sota seem part of an emerging trend, and, considering the well-entrenched reliance on review by one's peers, there will undoubtedly be resistance.

Take the administration at the University of Minnesota, for example. After the consent decree was announced, administrators at the university said that they merely wanted to end the protracted case. A consent decree was not an admission of guilt, they noted, and said they were already reforming the university's procedures in line with the "spirit of the decree."

A couple of weeks later, however, a reporter for the Minneapolis *Star* discovered that the chemistry department had already made offers to four men who are scheduled to arrive in September—a fact that would seemingly fly in the face of the court-approved quota whereby two of the next five tenure-track openings must be filled by women. According to university officials, the offers were made prior to the consent decree, two in January 1980 and two in 1979. And even though the offers of employment have yet to be approved by the Minnesota Board of Regents, that fact would not necessarily stand in the way. The consent decree has only been tentatively approved by the federal court, the judge deferring on final approval so that notices can be printed in newspapers across the country so that class members in the suit can have time to comment on the terms of the settlement. The date for final approval is set for 1 August. This would technically allow the hiring and approval by the board of regents of four new male faculty in the chemistry department, just as long as it was done before the 1 August deadline. The story in the Minneapolis *Star*, however, seems to have cooled the administration's enthusiasm. University attorney Mays now says that the chemistry department will probably hire only three of the four men. "The administration is dealing with the issue right now," he says with a sigh. "They have not yet made a decision. But I'm sure the ultimate decision will meet both the letter and the spirit of the decree."—WILLIAM J. BROAD

> "I have to state that she would have problems because she is a woman."

## Math Center Protests Army Contract Terms

As Pentagon research officials tell the story, it was just a case of bureaucratic clumsiness. The Department of Defense (DOD) did not mean to do anything that might restrict the freedom of academics doing basic research with DOD support, but overenthusiastic contract writers in the Army this spring sent a shudder through the Mathematics Research Center (MRC) at the University of Wisconsin in Madison. In renewing the Army's $1.8 million contract with the math center, the government added a couple of restrictive new clauses that prompted several staff researchers to threaten to resign. Coming on the 10th anniversary of the bombing of the Mathematics Research Center by student radicals, this was hardly an auspicious sign for the DOD's plan to reestablish itself as a major funder of university-based research.

There were two offensive clauses. The first, inserted as a parenthetical statement in a section dealing with international conferences sponsored by MRC, said that the Army's funds may not be used "to support participation by Communist nationals." While people at the MRC regard the policy as "utterly stupid," they are prepared to live with it, since it will be possible to use other funds to bring visitors from Communist countries. "There is nothing secret going on here," one MRC staffer said. "We don't have a single classified file." He could not understand why the government would voluntarily cut itself off from a firsthand source of information about current mathematical theory in the Soviet Union and Eastern Europe.

Jagdish Chandra, who directs the mathematics program for the Army Research Office, denied that this clause on Communist visitors represented a new departure in Army policy. He claimed that the DOD has forbidden contractors from using its funds to support Communist participation since 1967. The policy has always been implicit, Chandra said, although it was spelled out for the University of Wisconsin for the first time in the MRC contract this year. Other conference projects have been subject to the same restriction before this. It is "quite possible," Chandra agreed, that the policy is "undesirable." But, as one DOD contract official pointed out, it is difficult to justify paying the travel expenses for Communist nationals while travel funds for U.S. scientists are being cut back.

The Department of Energy (DOE), according to a contracts officer, also follows the no-travel-for-Communists rule, but it does not spell it out in contracts. The policy is applied administratively, meaning the DOE denies reimbursement only when it catches a violation. Visiting scientists from China, under an agreement negotiated earlier this year by Frank Press, will be financed by their own government.

The second unwanted clause was more troublesome, and, indeed, it is still being negotiated by the MRC and the Army. In the first draft, it required that recipients of Army funds send their papers to the chairman of the Army Mathematics Steering Committee for approval before publication. The Army insists that it was only seeking to ensure that the work it sponsors measures up to a high standard. Percy Pierre, assistant secretary of the Army for research, development, and acquisition, told *Science* that he issued a directive last year requiring that all in-house Army research papers be subject to a form of peer review. When he assumed office, he said, he was "appalled" to find that there was no consistent policy for reviewing the output of Army scientists, so he instituted one. His policy, he thinks, may have been mistakenly applied to contract research at universities as well.

The MRC contract appears to have been the first major one to bump into the problem, although Pierre said he also received a vigorous protest from someone at the Massachusetts Institute of Technology, passed to him by White House science adviser Frank Press. In the future, research done on contract will not be reviewed by the Army, but researchers will be asked to file a copy of each paper with the Army at the same time that they send it to a journal for publication.

George Gamota, a physicist who works in the office of the DOD's under secretary for research and engineering, has been trying for several weeks to clear up the confusion and devise a uniform review policy for all the DOD's


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research contractors. The Navy and Air Force, he claims, have never required prior review of scholarly work, and the Army had not sought it until this year. "It is Defense Department policy to have this work published as soon as possible; we want to do nothing that would hamper publication." The Army's policy and the clause in the MRC contract are being revised. "We are working on a DOD regulation now," Gamota said, "that would prevent anyone from trying to hamper the flow of information" or compel authors to revise extramural research papers. There will be no change, however, in conference funding policy. It is generally understood that research dollars may not be used to pay for travel by Communist bloc scientists.

## NSF Searches for New Leaders

George Pimentel, the deputy director of the National Science Foundation (NSF) announced last October that he would be leaving the agency on 30 June this year to return to the University of California at Berkeley. In March, the NSF's director, Richard Atkinson, announced that he too was leaving at the end of June to become the chancellor of the University of California at San Diego. Thus, the NSF could be leaderless within a few weeks unless the President nominates a new director soon, and no such move seems imminent. Both the director and his deputy must be confirmed by Congress.

According to NSF watchers in Congress and the Executive, a candidate for deputy director has been chosen, but a final choice of director has not been made. The National Science Board (NSB), which the President must consult in this matter, has sent a list of recommended names to the White House. Representative George Brown (D-Calif.), chairman of the House subcommittee on science, research, and technology, has sent the White House his own list of 16 "exemplary" candidates, all of whom are familiar with Washington politics.

Because of possible delays in getting nominations approved, it may be necessary to bridge the gap this summer with a temporary NSF director. One plan is to have Pimentel postpone his departure and remain for a time as acting director. But Pimentel, according to his assistant, has not been asked to stay. Another choice would be to reach to a lower rung in the agency and make one of the assistant directors a temporary chief. If this happens, says NSF spokesman Jack Renirie, the probable candidates are Francis Johnson, William Klemperer, and Eloise Clark, for they are all presidential appointees. Clark has been at the agency the longest (since 1969).

In the meantime, the NSB, which governs the National Science Foundation, elected a new chairman and vice-chairman on 15 May—Lewis Branscomb and Herbert Doan, respectively. Branscomb, the former director of the National Bureau of Standards and president of the American Physical Society, has been the vice president and chief scientist at IBM since 1972. Doan, a chemical engineer, is a former president of the Dow Chemical Company and a prominent member of the Dow family. He is now chariman of the Doan Resources Corporation.

## Oil Embargo Might Cost $270 Billion, CBO Reports

A bit of realism in oil policy is in order, according to a report issued by the Congressional Budget Office (CBO) on 22 May. The report says it is time for American policy-makers to accept the fact that this country will be dependent on oil imports for at least the next decade. Instead of focusing on the (probably unattainable) goal of stopping imports, the United States may wish to develop a more sophisticated strategy for minimizing risks which cannot be avoided. Everett Ehrlich, the principal author, said that he expects to see more imports, higher prices, and a tapering off of domestic oil production.

Ehrlich intended the paper to serve as a benchmark for 1980, useful in measuring the government's progress in attacking the oil problem in years to come. If no dramatic new conservation or energy-producing schemes are undertaken, the CBO's economic model projects a rather conservative increase in domestic oil demand, from 18.5 million barrels a day (mbd) in 1979 to 19.5 mbd in 1985 and 19.9 mbd in 1990. U.S. economic growth is set at a low rate—3 percent a year. If the CBO's estimates of world oil production and demand are sound, the oil shortage will persist for the rest of the decade. The lowest likely forecast price for 1985 is $52 a barrel (the current price is $30), and for 1990, $84.

Perhaps the most striking finding is the estimated cost of a supply cutoff. It is quite conceivable that the United States might have to live for a year with a sudden import reduction of 3.5 million barrels a day. Assuming that the impact would be mitigated by using 500 million barrels of oil stored in the U.S. Strategic Petroleum Reserve (it now contains 91 million), the CBO concludes that in 1984 a reduction of the kind described above would cause a $270 billion loss to the general economy, increase unemployment by 2 percent, and raise inflation by 20 percent.

The authors note that it would be "cost effective" for the United States to continue stocking the oil reserve, at least until it holds the planned capacity of 1 billion barrels. The cost, they calculate, would be between $8 and $10 billion.

The paper suggests several other, less dramatic steps that might be taken to reduce risk:

- The United States should consider following the example of other industrial countries, such as Japan and France, which have signed bilateral trade agreements with oil producers. Long-term pacts might ensure that those who sell oil to this country spend the proceeds of their sales here.
- It might be a good investment, the CBO paper says, to extend credit to non-OPEC nations to finance risky oil exploration projects.
- The United States could lend technical and financial support to develop heavy oil fields in Venezuela, which hold large, but hard-to-process, reserves.
- New financial arrangements should be sought to prevent the deterioration of the dollar as an international reserve currency. A new oil currency might be created to reassure oil producers that their cash assets are not being eaten up by inflation. This, it is suggested, might encourage them to expand production.

**Eliot Marshall**