

White house advisers urge significant changes at Federal labs

Reformation of the Federal laboratory system is an old idea whose time may finally have come—especially if a panel of the White House Science Council and President Reagan's science adviser have their way. Despite its sometimes tough talk, the panel's report is not likely to cause fear and trembling at the 755 Federal labs, which account for roughly one third of the entire \$45 billion budgeted in FY 1984 for government research and development. It may even be considered beneficial to lab directors and agency heads who have been seeking more independence, greater stability and better staff for the government's research centers.

Only 16 pages long, including a 4-page summary, the report was completed on 12 May but not released by the White House until 15 July, with no apparent reason for the delay other than Washington's summer torpor. While the panel admits in the report that it did not examine the labs in sufficient detail to determine fully the quality of work or extent of their problems, it argues that the findings and recommendations are meant to apply to all Federal labs. In fact, between 21 June and 28 November of last year, the panel called at 16 of the most prominent Federal research centers, operated either by the government or under contract. These included the National Institutes of Health, National Bureau of Standards, Naval Research Laboratory, Air Force Weapons Laboratory, Caltech's Jet Propulsion Laboratory and the eight Department of Energy multiprogram labs. In its round of the labs, the panel observed what it terms "serious deficiencies" that restrain productivity and effectiveness at many places. "At a time when the nation's economic and military competitiveness is increasingly challenged," the report states, "it is imperative that the nation gets the optimum return from its investment in the Federal laboratories."

At a news conference in the Executive Office Building, next to the White House, the President's science adviser, George A. Keyworth II, reflected that Federal labs had been established "at

different times for different purposes, and over time they've expanded and diversified. In some cases... this process has diluted and weakened their purpose, mission and capability." In keeping with this picture, the panel report portrayed some of the most prestigious Federal laboratories pursuing outdated missions, suffering poor management and lacking accountability and justification for their work.

Such deficiencies are not new, the report states. Worse yet, "their negative effects have increased to serious levels over the past decade." Consequently, "the nation's return on its investment... is being undercut seriously by the vagueness and inconsistencies" of the missions and managements of the labs. While the panel found some labs—notably those with clear, coherent and narrow purposes, such as weapons research—doing quite well, for other labs, a part—often a major part—of their efforts "was often fragmented and unrelated to their main activity." In such circumstances, the report goes on, "It would be better to reduce the size of a laboratory to meet the real needs of its legitimate missions than to maintain its size by filling in with unrelated research projects." Still, the panel argues, as national needs change, a laboratory may be able to acquire new missions, so long as these are "consistent with the laboratory's existing strengths and expertise.... The size of each Federal laboratory should be determined by its missions and the quality of its work. That size should be allowed to increase or decrease (to zero if necessary) depending on mission requirements, but it should not fluctuate randomly. Preservation of the laboratory is *not* a mission."

Other studies. This dictum appears consistent with the Reagan administration's philosophy that calls for reducing the size and scope of government. It also agrees with Keyworth's criticism of the welter of unrelated and unnecessary research programs in some Federal labs. It is a clangorous resounding of recent peals from several study groups, including the DOE's Energy Research Advisory Board (PHYSICS

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The recommendations in the new report are contrary to some widely held beliefs that the White House panel of influential, mostly conservative scientists would call for an extensive transfer of R&D from Federal labs to universities and corporations or, at least, a bold reorganization of DOE labs.

"It is not a bombshell," says Keyworth. "It does not contain a death sentence for any lab." It is not even an exercise in cutting excessive fat from the Federal laboratories, claims the panel chairman, David Packard, co-founder and board chairman of Hewlett-Packard and former Deputy Secretary of the Department of Defense. While the panel does not believe that throwing more money at the Federal labs will achieve satisfactory results, it insists that implementing its recommendations should achieve more productive labs operating on less money, says Packard.

As an example of the dilution of missions, the panel alludes to the effort by the Ford and Carter Administrations to pump considerable funds into DOE labs for research on conservation and alternative sources of energy after the 1973 oil embargo imposed by Arab countries. "Given the great concern at that time about future energy sources, a lot of money was made available to the laboratories," states the report. "But very little came of this effort." In the Reagan years, most DOE research in solar and other alternative energy has been reduced or eliminated at a saving of nearly \$90 million. In this instance, the panel's object lesson concludes, "some of the work done by the Federal laboratories could have been done as well, or possibly better, by private industry or by universities—e.g., engine designs, batteries and fuel cells, electric power transmission and distribution, designs of specific air-frame/engine installation concepts and renewable energy sources. This would

have been less likely to happen if the missions of the Federal laboratories had been defined to encourage cooperation rather than competition with industry and universities. Most research projects at Federal laboratories could benefit from related research in universities and in industry and could be guided by prospective users, either in industry or in government agencies." In addition, say the report, "the breadth of research activities at most Federal laboratories could be reduced and the depth increased in those areas of demonstrated excellence and mission relevance."

Cabinet support. With such statements, it came as no surprise that President Reagan welcomed the report after his briefing in the Oval Office by Packard and Keyworth on 12 July and asked OSTP and the Office of Management and Budget to see that the various agencies carry out the recommendations. A committee of the inter-agency Federal Coordinating Council on Science, Engineering and Technology (known colloquially as "fixit") will soon be organized to develop a plan of action. Before seeing the President, Packard and Keyworth proselytized Defense Secretary Caspar W. Weinberger, Energy Secretary Donald P. Hodel, Personnel Director Donald Devine and NASA Administrator James Beggs to support and implement the panel's proposed reforms, as well as to use it in drafting the Administration's FY 1985 budget request.

The report calls upon Congress, along with the Administration, to attend to the panel's recommendations. The Congressional connection is most obvious in such financial matters as pay scales and budget authorizations, both considered critical to the vitality and stability of Federal labs. Accordingly, two sections of the report deal with personnel and funding—subjects where the practical difficulties appear most formidable. "The key to a laboratory's success is a high-quality and properly motivated scientific staff," says the report. That many Federal labs are unable to recruit, retain and promote the best and brightest scientists and engineers, particularly the young at entry levels and the most experienced at top levels, within the Civil Service framework, is considered "alarming." Cumbersome hiring practices and rigid salary policies severely handicap those labs that are government-owned and government-operated (the so-called GOGOs). The panel notes that "recent personnel ceilings imposed strictly on a numerical basis without distinguishing among types of staff have adversely affected the laboratories' R&D activities. In the case of contractor-operated labs, the report points out, some Federal agencies have



White House science panel posed for an official photograph last October at the Department of Agriculture Research Center in Beltsville, Md. during its study of Federal labs. From the left, David Packard, Ralph Lee (member of the President's private-sector survey), Donald Fredrickson, Minh-Triet Lethi (policy analyst on OSTP staff), Edward Teller, James Ling (study director on OSTP staff), Arthur Kerman, Paul Putnam (director of Beltsville Agricultural Research Center), Allan Bromley, Albert Wheelon and John Bardeen. (White House photo.)

chosen to impose pay and promotion ceilings, even though the employees are not bound by Civil Service rules. The situation in both types of Federal labs, the panel declares, "if not corrected, will seriously threaten their vitality." Thus, the panel asks that Civil Service regulations be changed to a more flexible system that would enable the labs to use special pay and promotion procedures based on merit. Moreover, says the panel, decisions about staff rewards are "done best by the laboratory management, not by the agency."

The panel also calls on Congress and OMB to provide funding "on a predictable, multiyear basis" so that Federal labs can plan their R&D programs better. This would go a long way toward avoiding uncertainty and instability caused by the chronic delays in the budget process and the frequent indecision in Federal agencies.

Another recommendation that will gladden lab administrators would enable them to devote at least 5% and as much as 10% of their annual budget to independent research of their choosing. Moreover, says the panel, "to encourage cooperative research programs, the laboratory directors should have the authority... to spend part of the discretionary funds at appropriate universities, and industries." The panel proposes that the agencies should link the discretionary funds to outside evaluations of the work performed under the scheme. Though this technique is similar to the peer-review system used by such agencies as DOE, NASA, NIH and NSF in awarding research grants, what

the panel has in mind is an evaluation of actual performance. Such evaluations would go a long way toward making up for the lack of accountability, which the panel terms "perhaps the most serious deficiency of the Federal laboratories." As it is now, their survival has not depended on satisfying the "economic and competitive forces" faced by industrial R&D labs. When Federal agencies use their oversight and review authority, the panel asserts, it usually results in excessive amounts of paperwork, "but inadequate scrutiny of the quality and relevance of the laboratories' activities."

As difficult as this may be for the agencies to do, it will probably be even harder for Washington bureaucrats and political appointees to follow the panel's advice to avoid giving meddling, detailed directions to the labs—a technique known as "micromanagement," which, according to the report, is at its worst for the DOE multiprogram labs. The panel claims micromanagement "has its roots in the lack of stability in DOE itself. The department has changed leadership many times, and its mission has changed and diversified too often, to the point where it is no longer clear." In addition, DOE "must respond to a much larger number of Congressional committees and subcommittees than other Federal agencies." In an aside, the panel urges the Administration and Congress "to work together to stabilize and strengthen DOE management and to define and affirm its mission" so that it can direct its labs with more coherence and certainty, while avoiding "unpro-

ductive overlap among laboratories and missed opportunities for synergism."

'Fresh look.' In its "fresh look" at the national labs, the panel makes some final observations: "The US can no longer afford the luxury of isolating its government laboratories from university and industry laboratories. . . . The national interest demands that the Federal laboratories collaborate with universities and industry to ensure continued advances in scientific knowledge and its translation into useful technology." The White House panel argues that current Federal procurement practices discourage the agencies and labs from contracting with universities and industry, and that the agencies have assigned R&D work to labs that would be more appropriately performed elsewhere. "This problem is most severe with the DOE and DOD and least with the NIH," the report claims.

The report is silent about particular labs, though it names a few when it wants to emphasize a general point. It notes, for instance, in speaking about the value of some rivalry among labs, that "competition between Lawrence Livermore and Los Alamos in nuclear weapons development seemed to be an important factor in the high quality of work in both laboratories." In advocating reforms in personnel management, the report cites an experimental pay and promotion system in effect at the Naval Weapons Center in China Lake, California, and the Naval Oceans Systems Center in San Diego.

At the press conference, Packard delivered some snapshot assessments of various Federal labs: DOE's Stanford Linear Accelerator Center and Fermilab were praised as examples of single mission labs with "real good performance records." Los Alamos and Livermore, both operated by the University of California, and Sandia, run by AT&T, were doing well in weapons work but DOE ought to cut back other R&D at the labs, particularly in alternative energy studies. Lawrence Berkeley, Argonne and Brookhaven, all once preeminent in accelerator work, and now diversified into many other fields, urgently needed "streamlining" and their missions redefined by DOE. For its part, NIH faces a worsening shortage of talented clinical researchers, even though it offers up to \$10 000 more in differential pay for those with MD degrees. Livermore and JPL were hailed for their "close encounters" with the university faculties at, respectively, the University of California and Caltech.

After the press conference, Keyworth was asked what message the Packard panel report carried for Brookhaven, which is about to lose a

partially built Colliding Beam Accelerator (see page 17). Brookhaven is clearly in search of an important new mission, possibly, said Keyworth, materials research in which it could use its new synchrotron-radiation facility, "one of the best in the world."

Although the report offers no revolutionary changes for the Federal labs, it carries the weight of the White House with a package of reforms. The last time such a reformation was proposed was in 1962 when President Kennedy asked a group of Cabinet-level officials to examine the problems confronted by Federal labs arising from the rapid growth of R&D programs. Under the chairmanship of David E. Bell, director of the Bureau of the Budget, the panel concluded that Federally financed R&D, which had soared from \$100 million per year in the late 1930s to more than \$10 billion in FY 1962, required a partnership between public and private research institutions as "the best way to enlist the nation's resources and achieve the most rapid progress." It urged that government labs be assigned "significant and chal-

lenging work," that laboratory directors be given "more authority to command resources and make administrative decisions" without unnecessary echelons of review and supervision by agencies and that salaries be raised to attract and retain first-class scientists, engineers and administrators. In these respects, the Bell report was not much different from the recommendations offered in the Packard report. In an interview later, Packard vowed to carry the message of his report up Capitol Hill personally. "The stakes involved are too important to allow these recommendations to go unfulfilled, as happened with the Bell report," he said.

Besides Packard, the White House panel consisted of five physicists—John Bardeen from the University of Illinois at Urbana, D. Allan Bromley of Yale, Arthur K. Kerman of MIT, Edward Teller from the Hoover Institution on War, Revolution and Peace at Stanford, and Albert D. Wheelon of Hughes Aircraft Co.—and Donald S. Frederickson, former NIH director and now vice president of the Howard Hughes Medical Institute.

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Argonne surrenders accelerator to SURF

The heated rivalry between Argonne National Laboratory and a consortium of 23 southeastern universities over the construction and operation of a continuous-beam electron accelerator (PHYSICS TODAY, July, page 57) ended on 19 July when Argonne withdrew its political forces fighting for the proposed machine in Washington.

In a letter to Senator Charles H. Percy (D-Ill.), who is chairman of the Senate Subcommittee on Energy, Nuclear Proliferation and Government Processes, Argonne's director, Walter E. Massey, wrote that he had decided not to press the lab's case with the Department of Energy to avoid a stalemate that could result in postponement or cancellation of the facility. "Such a stalemate," Massey stated, "could hurt all of American science. . . . At a time when the United States is striving to maintain its leadership in key areas of science and technology in the face of intense foreign competition, it would be unfortunate to delay or cancel such an important project. Rather than risk the loss or delay of the project, we think it best to end the effort to reverse the original recommendation to the DOE."

Argonne launched the attack last April after the DOE-NSF Nuclear Science Advisory Committee chose a design for an accelerator in the energy range of 0.5–4 GeV submitted by the Southeast Universities Research Association from among five proposals. The Argonne proposal, a novel variation of

the race-track microtron with beam energies extended to a maximum of 4 GeV, was considered by NSAC to have more uncertainties than the SURF design. Because NSAC found that both designs "could very well form the basis for an extremely powerful national facility," Argonne's board of governors and its contractor, the University of Chicago, urged Massey to contest the NSAC decision. Percy and a delegation of Illinois Congressmen, flanked by governors and university officials from other Midwest states, argued for Argonne. Meanwhile, Senator John Warner (R-Va.) was allied with members of Congress from eight southeastern states in the battle for the accelerator. "Warner and Percy were prepared to carry the battle to the President if necessary, if the scientists wanted that," said a Congressional aide.

For his part, George A. Keyworth, President Reagan's science adviser, warned Massey that Argonne was imprudent in disregarding the recommendation of the peer review conducted by NSAC, and the lab's insistence would jeopardize the construction of the accelerator. In June, Keyworth wrote to Herbert H. Bateman (R-Va.) deploring a planned amendment to the budget bill by Representative Sidney Yates (D-Ill.) to block the project altogether. Yates's amendment, Keyworth declared, would undercut the "framework upon which American scientific