

GAO Finds Fault with NSF Award

Serious problems cited in process leading to grant establishing earthquake engineering research center

NATIONAL Science Foundation handling of the award of a grant to create an earthquake engineering research center is sharply criticized in a new report* by the General Accounting Office. GAO said it found no evidence of "favoritism" influencing the choice, but noted "serious problems in NSF's management of the award process."

The award, which provides for NSF funding of up to \$25 million over 5 years, was made last August to a coalition of eastern universities headed by the State University of New York (SUNY) at Buffalo (*Science*, 5 September 1986, p. 1031). The only other proposal considered in the final stage of the competition was made by the University of California, Berkeley.

GAO carried out its review at the request of California senators Pete Wilson and Alan Cranston, who were responding to objections from California scientists associated with the Berkeley proposal. In their letter asking for the study, the senators said they had reason to suspect that "certain parties may have violated the research community's long-standing tradition of objectivity, impartiality and honesty and substituted them with bias, pressure tactics and misinformation." A spokesman for Wilson says criticism of NSF procedure in the report convinced the senator to "pursue legislation to stop the award if necessary."

The GAO report did not recommend reconsideration of the award. A statement from NSF on the GAO report quoted NSF deputy director John H. Moore as saying, "Certainly there is nothing in the report that would warrant reopening the grant process."

Wilson also argues that NSF's conduct of the award process for the center provides cause for a more general look at the foundation's peer-review system. The senator's ability to muster support for closer scrutiny of the matter will be tested in Senate markup sessions on the NSF authorization bill, the final stage of committee action in preparing

the bill for the floor. Wilson is a member of the Senate Commerce committee subcommittee that shares jurisdiction over NSF authorizations, but belongs to the Senate's Republican minority, which limits his leverage. Sources on Capitol Hill committee staffs say that the GAO's failure to find evidence of bias appears to limit any ground swell of congressional opinion for a punitive response.

A major focus of the GAO analysis was the actions of a panel of outside experts assembled to advise NSF on selection of a proposal for the center. The report said, "GAO found no evidence that the panel showed favoritism for one proposal over another during its evaluation deliberations." It noted, however, that no documentation was available on the panel's evaluation and that GAO had relied on separate interviews with the panel's seven members in its attempt to reconstruct the discussions.

Critics had questioned the qualifications of the panel's members. GAO found that although only one member of the panel was a recognized expert on earthquake engineering, three others had experience in the field and all had managed large research projects. GAO called the panel's qualifications for the selection task "appropriate."

The GAO report was harsh in its comment on the lack of adequate documentation on the award process. In a summary, the report said, "GAO found that the statements in the existing documentation are not linked to the stated criteria in the program announcement, are misleading in places, and are unbalanced in tone and coverage of topics. As a result, this led to the appearance that the criteria were not consistently and fairly applied and that additional criteria could have been added during the evaluation process."

A sore point with the critics was that the NSF panel made a "conditional" recommendation that the award go to the New York group before it made a site visit to Berkeley. The GAO report attributes this in part to confusion about NSF's requirements for matching funds. A commitment of state matching funds was made by New York to meet a 15 January 1986 deadline set by the



Pete Wilson. Senator from California rakes NSF award process.

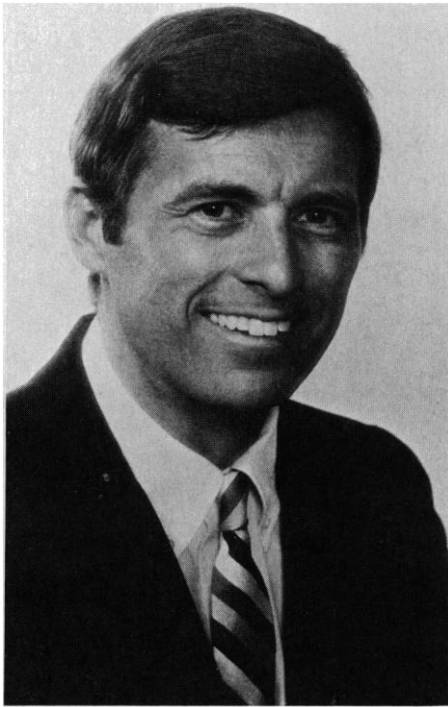
foundation. Matching funds to back the California proposal depended on action by the state legislature in the summer of 1986 and California officials said they operated under the impression gained from NSF that the deadline was flexible. When California matching funds were authorized last July, a site visit by the review panel was arranged. The visit did not go well and Berkeley scientists said they felt that the decision on the award had been made prior to the visit and that New York's having the matching money in hand was a factor.

NSF deputy director Moore notes that the review panel made the site visit to Berkeley under "tremendous time pressure"—NSF wanted to get a final proposal to the National Science Board for approval at its mid-August meeting in order to have funding for the center included in the fiscal year 1988 budget. The panel "wrote the report on the spot," said Moore. The panel members sought to make the same detailed evaluation of the Berkeley visit as in the report on the New York site visit. Though they may have failed in this, the panel conclusions were unmistakably that the California proposal was not as good as the New York one, Moore told *Science*.

He acknowledged, however, that the GAO report shows NSF did a "lax job of documentation" with the award. As for responsibility for the episode, he said that the buck stops with the top management of the foundation. NSF is "taking the report very seriously." The report and its recommendations are being studied within NSF and the results will be "translated into action."

Moore emphasized that the report includ-

*"National Science Foundation: Problems Found in Decision Process for Awarding Earthquake Center." Available from USGAO, Post Office Box 6015, Gaithersburg, MD 20877.



John H. Moore. NSF deputy director insists that the best proposal won.

ed no finding of "unfairness," and insisted that its negative assessment was directed at the management of one proposal and not at the NSF review process in general.

The GAO report recommends that NSF's director take action in three areas of management to ensure that similar problems "do not occur in the future." NSF should be sure that documentation on large awards clearly links reviewers comments with criteria stated in program announcements. Requirements for matching funds should be specified in detail. And conditional recommendations should be avoided.

GAO, the auditing arm of Congress, oversees administrative as well as financial aspects of federal government operations. The GAO report says that the focus of the review was to determine whether NSF followed its award procedures and to examine the credibility of that decision. "Our intent was not to recompute the proposals or to second guess the judgments of the panelists but rather to validate information that the panelists had provided to us."

What was not included in the report was an evaluation of NSF's broader intentions in establishing the center. The GAO did explore a complaint originating with the Berkeley group that NSF's program announcement did not make clear that NSF would look with favor on having a center with a national rather than a regional focus. Plans in the New York proposal to cast its net widely for earthquake engineering ex-

pertise and deal with a wide range of earthquake engineering problems were cited by the foundation as a strong factor in the choice of SUNY Buffalo. The GAO said the issue was one of those on which the documentation was weak and reported it could not find evidence that a national focus was a criterion added during the evaluation.

Those familiar with NSF's development of the center idea say that it was a product of discussions over several years involving federal agency officials and members of the earthquake research community in academia. A consensus is said to have evolved on the need for multidisciplinary research aimed at a broad range of scientific and engineering issues, the involvement of industry, and a broadening of attention beyond earthquake problems special to the West Coast, particularly to include the eastern portion of the United States. Discussion of these aims is reflected in such congressional documents as the recent House Science and Technology Committee report on the authorization measure for the Earthquake Hazards Reduction Act, but they were expressed only sketchily in the NSF program announcement.

In the view of Representative George E. Brown, Jr. (D-CA), who represents a seismically vulnerable southern California district and has been a strong proponent of earthquake research, the center award was "favorable to the health of earthquake research." Brown told *Science*, "I have repeatedly argued for the need to broaden the base of the research. We have to have a bigger constituency with an understanding of the need for such research. From that standpoint, the award of the center to Buffalo was constructive."

Brown notes that GAO was highly critical of some steps in the award process and of a lack of internal consistency, but says he is "not sure that it warrants opening it up, starting over." One thing he is emphatic about is that provision of funds for the center "should not be allowed to detract from resources for other high-quality research" in the field.

From the incident, Brown draws the lesson that "NSF needs to look at its procedures for awarding grants that have sensitive geopolitical aspects and be sure that its skirts are clean and it will not draw criticism."

A piquant footnote to the episode is that GAO recruited a panel of four experts from universities not involved in the competition to examine the performance of the NSF panel in evaluating technical aspects of the research plans put forward in the two competing proposals. The key finding in the report, therefore, hinged on a peer review of peer review. ■ **JOHN WALSH**

Space Station Price Climbs Higher

The U.S. space station will cost more than advertised—about \$27.5 billion in 1984 dollars—but not more than expected by aerospace experts, according to a special report released on 6 July by the National Research Council (NRC).

The report is part of a bigger study commissioned by the Reagan Administration early this year when it decided to take a second look at the space station. The full study, to be written by a 13-member panel chaired by Robert C. Seamans, Jr.,* will come out in the fall. This interim paper discusses mainly "acquisition costs," not problems in assembly and operation, which will be examined later.

When the National Aeronautics and Space Administration (NASA) made its first cost estimate in 1984, the station's price tag was put at roughly \$8 billion. That was the basis on which Congress and the White House originally endorsed the project.

Last year, NASA was then asked to make a more complete analysis to include ancillary costs at various NASA centers. The new total, announced in January, came to \$14.5 billion for the entire station, or, if bought in segments as now planned, \$12.2 billion for block I and \$3.8 billion for block II. The station will not be fully operational until well into block II, sometime in the late 1990s.

The new Seamans report finds that if other essential items are included—the orbital maneuvering vehicle, the flight telerobotic servicer, and the crew emergency rescue vehicle—the full research and development cost comes to at least \$18 billion. When deployment costs are added, the bill is \$27.5 billion. (With inflation, this comes to more than \$32 billion in 1988 dollars.)

Many of the deployment costs in the NRC's total do not represent new expenses but ones already covered in NASA's financial plan. They will be provided for by shifting priorities within budget levels al-

*In addition to Seamans, a Massachusetts Institute of Technology (MIT) professor of aeronautics, the group includes W. Bowman Cutter III of Coopers & Lybrand; Earl H. Dowell of Duke University; Brigadier General Robert A. Duffy, former president of the Charles Stark Draper Laboratory; Herbert Friedman, former presidential economic adviser; Owen Garriot, president of EF-FORT, Inc.; Benjamin Huberman, vice president of Consultants International Group; John McLucas, chairman of Questech, Inc.; Eberhardt Rechtin, president of The Aerospace Corporation; Donald B. Rice, president of RAND Corporation; Ivan Sellin, chairman of American Management Systems, Inc.; Lieutenant General Thomas Stafford of Defense Technologies; and Laurence R. Young, director of MIT's Man-Vehicle Laboratory.