

## Mohole: Drilling Site in Pacific Favored as Time Nears to Award Construction Contract for Vessel

Project Mohole, for a long time the Vietnam of the National Science Foundation, has been relatively quiet for a while. But preparations for the deep drilling venture are now approaching a point which will test the durability of the cease-fire that Leland J. Haworth imposed last year after he became NSF director (*Science*, 10, 17, and 24 January 1964).

After 8 years of talking and testing, and 2½ years of detailed planning, the designs are nearly completed for the unique and gigantic seagoing platform that is intended to drill through the ocean bottom to unprecedented depths. Normally this might be a joyous occasion in a difficult development program. But the administrative battles that long delayed Mohole, and the pork-barrel political atmosphere that now envelops major development projects, provide grounds for apprehension. Furthermore, NSF once again must tell Congress that the price has risen. This time it's reported to be as much as 10 percent above the \$68 to \$70 million that was cited last year, and almost double the figure that was offered when Mohole was first seriously examined by congressional committees several years ago. NSF attributes the latest increases to "additions to the scope of the work, changes in platform design, and increases in the price of steel and other supplies."

Money, however, may be a minor consideration, since Congress has become well acquainted with the difficulty of estimating costs on unconventional construction. What may not be so minor is the row that could develop in the country's ailing shipbuilding industry over who gets the \$28- or \$30-million contract for building the vessel. With the designs nearly completed, and invitations for construction bids due to go out in a few weeks, NSF reports a number of inquiries from shipyards. And it estimates that there are probably 12 in the country with the capacity to handle the job.

But the question of where to build the 279- by 234-foot (83- by 70-meter) platform isn't related only to price and performance. It is closely tied in with another issue—namely, should the Mohole be drilled in the Atlantic or the Pacific? Since the platform's width prevents transit through the Panama Canal, a move from one ocean to the

other is expected to take 120 days and to cost about \$500,000. NSF thus is inclined to build on the ocean where it will drill, but a sufficiently low bid could make it worth while to build the platform on one coast and take it around to the other. The trip would have to be around the southern tip of Africa, since the South American route is considered too stormy and it is doubted that the Suez Canal authorities would risk taking the cumbersome vessel, since it would be a tight squeeze at the narrower points of the canal.

In any case, according to the National Geographic Society, the Suez and Cape of Good Hope routes come out to be virtually the same on a voyage from the East Coast to the West Coast of the United States—about 22,000 miles (35,000 kilometers).

Just this week, NSF, on the basis of recommendations and studies by the National Academy of Sciences Mohole site selection committee, and Brown and Root, the Mohole platform designer, announced that the Pacific would be the ocean for drilling. But apparently mindful of how official pronouncements were cited as Holy Writ in the earlier Mohole controversies, NSF repeatedly emphasized that it wasn't committing itself to any particular site in the Pacific. It stated that an "initial decision" had been made to drill through the earth's crust at a site 100 miles north-northeast of the Hawaiian island of Maui, starting in 1968. But Haworth added that the site "can be changed should new information indicate that some as yet unidentified site would better fulfill our scientific objectives." Meanwhile, six other Pacific sites, ranging from Panama to Washington, have been chosen for intermediate drilling projects—which is the culmination of a victory for those who opposed viewing Mohole as no more than a deep drilling venture.

The decision to drill in the Pacific rules out sites that had been under study near Puerto Rico and Antigua. Both were rejected, according to the announcement, because of their proximity to the hurricane belt. (If this was a consideration, it isn't clear why they were considered in the first place.) In addition, the Puerto Rican site was found to have a badly faulted bottom, and the Antigua site turned out to be several thousand feet deeper than the one off Maui.

Since Haworth decreed peace and had NSF take direct administrative control of the project, the backbiting

## Elliott Committee Staff Receives 2-Month Stay To Prepare Report

The House has approved a resolution to permit part of the Elliott Committee staff to prepare a final report on the committee's 15-month investigation of federal research programs. The committee, headed by former Representative Carl Elliott (D-Ala.), expired at the end of last year. The resolution authorizes seven members of the staff to remain on the payroll through February to prepare a summary of findings and recommendations. The committee earlier published ten separate studies (*Science*, 8 January).

—D.S.G.

that characterized Mohole's previous history has largely disappeared. If there are people who are unhappy about the decision going to the Pacific, so far they are silent. But it should be noted that the former combatants have now had a full year's rest, and that in the past they were easily ignited by lesser matters than Atlantic versus Pacific.

As things now stand, the construction contract is scheduled to be awarded in March or April; construction is to be completed in August 1966, and 1967 is to be devoted to experimental drilling and testing and modification of the drilling rig. The start of drilling to the mantle is scheduled for 1968.

While the preparations continue, Mohole exists as an administrative anomaly at NSF. Traditionally, a university or a research institution is the link between the foundation and the activities it finances, but in the case of Mohole the foundation is running the show, under the direction of one of its own staff members, Gordon Lill, who bears the title of Mohole Project Director. There is talk that the project may eventually be administered by a combine of major oceanographic institutions, but they don't seem eager to adopt the creature while it is still gestating, and everyone involved seems to be happy with the way Lill is running things.

Incidentally, the American Miscellaneous Society (AMSOC), which originated Project Mohole, is altogether dissociated from it, having been cast out when Haworth inherited the project and decided to assume tight NSF con-

trol. The National Academy of Sciences remains associated with Mohole, through the site selection committee and a committee on scientific objectives, but Haworth has left no doubt that, since NSF is footing the bills, its outside advisers are no more than advisers. Since AMSOC is an organization that prides itself on having no organization, it is difficult to verify its existence or activities. But AMSOC members say it still exists and they are thinking about holding a meeting abroad sometime during the next few years.

—D. S. GREENBERG

### **Title VI: Universities, Others Affected by Federal Moves To End Discrimination by Aid Recipients**

Over the past few months the government has been moving to implement the provision of the 1964 Civil Rights Act that many observers feel will do more than any other to break the pattern of segregation in the South. The provision, known as Title VI, declares that "no person in the United States shall, on the basis of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." Under regulations just issued by the 20-odd agencies administering assistance, the billions of dollars annually dispensed by the federal government for programs ranging from support of basic research to rural electrification are to be held back until written assurances of intent to comply with the nondiscrimination provision are received in Washington.

Such a policy has an enormous potential impact on education, which, on all levels and throughout all areas of the country, is heavily dependent on the federal government. Agencies have begun holding up payments pending receipt of assurances, and, faced with the threat of delays or cutoffs, previously recalcitrant institutions and districts in the South have scrambled to affix their signatures to statements of compliance. The boards of education of Georgia and Virginia, for example, as well as local districts elsewhere in the South, have concluded that it would be impossible to finance their programs alone and have voluntarily signed the pledge. And just in the last few weeks some 200 southern colleges and universities

—including some like the University of Mississippi which began modest desegregation only under duress—have also committed themselves in writing to a degree of egalitarianism perhaps unrivaled since the days of Reconstruction.

According to Washington officials who spent much of the summer talking with people in the South about the implementation of Title VI, there are several reasons for the apparent surge of compliance. In the first place, they say, Title VI only gives added incentive to the desegregation already occurring in many places under court order. Secondly, there is the money itself. Although it is difficult to calculate the total amount of federal funds going to each southern state, the number of affected programs in each of them is huge. Even in the relatively limited area of higher education, the amounts are substantial. The Public Health Service, for example, last year gave more than \$17 million to institutions of higher education in Mississippi, Alabama, and Georgia, and the National Science Foundation contributed another \$5 million. These figures represent a sizable contribution to those states' total expenditures for higher education, and it is felt that school administrators, reluctant to see their institutions begin a slow decline, will use the threat of Title VI to put pressure on rabble-rousing politicians who have frequently made the task of integration more difficult. It is also felt that college faculties, unwilling to jeopardize their federal grants, will press the administrators into compliance with the new law.

Despite the appearance (and the logic) of massive compliance, however, and the conviction of federal officials that they have a tool that will be second only to the cotton gin in its impact on southern life, the effect of Title VI—at least on higher education—is still open to question. The uncertainty arises both from the nature of the regulations themselves and from the complexities of their administration. Though it is too early to say for sure, there are some indications that the law may have relatively little effect on the pace of change in the South.

### **The Regulations**

The regulations, which were developed by an interagency committee under the leadership of the Justice Department, are basically the same for all agencies. They combine an extremely

tough definition of "discrimination" with very complicated and cumbersome procedures for enforcing compliance. In higher education, the regulations would seem to prohibit discrimination in everything from recruitment of students, to the use of fraternity houses, to the employment practices of a contractor hired to build a facility on a campus having an altogether unrelated grant from the federal government. In an explanatory question-and-answer sheet drawn up by the Department of Health, Education, and Welfare and sent out along with copies of its assurance forms to all aid recipients, the following points are raised.

*What effect will the Regulation have on a college or university's admission practices or other practices related to the treatment of students?*

A. An institution of higher education which applies for any Federal financial assistance of any kind must agree that it will make no distinction on the ground of race, color, or national origin in the admission practices or any other practices of the institution relating to the treatment of students.

(a) "Student" includes any undergraduate, graduate, professional, or postgraduate student, fellow, intern, student, or other trainee receiving education or training from the institution.

(b) "Admission practices" include recruiting and promotional activities, application requirements, eligibility conditions, qualifications, preferences, or quotas used in selecting individuals for admission to the institution, or any program of the institution, as students.

(c) "Other practices relating to the treatment of students" include the affording to students of opportunities to participate in any educational, research, cultural, athletic, recreational, social, or other program or activity; the performance evaluation, discipline, counseling of students; making available to students any housing, eating, health, or recreational service; affording work opportunities, or scholarship, loan or other financial assistance to students; and making available for the use of students any building, room, space, materials, equipment, or other facility or property.

*Does the Assurance of nondiscrimination apply to the entire operation of an institution?*

A. Insofar as the Assurance given by the Applicant relates to the admission or other treatment of individuals as students, patients, or clients of an institution of higher education, a school, hospital, nursing home, center, or other institution owned or operated by the Applicant, or to