

DOE panel praises national labs but faults DOE management

What is the appropriate role for the national laboratories? This question is currently being addressed on many levels by the present Administration. One study recently completed by a Multiprogram Laboratory Panel of the Energy Research Advisory Board may provide a basis for part of the answer.

At the request of Deputy Secretary W. Kenneth Davis, the panel undertook a year-long evaluation of the nine multiprogram laboratories run by the Department of Energy. The panel, led by Ivan Bennett (dean and provost, N.Y.U. Medical Center), called for "a broader laboratory role in innovation and productivity in the national economic interest," while recommending that the laboratories maintain their "national-trust" missions for fundamental research in the physical sciences, including high-energy and nuclear physics, and the radiobiological sciences, including nuclear medicine." The panel said that because uncertain budgets and DOE management inefficiencies were major impediments to the effective use of the laboratories, Congress should safeguard the labs against budget variability and that laboratory directors should participate in setting DOE policies for R&D and be given greater flexibility in their use of Federal funds.

Core areas of excellence for each multipurpose laboratory were identified



Energy Research Advisory Board, under whose auspices the national-lab panel did its study, consisted of (from left) Thomas Kuehn, Victoria Tschinkel, Ivan Bennett (panel chairman), William Lee, James Edwards, William McCormick, Grant Thompson, John Simpson, Louis Roddis Jr (ERAB chairman), Dayton Clewell, David Pimentel, W. Kenneth Davis, Norman Hackerman, Martin Elliott, Hans Landsberg, Floyd Culler, Eric Reichl, Thomas Cochran.

► Pacific Northwest—Waste Management

► Sandia—Defense

Major findings. The Multiprogram Laboratory Panel of ERAB defined appropriate roles for the labs, identified their scientific and technological capabilities, evaluated DOE policies in regard to them and assessed how effective these policies were at insuring optimal use of the labs. They then made recommendations based on their findings. In considering appropriate roles for the multiprogram national laboratory complex the panel noted that the quality of the work done by the labs was not in question and, in fact, they found the accomplishments of the labs impressive. The tasks that were most appropriate for the labs to undertake, however, were in question, especially in view of continuing budget constraints, the availability of other facilities and current national priorities.

The panel considered both what facilities were available for R&D at the labs and who would be the best performer of the R&D programs supported. They recommended that DOE labs maintain their traditional roles both as a performer of research and as a steward of national facilities to support research in the "national trust" missions in the physical sciences and the radiobiological sciences.

They also recommended that the labs perform research in the health, safety and environmental aspects of energy technologies, and generic energy R&D in areas of concern to the public or where "industry does not choose to support it." The panel asked, however, that this research be conducted in closer cooperation with end-users of the technologies, that industrial users have greater access to the facilities, and that DOE select "the best available performers" of the research.

Inadequacies. The panel identified several organizational and management inadequacies within DOE that "may in themselves be the most significant impediment to optimal utilization of the scientific and technological capabilities of the laboratories."

Noting that lab directors have little control over the R&D activities of their own labs, the panel saw this situation as one indication of DOE policies acting as an impediment to the labs' operations. As a further indication, they cited the fractionation of managerial responsibility at DOE, requiring lab staff to interact at numerous levels to determine lab policies and directions. The panel described this approach to the labs as "micromanagement," and said that it "deprives the laboratory of virtually all flexibility for better management of its resources."

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fied by the panel, which "can be expected to remain central to any national energy policy for years to come." These were:

- Ames—Fundamental Energy Science
- Argonne—Nuclear Energy, Fundamental Energy Science
- Brookhaven—Fundamental Energy Science
- Lawrence Berkeley—Fundamental Energy Science
- Los Alamos—Defense
- Lawrence Livermore—Defense
- Oak Ridge—Fundamental Energy Science, Magnetic Fusion, Nuclear Energy (fuel cycle, primarily)

The ERAB panel attempted to identify the reasons why DOE policies had not been as effective as possible and found that DOE had been too conservative in conceiving them. They said, "Contrary to past practices, the expertise of the laboratory staff and directorate are not being fully utilized in establishing Department policy and directions for research and development." The panel also said that the labs could not be used effectively with "prolonged budgetary uncertainty and the pressure of repetitive crash readjustments in program funding."

To remove some of these impediments, the panel suggested that DOE set up a group of all the laboratory directors to help DOE determine R&D policy and strategy for the labs. ERAB also recommended that an official at about the level of a Deputy Under Secretary be designated in DOE with authority to coordinate and administer all aspects of R&D programs at the national labs, and that operations offices de-emphasize their policy and programming functions and concentrate on managing contracts with the laboratories operating contractors.

Lab directors should be given more flexibility with budget and program guidelines to reprogram lab resources in response to opportunities to use them more effectively. In fact, the panel said that DOE should permit each lab to use 1-2% of its funds for independent R&D, "at the discretion of the lab director." To remove the instability caused by budget uncertainties, ERAB recommended that the Office of Management and Budget support two-year rolling appropriations.

The panel also found the policy of lead missions ineffective as it is currently implemented. They noted that labs were operating way below capacity because of budget constraints, that their contribution to education and training researchers could be increased, that R&D planning did not consider end users adequately and that there were too many barriers to laboratory-industry cooperation. They pointed out, in particular, that the labs were overburdened with paper work and reporting requirements, and that the means of evaluating lab performance needed to be systematized. ERAB also found that DOE placed too many restrictions on the labs preventing them from doing work for others, especially for industry, and that their past patent policy had also acted as a barrier to technology transfer.

To alleviate these problems, the panel advocated that the lead mission be clearly defined for each lab and that resources be provided to support them accordingly. They also recommended establishing user groups that report to DOE, similar to HEPAP and NUSAC, for

all the major mission programs.

DOE should employ an outside auditor to help reduce paperwork, and existing laboratory institutional plans should be improved to permit their use in long-range planning, the panel said. Additionally ERAB recommended that DOE convene panels from such scientific bodies as the National Academy of Sciences to supplement internal evaluation of lab performance.

The panel said that DOE should continue to support university-lab cooperation, especially in training scientists.

To encourage more cooperation with industry, DOE should permit labs to do more reimbursable work for others and should inform administrators about the recently liberalized patent policy in DOE. This new policy waives the government's rights to inventions arising from the reimbursed use of DOE facilities and for work contracted by the facilities. Thus it should encourage increased use of lab facilities and personnel by providing patent rights to industrial users buying R&D or technical assistance from them.

To further encourage technology transfer, the panel also recommended that DOE permit joint ventures with industry for select projects, encourage labs to work more closely with industry by responding to proposals from industrial cooperative groups and by helping advise other users, and review and identify existing barriers to technology transfer.

The ERAB study both began and ended in a climate of uncertainty about the future of the national labs. The Multiprogram Lab Panel was first convened in September 1981, following testimony in Congress the previous summer questioning the current mission of the labs. Arthur Bueche (then senior vice president of corporate technology at General Electric, now deceased) was one of those who testified before the subcommittees on Energy Research and Energy Development of the House Committee on Science and Technology. He was concerned that the labs had entered areas of R&D more appropriate for the private sector, and thus that the government was supporting research in competition with industry. Further testimony by Presidential Science Adviser George Keyworth that "the national laboratories hadn't been reviewed in over 20 years" caused general speculation about how the Administration's policy of supporting long-range, high-risk research would affect programs at the national laboratories (PHYSICS TODAY, January 1982, page 53).

Speculation was aroused further by President Reagan's announcement of his plans to disband DOE and to incorporate its R&D functions, includ-

ing the administration of the national labs, under the Department of Commerce (PHYSICS TODAY, March 1982, page 59). These plans now seem to have been set aside. Concern arising out of what was described by Deputy Secretary Davis as "an increasingly austere budget" was one of the driving forces motivating the study.

In fact, ERAB noted that budget cuts resulted in reductions of staff at the multiprogram labs of 3500 from FY 1980 to FY 1982, and that further reductions are anticipated due to projected FY 1983 budget cuts. The panel also noted that the strain on the facilities and personnel of the labs caused by repeated cuts had reduced utilization of facilities at nondefense labs to 40-50% of their capacity.

The future. While the ERAB study of national labs is only one of several being undertaken, it may be laying the groundwork for other investigations. In October, members of the ERAB panel briefed David Packard, who is heading the committee evaluating the national labs for OSTP. This study was undertaken at Keyworth's request; it is now in progress and is considering all the Federally supported laboratories, not just those supported by DOE. James Ling, an engineer on the OSTP staff, told us that in addition to defining the appropriate roles and missions for the laboratories, the committee's objectives were to identify systemic impediments to satisfactory performance, to make recommendations to remove them, and to identify the unique strengths of the Federal labs. Now scheduled to complete the entire study in April, this committee planned to have an interim report on the DOE labs ready for their internal use in early December. At this writing, the decision whether or not to make the interim conclusions public had not been made. Other studies now underway include one by the General Accounting Office, which is investigating the performance, efficiency and mission of the national labs as part of its oversight function, and by the private sector, which, at the President's request, is considering the connections between the labs' R&D programs and industry.

In December, members of the ERAB panel and DOE staff testified before the House Committee on Science and Technology. Held at the request of the committee chairman, Don Fuqua (D-Fla.), these hearings provided an opportunity for Congress to evaluate the ERAB panel's findings and for DOE to respond to some of the criticisms of DOE management and policies included in the panel's report. In turn, information from these hearings may significantly influence Congressional attitudes toward FY 1984 budget priorities, being set now.

—JC