

state & society

DOE studies university management of nuclear weapons labs

In 1982 the contract between the Department of Energy and the University of California for the management of the two national nuclear-weapons laboratories—Los Alamos Scientific Laboratory and Lawrence Livermore Laboratory—expires. According to the rules of the contract, two years' notice is required if the University chooses to sever the contract, and, historically, the process of negotiating a new contract has also taken about two years. Thus, in the next year, the DOE and the University will each have to make a decision as to whether they want to continue the present arrangement.

ERAB committee. In preparation for this decision each side has examined the situation at some length. Last winter Secretary of Energy James Schlesinger commissioned a study by the Energy Research Advisory Board on the relationship between the University and the laboratories. That study, carried out by a study group that included physicists Solomon Buchsbaum (Bell Labs), chairman, Harold Agnew (General Atomic), Michael May (Livermore) and Gerald Tape (Associated Universities), was recently sent to Schlesinger. The study group recommended that the University of California continue to operate the Los Alamos and Livermore laboratories for DOE. "There is," the group noted, "such a reservoir of good will within the University towards the laboratories and within the laboratories towards the University that the ex-

isting shortcomings, we believe, can be rectified." However, as a precaution, DOE should prepare an alternate arrangement for the operation of the weapons laboratories, recognizing the growing pressures to terminate the relationship.

After interviewing over 100 representatives of government, the University and the two labs, the study group concluded that "the past arrangements between the University and the laboratories have served the nation and the laboratories well. We do note some faltering in this relationship in the most recent past stemming primarily from inadequate attention being paid by the University to certain needs of the laboratories." An example of this given in the report is the selection by the University Regents of a new director of Los Alamos. Harold Agnew informed the Regents of his resignation from that post last fall. However, the position was not filled until the end of May, when Donald M. Kerr Jr was appointed to the post. "Greater familiarity by the Regents with the broad requirements of the job of director and with the senior leaders at the laboratories would enable the Regents to discharge their key responsibilities more efficiently. When a vacancy in a directorship occurs, a search for a new director should not start *de novo* with only a peripheral Regental involvement."

Other issues over which "there is within the laboratories unease and dissatisfac-

tion" are salary scales and labor and procurement policies.

Alternative contractual arrangements considered by the study group were management by another university or consortium of universities, an existing industrial or other corporation, existing nonprofit corporations and a new nonprofit corporation. The group suggested that the last alternative receive primary consideration. Such a new, independent nonprofit corporation should, according to the group, have a Board of Trustees "chosen specifically for the purpose of administering the Los Alamos and Livermore laboratories."

The old AEC and its successors have encouraged scientific competition between the two weapons labs. The Buchsbaum committee recommended that a "single management for both laboratories be retained in order to keep the desirable competition between the laboratories to the technical level only and not allow it to extend to areas of salary, personnel administration, perquisites, corporate lobbying, etc."

The version of the report sent by ERAB to the Secretary was not significantly different from the version submitted to the Board by the study group, with the exception of a statement of reservations, signed by six (including physicists Margaret Kivelson, John Gibbons, John Holdren and Thomas Cochran) of the 26 members of ERAB. The six divided their reservations into two general areas:

LOS ALAMOS



LIVERMORE



issues of process and issues of substance. They complained first of the "degree of commonality of background among the group's members," a shortcoming which would have been compensated for under normal circumstances by the diversity of the full Board. The problem was compounded, however, by the fact that the Board had very little opportunity to meet with and direct the study group before or during the study. The six also objected to the lack of public input on the report. The issues of substance raised in the statement of reservations were that the study group defined their charge too narrowly and that the report "understated and oversimplified the opposition within the University of California to continuation of U.C. management of the weapons labs."

University sentiment. Concerning the attitude within the University, the Buchsbaum report said, "Nearly all of the Regents we talked with as well as the president of the University and his administration have come out for the continuation of the University's role of operating the laboratories as a public service," although it also admits that "among the faculty and students, there is some opposition to continued nuclear weapons R&D in any form, especially if it is managed by the University."

Two years ago the University conducted a study (headed by William Gerberding, then executive vice chancellor of UCLA) which concluded that, although the relationship between the University and the labs is not an improper one, that relationship should not continue without certain changes being made—specifically, the establishment of a board of overseers, made up of regents, faculty members and nonuniversity appointees. That board would have had full security clearance and would have reported directly to the Regents. That recommendation was not implemented. More recently, William Fretter, UC vice president, proposed an alternative advisory board to the University president that would not have full clearance. That board also never materialized, but a stronger version of an oversight committee is now under consideration, according to Fretter.

The issue of University management of the weapons labs has become politicized beyond the confines of the University community. At a May meeting of the Regents, California Governor Edmund G. Brown Jr introduced a motion calling for divestment of the Los Alamos facility and to "further seek the retention of the Livermore Laboratory within the University community for nonweapons purposes." The Regents chose to table the motion until their meeting this month. Brown's involvement with this issue has brought severe criticism from DOE. John Deutch (formerly head of the Office of Energy Research), recently chosen by the President as Undersecretary of Energy (subject

to Congressional approval), told PHYSICS TODAY that he is "very worried" about Brown's proposal to the Regents. "The entire forward motion that has its direction as a result of the Buchsbaum report has been endangered" by the proposal, he said.

Although it is not within the power of the University to "reprogram" one or both of the weapons laboratories, the University may choose to sever ties with the

laboratories unless it is given more control over the research done at the labs. At the present time about half of the research performed at the two labs is in non-weapons areas. Duane Sewell, Assistant Secretary for Defense Programs at DOE, said that his office would encourage both labs to accept more nonweapons programs, although the primary function of the labs will remain the conduct of weapons research. —MEJ

Two reports on radiation risks

The risks associated with nuclear reactors and the effects of low-level radiation are two topics of continuing concern. Recently, the National Academy of Sciences released the summary of a literature review, *Risks Associated with Nuclear Power*, which details the risks incurred at each stage of the nuclear fuel cycle. *The Effects on Populations of Exposure to Low Levels of Ionizing Radiations*, a second NAS report, updates a 1972 report of the National Research Council Committee on the Biological Effects of Ionizing Radiations.

Risks was produced by a committee headed by Robert F. Christy (Caltech) between 1975 and 1976 and by Conyers Herring (Stanford University), since 1976.

Although the Herring report was written prior to the Three Mile Island accident, the conclusions of the report are still valid, according to Herring. "When the Three Mile Island accident has been completely analyzed, maybe we can make better estimates of the probabilities of such an accident occurring," he told PHYSICS TODAY. Changing the experimental premise from "no accidents in 200 reactor years" to "one accident in 300 reactor years" does not significantly affect the order-of-magnitude calculations of rough experimental bounds for overall accident risks worked out in the report, Herring added.

The major points made in the report are:

- ▶ The radiation dose to which the public is exposed during the normal operation of the nuclear fuel cycle will result in health effects that are "modest" compared to coal and other energy sources.

- ▶ While it is advisable to select sites for nuclear waste-disposal facilities that will minimize the likelihood of escape, "it is not necessary to strive for absolute assurance against escape," because even if high-level wastes are leached into groundwater, the time-integrated exposures would not exceed current doses from normal operation of the fuel cycle.

- ▶ The numerical estimates of risks of a major accident in a light-water nuclear power reactor involve a large range of uncertainty.

- ▶ The risks associated with nuclear proliferation, terrorism and sabotage "cannot be quantified by technological analysis alone."

- ▶ There is considerable difference of opinion among experts concerning the hazard posed by radioactive radon gas released by ore tailings left when uranium is mined. While the danger to any one human generation is small, the integrated radiation dose to all future generations from ore tailings that are simply abandoned could conceivably be significant.

- ▶ It is not yet clear whether one may legitimately extrapolate a straight line from the effects observed at high levels back towards natural background radiation to estimate the human response to a low dose of radiation. "Most students of this field believe that the rate of induction is either equal to or less than that estimated by linear extrapolation."

This method of linear extrapolation was the technique used by the BEIR group, headed by Edward P. Radford of the University of Pittsburgh School of Public Health, to arrive at their conclusions. In estimating the genetic effects of low levels of ionizing radiation, the BEIR committee predicted by linear extrapolation from animal data that one rem of human parental exposure in the general population would result in an increase of 5 to 75 serious genetic disorders per million live births in the first generation. (The natural incidence of genetic disorders is approximately 107 000 per million live births.) Natural background exposure constitutes approximately 0.1 rem per year. "These conclusions . . . have been strengthened by new methods and data obtained since the 1972 BEIR report," according to a summary of the current effort, "but the resulting risk estimates are nearly the same as those presented in that report."

For effects on human development, the report was less definitive. In considering development of malformations in children resulting from low-level exposure, the committee pointed out that such adverse effects depended strongly upon the stage at which the embryo or fetus was exposed and whether the exposure was single or

continued on page 80