Los Alamos NATIONAL LABORATORY EST.1943

NewsLetter

Week of May 22, 2006

Vol. 7, No. 11

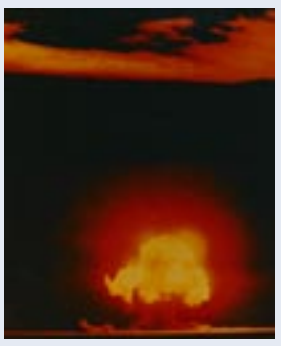
Celebrating an era with pride and honor

1940s

1943 — Los Alamos Laboratory (code name Project Y) is created by the Manhattan Engineer District under the direction of J. Robert Oppenheimer.

The Bethe-Feynman formula, a simple method for calculating the yield of a fission bomb is derived.

1944 — The world's first nuclear reactor using enriched uranium achieves criticality.



1945 — The Trinity test takes place on July 16. The world's first atomic bomb was successfully exploded.

1946 — The world's first fast-neutron reactor "Clementine" achieves criticality.

continued on Page 4

Photo by Jack Aeby

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Editor's note: The following excerpt is a candid look at the evolution of the management contract that set in motion the University of California's 63 years of service to the nation as the sole manager of the Laboratory. The excerpt is taken from an article by former Laboratory employee Robert Siedel, who wrote a series of historical articles for the Laboratory's 50th anniversary, which appeared in the former weekly Newsbulletin from July 31, 1992, to Dec. 17, 1993. The articles are available online at http://library.lanl.gov/cgi-bin/getfile?Homepage.htm

Norris Bradbury watches as Robert Underhill, secretary of the regents of the University of California, signs the contract to operate the Laboratory on Feb. 1, 1952. File photo

UC's first contract to operate the Laboratory

The contract between the University of California and the Manhattan District of the Corps of Engineers (MED) to operate Project Y, Los Alamos Laboratory, was not signed until April 15, 1943, after the project was already under way. It was the first such contract between them.

A rudimentary agreement was first laid out in a letter from Irwin Stewart on Jan. 23, 1943, and called for an Office of Scientific Research and Development (OSRD) contract with the University of California for "certain investigations to be directed by Dr. J. R. Oppenheimer," at a cost of $150,000 covering the period Jan. 1, 1943, to July 31, 1943.

Such contracts had been the standard means of mobilizing university researchers to work in installations such as the radiation laboratory at the University of California, its namesake at the Massachusetts Institute of Technology and the University of Chicago's metallurgical laboratory. Several such contracts had been established between the University of California and the OSRD.

Robert M. Underhill, the secretary of the regents of the University of California, understood that the contract would be similar to the other OSRD contracts at Berkeley and, on that basis, agreed with UC President Robert Gordon Sproul to accept the letter of intent on Feb. 10, 1943.

"There was some very informal discussion after that with Dr. Oppenheimer," Underhill later wrote, "and it is my understanding that as a preliminary matter we were to provide personnel service, traveling expenses and to cover charges then being expensed by Princeton University under a similar letter of intent. It was some time later before permission was granted to inform me as to where this project would be located. My only knowledge up to that time being that it would not be in the state of California. It very definitely seemed to be that the university, as a corporation, was to be almost a straw man in the proceedings, but to this the university never agreed."

Enter the MED. The decision to transfer work on the atomic bomb from the OSRD to the MED had been made by OSRD head Vannevar Bush and James Bryant Conant, Harvard University president and chairman of the S-1 committee (the committee that oversaw all phases of work on nuclear weapons) of the OSRD early in 1942, and the district was organized in the summer of that year to take charge of the developmental aspects of the project, especially the manufacture of Uranium 235 and plutonium. Gradually, the MED took over those contracts relating to the bomb.

On Feb. 13, 1943, Oppenheimer and Gen. Leslie Groves met with Underhill to negotiate a long-term contract to operate Los Alamos Laboratory.

The fact that this occurred after the site, equipment and men for the project had been selected suggests that the contract was an afterthought. Indeed, Underhill found that Oppenheimer had already hired D.P. Mitchell from Columbia University to take charge of purchasing at Los Alamos and that he was arranging to hire a business manager.

Underhill rejected the business manager proposed by Oppenheimer because, he felt, "it would be better to have someone who knew something about university organization and its general business arrangements." In his discussion with Mitchell, Underhill got the impression that "the university was to be more or less in the position of banker

continued on Page 3

For Your Safety

Use sun sense

Too much sun while working or playing outdoors can cause sunburns, eye problems and heat illness. Excessive sun exposure can even lead to skin cancer and death.

Use the following guidelines to help prevent heat illness:

• **Drink water frequently.** This will help prevent dehydration, a chief contributor to heat illness. Coffee, tea, alcohol and many soft drinks are diuretics causing the body to lose water and contribute to heat illness

• **Eat light foods such as fruits and vegetables while working in the heat.** Lightly salted foods may help prevent heat illness because excessive sweating causes the body to lose needed salt along with water.

Sunburn and sun damage to the eyes also are serious concerns in hot weather. Try these tips to avoid overexposure to the sun:

• **Stay in the shade if possible,** especially between 10 a.m. and 3 p.m. when the sun is the brightest and hottest.

• **Cover up with clothing.** A hat, long-sleeved shirt and pants are recommended. Light-colored fabrics reflect the heat and feel cooler.

• **Wear sunglasses.** When buying sunglasses, read the label to make sure they are made of a material that will protect against ultraviolet radiation.

• **Wear a sunscreen on exposed parts of the body.** Check the label to ensure that it is at least SPF No. 15 (sun protection factor). The sunscreen must be formulated to protect against both UVA and UVB ultraviolet rays.

• **One can get sunburned on cloudy days, too.** The potential for sunburn is greater around reflective surfaces such as water, sand or concrete and at high altitudes.

Los Alamos NewsLetter

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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.

NNSA National Nuclear Security Administration

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An outstanding past, a bright future … and 'Thank You'

Bob Kuckuck

Earlier this week I gave my "farewell" all-employee meeting as director of the Los Alamos National Laboratory. It was my opportunity to share with you some thoughts about my experiences as your eighth director and about the bright future in store for Los Alamos.

When I was asked to become your director in May 2005, I viewed the request as an opportunity I couldn't pass up. To be affiliated with this historical, world-class scientific research laboratory, which has served the nation admirably for 63 years, is something I am very proud of, as I'm sure you are. I can say without a doubt that this has been one of the hallmarks of my career in science.

In the one year that I have been your director, I have had the opportunity to meet many of you, learn about the cutting-edge science you do every day, learn more about and see the impressive work that you do to support our science and programs, and to be a part of your many and important accomplishments — all while being introduced to many uniquely New Mexican cultures and traditions such as frito pies, "Christmas" enchiladas, farolitos, and feast days at nearby pueblos that Marilyn and I will cherish forever.

The strength of any institution, and particularly Los Alamos, is its people. I have said this many times; I truly believe it and have tremendous admiration and respect for each of you. I also have reinforced that message while out talking about Los Alamos to local, state, university and national leaders. I always will believe this, and as we transition to a new management and operations contractor on June 1, I hope that all of you will continue to build on this outstanding legacy that you and your predecessors have created.

I also have seen your concern for and commitment to this institution and to the communities you live in, whether it be volunteering or donating your time and money to scholarship programs or community activities.

Los Alamos has had a significant and impressive history going back to its Manhattan-era founding in 1943. I am absolutely convinced that Los Alamos will continue to add to its magnificent history and will continue to play an important role in serving and protecting our nation in the future. It will be the individual and collective efforts of every one of you that will carry Los Alamos forward.

Thank you for allowing me to serve you and the nation as director of the Los Alamos National Laboratory. Thank you for supporting me so strongly. My very best wishes to each and every one of you and your families. I will always remember you as colleagues and friends.

Memorial dedicated to those who lost their lives Sept. 11, 2001

John Harvey, right, of the Emergency Operations Office (ADSFO-EOO), looks at the piece of the Pentagon Building inscribed with the names of individuals who lost their lives in the Sept. 11, 2001, attack. The piece was unveiled during last Saturday's dedication of the National Security Sciences Building at Technical Area 3. KSL Services personnel moved the memorial into place and built the stand that it rests on. Albuquerque Monument engraved the names. *Photo by James E. Rickman*

At left, KSL Services crews used a crane to lift the memorial from a flatbed truck and into place in front of the NSSB at TA-3. The piece was unveiled at last Saturday's Celebrating an Era with Pride and Honor event. *Photo by Omar Juveland of the Bradbury Science Museum*

Moving day

Two, 28-by-60-foot buildings slowly make their way across the Omega Canyon Bridge on their way to Nambe Pueblo. The transportable buildings were being relocated from Technical Area 21 by EGSM of Albuquerque, which specializes in moving large structures. The buildings were transported on special flatbed trucks and moved on Trinity Drive to Diamond Drive, over the canyon and then onto East Jemez Road (the truck route). The buildings were moved as part of a Project Management (PM) Division demolition and decommissioning project at TA-21 off DP Road. *Photo by Ed Vigil*

Science representation under LANS

by Tom Bowles, chief science officer

This column will be the last one written by me as the chief science officer. As of June 1, {Los Alamos National Security, LLC] is modifying the role of the chief science officer into one of a Chief Scientist office. As the chief scientist, I will be working with Dave Sharp (as the deputy chief scientist) to serve as the primary Laboratory advocate for Lab scientists. The Chief Scientist office is charged with developing procedures and solutions to problems that impede work "getting done." That includes ensuring new requirements take into account the needs of getting science done. The Chief Scientist office will reside in PADSTE (Principal Associate Director for Science, Technology and Engineering) with Terry Wallace as acting PADSTE. In addition, the Chief Scientist office will provide oversight on scientific reviews, represent science in policy discussions and decisions and help guide the development of the future workforce.

The primary difference between the CSO office and the Chief Scientist office is that the CSO responsibility for various types of program oversight (such as LDRD and G&A reinvestment) will now reside elsewhere. This means that the Chief Scientist office will be able to focus completely on science advocacy, which after all was the primary reason then-Director [Pete] Nanos created the CSO office.

What this means is that LANS fully recognizes the need to have advocacy for science at a senior level in the Laboratory. The changes are in line with the philosophy of LANS to focus on specific activities and to reduce the span of control so that one can be more effective in addressing a primary function. What this means for staff is that there will be a direct route to senior management on issues that impact science and our ability to do science. I am glad that LANS understands that our ability to drive innovative ideas from our staff upward is a dominant characteristic of why Los Alamos has been so successful as a research institution. I look forward to continuing to work with all of you to make Los Alamos even more successful.

UC's first contract …

continued from Page 1

and officially little more." It was in fact, a pact between those who would only work for a civilian project and Groves, who wished the bomb design to be done under military auspices.

Bringing in the University of California in 1943 made recruiting for the work of the Laboratory easier. Underhill, however, insisted on more UC involvement. The regents of the University of California were concerned that the project was located outside the state of California. Underhill approached the finance committee of the regents who instructed him to investigate the liabilities to which that might expose them. Underhill was told only that the Los Alamos project would never include more than 250 people and that it would have an annual budget not exceeding $7,500,000. Groves convinced Sproul that the contract was "the best solution to a crucial problem."

UC was experienced in research and could do the job. As Groves later admitted, he had a "big problem in getting good people" because "the scientific resources of the country, particularly in this general area, were already fully engaged in important war work. Because they were civilians, the scientists had complete freedom in their choice of jobs." A university employer would be more acceptable than the military or industry.

"You know what they're doing down in Los Alamos?"

Nevertheless, Groves clung to the notion of military control, and insisted that once development was begun, the military would take over the project. At least one scientist, Robert Bacher, who headed the Physics Division at Los Alamos Laboratory, submitted a resignation that would be effective upon that transition.

On Feb. 20, in a meeting in the Biltmore Hotel in New York with Conant and Groves; Groves' deputy, Col. Kenneth D. Nichols; I. I. Rabi of Columbia and the M.I.T. Radiation Laboratory; Samuel Allison of the metallurgical laboratory of the University of Chicago; and Robert Wilson of Princeton University, who would lead the cyclotron group at Los Alamos, Underhill learned that the Army, not the OSRD, would be the agency that would oversee the Los Alamos contract. He was no more pleased to learn this than the scientists had been. "I suggested that some other university might be found to carry on the activity.

"There was some slight discussion of California Institute of Technology," said Underhill, because Oppenheimer had served there, as well as at UC, the University of New Mexico and the University of Chicago. "However, there seemed to be no general desire on the part of the Army that any institution but the University of California be requested to do the work," continued Underhill, because Oppenheimer and other scientists had worked at the Berkeley Radiation Laboratory and because UC was already receiving many contracts worth millions of dollars for related work on electromagnetic separation.

Underhill left the meeting after telling those present that UC would be perfectly satisfied to have any other university handle the contract.

The next day, Oppenheimer approached him outside Grand Central Station in New York, told him that everyone concerned still wanted UC to have the contract and asked him to meet with Groves in Washington. On Feb. 22, he met with Groves and agreed.

A letter of intent was drafted by the Army and signed by Underhill March 3, 1943. The detailed contract required five days to negotiate, from April 15 to April 20, 1943. Underhill succeeded in obtaining the conditions traditional in OSRD contracts. Because the work at Los Alamos had already started, Underhill and the Army gave up the attempt to include an agreement for negotiation with the Army in the contract, and although the main part of the contact was signed on April 20, the negotiation agreement was not added until a year later.

For reasons of security, UC had no representative at Los Alamos with authority comparable to Oppenheimer or the military commander. Only Oppenheimer, Lawrence, McMillan and other members of the University of California faculty recruited for "Project Y" understood the true implications of the work. Neither Underhill nor the regents were told the true purpose of the project. It was not until November of 1943 that Ernest Lawrence, the director of the University of California Radiation Laboratory, who had helped to organize Los Alamos, came into Underhill's office, shut the door and asked: "You know what they're doing down in Los Alamos?" When Underhill confessed he did not, Lawrence told him that an atomic bomb was being designed there. Underhill was forbidden, however, to tell the regents. …

Although the University of California was kept largely in ignorance about the nature of the project at Los Alamos until after the war, at which time it tried to terminate the contract, Lawrence, Sproul and Underhill finally agreed to continue to operate the Laboratory for the MED's successor, the Atomic Energy Commission, in 1947. The contract, although born and swaddled in secrecy, was adequate to operate the Laboratory and to complete its wartime mission.

Celebrating an era with pride ...

continued from Page 1

"Norris Bradbury was an excellent physicist and had done an outstanding job on the Trinity Test, but could he fill Oppenheimer's shoes? In early 1947, at least a substantial minority of the GAC [Atomic Energy Commission's General Advisory Committee] believed that neither Los Alamos nor Norris Bradbury would long be on the atomic energy scene. That this unhappy prognostication did not come true is, I think, more of a tribute to Bradbury and the Los Alamos team than a reflection on the prophesying ability of the GAC."

—Glenn Seaborg, Feb. 15, 1968

Laboratory directors

J. Robert Oppenheimer
1943 to 1945

Norris Bradbury
1945 to 1970

Harold Agnew
1970 to 1979

Donald Kerr
1979 to 1985

Siegfried Hecker
1986 to 1997

John C. Browne
1997 to 2003

George P. Nanos
2003 to 2005

Robert Kuckuck
2005 — 2006

1947 — The first U.S. critical assembly facility becomes operational at the Laboratory's Pajarito Site (TA-18) in April.

1948 — Los Alamos researchers complete first liquefaction of helium-3, subsequently making the Lab prominent in the emerging field of low-temperature physics, an area of importance for the nuclear weapons program.

1949 — After visiting the Laboratory, an Atomic Energy Commission consultant reports that Los Alamos is the finest government laboratory in the nation.

1950s

1951 — Lady Godiva nuclear reactor put into operation.

1951 — First thermonuclear reactions produced (George shot), providing the physics basis or the design principles of subsequent thermonuclear weapons.

1952 — First thermonuclear test conducted in the Pacific (Mike shot).

1952 — Mathematical analyzer, numerical integrator and computer (MANIAC) is built to solve large-scale hydrodynamic problems.

1953 — The Laboratory moves from the area around Ashley Pond to its present site across the Los Alamos Canyon.

1955 — The Rover rocket program, a collaboration between the Lab and NASA, is initiated to launch large payloads into deep space.

1956 — Lab researchers discover the existence of the free neutrino, a subatomic particle that has no charge and little or no mass.

1957 — Los Alamos becomes an open community, as the security gates are taken down.

1959 — Nonproliferation technology started at the Laboratory following recommendations to use satellites to monitor compliance with the nonproliferation treaty.

1960s

1962 — The world's highest intensity X-ray facility (PHERMEX or pulsed high-energy radiographic machine emitting X-rays) is built for use as a diagnostics tool to study the process of implosion. The PHERMEX facility also is used to study fluid dynamics and the behavior of matter under extreme conditions.

1963 — The heat pipe is invented at Los Alamos for use in space power systems. This passive heat transfer device re-channels waste heat back into the production cycle of a system and has found additional applications, ranging from permafrost control on the Alaska pipeline to heat-transfer devices in solar collection systems.

1963 — Vela satellite sensors developed to detect nuclear explosions.

1963 — The world's highest-voltage Van de Graaff accelerator is completed at the Lab.

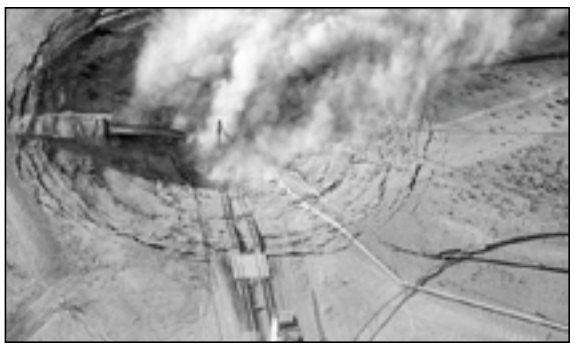
1965 — First government house in Los Alamos is sold to William Overton on Nov. 18.

1967 — The side-coupled cavity is developed for the future Los Alamos Meson Physics Facility (LAMPF) linear accelerator. Every radiology machine in the United States today uses this design for the production of X-rays.

1968 — Los Alamos Meson Physics Facility ground breaking takes place on Feb. 15.

1970s

1971 — Underground test containment program starts. During the next 20 years, more than 150 underground nuclear tests will be conducted by Los Alamos without a single instance of unplanned radioactive release.



Celebrating an era with pride ...

1972 — Clinton P. Anderson Meson Physics Facility is completed four years after its ground breaking. The half-mile-long linear accelerator achieved its design goal of 800 million electron volts the same year.

1974 — First radioisotope produced at LAMPF for medical research is shipped from Los Alamos to the Veterans Administration Hospital in Denver. The shipment was the first as part of a program to produce radioactive isotopes for medical facilities throughout the world to use for diagnostic and therapeutic purposes.

1974 — The first vector supercomputer from Cray Research Corp. arrives at the Laboratory.

1975 — A technology transfer office is established at the Laboratory.

1976 — The Laboratory is designated as a National Environmental Research Park by the U.S. government.

1980s

1980 — The University of California establishes a branch of its Institute of Geophysics and Planetary Physics (IGPP) at Los Alamos.

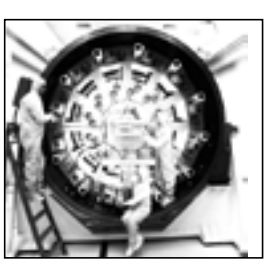
1980 — The Center for Nonlinear Studies is established. The center conducts research into the growing field of nonlinear problems, including chaos theory.

1981 — Center for Materials Science is established to focus materials research activities and foster interactions with the national materials science community.

1981 — The Laboratory's name is changed from Los Alamos Scientific Laboratory to Los Alamos National Laboratory.

1982 — GenBank, an electronic database that serves as a national repository for genetic sequence information, is established at the Laboratory. The name was changed to the Genome Sequence Data Base in 1993.

1983 — Antares, the most powerful carbon dioxide fusion laser in the world, delivers an energy of 37 kiloJoules in one nanosecond on a fusion target.



1984 — The National Laboratory Gene Library Project is established at Los Alamos and Lawrence Livermore national laboratories. The project produces and distributes selections of DNA fragments to geneticists and other scientists around the world.

1986 — The AIDS database is established at the Laboratory. Funded by the National Institute of Allergy and Infectious Diseases, the database is to compile nucleotide sequence data from researchers around the world.

1987 — Advanced Computing Laboratory is established to promote research into new computer techniques, technologies and applications and to serve as a gateway for interactions with industry, academia and government.

1988 — Center for Human Genome Studies created to help locate and understand the chemical structure of parts of the human genetic sequence, or genome, and develop ways to apply such knowledge in the study of medicine and the treatment of disease.

1989 — Beam Experiment Aboard Rocket (BEAR) Project is successful. On July 13, an Aries rocket launched from White Sands Missile Range in south central New Mexico carried the first particle beam accelerator into space. During BEAR, the accelerator system delivered a neutral particle beam for nearly five minutes in a successful demonstration of the feasibility of the technology.

1989 — The Los Alamos Neutron Scattering Center (LANSCE) is dedicated as the Manuel Lujan Jr, Neutron Scattering Center. LANSCE is an international user facility that provides state-of-the-art resources for research into the basic structure of materials.

1989 — The Laboratory acquires the CM-2, a Thinking Machines Corp. massively parallel computer.

1990s

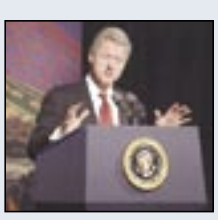
1991 — LIDAR, a portable laser-driven detection system developed at the Laboratory, makes it possible to determine the sources of air pollution in major metropolitan areas, such as Mexico City.

Important vistors

1958 — Greece's Queen Fredericka and daughter, Princess Sophie, visit the Laboratory in November. They toured the Health Research Laboratory, the Physics Building and Project Sherwood facilities.

1962 — President John F. Kennedy visits the Lab on Dec. 7; he is accompanied by Vice-president Lyndon B. Johnson (not shown).

1966 — Vice-president Hubert Humphrey visits the Lab on Sept. 10, touring several of the Lab's facilities and attending a classified briefing on weapons research.



1993 — President Bill Clinton visits the Laboratory in May. He visited a second time during his presidency in 1998.

Q: With the University of California's role as the sole manager of the Laboratory coming to a close at the end of the month, what is your fondest memory of working at the Laboratory thus far or what Laboratory accomplishments are you most proud of since its inception?

Johan Bollen of the Research Library (STB-RL)

I have nothing but fond memories! It has been an unqualified pleasure to work with such a great group of people at an institution like the Laboratory. I just hope the fun continues.

Jo Starling of the Bradbury Science Museum

I am proud that by developing the atomic weapons, the Laboratory brought an end to World War II.

Helen Boorman of STB-RL

My fondest experience has been the opportunity to meet and make connections with the scientists who visit the Research Library from around the world.

Giday Woldegabriel of Hydrology, Geochemistry and Geology (EES-6)

My fondest memory of the last 19 years is the opportunity to conduct and collaborate in diverse and multidiciplinary basic and applied geo-physics, ranging from volcanic processes to the origin of human beings.

Gordon McDonough of the Bradbury Science Museum

I have enjoyed the Lab's involvement in our community — events like High Tech Halloween at the Bradbury Science Museum and all of our education outreach programs.

Laura Robinson of STB-RL

My fondest memories are from summer activities with the other students at the Lab. Every one is excited and energized, and talking to students about their experiences is always fun.

Rajan Gupta of Elementary Particles and Field Theory (T-8)

Aquiring the thinking machine CM2 supercomputer and starting the era of parallel computing.

Two receive Sandia President's Quality Award

Rebecca Settle

Jim Wieting

Rebecca Settle of International Research, Analysis and Development (N-3) and **Jim Wieting** of Advanced Nuclear Technology (N-2) recently received the Silver Sandia President's Quality Award for their work with the Port of Antwerp Megaports Initiative, a collaborative effort with Sandia National Laboratories and several other institutions. The quality award comes in gold, silver and turquoise levels.

"The Megaports Initiative began in 2003 as part of the Department of Energy/National Nuclear Security Administration's Second Line of Defense program. The Megaports Initiative works with international customs and border enforcement officials to detect and deter illicit trafficking of nuclear and other radioactive materials across international borders," said Wieting.

The award recognizes teams that demonstrate performance excellence, process improvement, and a commitment to quality concepts and principles.

Mark Ekman of Sandia National Laboratories nominated the team for the award. "I nominated our team because I believe that everyone involved in our SLD Antwerp Project since its inception has more than demonstrated levels of excellence that have exceeded the criteria for the award," said Ekman.

About 20 Laboratory employees from the Decision Applications (D), Nuclear Nonproliferation (N), and Security and Safeguards (S) divisions worked with Settle and Wieting on the initiative.

"We coordinate with many team members at [the Laboratory] who work very hard to make this project a success. This is a great team effort and we must remember the end goal is the security of our nation. Any collaborative effort to this end is important," said Settle, Megaports lead project manager for Los Alamos.

Laboratory retiree **James Lee Jr.**, also was recognized by Sandia for his work with the Megaports initiative.

Schraad is new Fluid Dynamics group leader

Mark Schraad

Mark Schraad is the new Fluid Dynamics (T-3) group leader.

"I look forward to serving an exceptional staff in this capacity. And I especially welcome the opportunity to work with all of the members of T-3 to establish our collective vision for the future of our group," Schraad said.

The Fluid Dynamics group was established in 1959 and has been at the forefront of the computational fluid dynamics and continuum mechanics fields. In particular the group is involved in modern hydrodynamic theory, multi-phase flow, turbulence, continuum mechanics, materials modeling, numerical algorithm development for multi-physics applications and global climate modeling. The research performed by T-3 is used in support of nuclear weapons design, performance and safety assessment, internal combustion engine design and performance, materials design and fabrication, chemical analysis for oil, gas and chemical industries, as well as climate change prediction for the Department of Energy.

continued on Page 7

In Memoriam

Gilbert J. Martinez

Laboratory retiree Gilbert J. Martinez died on April 5. He was 76.

Martinez joined the Laboratory in 1947 as a warehouse assistant. He later worked as a technician in the former Weapons Engineering (W) and GMX divisions and the Physics (P) Division. At the time of his retirement in 1987, he was working in the former Dynamic Testing (M) Division.

Don McCoy

Laboratory retiree Donald McCoy died March 30. He was 52.

McCoy came to the Laboratory in 1980 in the Theoretical (T) Division. He retired from the Lab in 2005 as a senior adviser in the Principal Associate Directorate for Nuclear Weapons Programs.

McCoy earned his bachelor's degree in mechanical engineering from the University of Delaware, and master's and doctoral degrees in nuclear engineering from Northwestern University.

Herbert Travis "Tex" Williams

Herbert Travis "Tex" Williams died May 2. He was 82.

Williams joined the Laboratory in 1960 as a staff member in the Physics (P) Division. He later worked in the former Isotope and Nuclear Chemistry (INC) Division where he retired in 1985.

Williams received a master's degree in nuclear physics from the University of Texas at Austin.

He is survived by his wife, Edith, of Los Alamos; daughters Lynn Caporuscio of Oxnard, Calif., Virginia Earl of Albuquerque, N.M., Janet Hyatt of Waynesville, N.C.; sons Travis of Los Alamos and Wesley of Eustace, Texas; and numerous grandchildren.

May service anniversaries

35 years
Severino Aragon, ESA-TSE
Dennis Brandt, NMT-4
Michael Pacheco, MST-NHMFL

30 years
Ruben Aguilar, C-CSE
Lupe Archuleta, IM-9
Arthur Bridge, LANSCE-NS
William Cata, MSM-6
Thomas Cayton, ISR-1
Elaine Chavez, S-9
Dona Espinoza, LC
Richard Lovato, ISR-5
David Martinez, DX-TSO
Lawrence Montoya, CCN-18
John Valencia, ISR-1
Mary Anne Yates, CHS

25 years
Barbara Canavan, N-3
Peggy Gonzales, ESA-DO
Barbara Hernandez, CFO-2
Gabriel Herrera, N-2
Mary Hockaday, PADNWP
Gail Hodyke, LC-BL
Gary Hogan, P-25
Marvin Maestas, NMT-1
Robert Martinez, CCN-5
Jerilyn Mosso, DX-TSO
Henn Oona, DX-9
Mark Peters, P-21
Judy Pippin, CCN-2
Joanne Roybal, CFO-2
David Scudder, P-22
William Spurgeon, ISR-5
Joel Williams, S-DO

20 years
Patti Buntain, ESA-WSE
Charles Harrington, EES-9
Carol Hughes, HSR-2
Richard Kovach, EES-7
Geoffrey Miller, S-7
Alex Montaño, CCN-5
Donald Naranjo, FM-DX-ESA
Robert Reinovsky, P-DO
Frank Romero, ISR-6
Behzad Salimi, X-3-SEC3
Peter Sandford, IM-1
Vincent Trujillo, ESA-WSE
Margaret Trujillo, S-9

15 years
James Covey, PM-DS
Ned Elkins, EES-12
John Galbraith, P-21
Rebecca Galvez-Martinez, CFO-SYS
Yolanda Garcia, ESA-WOI
Johnell Gonzales-Lujan, D-2
Kelly Hakonson, C-CSE
Carol Hengstenberg, HR-OEOD
Albert Jiron, SUP-DO
Robert Kelsey, CCN-12
Phillip Sena, CCN-18
Francisco Uribe, MST-11
Oliver Wilton, HSR-5
Michael Zollinger, CCN-1

10 years
John Bass, CER-20
Langdon Bennett, X-4-SEC3
Steven Buck, CCN-12
John Dunbar, B-1
Joetta Goda, N-2
Richard Gomez, NMT-15
Allen Huff, NMT-1
Steven Koch, ENV-ECR
Robert Lowrie, CCS-2
Deirdre Monroe, DX-1
Angelique Neuman, NMT-9
William Phillips, EES-11
Carlos Rael, N-1
Neal Tapia, DX-1
Rae Tate, PADNWP
John Telford, HSR-8
Joel Vargas Sr., NMT-4
Wayne Weseloh, X-4-SEC4

5 years
Benjamin Amiri, D-5
William Atkin, ENG-DO
Jerrold Baca, CCN-1
Melvin Borrego, LANSCE-LC
Sean Brennan, ISR-3
David Chavez, DX-2
Cher Cusumano, ISR-6
Nicholas Dallmann, ISR-4
Shad Davis, NMT-9
Michael Dennis, HSR-8
Paul Fenimore, T-10
Tony Heaton, CCN-9
Angela Herring, X-1-SEC3
Anthony Jarvis, MSM-2
Hari Khalsa, D-4
Hoyt Lawrence, CCN-1
Laura Lovato, SUP-4
Nyree Maes, B-2
Leroy Martinez, ENG-DECS
Tommy Martinez, LANSCE-TMS
Maxine Martinez, CFO-3
Ismeal Martinez, NMT-3
Robert Mcclenahan Jr., NWIS-TA-50
Shawn Mcgrane, DX-9
Angela Mielke, ISR-3
Jeffrey Miller, C-AAC
Willie Montoya, NMT-15
Robert Montoya Jr., P-22
Keith Morgan, IM-3
Amanda Naranjo, NWIS-TA54E
Francois Nortier, C-INC
Augustine Ortiz, X-DO
Marilyn Peabody, NMT-DO
James Rutledge, EES-11
Elevinia Salazar, CCN-1
Jose-Maria Sansinena, C-ADI
Daniel Stinemates, ESA-WR
Gus Takala, ESA-AET
Sidney Taylor, N-3
Kevin Tegtmeier, CCN-7
Julio Trujillo, NMT-5
Mabel Valencia, IM-3
Matthew Velasquez, NMT-10
Elvera Vigil, CCN-2
Larry Vigil, NMT-5
David Watkins, N-2
Dorothy Watts, DX-5

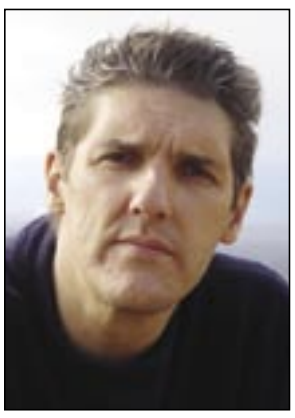
Schraad …

continued from Page 6

Schraad joined the Laboratory in 1996 as a post-doctoral research associate. He has a personal interest in multi-scale constitutive modeling, micro-mechanics, homogenization techniques, scale-dependent behavior and instabilities in structured media and interdisciplinary problems involving the mechanics of coupled multi-phase and multi-material systems.

Schraad graduated from the University of Michigan with a doctoral degree in aerospace engineering and two master's degrees in mathematics and aerospace engineering. He also received his bachelor's degree from the University of Minnesota in aerospace engineering.

Van de Sompel named SPARC innovator



Herbert Van de Sompel

Herbert Van de Sompel, leader of the Digital Library Research and Prototyping Team at the Research Library (STB-RL), is the first Scholarly Publishing and Academic Resources Coalition Innovator, in recognition of his significant contributions challenging the status quo in scholarly communication for the benefit of researchers, libraries, universities and the public.

Van de Sompel's work includes a major role in authoring SFX, which became the OpenURL framework to help link objects from different namespaces, transforming the accessibility of communication between scholars. Van de Sompel also is responsible for the Open Archives Initiative and Protocol for Metadata Harvesting and the Uniform Resource Identifier Scheme.

SPARC and SPARC Europe are part of an international alliance of more than 300 academic and research libraries working to correct imbalances in the scholarly publishing system. Innovators are named by the SPARC staff in consultation with the SPARC steering committee based on criteria that promotes the advancement of scholarly communication and access to information.

"Herbert is one of our leading thinkers on system architecture," said Clifford Lynch, executive director of the Coalition for Networked Information. "What is striking to me, however, is the extent to which his work in this area is driven by his commitment to improving information flow and communication."

Van de Sompel has a doctorate in mathematics and computer science from Ghent University, Belgium. He was the head of library automation for Ghent University, a visiting professor of computer science at Cornell University, and director of strategy and programs at the British Library before coming to Los Alamos.

Thomas Jordan of the Southern California Earthquake Center

Speaker: Predicting earthquakes pose challenges for scientists

by Sallie Boorman

Predicting earthquakes quickly and reliably is still difficult even after more than a century of research, a University of Southern California professor told Laboratory employees during a recent talk.

Thomas Jordan, director of the Southern California Earthquake Center, spoke about the difficult scientific challenges of predicting earthquakes during a Director's Colloquium in the Physics Building Auditorium at Technical Area 3.

The SCEC is a leading consortium for earthquake research. Jordan's research includes earthquakes, the seismological study of Earth structure and geodetic observations of plate motions and interplate deformation. Through his research Jordan has made many important discoveries about the three-dimensional structure of the Earth's interior by using the information from earthquake waves that travel deep inside the Earth. His work contributed to a better understanding of plate tectonics.

According to Jordan, in response to public expectations, some scientists are striving to answer the question of short-term earthquake predictably through what Jordan calls the "silver bullet approach." This approach endeavors to look for a common precursor event or link of events that lead up to an earthquake that could be used to forecast an impending quake, he explained.

"So far, no one has ever found a precursor element that is reliable enough for use toward a prediction," he said.

"After a century of research on earthquakes, we still cannot predict large earthquakes in a short amount of time with the reliability needed to prepare communities for impending disaster," said Jordan.

Jordan argues that rather than approaching predictability from a 'silver bullet' method, that a "brick by brick approach" to determining the intrinsic predictability of the earthquake rupture process will be more helpful in building an understanding of earthquake predictability.

Major earthquakes, said Jordan, are surrounded by a number of variables making it hard to predict earthquakes via a specific precursory event, but also difficult to test in a computer model. The inability to conduct scientific prediction experiments under rigorous, controlled conditions and evaluate them using accepted criteria specified in advance, is particularly challenging for scientists today. Jordan and the SCEC are in the process of now developing a virtual laboratory for scientists to perform prediction experiments.

"We cannot have techniques that we cannot take back to the lab and put through a rigorous scientific study," he said. "The infrastructure for conducting and evaluating scientific prediction experiments needs to be improved."

Jordan has a doctorate in geophysics from California Institute of Technology and has been recognized internationally by the Geological Society of America and the American Geophysical Society. He is a National Academy Member, an American Society of Art and Sciences Fellow and is the former chairman of the Earth Sciences department at MIT.

Celebrating an era with pride ...

1991 — Los Alamos and Oak Ridge national laboratories chosen as sites for the Department of Energy's high-performance computing research center.

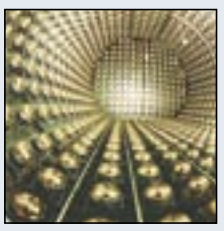
1993 — ALEXIS (array of low-energy X-ray imaging sensors) satellite is launched.

1993 — A team of Laboratory scientists visits the closed Russian city of Arzamas-16.

1993 — During ceremonies observing the Laboratory's 50th anniversary in April, the chief scientist of the Russian nuclear weapons laboratory at Chelyabinsk 70 presents Laboratory Director Sig Hecker part of a thermonuclear warhead from a dismantled Soviet missile that had been aimed at the United States. The piece was inscribed "From Russia With Love.

1994 — Historic U.S.-Russian fusion experiment takes place at the Lab.

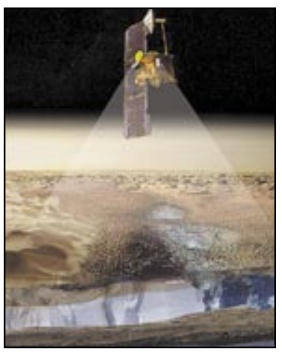
1995 — A team of Lab researchers from several divisions found indirect evidence that neutrinos have mass.



1995 — Superconductivity break-through achieved by Lab researchers who develop a thick-film superconductor that delivers world-record levels of electric current at relatively high temperatures.

2000s

2002 — Dual Axis Radiographic Hydrotest (DARHT), the Laboratory's premier flash X-ray facility, passed the major technical hurdles needed to complete the second axis of the project. When fully operational, DARHT will provide time-resolved, three-dimensional radiographs of non-nuclear mock-ups of nuclear weapon primaries at the moment of implosion.



2002 — Maps based on data from a neutron spectrometer built at the Laboratory and flown aboard NASA's Mars Odyssey detail the location of hydrogen that may indicate water-ice just below Mars' surface.

2002 — Lab creates publicly available Web database containing the Human herpesvirus 2 genomic sequence.

2002 — Omega West Reactor located at Technical Area 2 in Los Alamos Canyon and TA-61 on the south mesa of the canyon is decommissioned and demolished.

2003 — Ground broken for construction of the National Security Sciences Building at Technical Area 3. The 275,000-square-foot building will replace the Administration Building.

2003 — New Emergency Operations Center is dedicated.

2003 — Nonproliferation and International Security Center is dedicated. The 163,375-square-foot facility is located in Technical Area 3.

2003 — The first shipment of radioactive, sealed sources is transported to the Waste Isolation Pilot Plant from Technical Area 54.

2003 — New detonator manufacturing facility at Technical Area 22 is dedicated.

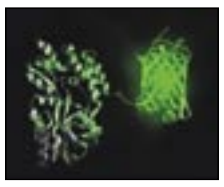
2004 — Department of Energy announces the management contract for Los Alamos will be put up for bid as a separate competition from the Lawrence Livermore National Laboratory contract.

2004 — Laboratory breaks ground for a new Hydrotest Design Facility at Technical Area 22 and for the new Center for Integrated Nanotechnologies at TA-3.

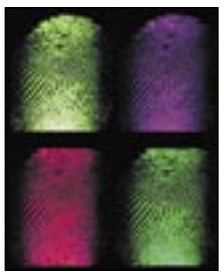
2004 — Draft Request For Proposal (RFP) for the contract to manage the Lab is released.

2004 — Lab scientists collaborating with colleagues at Harvard Medical School model dynamics of DNA transcription.

2005 — Laboratory scientists develop new protein-tagging and detection system based on a process for "splitting" a green fluorescent protein.



2005 — The Array of Low-Energy X-ray Imaging Sensors (ALEXIS) satellite launched in 1993 makes its last ground station contact with the Laboratory in April. The satellite lasted well beyond its nominal one-year mission to demonstrate its telescope and radio-receiver technology for nonproliferation applications and past a three-year lifetime engineering estimates gave it.



2005 — Researchers develop fingerprint detection technology. Scientists working at the Laboratory develop a novel method for detecting fingerprints based on the chemical elements present in fingerprint residue.

2005 — Los Alamos National Security, LLC, is selected as the new manager of the Laboratory, effective June 1. LANS is a limited liability corporation made up of the University of California, Bechtel National Inc., BWX Technologies Inc. and Washington Group International Inc.

2005 —Laboratory researchers set a new world's record by performing the first million-atom computer simulation in biology. Using the "Q Machine" supercomputer, Lab computer scientists created a molecular simulation of the cell's protein-making structure, the ribosome.

2006 — Using supercomputers to respond to a potential national health emergency, Lab scientists develop a simulation model that makes stark predictions about the possible future course of an avian influenza pandemic.

2006 — Laboratory researchers, working with collaborators from around the world, observe experimental evidence of solitary vibrations (solitons) in a solid.

2006 — Laboratory celebrates the University of California's 63 years of service to the national through its management of the Lab. Workers, retirees and their guests are invited. The highlight of the celebration is the dedication of the new National Security Sciences Building (NSSB) at TA-3.

2006 — Michael Anastasio becomes the ninth Los Alamos National Laboratory director on June 1.

Note: Sources for timeline material include Dateline: Los Alamos (Special Issue 1995), The Atom ("A Promising Future" 1943-1968).