LANL
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Potential new plutonium storage path

by Kevin Roark

Storage of the nation's excess actinide metals, including plutonium and uranium, present a myriad of problems from pollution concerns to proliferation risk. Solid-state chemists at the Laboratory have discovered a new reaction process that may prove to be a solution to some of the most serious storage problems.

Kent Abney, of Isotope and Nuclear Chemistry (C-INC); along with Anthony Lupinetti, a post-doc with a dual Chemistry (C) Division and Nuclear Materials Technology (NMT) Division appointment; and Ed Garcia, also from NMT Division, have been looking at methods of reacting actinide elements with stable elements. The team presented its findings at a recent meeting of the American Chemical Society. The goal

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Anthony Lupinetti, left, of Actinide Processing Chemistry (NMT-2), and Kent Abney of Isotope and Nuclear Chemistry (C-INC) examine plutonium boride encased in a quartz tube at the alpha wing of Technical Area 48. Lupinetti's and Abney's work aims to produce a more stable form of plutonium suitable for longer-term storage.
Photo by James E. Rickman

Laboratory researchers present Lunar Prospector data

by Shelley Thompson

Scientists from the Laboratory presented their latest findings from NASA's Lunar Prospector mission at the recent Lunar and Planetary Science Conference in Houston.

"Lunar Prospector has revolutionized our view of the moon, we just didn't realize how much … And there is a whole community in the planetary science world that is excited about and interested in the Lunar Prospector data," said Rick Elphic of Space and Atmospheric Sciences (NIS-1).

The Los Alamos studies include data on "moonquake" activity, further confirmation of the presence of water-ice on the moon, and mapping of iron and titanium using gamma rays emitted when cosmic rays slam into the lunar surface.

Los Alamos scientists built three of the five instruments aboard the Lunar Prospector spacecraft that orbited the moon for nearly 19 months gathering data: a neutron spectrometer designed to measure the surface abundance of lunar materials with special emphasis placed on the search for polar water-ice deposits; a gamma-ray spectrometer designed to provide maps of the major and trace elements in the lunar surface; and an alpha-particle spectrometer designed to measure the history of gas-release events on the moon.

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Director's News

Laboratory Director John Browne testified before the Energy and Water Development Subcommittee of the Appropriations Committee of the U.S. Senate on March 13. In his testimony, Browne explained the needs of the Lab's aging infrastructure.

Noting that Congress created the National Nuclear Security Administration to deal with problems such as the nation's aging nuclear infrastructure, Browne said "… now we must put in place the measures for success. One of these measures is a viable nuclear weapons complex for the future. The best way to ensure that the necessary reinvestment occurs in the facilities, infrastructure and construction base is to provide the resources through a dedicated budget initiative. We strongly endorse the NNSA/DP Facilities and Infrastructure funding initiative. We believe the top priority construction projects must be completed in the next 10 to 15 years to ensure that the nuclear weapons complex has a safe, secure and reliable infrastructure to ensure that programmatic missions can be accomplished."

Potential storage …

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is the creation of uranium, thorium and plutonium compounds that are environmentally friendly and more difficult to use in weapons.

Plutonium is chemically reactive with water vapor in the air. Plutonium metal powder can catch fire if it's not constantly bathed in an inert gas, such as argon. Plutonium metal also can be easily dissolved in water-a potential for environmental and safety problems in the absence of robust containment.

Plutonium metal can be converted to an oxide, a more stable form but one that still possesses some of the same problems as the pure stuff — it's reactive with water and has a potential proliferation concern.

Plutonium not earmarked for weapons work from seven separate sites across the DOE complex tops 38 metric tons, a sizeable surplus. Most of the material is housed at the Pantex plant outside Amarillo, Texas, and is planned to be used in existing nuclear reactors to generate electricity.

To address plutonium's storage challenges, Abney and Lupinetti are looking at new ways to combine actinides with the element boron.

It has long been known that plutonium and boron, a solid semi-metal or metalloid-meaning it is an intermediary element, sharing some of the properties of metals as well as nonmetals — could be combined to create a very stable and insoluble compound, plutonium boride. However, until now this could only be done at extremely high temperatures, more than 3,000 degrees centigrade, and the process was a grind-literally.

In order to get the two elements to mix, something they don't do easily, they would have to be melted at very high temperature, cooled, then ground into a powder, then mixed and melted again. Sometimes this process would have to be done over and over to achieve proper mixing. Abney and Lupinetti have developed a reactive process that takes place at more easily attainable temperatures, between 400 and 800 degrees centigrade and doesn't involve the grind.

The end result of a uranium tetra-chloride reaction with magnesium-diboride yields uranium boride mixed with a magnesium chloride. The latter is easily washed away, leaving behind the uranium-boride, a compound that is stable and insoluble. In addition, actinides mixed with boron, which readily absorbs neutrons, are not easily converted to their pure form, making them harder to use in weapons.

"We're interested in synthesizing actinide materials that have well-known properties-and have an important impact on our storage problems-using new methods and new materials," said Abney.

ISM Corner

'Wildfire 2001' meeting planned

The Laboratory and the Interagency Wildfire Management Team will co-host a public meeting, "Wildfire 2001: Protecting Our Communities," from 7 to 9 p.m. April 26 in Fuller Lodge, Los Alamos.

The event will focus on cooperative efforts to mitigate future fire risks to the region. It will provide updates on post-Cerro Grande Fire recovery efforts, flood control and revisions to the county emergency evacuation plan. Exhibits will be on display from 6 to 7 p.m. A video presentation, "Los Alamos and the Cerro Grande Fire" will be shown at 6:45 p.m. in the Pajarito Room.

For more information, contact Fran Talley of Public Affairs (CER-20) at 7-5225.

LANL

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Editor:
Kathy DeLucas, 7-1455

Assistant editor:
Judy Goldie, 5-0297

Managing editor:
Denise Bjarke, 7-3565

Graphic designer:
Edwin Vigil, 5-9205

Contributing photographers:
James E. Rickman, 5-9203
LeRoy N. Sanchez, 5-5009

Contributing writers:
Judy Goldie, 5-0297
Kevin Roark, 5-9202
Steve Sandoval, 5-9206
Shelley Thompson, 5-7778

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NNSA

Things are heating up

A guest editorial by Howard P. Hanson, group leader, Atmospheric and Climate Sciences (EES-8)

In 1996, the Second Assessment Report of the Intergovernmental Panel on Climate Change, or IPCC (organized under the auspices of the United Nations and the World Meteorological Organization), made waves with the rather innocuous statement that "the balance of evidence suggests a discernible human influence on global climate." Given the firestorm of reaction to this assertion, it will be interesting to see how the stronger conclusions of the Third Assessment Report, which is being released this spring, will be received.

Although much of the TAR still is in draft form, it appears that it will present evidence to support the statement that "… most of the warming observed over the last 50 years is attributable to human activities." Further, the report expresses enhanced confidence in the ability of models to project future climate, due to their improvements, and reports that the "globally averaged surface temperature is projected to increase by 1.4° to 5.8° C [2.5° to 10.4° F] over the period 1990 to 2100." The range is due both to the various forcing scenarios used — that is, how much carbon dioxide and other substances are injected into the atmosphere in the future — and to the variety of climate models used. These conclusions from the TAR were drawn by Working Group I, the group examining the climate science side of the issue. Implications for policy will be discussed separately.

However these implications emerge, the Laboratory has a stake in the issue. It seems clear that, first, the issue of global warming will not simply go away. This suggests that, in the short term, there will be an increased emphasis on reducing the uncertainty of climate projections and on understanding the implications of various energy policies on these projections. Because energy policy also is a driver of the national economy, understanding its economic implications also will be emphasized. And, this, of course, is one of the Department of Energy's missions. Second, and the TAR addresses some but not all of these, the implications of global climate change for regional climate and for day-to-day weather (especially extreme weather events) and weather-related resources such as fresh water also will become more and more important to understand and predict. Because the research community still is grappling with these issues at a basic level, this is more of a long-term problem. Third, the TAR's recommendations include increased emphasis on research connecting the physical climate system to the biological and chemical components of the Earth system. Thus, "biogeochemistry" will play an increasingly important role in the future national research agenda.

Further, because not all of the regional and local implications of global climate change are even imagined — if we can expect one thing, it's to be surprised — the potential role of the Laboratory in all this, for both the short- and long-term, expands hugely. As a multi-program national laboratory with extensive experience in dealing with interdisciplinary national security issues as well as responsding to policy with basic science, we stand ready to be a national resource to assist the nation in developing a rational response to 21st Century global warming and its implications.

Challenge draws more than 150 students

More than 150 high school students from throughout New Mexico will be at Los Alamos April 24 and 25 for the 11th annual New Mexico High School Supercomputing Challenge Awards Day activities.

The goal of the year-long event is to increase knowledge of science and computing, expose students and teachers to computers and applied mathematics, and instill enthusiasm for science in high school students, their families and communities. Any New Mexico high school student in grades 9-12 is eligible to enter the Challenge.

Laboratory personnel are encouraged to visit the Santa Clara Gallery on the second floor of the J. Robert Oppenheimer Study Center between 9 and 10 a.m. April 25 to view posters students designed that describe their computing projects, according to David Kratzer of Computing (CCN-7) and Eric Ovaska of Customer Service (IM-2), coordinators of the supercomputing challenge.

More information on the New Mexico High School Supercomputing Challenge, including a list of student projects, can be found at *www.challenge.nm.org* online.

A closer look at C Division

A proud new chemistry division

by Kevin Roark

Over time the previously named Chemistry Science and Technology (CST) Division became one of the largest organizations at the Laboratory, with a diverse array of responsibilities. Having spawned significant portions of newly created divisions, the newly reorganized C Division is leaner and working hard to emphasize its core scientific strengths in the discipline of chemistry.

Chemistry is integral to the entire Laboratory. From dynamic experimentation to waste handling to isotope production, C Division's capabilities serve the Lab's core missions of stockpile stewardship, non- and counter-proliferation, nuclear materials management and environmental stewardship, as well as civilian and other national needs.

"The Chemistry Division, like other disciplinary-focused organizations, takes pride in serving the Lab, but is also very proud of its connections with the outside scientific community," said Carol Burns, deputy division director. "This is our gateway to innovation. We're only going to have the most innovative new science if we're well connected with the research community. Our post-doc and student programs are very important for bringing in new vitality and new vision."

In the nuclear weapons program, C Division is involved in a wide variety of cross-disciplinary science, from designing novel chemical processes involved in the recovery of actinide metals to the certification of materials used in manufacturing processes.

In the area of threat reduction, C Division works with lasers for the remote detection of trace chemical and biological effluents and on the design of new materials in radioactivity detection.

C Division does extensive work in environmental science, looking at the behavior of metals in the environment and modeling the transport of radionuclides. Chemists are developing the means to quantify carbon content in soils to study the effectiveness of natural and engineered carbon dioxide sequestration processes.

"We like to think of ourselves as problem solvers," said Burns. "We know how to go out and work with people from across the Lab, adapt to the situation at hand and find a solution."

There have been hard times. The Cerro Grande Fire caused a loss of C Division offices and damage to important scientific instruments, lab space and data. Then came reorganization and self-examination. But the division is now in an era of revitalizing itself, according to Burns. It's a process of emphasizing and coordinating the important roles played by chemistry in the core mission of the Lab; trying to identify new scientific applications of chemistry in any of the Lab's programs; and then as a division, taking a leadership role, she said.

"We're getting reacquainted, learning our overall function, understanding the assets we have and reemphasizing our core scientific strengths," said Burns.

The division consists of eight groups: Advanced Chemical Diagnostics and Instruments (C-ADI), Actinide Analytical Chemistry (C-AAC), Physical Chemistry and Applied Spectroscopy (C-PCS), Analytical Chemistry Sciences (C-ACS), Isotope and Nuclear Chemistry (C-INC), Applied Chemical Technology (C-ACT), Structural Inorganic Chemistry (C-SIC), and Chemistry Facilities and Management (C-FM).

Much of the focus for C Division's future will be driven by the emergence of better synthetic methods, characterization tools and analytical methods. Areas of focus include providing improved experimental tools to validate the highly complex models produced by the Advanced Strategic Computing Initiative; looking closely at applied energy and the more effective and efficient processes in converting matter to energy; and assessing the impact of nanotechnologies on the missions of the Lab.

"C Division's success is found in our talented and creative people and our unique nuclear and non-nuclear facilities and equipment," said Burns. "We're committed to creating a work environment that celebrates outstanding science; values the differences in people; and partners effectively with the other Lab divisions, the departments of energy and defense, academia and the civilian research community."

Reducing badge clutter saves time

Now that security badges must be swiped through a badge reader by Protection Technologies of Los Alamos employees at all manned guard stations, PTLA and Security (S) Division are asking that employees reduce their badge clutter to reduce the time it takes to do the swiping.

It is common for employees to attach any number of other documents on the same clip as their badge, things like property passes and emergency phone number lists. It's important to have these items, but they can get in the way when a badge is swiped, causing the process to take more time. For the individual employee this may not be a big deal, but the cumulative effect during the rush hours can really add up.

The most helpful thing an employee can do is hang the security badge from its own clip and hang everything else separately. This way the guards don't have to fumble around with a badge that has two or three other laminated cards with it, they can just take the solitary badge — and swipe it. Extra clips can be obtained at the badge office.

Laboratory joins Magdalena Ridge Observatory Consortium

by Shelley Thompson

The Laboratory is now a full member of the Magdalena Ridge Observatory Consortium and will support up to 16 full-time students from other institutions — New Mexico Institute of Mining and Technology, New Mexico State University, New Mexico Highlands University and the University of Puerto Rico.

Once constructed along the main ridge of the Magdalena Mountains west of Socorro, N.M., the MRO will be a state-of-the-art observatory employing cutting-edge technology to produce detailed images of the far reaches of the universe. The observatory will be equipped with three, 2.4-meter telescopes linked together to create the potential resolving power of a single 50-meter telescope. The telescopes also will be independently operable for projects not requiring such high resolution. MRO will be used for scientific research by the consortium and by the U.S. Army for missile tracking.

The Lab's contribution to the project will be the equivalent support of four students per university per year, or $120,000 per university per year. The students supported by Laboratory funding will work in areas of interest both to Los Alamos and the MRO. They will spend part of the year at the Lab and be mentored by a Los Alamos scientist.

Construction of the MRO will begin in spring 2002 with a scheduled completion date in 2006. Although the observatory won't be fully operational for four years, the Lab will begin funding students this year.

Scientists also are looking into the possibility of staging the building of the observatory to have one telescope operational in two years, allowing single-telescope research to begin at the MRO before the construction is complete.

Funding for the facility — which will eventually cost $40 million — was secured through the U.S. Army, which runs the White Sands Missile Range. The design, construction and operation of the observatory will be under the auspices of the consortium. The partnership between the Department of Defense and the consortium will allow the facility to be a scientific observatory primarily, but also be used by the military to track missile tests at White Sands Missile Range, make images of geostationary satellites and track satellites and orbiting debris.

For more information, contact Galen Gisler by electronic mail at *gisler@lanl.gov* or by phone at 7-1375.

See the March 30 online Daily Newsbulletin for the complete story (*www.lanl.gov/newsbulletin*).

Laboratory researchers present …

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The spacecraft was intentionally crashed in the moon's south pole in a final attempt to extract additional information about water on the moon.

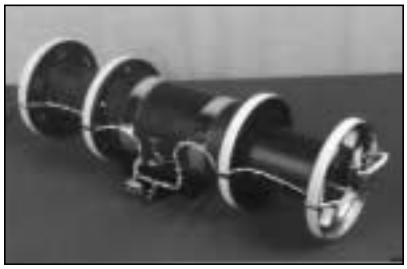
The data gathered by the Lunar Prospector and analyzed by Los Alamos scientists also provided the first global elemental lunar study to date. The scientific goals for the Lunar Prospector were to answer longstanding questions about the moon; its resources, including water; its structure; and its origins.

"You can't take samples of just a few locations on the moon, like the Apollo missions did, and say you know the composition of the whole moon. It would be like taking a rock from Paris and Los Angeles and a snapshot of Tokyo and saying you know everything about Earth's composition," said David Lawrence of NIS-1. "It's like a detective story; you have to put all of the pieces of information together to see the whole picture."

Among Los Alamos scientists at the conference were Tom Prettyman of NIS-1 and Lawrence. They presented the first Lunar Prospector gamma-ray spectrometer measurements of lunar iron abundance. Elphic and Prettyman presented titanium data that suggest previous measurements were twice as high as the actual abundance.

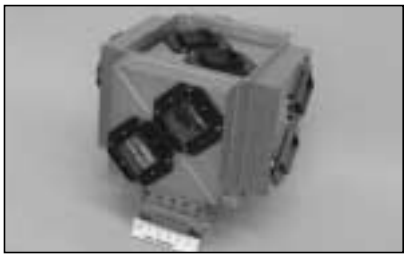
Olivier Gasnault presented neutron data that correlate the atomic mass of the soil to neutron flux. William Feldman provided further evidence that the enhanced hydrogen abundance at the lunar poles is in the form of water-ice. Stefanie Lawson presented the first alpha-particle spectrometer measurements on tectonic activity. All three are from NIS-1. Elphic also presented computer simulation data that confirm actual measurement techniques.

For the full story, see the March 14 online Daily Newsbulletin located at *www.lanl.gov/newsbulletin*.



Gamma-ray spectrometer

Neutron spectrometer



Alpha-particle spectrometer

Amy Sahota

Amy Sahota is the new deputy office director of the Lab's Office of Equal Opportunity (OEO). Sahota formerly was a group leader in Defense Programs (BUS-2). She has been at the Lab since 1981. Sahota has been a member of the Lab's Women's Diversity Working Group and the Asian American Diversity Working Group. She also is involved with the Diversity Alliance, a not-for-profit group, and the Los Alamos Employees' Scholarship Fund, which raises money to award college scholarships to Northern New Mexico students. Sahota has bachelor's degrees in biology, chemistry and education from Punjab University in Chandigarh, India, and a master's degree in Business Administration from the College of Santa Fe.

Gary Stradling

Gary Stradling of the Nuclear Weapons Directorate (ALDNW) has received the Secretary of Defense Medal for Outstanding Public Service. The award recognized Stradling's contributions during his change-of-station in the Office of the Secretary of Defense as the special assistant to the deputy assistant secretary of defense for Nuclear Forces and Missile Defense Policy from June 1997 until August 2000. Stradling has been at the Laboratory since 1981. He has a physics degree from Brigham Young University, master's degrees in physics and applied science from BYU and the University of California, Davis, respectively, and a doctoral degree in plasma physics/applied science from UC, Davis.

Ed Heighway

Ed Heighway has been named deputy program director for Experimental Programs in the Nuclear Weapons Directorate. He has been acting deputy director in the Physics (P) Division. Since arriving in 1985, Heighway has served the Lab as a project leader, group leader, program manager and deputy division leader in the Accelerator Technology (AT) Division and as program manager in Laboratory Directed Research and Development. His major field of research has been in accelerator science of multiple flavors, which he explains as theory and experiment spanning fundamental science to exotic defense applications. Heighway has been recognized with a Career Development Mentoring Award as well as a Distinguished Performance Award as part an LDRD team.

Lab's wellness programs recognized

The Laboratory has received a bronze "well workplace" award from the Wellness Councils of America for its wellness programs. It is the first organization in New Mexico to receive such an award from the Wellness Council.

The Omaha, Neb.-based national, not-for-profit organization is dedicated to promoting healthier lifestyles, especially through health-promotion activities at worksites.

The Lab joins Fortune 50 companies such as Exxon, Dupont Fibers, Mobil, Mylan Pharmaceuticals and Motorola Cellular as recipients of the council's wellness program awards.

The Positive Health Directions program is jointly operated by ESH-2 and HR-1 and includes the Health Connection and Health Check programs and several self-care books.

Judith Bannon Snow

Judith Bannon Snow has been named the new deputy associate Laboratory director for the Strategic and Supporting Research Directorate. In her new role, Snow will be responsible for assisting in the oversight and management of SSR's research activities that support the Laboratory's nuclear-weapons and threat-reduction missions. Snow joined the Laboratory in 1994 and has served as a technical staff member in the former Chemistry Science and Technology (CST) Division and in various management positions in both CST and Dynamic Experimentation (DX) divisions before becoming group leader in 1996 for High Explosives (DX-2). Snow has a bachelor's degree in chemistry from Whitman College, a master of arts in teaching chemistry from Reed College, a doctorate in chemistry from Wesleyan University and a master's in management from the Stanford University Graduate School of Business.

Kim Thomas

Kim Thomas has been named to the second deputy division director position in the Chemistry (C) Division. For the past three years Thomas has been group leader in Isotope and Nuclear Chemistry (C-INC) and continues to serve as deputy program manager for Chemical Separations for the National Advanced Accelerator Applications program. From 1994 to 1997 Thomas was chief of staff in the Physics (P) Division. She had earlier assignments at the Lab as manager for the Hanford Tank Waste Remediation System, project leader for the Yucca Mountain program, and deputy group leader of INC-11, the Isotope and Nuclear Chemistry group in the former Chemistry Science and Technology (CST) Division. Thomas holds a doctoral degree in nuclear chemistry from the University of California Berkeley.

April service anniversaries

35 years
Keith Alrick, P-23

30 years
David Garcia, NIS-5
James Harrison, DX-8
Nicholas King, P-23
R.M. Montoya, ESA-WMM
Thomas Zaugg, AAA-TPO

25 years
Christopher Bjork, ESH-4
William Dorin, CCN-12
Daniel Fitzgerald, LANSCE-2
James Halbig, NIS-5
Jo Anna Hawkins, BUS-7
Dwight Jaeger, NW-SS
Nelson Montoya, NMT-8
M. Ann Nagy, X-5
Susan Potter, LC-BPL
Randall Rowan, ESA-WMM
A. Daniel Talley, ESH-4
Michael Trujillo, OEO
Ronnie Vigil, FWO-WFM
Kenneth Werley, D-3

20 years
Linda Anderson, D-4
Kathryn Berkbigler, CCS-3
Carlos Chacon, BUS-DO
Dona Crump, BUS-4
Barbara Devolder, X-5
Harry Egdorf, IM-8
Cipriano Gomez, NMT-4
Nora Ann Horrell, NMT-5
James Kowalczyk, NIS-8
John Ledford, LANSCE-1
Danny Lujan, NMT-15
Pamela Mayne, D-7
Charles Quick Jr., C-ADI
Elizabeth Redman, BUS-DO
Donald Rej, SNS-DO
Gabriela Rodriguez, S-4
A.K. Sahota, OEO
Gerald Schmitt, DX-1
N. Jill Warren, NIS-8
Theodore Williams, BUS-2
Moises Zamora, BUS-DO
Hans-Joachim Ziock, EES-6

15 years
Thomas Claytor, ESA-MT
Karen Collier, LANSCE-8
Ruth Dupre, LC-LEL
Michael Ebinger, EES-10
Kathleen Fillmore, PM-4
Kenneth Gallegos, ESA-FM-ESH
Judy Hamilton, CCN-2
C.P. Leibman, C-ACT
Ann Mascarenas, D-10
Mary Jo McGrath, ESH-1
Bruce Meyer, LANSCE-2
Barbara Milder, NIS-6
Peter Milonni, T-4
Elaine Ortiz, NMT-5
Joseph Romero, NMT-16
Linda Thompson, B-1
Kristie Whitaker, S-7

10 years
Martin Aguilera, PM-DO
Mary Barr, NMT-11
Dennis Bianchi, FWO-S2CM
Terrance Connors, FWO-WFM
Gene Griego, DX-4
Steven Hanson, FWO-DO
David Holmes, BUS-8
Joanne Irwin, NMT-8
Patricia Leyba, E-DIV
Sheila Molony, IM-1
John Mott, IBD
Michael Murillo, X-1
Michael Saladen, ESH-18
John Sullivan, P-25

5 years
Kellie Art, FWO-DO
James Gore, IM-3
Emily Kluk, EES-6
Michelle Marquez, IM-8
Duane Martinez, NMT-5
Curtis Novak, NIS-3
R.R. Sharp-Geiger, MST-OPS
Ann Sherrard, ESA-FM-ESH

This month in history

April

1862 — Confederate forces abandon the city of Santa Fe after occupying it for 27 days

1876 — The first official meeting of the American Chemical Society is held at New York University

1935 — Sir Watson-Watt is granted a patent for the invention of radar

1943 — Robert Serber presents a series of five lectures, which became known as the Los Alamos Primer, outlining what was then known about designing nuclear weapons

1960 — The first weather satellite, named TIROS (Television Infrared Observation Satellite), is launched from Cape Canaveral

1977 — President Carter bans the recycling of used nuclear fuel from commercial reactors

1990 — The Hubble Space Telescope is launched — with a slightly warped mirror

1998 — Former Director Sig Hecker and Pete Lyons, a Lab employee who works in the office of Sen. Pete Domenici, are chosen to receive the New Mexico Distinguished Public Service Award

In Memoriam

James E. Harlow

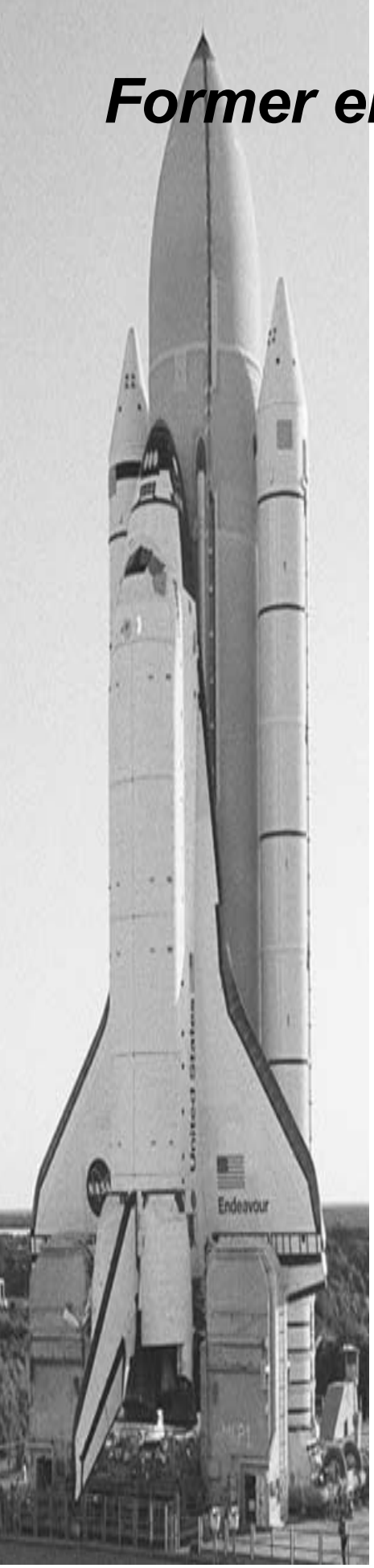
Laboratory retiree James E. Harlow died March 6. He was 84. Harlow moved to Los Alamos in 1945 as technician with the U.S. Corps of Engineers. Harlow joined the Lab in 1946 as a cryogenic development technician. He retired as a mechanical a technician after 29 years of service.

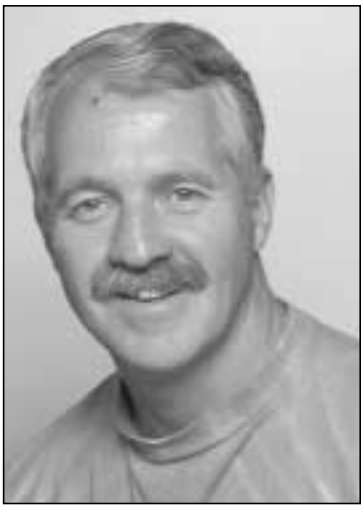
Gene H. Moore

Laboratory retiree Gene H. Moore died Feb. 25. Moore was born in 1933. He served in the U.S. Army from 1954 to 1956. Moore came to the Lab in 1967, joining the then-Plutonium, Chemistry and Metallurgy (CMB-11) Group as a chemical technician. He retired from Power Source Technology (NMT-9) in 1993.

Former employee reaches for the sky

by Steve Sandoval and Judy Goldie





John L. Phillips

Former Laboratory employee John L. Phillips, who had worked in Space and Atmospheric Sciences (NIS-1) until chosen for the astronaut program, is part of a crew of astronauts scheduled to begin an 11-day mission to the International Space Station. Phillips is part of a seven-person Space Shuttle Endeavour crew that is scheduled to launch from the Kennedy Space Center in Florida at 12:41 p.m. MDT this afternoon (April 19). This flight will be the ninth shuttle mission to visit the International Space Station. The crew will deliver and install a Canadian-built robotic arm, the Raffaello Multi-purpose Logistics Module, onto the station. The crew is scheduled to take at least two space walks to install the robotic arm, which also is known as the Space Station Remote Manipulator System.

This robotic system will play a key role in space station assembly and maintenance, moving equipment and supplies around the station, releasing and capturing satellites, supporting astronauts working in space and servicing instruments and other payloads attached to the space station.

Phillips, who turned 50 on Sunday, came to the Laboratory as a J. Robert Oppenheimer postdoctoral fellow in 1987. He graduated from the U.S. Naval Academy in 1972 with bachelor's degrees in math and Russian. He earned his master's degree in aeronautical systems from the University of West Florida in 1974 and went on to earn a master's degree in geophysics and space science from University of California, Los Angeles, in 1984 and a doctoral degree in those subjects from UCLA in 1987.

While at UCLA, Phillips carried out research involving observations by the NASA Pioneer Venus Spacecraft. At the Laboratory, he performed research on the sun and on space environment. He was the principal investigator for the Solar Wind Plasma Experiment aboard the Ulysses Spacecraft as it executed a unique trajectory over the poles of the sun.

Phillips was chosen by NASA (see Newsbulletin article on the World Wide Web at *http://newsbulletin.lanl.gov/pdfs/weeklynews/062196.pdf*) in April 1996 along with fellow Laboratory employee Don Pettit of Energy and Process Engineering (ESA-EPE). He reported to the Johnson Space Center in August of that year.

Phillips has been a Navy reservist since 1982, serving as an A-7 pilot and in a variety of nonflying assignments as well. He has logged more than 4,300 flight hours and 250 carrier landings. Currently he is a captain in the U.S. Naval Reserve.

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