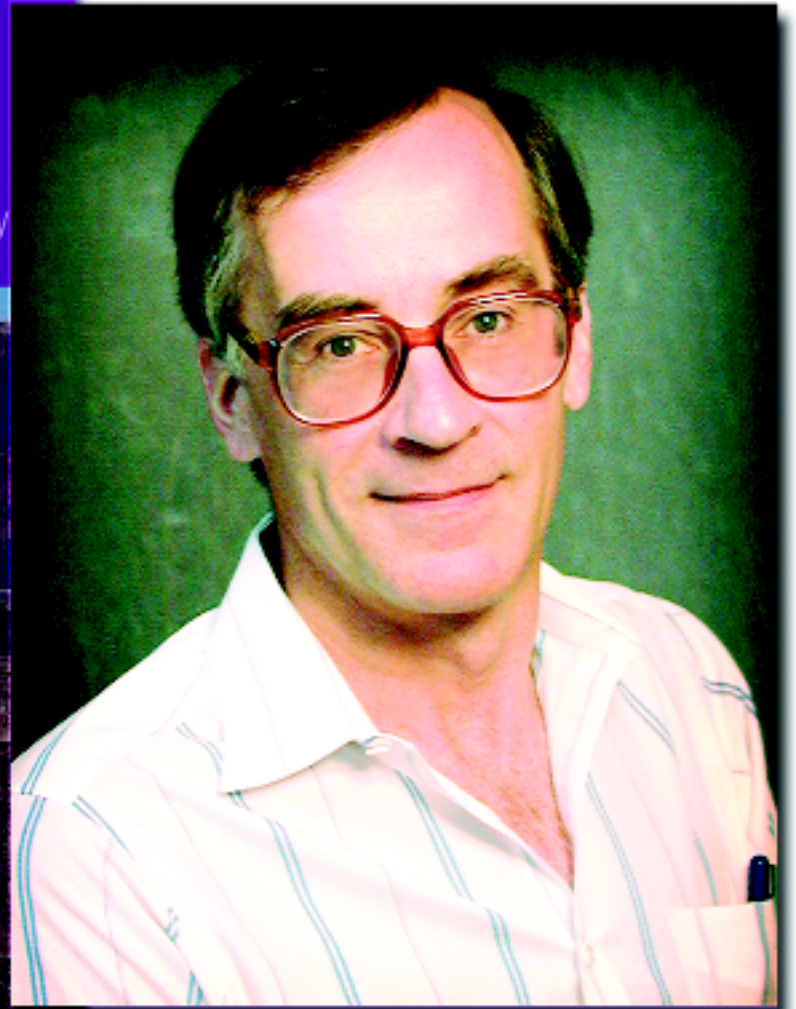
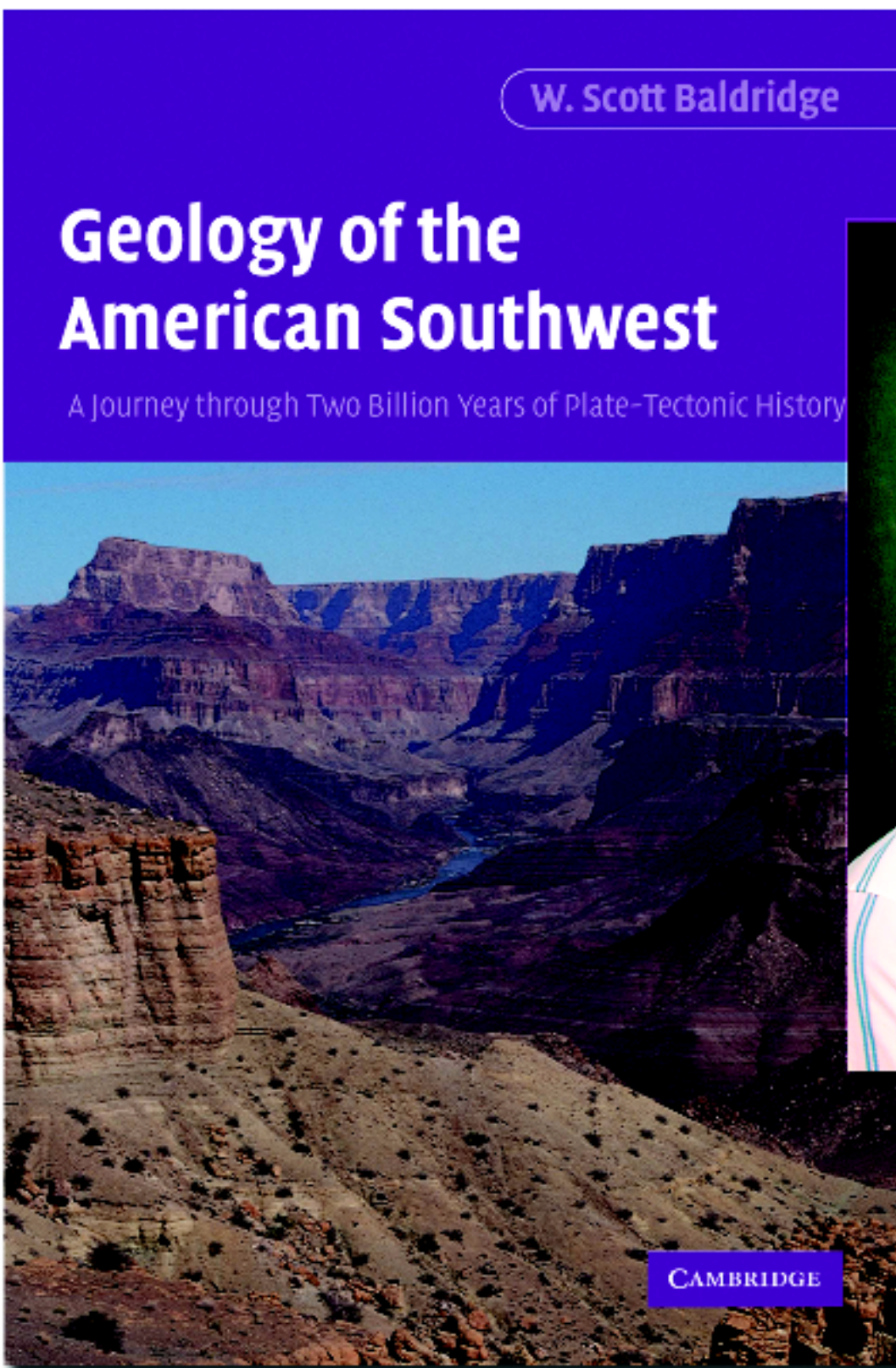
Scott Baldrige of Geophysics (EES-11) can enlighten the public. He recently wrote a book titled "Geology of the American Southwest: A Journey Through Two Billion Years of Plate-Tectonic History." It was released by Cambridge University Press in May and is available at <http://us.cambridge.org/titles/catalogue.asp?isbn=0521816394> online.

The book follows a timeline that starts roughly two billion years ago, examining rock formations in the Southwest from the oldest to the most recent. As defined by Baldrige, the Southwest encompasses New Mexico and Arizona, southeastern California, parts of Nevada, Utah, Colorado, Texas and Northern Mexico. Baldrige's goal was to create a comprehensive text explaining how the whole Southwest formed, beginning two billion years ago and continuing in its evolution right up to the present day. He describes the formation

in a plate-tectonic framework and relates events to what was happening on other areas of Earth as well, as many other books do not discuss the relation of one event to another.

The idea to write a book was suggested to him long ago by another editor. After stewing on it for a few years, Baldrige decided it would be fun and educational, so he began the long process of gathering information and putting it together in his free time. He did his own research, took all but one of the photographs and made most of the illustrations himself. Baldrige worked seriously for about six years on the book, but was thinking about it for even longer. "I had fun going to these places, and I learned a lot doing this," said Baldrige.

Baldrige hopes his book serves as a basis for courses and field trips to the Southwest and as a textbook for students who study the Southwest. He hopes nonscientists will use it to understand the overall geologic evolution of the Southwest. Many social issues, including those relating to groundwater, waste storage, resources and recreation have a geological component to them. "I hope it's a book people will use," said Baldrige.



Scott Baldrige