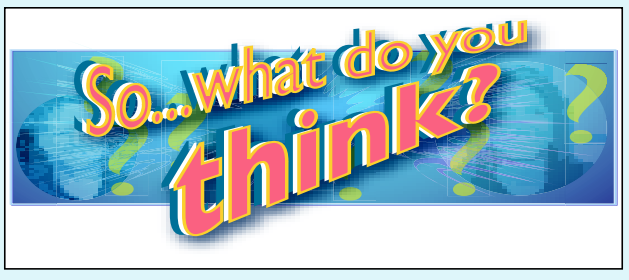
Los Alamos NATIONAL LABORATORY EST.1943

NewsLetter

Week of March 14, 2005 Vol. 6, No. 6

Inside this issue …



The Laboratory's chief science officer, Tom Bowles, recently gave a talk that focused on the state of science at Los Alamos. How do you think the research performed at the Laboratory best serves the nation, and which, if any, of the Lab's most recent scientific accomplishments are you most proud? Learn what your co-workers had to say on Page 6.

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Snow brings green machining to Lab

by Todd Hanson

Los Alamos scientists have developed a novel machining technique that uses a jet of solid carbon dioxide (CO_2) to cool/lubricate the surface of metal parts and remove the cut material during machining. Called Snow-Machining, the process could someday eliminate the use of oil-based or synthetic chemical fluids for metal cutting and metal parts cleaning in industry.

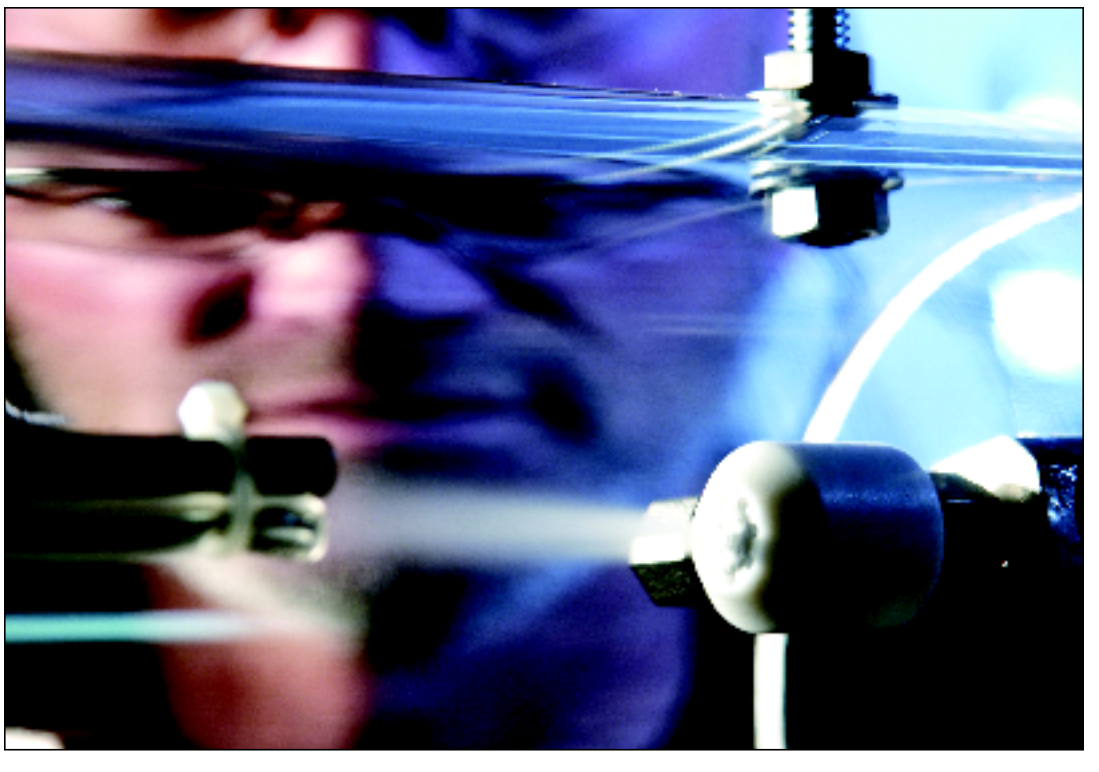
The Snow-Machining technology creates a high velocity stream of small, micron-size dry ice particles through the process of adiabatic expansion of liquid carbon dioxide as it passes through a 0.012 inch diameter nozzle. The resulting particulate CO_2 acts as a mechanical force to blast away the waste metal material while at the same time cooling and lubricating the surface of the machined part. Experts in the department of mechanical engineering-engineering mechanics at Michigan Technological University estimate that American industry uses more than 100 million gallons of metalworking oil each year and that the amount of cutting fluids used is at least several times that of metalworking oil.

The use of "snow" means that the machining process can be made to produce virtually zero hazardous waste, since carbon dioxide is environmentally benign. Other advantages over traditional cleaning and cooling fluids come with the fact that carbon dioxide also is inexpensive, nonflammable, recyclable and plentiful. The Los Alamos process was developed to improve "dry" machining techniques for the nuclear weapons programs. Although the Laboratory has moved toward using "dry" machining technologies in many of its manufacturing techniques, the technology is limited to depth of cuts of less than 1/1000th of an inch and feed rates of 2/10,000ths of an inch per revolution.

The Snow-Machining system already has demonstrated improved performance and cost savings over traditional dry machining in terms of enhancing the surface finish and by increasing the life of the cutting tool.

The result of a collaboration between the Chemistry (C) Division's Supercritical Fluids Team and the Nuclear Material Technology (NMT) Division's Small Scale Experiments team, the technology has been expanded into traditional machining applications by the Laboratory's Pollution Prevention program, where the process will help reduce/eliminate the amount of radioactive hazardous liquid wastes produced by the machining and the cleaning of uranium at the Laboratory.

The invention follows on the heels of an earlier Laboratory success where scientists developed the use of liquid carbon dioxide to replace cleaning fluids in the dry cleaning industry. The Los Alamos invented process is now widely used in the commercial dry cleaning industry.



Jerry Barton of Applied Chemical Technologies (C-ACT) calibrates the temperature position of the carbon dioxide jet for Snow-Machining applications at a Technical Area 35 laboratory. The process could someday eliminate the use of oil-based or synthetic chemical fluids for metal cutting and metal parts cleaning in industry. *Photo by LeRoy N. Sanchez*

For Your Safety

Ergonomics in the Laboratory

Editor's note: Many tasks performed in research laboratories place workers at risk for developing musculoskeletal disorders. Potentially hazardous activities include the use of pipettes, microscopes, microtomes, centrifuges, flow cytometers, cryostats and computers. The following is part two of a three-part series offering suggestions to help reduce the risk of developing musculoskeletal disorders.

Microscopy

• Set your microscope near the edge of the work surface to maintain an upright posture during use. Elevate the tabletop or the microscope itself to avoid jutting your chin forward or bending your neck down.

• Try to avoid using the microscope for more than five hours per day.

• Consider arm supports for forearms while using adjustment knobs. Arm supports are available from AliMed (800-225-2610), Ergo Source (612-404-1058), and Air Technologies (800-759-5060).

• Consider television systems to eliminate the use of binocular eyepieces.

• Select chairs with padded armrests to rest your arms, but make sure the armrests do not prevent you from getting sufficiently close to the microscope.

• If possible, select a microscope that can be fitted to you. Leica makes viewing tubes that can be matched to the user's size. Visit *www.cdc.gov/od/ohs/Ergonomics/labergo.htm* for the Leica Web site and additional manufacturers of ergonomically designed lab equipment.

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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FROM THE TOP

Chief science officer outlines the State of Science at the Lab

by Hildi T. Kelsey

Chief Science Officer Tom Bowles highlighted scientific accomplishments and identified areas for improvement in his State of Science talk in the Administration Building Auditorium.

"The best part of my job is going around to different groups and learning about new things that are going on at the Lab," Bowles said to employees in the auditorium and watchers on LABNET.

Bowles recognized staff for their recent accomplishments and awards including four Lab employees named American Physical Society Fellows for 2004. Additionally, Quanxi Jia, a Laboratory Fellow and Device Team Leader in the Superconductivity Technology Center of the Materials Science and Technology (MST) Division, was named as the Asian American Engineer of the Year for 2005.

Bowles also profiled the recent Lab projects that won R&D awards. These included a 10-Gigabit Ethernet Adapter, which has applications in wider industrial environments; Clustermatic, a complete cluster management software solution; Confocal X-ray florescence, originally developed to identify elements in radioactive waste and now used in determining art forgeries; Plasma Torch Production of Spherical Boron Nitride Particles; and mpiBlast, a high speed software catalyst for genetic research used in combating bio-terrorism.

"None of this could have been done without tremendous help in preparing the nominations by the support side of the Lab," said Bowles.

In addition, he recognized Richard Hughes of Neutron Science and Technology (P-23) and Jane Nordholt of Biological and Quantum Physics (P-21) for earning the Descartes Prize for Research, one of the highest awards given in Europe, for their work on Quantum Key Distribution.

Bowles also noted that Bette Korber of Theoretical Biology and Biophysics (T-10), Fred Mortensen of Thermonuclear Applications (X-2) and Greg Swift of Condensed Matter and Thermal Physics (MST-10) received three out of seven E.O. Lawrence Awards from the Department of Energy.

The Research Library (STB-RL) also was mentioned as a "highlight of the year." It recently was rated "best science digital library in the world" by an external advisory board. Bowles credited library director Rick Luce and encouraged staff to utilize the Library's resources as they "could really help your life."

Tom Bowles, chief science officer

Bowles also presented several Lab research highlights. Such highlights included solar research at Sudbury Neutrino Observatory, the search for new state of matter (PHENIX), solar and astrophysical plasmas, instruments on the Odyssey Orbiter to study the surface water distribution on Mars and atmospheric activities monitoring.

He also mentioned the study of nonlinear, nonequilibrium dynamics of materials, the Chemistry (C) Division's work on the Quantum-Dot program and research dealing with magnetic-field-induced-quantum-coherent spin state in an ancient purple pigment. He profiled High Explosives Science and Technology's (DX-2) work with low density metal foams, Los Alamos Neutron Science Center's (LANSCE) new diamond-like phase formed by carbon nanotubes and the DOE's (through the Lab) contribution to sequencing the human genome.

continued on Page 3

Energy secretary visits Lab, talks to employees

Department of Energy Secretary Samuel Bodman, right, talks with Greg Swift of Condensed Matter and Thermal Physics (MST-10), left, and Fred Mortenson of the Applied Physics (X) Division during a recent visit to the Laboratory. Bodman lauded the scientific excellence of the Laboratory during an all-employee talk in the Administration Building Auditorium at Technical Area 3. "I consider it an extraordinary personal and professional honor to be here with you. I am in awe of the scientific excellence and historic significance Los Alamos presents," said Bodman, who was making his first visit to Los Alamos since being named DOE chief. Bodman also toured several Laboratory facilities and received briefings about Lab programs.
Photo by LeRoy N. Sanchez

Chief science officer …

continued from Page 2

Much focus also was placed on computing efforts, including the institutional computing project creating the turquoise network — a new, open collaborative network. Computer modeling of large-scale extragalactic structures and 3-D simulations of the asteroid impact that supposedly killed the dinosaurs 65 million years ago and still are relevant for tsunami research were mentioned. Bowles also cited the Lab's collaborative effort with Sandia National Laboratories to predict the course of Hurricane Francis, thus, acting as a resource for Florida power companies and authorities.

Bowles profiled several additional research highlights for 2004 — he plans on posting his full presentation online for viewing by Lab staff.

Additionally, he stressed the importance of collaboration with the University of California (as it acts as a pipeline into the Lab for students) and listed the number of joint Lab/UC publications — there are more than 1,000 in the physics category alone. He also said the Lujan Center at LANSCE, where students can come to study, is another good example of this collaboration.

As chief science officer, Bowles maintained that his role is two-fold: 1) work to ensure the health of science at the Lab by providing a strong communication link between staff and management, and 2) oversee the quality of science at the Lab. He also serves as the point of contact with universities and science sponsors. Bowles is supported in his efforts by Deputy Chief Science Officer David Sharp and the Science Council.

Addressing issues in science

In striving for the Lab's main science goal to sustain a healthy and viable science effort that will be able to address the long-term needs of the nation, Bowles identified a few issues. "We need to get real at defining our priorities," he said, adding, "we need to integrate our capabilities across the Lab much more effectively." Getting the necessary resources, obtaining buy-in from sponsors, developing a plan and tracking it to completion are all part of the science roadmap that will be constructed over the next year with the help of technical directorates.

Bowles also listed safety and security at Los Alamos as a top priority mentioning that the Lab is the worst defense programs lab for Price-Anderson and Defense Nuclear Facilities Safety Board violations.

However, Bowles said compliant doesn't mean unquestioning. "Compliant means we should ensure safety, security and the ability to do our mission. But, you need to push back on things that do not make sense," said Bowles.

"[The Laboratory] can be fully safe, secure, and compliant and still maintain world-class science," he said. Bowles pointed out that it is to a large extent up to [Lab employees] to ensure that we do that.

"The quality of staff and of science and engineering at Los Alamos still is the highest level, but we still have a tremendous amount of work to do," said Bowles.

"We are absolutely committed to achieving success."

Year of Physics

by Tom Bowles, chief science officer

March 14 marked the 126th anniversary of the birth of Albert Einstein. In addition, 2005 has been declared "Year of Physics" by the American Physical Society, as it is the 100th anniversary of five of Einstein's paper, including ones on special relativity, Brownian motion, the photoelectric effect and the relation of mass and energy. These have had a profound impact on society. Einstein's efforts also quite literally laid the basis for Los Alamos National Laboratory. His paper on special relativity with the famous equation E = mc2 that laid the basis for the release of nuclear energy is at the heart of nuclear weapons. And it was his letter to President [Franklin D.] Roosevelt about his concerns over German pursuit of nuclear fission that prompted the government to create the Manhattan Project.

In another sense, it is Einstein's spirit that is reflected in the character of the Laboratory. While Einstein's work laid the physical basis for nuclear weapons, he pursued a very wide range of research, which included cosmology, relativity and atomic physics. He was interested in virtually all aspects of the world around him. That interest is reflected in the broad science portfolio of the Laboratory. This breadth has served the nation well in our ability to respond to emerging needs.

The Laboratory's future depends on its ability to sustain the strength of the scientific underpinnings that support our service to the nation. This is what has allowed the Laboratory to excel in meeting its missions over its 62-year history. This basis is under stress for a variety of reasons. The director, University of California, senior management and staff are working together to relieve that stress. The NNSA is supporting [the Lab's] efforts to improve our performance, which in turn will benefit science.

I will be discussing our actions in future columns, but for now, let me just say that we are committed to working through the problems that the Laboratory faces. Ultimately, our goal is to make the Laboratory a place where Einstein would want to work.

License income distribution

What is license income?

License income is income derived under a license agreement negotiated by the Technology Transfer (TT) Division with an outside entity for rights to Los Alamos patents or copyrights.

Is an employee eligible for a portion of the license income from his or her technology?

If an employee has intellectual property (IP) that has been disclosed, patented or copyright asserted and has shown potential for commercialization, IP can be licensed. If the Laboratory is successful in licensing this IP, the inventor or author are eligible for a portion of the license income as described in the University of California policy on License Income Distribution.

What is the UC policy on distribution of license income?

For those hired before Oct. 1, 1997, the distribution split is 42.5 percent to the inventor/author, 42.5 percent to the originating division and 15 percent remains in TT.

For those hired on or after Oct. 1, 1997, the distribution split is 35 percent to the inventor/author, 50 percent to the originating division, and 15 percent remains in TT.

Distribution of these funds is made annually at the Patent & Licensing awards reception, which takes place in February. To receive a distribution of license income, an individual must have IRS form W-9, "Request for Taxpayer Identification Number and Certification, on file with TT Division. In addition, the individual must provide a current address for payments to be made. Licensees who leave the Laboratory or retire are still entitled to their license income. License income is paid out until the license expires or no longer generates income. If an inventor dies, license income is paid to the inventor's estate.

Individuals who move or retire should contact TT Division to update their mailing information to avoid delays in receiving license income.

Are there restrictions on how this money can be used?

The inventor/author receives the money as personal, taxable income, and tax concerns are the responsibility of the inventor. TT Division and the division in which the invention originated must use their funds for research and development, technology transfer or education at the Laboratory. These funds are exempt from Laboratory overhead and have been used for various activities, such as division scholarships, technology maturation projects, marketing, patent infringement actions, etc. Note that funding used for research and development activities cannot be used to augment existing, funded programs. Questions or concerns about using the funds? Contact Dave Swavely, TT Business Team leader, at 5-7363 or Susan Brockway at 5-7677.

For more information about license income, see the TT Division Web site at *www.lanl.gov/partnerships* or contact Brockway via phone or e-mail at *sbrockway@lanl.gov*.

Appendix F Primer

by Brooke Kent

Laboratory Director Pete Nanos announced at a recent all-employee meeting that the Lab's overarching objective for this fiscal year is "to achieve a 90 percent outstanding rating on Appendix F objectives."

Given Appendix F's pre-eminence among the Lab's institutional priorities, three basic questions follow: what is Appendix F, why does it matter and how can each employee contribute towards an outstanding rating?

What is Appendix F?

"Appendix F is the Lab's report card from our customer," said Bill Wadt, Prime Contract Office (PCO) director, who coordinates the Appendix F evaluation process. "Three years ago, Los Alamos worked with the University of California, the National Nuclear Security Administration and Lawrence Livermore National Laboratory to change the performance evaluation process so that it focused on the 'critical few' strategic issues. Appendix F now consists of 10 objectives — six for mission and four for operations — and as a whole, it provides the basis for NNSA's annual appraisal of the Lab's performance."

The Appendix F objectives (see table at right) and their supporting 46 measures span the work of the Laboratory, covering areas as diverse as the nuclear weapons program, science and strategic research, infrastructure, business systems and the work force. "The Appendix F goals form the framework, not just for the Lab's near-term corporate objectives, but also align with the director's top five performance priorities, namely, safety, security and compliance; national security mission; outstanding science in support of mission; business operations and management practices; and community partnerships," said Wadt.

That unifying perspective is exactly what NNSA Administrator Linton Brooks applauded at a recent Appendix F strategy meeting. "Appendix F gives [NNSA, UC and the Lab] a common view of the forces that will shape our ability to do our job over the coming year," Brooks commented. UC Vice President for Lab Management Robert Foley concurred, adding that the metrics of the Appendix F performance-evaluation process "help us understand where we are coming from, and by extension, where we are going."

Why does Appendix F matter?

John Immele, Los Alamos' deputy director for national security summarized, "Since Appendix F is our report card, it affects our reputation, the funding and sustainability of our science, programs and operations and ultimately the renewal of the contract for operating the Los Alamos site." At the most basic level, Appendix F provides an evaluation of our performance not just to UC and NNSA, but also to Congress and the country as a whole. This evaluation process holds the Lab accountable for its performance and ensures that we provide good value for taxpayer dollars.

"Our reputation for the world's best science supporting national security remains untarnished and the centerpiece of our value to the nation; but our record for meeting milestones and safe operations does affect our funding and mission assignments.

continued on Page 5

Appendix F Performance Objectives

Following are the Appendix F Performance Objectives and each objective's institutional champion:

1) Common UC-design laboratory certification/assessment strategy — Fred Tarantino*

2) Long-term balanced, integrated stewardship — Tarantino*

3) Near-term balanced weapon program plans — Tarantino*

4) Science- and technology-based nonproliferation/counter-terrorism program — Doug Beason

5) Science, technology and engineering base in support of NNSA strategic objectives — Micheline Devaurs

6) Completion of projects and development of user facilities — Tarantino**

7) Recruit, retain and develop the work force basis — Richard Marquez

8) Effective and efficient operations in support of mission objectives — Carolyn Mangeng**

9) Effective business systems and practices — Marquez

10) Community initiatives — Marquez

*ADWP (Sue Seestrom) and ADWEM (David Beck) play a major role in defining the milestones as well as executing the work for objectives 1, 2 and 3.

**ADSFO (Scott Gibbs) plays a major role in defining the milestones as well as executing the work for objectives 6 and 8.

All Executive Board members and the organizations they lead must support one another in an interdependent way to succeed on all of the Appendix F objectives.

Procurement pre-solicitation conference draws large turnout

Nearly 120 representatives from New Mexico businesses attended a pre-solicitation conference regarding Laboratory catalog purchasing requirements sponsored by the Supply Chain Management (SUP) Division at Santa Fe Community College. In the photo above, Julie Allen, at podium, of Streamlined Purchasing (SUP-7), explains the Laboratory's desire to utilize Northern New Mexico and New Mexico businesses for catalog purchasing (formerly known as Just-in-Time purchasing) activities.

Ed Lundeen, the Laboratory's procurement manager, welcomes attendees to the conference. Laboratory procurement specialists explained coming requirements and components of the Laboratory's recently revised catalog-purchasing contract requirements. Conference attendees learned about time lines for contract implementation and procedures for submitting responses to Laboratory requests for proposals for catalog-contract purchasing. Attendees also had a chance to see a demonstration of the new Oracle software system that will serve as the backbone for Laboratory catalog contract purchasing in the coming year.

Photos by James E. Rickman

Appendix F ...

continued from Page 4

"This fiscal year is the last before the Lab's contract competition concludes, so the Lab's Appendix F ratings will affect conditions written into the new management contract," Immele continued. "Additionally, since the new contract will contain provisions for automatic extensions, our future Appendix F performance will influence how many years elapse before another contract competition."

Chief Science Officer Tom Bowles addressed Appendix F's impact on research sustained by the UC Directed Research and Development (UCDRD) program. "Under the current contract, UC funnels back money from its management fee into joint research programs uniting Los Alamos, UC and New Mexico universities. When poor Appendix F performance reduces UC's management fee, the funds available through UCDRD are reduced. In consequence, it also decreases the public service that UC renders through those grants," said Bowles.

How can employees contribute to outstanding Appendix F ratings?

An outstanding Appendix F rating is no trivial accomplishment, according to Wadt. "NNSA rates each Appendix F objective on an ascending scale from unsatisfactory to satisfactory to good to outstanding. Last year's difficulties in operations caused the Lab to receive outstanding scores on just three out of 10 objectives (and 11 of 42 measures) and unsatisfactory on the operations objective. This February, the associate directors projected that 25 out of 46 supporting Appendix F measures were on track towards an outstanding rating," Wadt said.

In light of these statistics, "a 90 percent outstanding rating would represent a dramatic improvement. This ambitious goal is within our reach, but only if every employee focuses on our Laboratory's performance," Wadt continued.

How can employees contribute toward a rosy report card? "The Appendix F objectives are broad enough that all employees should see themselves in at least one measure," said Immele. "Whether your expertise lies in packaging, engineering, accounting or so forth, Appendix F applies to you. The progress that we report — at the monthly Executive Board and Los Alamos Site Office meetings, at the mid-year review in May with NNSA and UC and at the year-end appraisal — is built on team and individual accomplishments. That translates into a trickle-up formula: If we each make Appendix F our top performance priority, then we will collectively drive this institution toward a 90 percent outstanding rating."

For more details on Appendix F, contact the Prime Contract Office at 7-1101, or go to its Web page at *http://pco.lanl.gov/* online.

Contract information available online

University of California
www.universityofcalifornia.edu/news/labcontract/welcome.html

National Nuclear Security Administration
www.doeal.gov/LANLContractRecompete/Default.htm

World-renowned physicist Hans Bethe dies

"No one any longer pays attention to — if I may call it — the spirit of physics, the idea of discovery, the idea of understanding. I think it's difficult to make clear to the nonphysicist the beauty of how it fits together, of how you can build a world picture, and the beauty that the laws of physics are immutable."
—Hans Bethe

Manhattan Pioneer and Nobel Laureate Hans Bethe has died. He passed away March 6 in Ithaca, N.Y. at the age of 98.

Born on July 2, 1906 in Strasbourg, Alsace-Lorraine, Germany, Bethe headed the Theoretical (T) Division at Los Alamos from 1943 to 1946. Before joining the Manhattan Project, Bethe taught physics at Cornell University. He joined Cornell in 1935 after arriving in the United States as a refugee from Nazi Germany. After World War II, Bethe returned to Cornell and remained until he retired as professor emeritus in 1975.

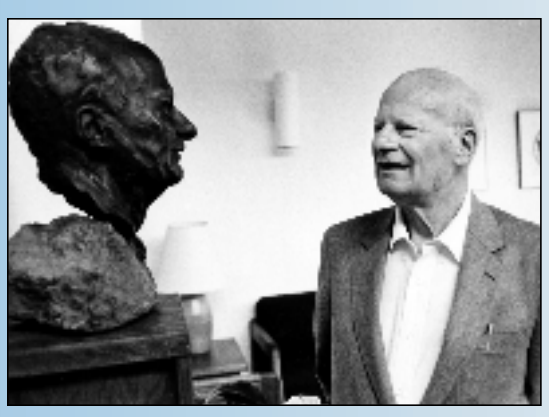
From left to right, Hans Bethe; his wife, Rose; and Carson Mark

It was during his early years at Cornell, before joining the Manhattan Project, that Bethe published his famous reviews of nuclear physics and conducted the groundbreaking work on the theory of energy production in stars that garnered him the Nobel Prize for physics in 1967.

Bethe also conducted theoretical research on atomic and molecular physics, studying the behavior of groups of atoms and molecules, their interactions (collisions), and on solid-state physics. In 1947, with R.E. Marshak, he anticipated the discovery of the pi meson. That same year, Bethe was the first to explain the Lamb shift in the hydrogen spectrum, laying the foundation for the modern development of quantum electrodynamics.

From 1956 to 1964, Bethe served as a member of the President's Science Advisory Committee and helped to negotiate the 1963 partial test ban treaty with the Soviet Union. He also acted as an informal adviser to presidents Eisenhower, Kennedy and Johnson. In his later years, Bethe was a passionate advocate against the international development of defensive nuclear systems, and in 1997, he sent a letter to President Clinton asking that he certify that the United States would not work to develop any new types of nuclear weapons.

In 2001, Bethe, along with former Laboratory Director Harold Agnew, was honored with the first Los Alamos National Laboratory Medal. Bethe was lauded for his role as a "scientific visionary and leader, mentor and role model to the Laboratory from its inception." The medal is the highest honor given by the Laboratory to an individual or group.



Bethe is survived by his wife, Rose; a son, Henry; a daughter, Monica; and three grandchildren.

Q: The Laboratory's chief science officer, Tom Bowles, recently gave a talk that focused on the state of science at Los Alamos. How do you think the research performed at the Laboratory best serves the nation, and which, if any, of the Lab's most recent scientific accomplishments are you most proud?

Paul Rich of Environmental Geology and Spatial Analysis (EES-9)

I am most proud of the integrative science that brings together physics-based models, new technologies for measurement and monitoring, computational techniques and map-based decision support. For example, some of the efforts being applied to address problems of critical infrastructure protection, carbon sequestration (to address climate changes) and water resource management.

Pei-Ling Sun of Structure/Property Relations (MST-8)

Attending the Minerals, Metals and Materials Society 2005 spring meeting in San Francisco and our presentation about the work we have done recently with ultra-fine aluminum mechanical properties. Also, finishing a paper for this symposium, which will be published in Material Science and Engineering.

Francisco M. Guerra of Weapons Response (ESA-WR)

I think, since I work in the weapons area, the work we are doing to ensure the stockpile is viable is very important. Stockpile deterrence has helped our nation rise to where it is right now.

Peggy Gonzales of Engineering Sciences and Applications (ESA-DO)

We are proud, in our division, of the work we are doing on the hydro-program. Also, we are proud of our engineering initiatives with universities, UCSD specifically, to grow mission-focused engineering skills — all related to the weapons mission.

Robert Gurule of Biological and Quantum Physics (P-21)

Quantum key distribution is a fascinating and cutting edge technology which serves the nation's national security needs.

David Seidel

Lab's Seidel passes NRM certification examination

David Seidel of Emergency Management and Response (EMR) passed the National Registry of Microbiologists' certification examination and is now a certified specialist microbiologist in biological safety microbiology.

Founded in 1958, the National Registry of Microbiologists is a voluntary certifying entity with representation in all 50 states, the District of Columbia, Puerto Rico and on six continents.

According to the American Society for Microbiology, certification eligibility requirements are rigorous, including both formal and in-the-job training experience. The successful completion of the exam requires a comprehensive knowledge of microbiology practice within a specialty.

"I feel like it is a fairly significant accomplishment because of the actual limited number of people that hold this certification — only 100 individuals in the country," Seidel said. "I feel honored to join an elite group of people that have passed the exam and achieved that level of accomplishment."

Weber to head IPT for Domestic Nuclear Detection

Paul Weber

Paul Weber of threat reduction is the new leader of the integrated product team for Domestic Nuclear Detection. His appointment was announced by Deputy Director for National Security John Immele and Associate Director for Threat Reduction J. Douglas Beason. The team was established and led by Mike Barnes before he recently was named acting deputy associate director for weapons physics.

Weber will lead program development for domestic nuclear detection and advance this new thrust area for the Laboratory. In doing so, he will coordinate with the new Domestic Nuclear Detection Office in the Department of Homeland Security, as well as with the broader interagency community.

Leading the integrated product team is part of Weber's duties as deputy associate director for defense science and technology

continued on Page 7

In Memoriam

Karen Whitehouse-Hall

Laboratory retiree Karen Whitehouse-Hall died Jan. 19. She was 61.

Whitehouse-Hall was born in Allegheny County, Pa. In 1965, she graduated from the University of Arizona with a bachelor's degree in home economics education and received her master's of home economics with a concentration in consumer science and housing from Colorado State University in 1970.

Whitehouse joined the Laboratory in 1983 in the former Health Safety and Environment Division Office (HSE-DO). While at the Lab, Whitehouse-Hall worked in the Performance Surety Division Office (PS-DO), Human Resources Development Division (HRD-4 and HRD-DO), the Integration and Coordination Office (ICO and ESH-16) and the Operations Integration Office (ESH-OIO). She also founded the Wellness Center and served as its director until 1995 when she retired.

Whitehouse-Hall is survived by her son, Brice; daughter-in-law, Kim; and granddaughter, Vida.

Donald Court

Laboratory retiree Donald Court died Jan. 20. He was 83.

Court was born in Cedar Falls, Iowa in 1921. He enlisted in the U.S. Navy in 1939 and served on various ships and duty stations during World War II. As a naval trainee, Court attended St Ambrose College from 1943 to 1944 for pre-engineering and the University of New Mexico from 1944 to 1945 for naval science. He married June Redenbaugh in 1945 and left the Navy in 1947.

Court joined the Lab in 1948 in the former Chemistry and Metallurgy Division (CMR), which changed names over the course of his career. In 1984, he retired from the former Materials Integration Science (MST-9) but stayed on at the Lab as a consultant until 1993.

He is survived by his daughter, Patricia; sister, Bonnie Jacobs; numerous nieces and nephews.

Theodore "Ted" Ehrenkranz

Theodore "Ted" Ehrenkranz died Feb. 3. He was 84.

Ehrenkranz was born in Budapest, Hungary, and immigrated to the United States in 1935. He served in the Merchant Marines and received his bachelor's degree in mechanical engineering in 1945 from City College in New York.

Ehrenkranz first worked in Los Alamos from 1946 through 1950 as a safety engineer in the former Health (H) Division. He returned to the Lab in 1960 to work in the former Health, Safety and Environment (HSE) Division, where he later served as assistant group leader. While at the Lab, Ehrenkranz also worked in the former Documentary (D) and Chemistry and Metallurgy Research (CMR) divisions and the Director's Office.

He retired in 1989 but returned as a Lab associate from 1989 to 1992.

Ehrenkranz is survived by his wife, Peggy; son, Doug; daughter, Katherine Armstrong and five grandchildren. He also is survived by his stepbrother, Martin Fischer.

Weber …

continued from Page 6

for ADTR — the associate director for threat reduction is the executive board champion for the Domestic Nuclear Detection program. Programs will be executed within the program and line infrastructure that now exists for the National Nuclear Security Administration and DHS portfolios. In addition to leading the team, Weber's IPT responsibilities include directing strategic program development by reaching across the Laboratory and spearheading interaction with external customers to develop a strong program.

"Paul has a tremendous track record and will work with an outstanding resource pool here at the Lab and elsewhere to develop this capability," Beason said in announcing the appointment. "Nuclear detection is one of the hallmarks for which this Laboratory has long been famous. I hope you will support Paul and the Domestic Nuclear Detection IPT to advance our role in the new national program."

Wallace named strategic research directorate leader

Terry Wallace is the Laboratory's new associate director of strategic research. Wallace most recently has been Earth and Environmental Sciences (EES) Division leader.

Wallace takes over leadership of ADSR from acting associate director Micheline Devaurs. Devaurs and Ross Lemons will serve as acting deputy associate directors.

"Part of our ability to maintain and nurture scientific excellence at Los Alamos depends upon identifying skilled leadership. Terry Wallace is well suited to help cultivate the Lab's genius for solving our nation's most pressing scientific problems," said Laboratory Director Pete Nanos. "At the same time, Micheline and Ross have done a tremendous job of getting ADSR operations restarted and figuring out how to do great science in the context of operational excellence. Their service in the last six months is a source of pride to all of us."

Raised in Los Alamos, Wallace returned in May 2003 to take the job of EES deputy division leader. Shortly thereafter, he was named acting division leader and became permanent EES leader in December of that same year. Before coming back to Los Alamos, Wallace had been a professor of geosciences at the University of Arizona since 1983. Wallace also was a faculty member in the Applied Mathematics Graduate Program, curator of the University of Arizona Mineral Museum and director of the Southern Arizona Seismic Observatory.

Wallace has authored or co-authored more than 80 peer-reviewed publications in various areas of seismology and tectonics, including ground-based nuclear explosion monitoring, plate tectonics, regional Earth structure and forensic seismology. He is the co-author of Modern Global Seismology, one of the most widely used textbooks on the subject.

Wallace received bachelor's degrees in mathematics and geophysics from the New Mexico Institute of Mining and Technology in 1978. He received his doctorate in seismology from California Institute of Technology in 1983. He received the Macelwane Medal in 1992 from the American Geophysical Union for outstanding research contributions by a young scientist, and in February 2003, Carnegie Museum of Natural History honored him with the 2002 Mineralogical Medal for outstanding contributions in mineralogical preservation, conservation and education.

Wallace has served in a number of professional organizations, including being elected as vice president (1995) and president (1999-2000) of the Seismological Society of America. He was a founding member of the Incorporated Research Institutions in Seismology, an NSF funded consortium of more than 100 seismology-oriented organizations, and served as chairman of that organization from 1994 until 1996.

March service anniversaries

30 years
Kenny Brown, CCN-3
David Bustos, IM-9
Benjamin Gurule, CFO-SYSTEM
Nelson Hoffman, X-1
Jose Lopez, CCN-3
Alfred Lopez, DX-5
Johnnie Martinez, CER-30
David Platts, P-22
Susie Salazar, CER-20
Mike Salazar, MST-7
Manuelita Valdez, NMT-15
George Zakar, NMT-5

25 years
Helen Bustos, EES-2
Robert Carpenter, MST-6
Teresa Cremers, ISR-5
Alan Graham, ESA-MEE
Clyde Hayes, S-4
Alan Lapedes, T-13
Reuben Roybal, CCN-5
Lori Sanchez, C-AAC
Stanley Simmonds, HAZMAT
Victor Vargas, MST-6

20 years
Andrew Adams, NWIS-TP
Martha Austin, P-DO
James Barber, HSR-2
Sylvia Cassil, MSM-2
Steve Chipera, EES-6
Robert Davis, NMT-10
John Foster, IM-8
Michael Haertling, X-DO
Debra Huling, CFO-OAO
James Krone, ISR-3
Shirley Kwan, CFO-1
Gloria Martinez, CCN-18
Michael Pankratz, ESA-ESA
Marie Roybal, CFO-3
Shelly Serna, NMT-12
Hubert VanHecke, P-25

15 years
Angela Corriz, CFO-1
Stephen Doorn, C-ACS
Agnes Gallegos, ISR-5
John Sarrao, MST-10
Lawrence Walker, HSR-1

10 years
Jerry Brock, X-7
Charles Cureton, PM-IP
Robert Davenport, CCN-4
Holly Farley, CFO-1
David Foster, STB-EPO
James Groves, MST-STC
Lianjie Huang, EES-11
Patricia Hummer, IM-8
Lance Kloefkorn, NWIS-SWO
Kevin Leifheit, S-DO
Jaroslaw Majewski, LANSCE-12
Sylvia Martinez, PADNWP
Scotty Miller, ENV-DO
Richard Montoya, CCN-5
John Morris, ESA-TSE
Keith Olson, NMT-3
Deborah Rivera, EES-IGPP
Natalie Rivera, TT
Sabrah Rolfe, CCN-5
Daniel Weeks, X-2

5 years
Michael Di Rosa, C-PCS
Drew Geller, ESA-TSE
Jason Halladay, T-DO
Russell Olson, P-22
Adam Pacheco, DX-5
George Peters, PS-4
Bryan Pivovar, MST-11
Richard Stein, N-2
Mark Swoboda, NMT-15
Adelaida Valdez, MST-7
Cyndi Wells, N-3

This month in history …

March

1618 — Johannes Kepler postulates the Third Law of Planetary Motion.

1756 — St. Patrick's Day is celebrated in New York City for the first time (at the Crown and Thistle Tavern).

1802 — The United States Military Academy, West Point is established.

1862 — Confederate forces are defeated in the Battle of Glorieta Pass east of Santa Fe.

1872 — President Grant signs the bill creating the nation's first national park at Yellowstone.

1896 — Antoine-Henri Becquerel discovers radioactivity.

1915 — Pluto is photographed for the first time but is not recognized as a planet until 1930.

1916 — Gen. Francisco "Pancho" Villa invades the United States near Columbus, N.M.

1931 — The "Star-Spangled Banner" officially becomes the national anthem.

1936 — Hoover Dam, located on the Nevada-Arizona border, is completed.

1942 — Baseball great Joe DiMaggio agrees to a new contract with the New York Yankees and gets a $6,250 raise.

1943 — J. Robert Oppenheimer arrives in Santa Fe with select staff to begin setting up for work at the secret laboratory.

1947 — The New Mexico Legislature passes a bill giving Los Alamos residents the right to vote in state elections.

1954 — The first thermonuclear bomb containing solid fusion fuel is tested in the Bravo shot in the Pacific.

1967 — The last of the Western Area homes in Los Alamos are sold to private individuals.

1971 — The Andromeda Strain becomes first film to use computer animation.

1973 — The Atomic Energy Commission declassifies 166,910 documents in five weeks, in accordance with Executive Order 11652.

1980 — President Jimmy Carter announces a United States boycott of the 1980 Summer Olympics in Moscow to protest the Soviet invasion of Afghanistan.

1983 — President Reagan calls on U.S. scientists to develop technical alternatives to the arms race, leading to the Strategic Defense Initiative.

1995 — A paper is submitted to Physical Review Letters by Lab researchers who may have found indirect evidence that neutrinos have mass.

1998 — NASA announces that Lunar Prospector, which carried three Laboratory-developed instruments, has found water on the moon.

2000 — The National Nuclear Security Administration formally begins operations within the Department of Energy.

The information in this column comes from several sources including the online History Channel, the Newsbulletin and its predecessors, the atomic archive.com, Echo Vitural Center, Science & Technology, Real History Archives, and Carey Sublette, "Chronology for the Origin of Atomic Weapons" from www.childrenofthemanhattanproject.org/MP_Misc/atomic_timeline_1.htm.

Submissions are welcome. Please be sure to include your source.

A winning combination

Editor's note: The following article is a reprint from the February 2005 issue of R&D Magazine.

by Lorraine Joyce

He has written [more than] 100 articles for textbooks, journals and magazines. [More than] 100 [articles] have been written about him. What is it about [Wu-chun Feng]? Other than being intelligent and ahead of his time, he is also one really nice guy. First off, let's start with being ahead of his time: Wu, a team leader at Los Alamos National Laboratory (LANL), conducts research in highperformance networking and computing (HPNC), with a focus on building efficient systems for HPNC, from hardware architecture to systems and application software.

One of these, mpiBLAST: A High-Speed Software Catalyst for Genetic Research, employs a process known as in-memory database segmentation, in which a database is segmented so that each compute node only has to search a distinct portion of the entire database. Due to its unexpected success — it has been downloaded [more than] 10,000 times in the past two years — Wu and his team are now moving along two parallel tracks.

"First, we hope to continue to incrementally develop, maintain, and support mpiBLAST for the greater computational biology community," he says. "Second, based on our own critical evaluation of mpiBLAST, we are planning a major re-design, one that we expect will deliver a few more orders of magnitude of improvement. We also are looking into collaborations where mpiBLAST is being used as part of a longer pipe-line of programs."

On the high-performance networking front, Wu has been working on multiple aspects (hardware-software interfaces, end-host software algorithms, traffic characterization, and performance evaluation) in a number of environments (local-area, system-area, and wide-area network). His work with Intel on a 10-Gb Ethernet adapter — which can transfer information from one computer to another up to 23,000 times faster than a DSL connection — fits in all of the above contexts.

"My team and I are currently working with 10-Gb Ethernet vendors to figure out how to get information into and out of a compute node more efficiently, without significantly involving the main processor on the end-host computer, and while abiding by traditional Ethernet constraints, such as the maximum transmission unit size," said Feng.

Ultimately, his goal is to better enable distributed computational grids that provide consistent and pervasive access to resources to enable sharing of computational resources, utility and autonomic computing, collaboration among virtual organizations, and distributed data processing. In short, a worldwide computer. "Part of enabling these goals requires developing tools and facilities that will troubleshoot and monitor such grids, which is the focus of our MAGNET research project. MAGNET stands for Monitoring Apparatus for General kerNel-Event Tracing. This tool is used for both troubleshooting and enabling self-aware adaptive systems," he explained.

Despite the grand accomplishments of all of his projects, the main challenge has been that they required "too much effort" to accomplish. "The holy grail is for systems to be selfaware, self-adapting, and self-healing so that results can be automatically achieved," he says. Wu's laundry list of future technological advances he would like to see include eliminating the "digital divide" due to socioeconomics and age by improving the ease-of-use and high cost of the technologies.

He'd also like to see the seamless integration of technology and its environment, with tools like tablet PCs and networks for a virtual classroom, instead of blackboards. A desire to see quantum computers, 100 Mb/sec speeds to the home, and a worldwide digital library tops his list as well.

Wu-chun Feng, Advanced Computing Laboratory (CCS-1)

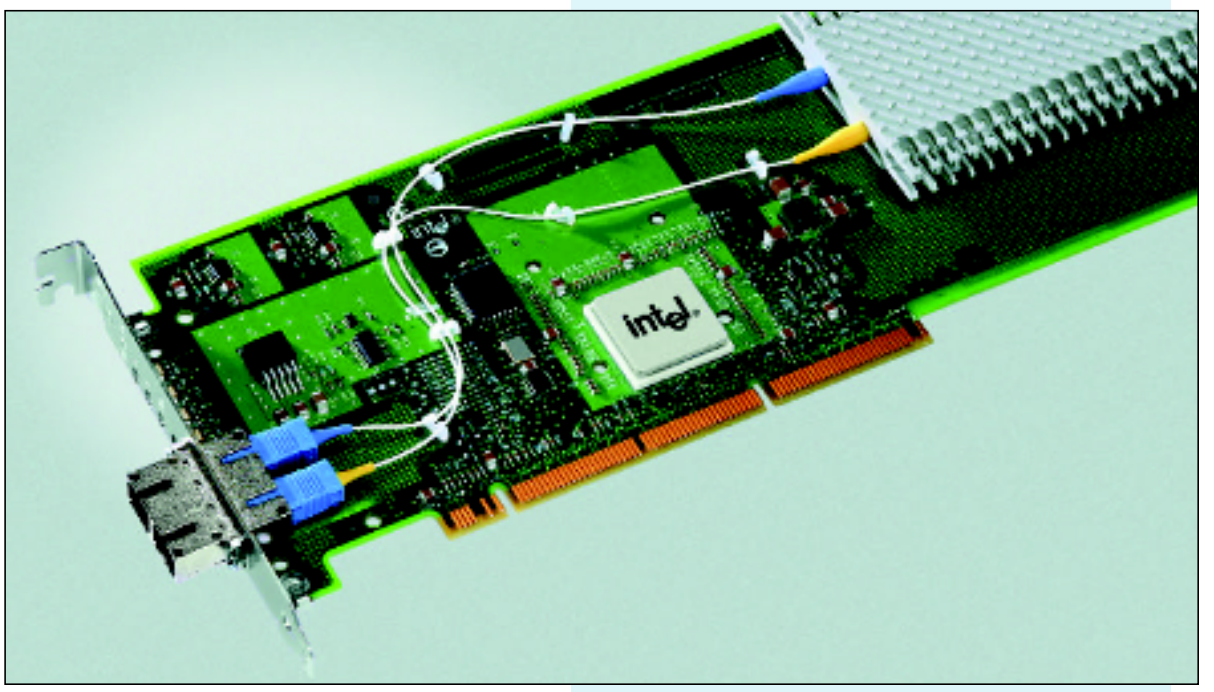
Bachelor's and master's degrees in computer engineering, Penn State University

Doctorate in computer science, University of Illinois at Urbana-Champaign

HPCwire's Top People and Organizations To Watch List

Three R&D 100 Awards

Innovative Supercomputer Architecture Award



Feng and his team at the Laboratory optimized Intel's 10-Gb Ethernet adapter and its associated subsystems, enhancing its performance nearly 300 percent.