



Discover LLNL

The Community Newsletter of Lawrence Livermore National Laboratory

Fall 2007

Lawrence Livermore National Security assumes management of LLNL

On October 1, Lawrence Livermore National Security, LLC (LLNS) assumed management of the Lawrence Livermore National Laboratory (LLNL). LLNS, a limited liability company, took over the reins from the University of California, which had managed the Laboratory for 55 years.

George Miller, Laboratory director and LLNS president, said the event “marks a new chapter in the long and proud history of our Laboratory.”

“For 55 years, this Laboratory has served the nation by ensuring and enhancing its safety and security. Through LLNS, we will continue to apply world-class science and technology with enhanced business and operational capabilities to answer the many challenges that lie ahead,” Miller said.

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in the long and
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our Laboratory.”**

— George Miller



LLNS was formed by entities renowned for their expertise and accomplishments throughout the DOE nuclear weapons complex and beyond. The LLNS team includes Bechtel National, the University of California, BWX Technologies, Washington Group International and Battelle.

Bechtel National is the largest project management contractor in the United States. The University of California is the world’s largest public research institution. BWX

Technologies and Washington Group International are the top two DOE nuclear facilities contractors and between them manage and operate four of DOE’s five safest sites. Battelle is a global leader in science and technology. The team also includes Texas A&M University, which provides an important academic alliance.

The Laboratory will continue to be known as the Lawrence Livermore National Laboratory, a national security facility operated for and funded by the U.S. Department of Energy.

Many of the management-related changes may not be noticeable to the community at large. With the transition, Miller emphasized that the Lab’s mission remains unchanged: to apply world-class science, technology and engineering to important national issues, including stockpile stewardship, global security, energy and environment and basic science.

LLNL scientists contributed to work behind Nobel Peace Prize

**“Many PCMDI scientists
have worked diligently
to improve our scientific
understanding of the
nature and cause of
climate change, and to
facilitate the distribution
of climate model data to
our entire community.”**

— Ben Santer, one of the Lab
contributors during a press interview

More than 40 Lawrence Livermore National Laboratory researchers were key scientific contributors to the reports of the Intergovernmental Panel on Climate Change (IPCC) which, along with former Vice President Al Gore, won the 2007 Nobel Peace Prize.

The Nobel Committee announced in October that the Nobel Peace Prize for 2007 is to be shared, in two equal parts, between the IPCC and Gore for their efforts to build and disseminate greater knowledge about manmade climate change and to lay the foundations for the measures that are needed to counteract such change.

The Lab’s Program for Climate Model Diagnosis and Intercomparison (PCMDI) has made major contributions to all four of the IPCC reports, from the First Assessment Report in 1990 to the Fourth Assessment Report in 2007.

By awarding the Nobel Peace Prize to the IPCC and Gore, the Nobel Committee is seeking to contribute to a sharper focus on the processes and decisions that appear to be necessary to protect the world’s future climate, and thereby to reduce the threat to the security of mankind.

Celebrating Community Leader Day in Livermore



Livermore's mayor Marshall Kamena (right) assisted Associate Director Ed Moses of LLNL in a demonstration about lasers.

More than 450 officials and representatives from throughout the Tri-Valley and San Joaquin county gathered at the newly opened Bankhead Theater in Livermore as the Livermore Laboratory hosted Community Leader Day on Oct. 4.

The event was an opportunity for members of neighboring government, education and business groups to meet the new Laboratory senior management team as well as hear about the Lab's plans for the upcoming year. It also was a chance to check out Livermore's new performing arts theater located in the heart of downtown, which celebrated its grand opening that same week.

"I am excited to be here to tell you about the new company that is managing the Laboratory," Lab Director George Miller told attendees.

Miller said that although Lawrence Livermore National Security, LLC (LLNS) has assumed management, the Lab's mission remains the same, with national security and protecting the future of the country and the world at the forefront. "These are exciting new times."

Ed Moses, principal associate director of the Lab's National Ignition Facility (NIF) and Photon Science, discussed the progress and success of NIF,



(From left) Len Alexander, executive director and CEO of the Livermore Valley Performing Arts Center, accepts a \$10,000 check presented by LLNL Director George Miller.

where the goal is to "make star power on Earth."

"The world is watching Livermore and NIF," he said, explaining the capabilities of the world's largest laser and the capacity to create a limitless supply of energy. "This is our dream. And it's happening here in the Livermore Valley," he said, introducing an alternative title for the Livermore Valley — "The Photon Valley."

At the conclusion of the presentation, Miller awarded a \$10,000 check to the Bankhead Theater, from the board of directors of LLNS — the first such corporate contribution to be presented by the company.

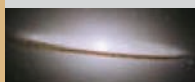
Mark your calendars. . . Science on Saturday is coming to Livermore

The Lawrence Livermore National Laboratory's Science on Saturday is a popular five-week series of free lectures and demonstrations targeted at middle- and high school students and teachers. Lab scientists partner with local teachers to provide each presentation. The program runs Feb. 9 through March 8.



Feb. 9: Geothermal Energy: Harnessing the Heat Beneath Your Feet

Presenters: John Ziagos, Carol Bruton; Teacher: Ken Wedel



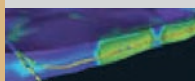
Feb. 16: Our Dark and Messy Universe: How One Particle Might Light the Way

Presenter: Steve Asztalos; Teacher: Tom Shefler



Feb. 23: From the Sun to the Sun: The Story on the NIF and Our Energy Future

Presenter: Edward Moses; Teacher: Dan Burns



March 1: Greenhouse Gas Reduction: Underground Storage of Carbon Dioxide

Presenter: Julio Friedmann; Teacher: Bret States



March 8: Protecting the Nation's Livestock: Corralling Foreign Diseases

Presenter: Pamela Hullinger; Teacher: Patti Carothers

The series will be held at a new location, the Bankhead Theater, located at 2400 First St. in Livermore. Two presentations are offered: 9:30 a.m. and 11:15 a.m. Seating is first-come, first-served. No pre-registration is necessary.

Contact Richard Farnsworth, Science and Technology Education Program via e-mail at farnsworth1@llnl.gov.

For directions, go to the Web at <http://education.llnl.gov/sos>.

Proton therapy machine for cancer treatment enters development

The first compact proton therapy system — one that would fit in any major cancer center and cost a fifth as much as a full-scale machine — is one step closer to reality, thanks to a technology transfer agreement announced earlier this year.

Proton therapy is considered the most advanced form of radiation therapy available, but size and cost have limited the technology's use to only six cancer centers nationwide.

The result of defense-related research, the compact accelerator is being developed by scientists at Lawrence Livermore National Laboratory in a project jointly funded by the Laboratory and UC Davis Cancer Center. In the new technology transfer pact, Lawrence Livermore National Laboratory has licensed the technology to TomoTherapy Incorporated of Madison, Wisconsin.

TomoTherapy will fund development of the first clinical prototype, which will be tested on patients at UC Davis Cancer Center. If clinical testing is successful, TomoTherapy will bring the machines to market.

"We are excited about applying this new technology to the field of cancer treatment, to make proton therapy widely available as a treatment option," said George Caporaso, the lead scientist on the project at Lawrence Livermore.

Conventional radiation therapy kills cancer cells using high-energy X-rays. These X-rays deliver energy to all the tissues they travel through, from the point they enter the body, until they leave it. Doctors, therefore, have to limit the dose delivered to the tumor to minimize damage to surrounding healthy tissue.

Unlike high-energy X-rays, proton beams deposit almost all of their energy on their target, with a low amount of radiation deposited in tissues from the surface of the skin to the front of the tumor, and almost no "exit dose" beyond the tumor. This capability enables doctors to hit tumors with higher, potentially more effective radiation doses than is possible with gamma radiation.

Worldwide, there are 25 proton therapy centers in operation. Together, they have treated an estimated 40,000 patients.

The compact accelerator will be mounted on a frame that rotates about the patient. The compact system is expected to fit in standard radiation treatment suites and to cost about one-fifth as much as today's current proton therapy systems.



Inder Daftari, a medical physicist at UC San Francisco, shows how a patient with melanoma of the eye would receive proton beam therapy at the Crocker Nuclear Laboratory at UC Davis.

Science teachers attend Laboratory's science symposium

Science teachers from the Tri-Valley and the Bay Area, as well as aspiring teachers from the California State University (CSU) system, spent a Saturday in November at LLNL for presentations, tours and workshops at the eighth annual Edward Teller Science and Technology Education Symposium.

The one-day event provided teachers with science resources relating to the Lab's research areas to keep their classroom science instruction current. In addition, CSU students were invited to learn more about teaching in their particular disciplines.

Later, participants attended hands-on workshops in their content area of interest conducted by Lab scientists in partnership with master teachers. They received materials, including CDs, hard copies and posters, they can use in their classrooms.



Participants of the Edward Teller Science and Technology Education Symposium toured the National Ignition Facility and learned about the world's largest laser.

Take a tour



Touring the Center for Accelerator Mass Spectrometry.

Tours of Lawrence Livermore National Laboratory's main site offer visitors a view into some of its exciting state-of-the-art research programs and facilities. Tour stops may include:

National Ignition Facility, the world's largest and most energetic laser

National Atmospheric Release Advisory Center, used for a national and international emergency response

Center for Accelerator Mass Spectrometry, renowned for its carbon dating capabilities

Main site tours start and conclude at the Laboratory's Discovery Center off Greenville Road in Livermore. They are conducted on alternating Tuesdays and Thursdays at 9 a.m. and last 2-1/2 hours, excluding holidays. To sign up for a tour, go to the Web at https://www.llnl.gov/pao/community_tour_request.html or call Community & External Relations with your tour request at (925) 422-4599.

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