LabUPDATE

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News about the Berkeley, Livermore and Los Alamos national laboratories,
which are managed by the University of California for the U.S. Department of Energy

RESEARCH AND PUBLIC SERVICE NEWS

SIMULATING EPIDEMICS: Los Alamos scientists are using a computer model called EpiSims to study how epidemics start, spread and can be countered. A 2002 study of a hypothetical smallpox epidemic in Portland, Ore., for the U.S. Department of Homeland Security showed how vaccination programs and restricting population movement at different stages of the disease affected the outcome of the epidemic. An outgrowth of Los Alamos transportation and air quality models, EpiSims will be used in a further study to apply lessons learned in Portland to a hypothetical smallpox epidemic in Chicago.

ENERGY DEMAND CONTROL TEST: The first successful test of a system that can automatically reduce energy consumption in large buildings when electricity gets too expensive was announced by Lawrence Berkeley National Lab researchers. With no human intervention, five buildings began reducing use of lights and air conditioning when a fictitious electrical price of 30 cents per hour was broadcast over the internet as part of the test. Further demand reduction steps took place at higher prices. The automated energy management system can also be triggered by grid overloads and by blackouts, according to principal investigator Mary Ann Piette of Berkeley Lab.

NEW ELEMENTS CREATED: Livermore lab scientists collaborating with Russian colleagues created superheavy elements 113 and 115. Four atoms of each previously unseen element were produced by bombarding americium-243 with calcium-48 using an accelerator in Dubna, the Russian research center.

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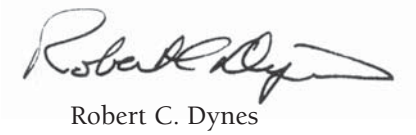
Message from the president

As we move farther into 2004, details of contract competition for the national laboratories are starting to emerge. The University of California and the Department of Energy last month agreed to extend UC management of the Lawrence Berkeley National Laboratory by one year, through January 31, 2005. In addition, DOE has announced its intention to compete the Los Alamos National Laboratory contract in time for its expiration on September 30, 2005. However, key unknowns remain. DOE has not yet decided on a competition schedule for Lawrence Livermore National Laboratory, whose contract expires on the same day as the Los Alamos contract. The terms and conditions of the competitions have not been announced for any of the contracts, although we expect to learn more this summer and fall as DOE goes through its process of seeking and evaluating proposals.

The University of California Board of Regents will not decide whether to compete until these terms and conditions are clear, but in the meantime we are moving ahead vigorously as if we will compete. We have a powerful incentive to do so. The University has a long and proud tradition as manager of Lawrence Berkeley, Los Alamos and Lawrence Livermore National Laboratories – laboratories that have helped define excellence in science, particularly large-scale science. The laboratories have responded many times to national needs, perhaps never more impressively than in the area of homeland security in recent years. Their rapid, multifaceted response to this national need was made possible by the tremendous human and technical resources that had been built up through many years of world-class research across a wide range of science and technology. The labs' major contributions continue today, as the government calls on the labs not only to strengthen homeland security but to help address issues in the areas of energy, environmental cleanup, biology, medicine and climate.

As the University prepares for possible contract competition, we must also continue to carry out this larger job of providing outstanding science for our country. The nation needs the valuable work of the laboratories, and we at the University of California continue to take great pride in the standard of excellence these institutions maintain, every day.



Robert C. Dynes
President, University of California

MANAGEMENT NEWS

Shank to Step Down as Berkeley Lab Director

Lawrence Berkeley National Laboratory Director Charles V. Shank announced his intention to step down by the end of 2004. A renowned scientist in his own right, Shank oversaw 15 years of scientific growth and achievement as the Laboratory expanded programs in astrophysics, computing, genomics and nanoscience. Shank will return to the Berkeley campus as a tenured professor.

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Livermore provided americium for the target. Energy Secretary Spencer Abraham called the achievement a demonstration of the value of "unfettered international scientific collaboration."

REACTOR DESIGN FOR JUPITER TRIP: Los Alamos researchers are playing a key role in designing a nuclear reactor to power a U.S. scientific mission proposed to be launched early in the next decade to visit three moons of Jupiter. The high-temperature reactor will have to operate reliably in the harsh environment of space for more than a decade, driving an ion propulsion system as well as powering science and communication systems. The design effort is driven by a very rapid schedule, including realistic non-nuclear testing within two years, according to David Poston, lead researcher.

MELTING POINT OF IRON: Livermore lab scientists found the melting point of iron at the Earth's core in a high pressure experiment that will help determine other key features such as temperatures at core boundaries and the crystal structure of the solid inner core. The experiment, carried out with the Lab's two-stage gas gun, found that iron melts at about 8,720 degrees Farenheit under Earth-core conditions of 32 million pounds per square inch. The results of the research were published in Nature magazine.

AIRCRAFT TURBINES IMPROVED: A laser peening system using Lawrence Livermore lab technology applied by Metal Improvement Co. of Paramus, N.J., is helping create longer-lived aircraft turbine parts. The laser system shock-compresses the surface of metal parts more effectively than do conventional methods, reducing stress and corrosion damage. The technology has produced savings of hundreds of millions of dollars and further applications may lead to improvements in other aircraft components, said lead Livermore research Lloyd Hackel.

BATTERY MATERIALS: Researchers in Berkeley Lab's Environmental Energy Technologies Division have developed an experimental facility to help the international effort to create reliable, battery-powered or hybrid cars. The goal is to take new battery materials from around the world and build them into test cells to be compared under realistic and standardized conditions, according to scientist Kathryn Striebel. The testing shows not only whether but why materials fail or degrade. Rigorous testing standards are established by the U.S. Department of Energy, with lithium-ion-based cells currently showing promise for meeting the standards.

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Lawrence Berkeley National Laboratory: www.lbl.gov
Lawrence Livermore National Laboratory: www.llnl.gov
Los Alamos National Laboratory: www.lanl.gov

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Commenting on the announcement, UC President Robert C. Dynes praised Shank for making "a major contribution to the cause of scientific advancement in this country" and predicted he will "play an important role in the competitive process" should UC Regents decide that the University will compete for contracts to continue operating the national laboratories. U.S. Energy Secretary Spencer Abraham also praised Shank's "scientific and managerial leadership at the highest standard of excellence."

National Academy Panel Challenge for Los Alamos

Outstanding science will remain the preeminent challenge at Los Alamos, regardless of who manages the contract, according to a panel of the National Academy of Sciences. "Whoever wins [a contract competition], the laboratory must be top notch," said Steve Henry, deputy assistant secretary of defense. "Over the last 10 years, going on 12 now, we have not conducted a nuclear weapons test, yet we're asking the laboratory to certify the stockpile and at some point in time maybe develop a nuclear weapon with a reliability of (100 percent) and never be able to test it." The Academy panel will meet at Los Alamos on March 2, including a public session.

One-Year Extension for Berkeley Lab

The University of California signed a one-year contract extension, through Jan. 31, 2005, to continue managing the Lawrence Berkeley National Laboratory on behalf of the U.S. Department of Energy. Recent Congressional action mandated competition for five DOE national laboratory contracts, including the three laboratories managed by UC. The University is waiting to learn more about terms and conditions of the competition before deciding whether to compete.

Community Sequencing Program at JGI

The Department of Energy's Joint Genome Institute, whose scientific resources come mainly from the Livermore, Los Alamos and Berkeley laboratories, has launched a Community Sequencing Program to broaden the range of disciplines that can benefit from genomics. Nontraditional communities of interest include geology, oceanography and ecology. Proposals will be reviewed competitively, as with any user facility. Located in Walnut Creek, the Institute has sequenced the DNA of human chromosomes and of non-human genomes, and has helped develop improved methods of analyzing gene sequences.