

**Continued University of California Management  
of Department of Energy Laboratories  
November 14, 2000**

**Issue**

The University is approaching a decision as to whether to extend the existing contracts with the Department of Energy (DOE) for managing the Lawrence Livermore National Laboratory and the Los Alamos National Laboratory. The UC has managed these two laboratories and the Lawrence Berkeley National Laboratory since their inception. The contracts for these three have normally been reexamined every five years, and the UC faculty have been consulted regarding possible continuation of the contracts early in the 18-month negotiation period prior to the end of the 5-year term. Under this schedule, the faculty consultation would have occurred during the first half of this coming calendar year in anticipation of the September 30, 2002 end of the 5-year contract term.

On October 17, DOE announced that it planned to enter into negotiations with the UC to extend the contracts for Livermore and Los Alamos to September 30, 2005. DOE wants these negotiations to be limited to a small number of issues, to start on November 20, and to be completed by December 19. While this situation is unusual, it is consistent with a special feature of the 1997 contract which gave the DOE the option to extend the contract to as long as September 30, 2007 at its election. The attached Regents item describes the background and the issues associated with the DOE's intention to extend. This schedule provides only a very short time for faculty consultation, but the anticipated modifications to the existing contract are small in number and are not expected to change research or personnel management.

The reason DOE is acting to extend the contract at this time rather than in 2002 is that DOE wants UC to accept some changes in the existing contract immediately, and realizes that it is unreasonable for the UC to implement these changes if there is less than two years left in the contract. In addition, recent events have hurt morale at the Los Alamos and Livermore laboratories, which could impede their ability to continue to retain and attract outstanding researchers. Since continued UC management is important to morale, both the DOE and UC realize the value in stabilizing the relationship now rather than following the usual schedule.

**Purpose of This Paper**

This paper provides some background information for those not familiar with these Laboratories and University's management relationship to them and the DOE

**Brief History of the Laboratories**

What is now the DOE laboratory system had its beginnings in the UC Berkeley Physics Department. For several years before the outbreak of World War II, the government funded increasingly larger cyclotron accelerators at the Physics Department's UC Radiation Laboratory (UCRL), headed by Professor Ernest O. Lawrence. Historians have noted this development as the beginning of "big science." Research enabled by these facilities drew outstanding faculty and students and made UC Berkeley a center for nuclear science.

President Roosevelt decided to proceed with the development of an atomic weapon, at the urging of Einstein and others. In 1942, J. Robert Oppenheimer, professor of physics at UC Berkeley, was asked to head the team to design such a weapon. He selected the site at Los Alamos, New

Mexico, to carry out the development. As a public service, the UC agreed to hire the employees and procure the supplies. Success in this Manhattan Project was urgently needed, and Oppenheimer was able to pull together the best scientific minds from a broad range of disciplines. General Groves was the leader for the government, and was responsible for the infrastructure, including buildings, roads, and security. In 1943, the arrangement was formalized with the signing of two management contracts, one for Los Alamos and the other to replace the earlier funding arrangement for the UCRL at Berkeley. This concept of a partnership between University and Government grew out of the experience at UCRL and was key to the success of the Manhattan Project.

After the War, at the University's request, the weapons engineering function was separated from Los Alamos and the Sandia Laboratory in Albuquerque, NM, was formed. Western Electric became the contractor for Sandia in 1949. Los Alamos retained the responsibility for designing the nuclear explosive. In 1952, the Atomic Energy Commission (AEC)<sup>1</sup> formed a second "design" laboratory by creating a branch of the UCRL at Livermore, California. Most of its staff were drawn from the UCRL-Berkeley. In 1971, the Regents separated the administrative ties between the two branches, forming separate laboratories both named after Professor Lawrence. The UC continues to manage the Lawrence Berkeley, Lawrence Livermore, and Los Alamos national laboratories.

### **Overview of Livermore and Los Alamos Laboratories**

Following the end of the cold war, the main mission of the two laboratories shifted from maintaining the stockpile and upgrading it by designing new weapons to that of stewardship of those weapons that remain in the reduced stockpile. The task of ensuring that these weapons remain reliable and safe (from nuclear detonation under severe accident conditions) without the benefit of nuclear testing is much more scientifically demanding than the task of designing those weapons. This is particularly true as the weapons remain in the stockpile for times that exceed previous experience. This challenge requires major advances in computers, in scientific understanding over a broad range of disciplines, and in experimental facilities and techniques.

Because of this demanding mission, these laboratories must continue to retain and recruit outstanding research talent. For them to remain at the cutting edge of a wide range of disciplines, they must be actively engaged in research and publication in the open environment. The connection with academia is essential. Over half of the publications from these two Labs are in collaboration with faculty from various universities, and over 350 papers per year are coauthored with UC faculty. Unique research facilities and multidisciplinary team environments provide important educational experiences for hundreds of graduate students per year. Facilities such as the Center for Accelerator Mass Spectrometry at Livermore, and the LANSCE neutron scattering facility at Los Alamos provide unique research capabilities for biology, human nutrition, materials science, chemistry, and nuclear physics. These Laboratories also have the most powerful computer systems in the world, and are in the process of building larger ones. The computational capabilities contribute to advances in many areas of research. Even though about 80% of the funding for these two Labs comes from national security sources, over half the research is unclassified and can be published.

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<sup>1</sup> The AEC was established on January 1, 1947. In the 1970s the AEC was absorbed into the Energy Research and Development Administration, and subsequently into the Department of Energy. In March 2000, the National Nuclear Security Agency was formed as a "semi-autonomous" agency within the DOE, with responsibility for the weapons complex, including Los Alamos and Livermore.

The capabilities required for their main mission allow these two laboratories, each with over 7000 UC employees, to address other problems of national importance. For example, following the initial push by Los Alamos, the three UC-managed Labs and the DOE initiated the human genome sequencing program, which then grew into a world-wide effort. The three Labs' joint effort succeeded in completing the sequence of their assigned chromosomes ahead of the other international participants. Large computer systems have facilitated the development of outstanding global ocean and atmospheric models that can be used for global climate studies. Computational expertise has also enabled important contributions to urban transportation planning, oil recovery, national infrastructure studies, and more accurate methods for delivering radiation treatment to tumors (Livermore's Peregrine program just commercialized). The combined capabilities of theory, computation, and experimental facilities have resulted in these and many other research programs that are vital elements of the Laboratories.

The two Labs also develop techniques to rapidly detect and protect against biological and chemical agents that might be used in terrorist attacks. They have developed and deployed systems to detect and help deter proliferation of nuclear weapons. Since the collapse of the Soviet Union, the Labs help the Russians keep their weapons and nuclear materials out of the hands of those who would be more likely to use them. Recent tests of special techniques developed at these labs should allow the US and Russia to ensure that each other's nuclear weapons are being disassembled while not revealing classified information. Such advances enable verifiable arms reduction. In short, the Livermore and Los Alamos laboratories are dedicated to reducing the global danger from weapons of mass destruction while providing technical advances that enhance the health and economic strength of this nation.

### **Motivation for UC to Manage the Laboratories**

From the UC perspective, it has always managed these laboratories as a public service. The University recognizes that it has unique capabilities and offers them to the government on a no-gain, no-loss basis. The management costs to the UC are fully and properly reimbursed, including \$11M for the indirect budget of the University. It is true that some funds are expended to enhance collaborations between the labs and the UC campuses, but these are viewed as mutually beneficial to the DOE, the University, and the laboratories. Collaborations with the campuses are also made easier because of the common management. The UC works aggressively to enhance the number and the effectiveness of collaborations, and works to further reduce the administrative barriers for such interactions. These collaborations provide important opportunities for access to unique research facilities at the Laboratories and multidisciplinary team environments for research that are valuable for UC faculty and students. However, the value of these associations is not so great as to make the UC dependent on them. The size of the University, with its ten campuses and five teaching hospitals, allows it to manage these large laboratories as a public service and benefit from the association without losing its independence or integrity.

### **Value that UC Provides the Government**

From the beginning, the government has recognized the unique qualities and capabilities that UC brings to this important task.

The ability to attract and retain outstanding researchers has always been key. The UC is very engaged in fostering and evaluating the quality of the people and the work at these laboratories. The collaborations with UC faculty enhance the technical expertise that can be applied to programs important to the government.

The University has always been viewed as an asset by those who appreciate the importance of integrity and independence in managing laboratories. The Atomic Energy Act (1946) placed nuclear weapons research under civilian control to provide a form of checks and balances in this critical area. The University's public entity status further strengthens the checks and balances by being fully accountable to the taxpayers of California. Moreover, the tradition of open academic debate and the principle of shared governance at UC mitigate against the development of a closed culture that can easily develop where secrecy is required. These features also help ensure that the laboratories will provide candid scientific opinion to the nation's policy makers, even when the technical information may not be supportive of policies of an agency or administration.

Once a year, the Directors of the two design laboratories have to sign a letter stating whether or not the stockpile is reliable and safe. These Directors have expressed the importance of the independence and stature of UC at such times.

### **UC Management Approach**

The Directors of the three Laboratories are selected by the University, are officers of the UC Regents, and report to the President of the University, similar to Chancellors of the campuses. While this organizational structure has remained the same, over the years the UC has become more involved in the management of the Laboratories, particularly since the 1992 contract was signed. Just prior to that, the UC President's Council on the National Laboratories was formed to advise the President on all aspects of managing the Labs. This Council and its panels have been a key element in strengthening UC oversight.

At the present time, the responsibility for management is divided in two parts at the level just below the UC President. The Provost and Senior Vice President for Academic Affairs is responsible for oversight of the scientific and programmatic work. The Senior Vice President for Business and Finance is responsible for the administrative and operations management.

On a day-to-day basis, the administrative and operations management is carried out by the Assistant Vice President for Laboratory Administration and his team of about 30 people. Similarly the scientific and programmatic work is the day-to-day responsibility of the Associate Vice Provost for Research and Laboratory Programs. His team is much smaller but is augmented by the peer review process overseen by the President's Council and its Science and Technology Panel.

This Panel assigns points of contact that participate with each of the 35 external peer review committees. These committees evaluate essentially all the technical work at the Laboratories, including that which is classified. The Panel and the Council advise the Directors and the University on the technical leadership and work, and on the quality of the peer review committees.

The UC faculty play an important role in this management and peer review process. The Vice Chair, Chair, and past Chair of the Academic Council are members of the President's Council, as is either the Vice Chair or Chair of the University Committee on Research Policy. In addition to these four, an additional 5 UC faculty serve on the 23 member Council. Also UC faculty are members of all of the panels including the S&T Panel, and most of the 35 peer review committees have at least one UC faculty member. In this way, the UC faculty have direct knowledge of the range and quality of the work, the quality of the technical staff, and have the opportunity to

recommend improvements. This advice is taken seriously by the UC and Laboratory managements.

### **Recent Challenges**

Recent issues in the areas of security and project management have resulted in immediate action by the University. UC reviews resulted in recommended changes which have been implemented. These include adding expert panels<sup>2</sup> to the Council, hiring additional expertise into the Office of the President, and making changes in management and operational procedures at the Laboratories. A key element has been working toward more effective interactions with the DOE. These recent actions build on the methods that have proven effect in resolving past issues in safety and in various operations such as procurement and property management.

In addition, the DOE has requested that some of the changes recommended by UC be added to the existing contract. More information about these changes and issues that will be part of the negotiations to extend the contract are described in the Regents Item for their November meeting (attached).

In spite of intense criticism and occasional pressure from the outside, the UC has maintained its integrity and has followed its personnel policies in dealing with these recent highly visible issues. Even now, some would like the government to have the authority to fire the directors and certain other high level managers in the laboratories. Those individuals do not understand the negative impact on national security that would result from such an assault on the independence the contractor from political pressure. The University rejects any such change and reaffirms the values established in the partnership between the University and the Government when these Laboratories were first conceived.

### **Conclusions**

The decision by the DOE to extend the contracts for managing Livermore and Los Alamos is a vote of confidence in the unique capabilities that the University continues to bring to this partnership. Recognizing that the time period is short, the negotiations are expected to be limited to matters collateral to the extension decision, and do not involve changes to research and personnel management, or most other aspects of the contract. While this background document provides basic information to those not familiar with the Laboratories, other documents deal with more detailed concerns often raised by faculty.

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<sup>2</sup> The Council now has five panels: the Laboratory Security and the Project Management panels have been added to the Environmental, Safety, and Health, Science and Technology, and the National Security panels.