

preeminence" is built and place "local self-interest above national objectives." DOE officials, including Alvin W. Trivelpiece, director of the Office of Energy Research, also advised Massey to call off his political forces or the project could be cancelled entirely.

"As long as our case looked good on scientific, technical and economic grounds," Massey says, "I was convinced we should pursue it vigorously, but as the political opposition increased, it looked more and more as if the project could be destroyed. Nobody actually asked us to withdraw, and no threats or promises were made. It was never our intention to be spoilers."

On 20 July, Hodel announced through a news release that SURAS proposal had been selected by DOE for consideration in the FY 1985 budget request to Congress next January. Hodel said he was "convinced that the

technical panel did a fair and thorough job of reviewing the proposals and, in cases such as this, technical excellence must be the principal criterion for selection."

That day Percy and Representative John Erlenborn (R-Ill.) sent a consoling letter to Massey, sharing his disappointment over Argonne's decision and relating a recent conversation with Hodel. "We explored," they wrote, "what we consider to be underfunding of Argonne and a need to locate new projects at the laboratory that equal or exceed the benefits to you and the region that were represented by the accelerator.... Secretary Hodel has told us that he carefully studied the needs of Argonne and concurred that much had to be done and should be done to strengthen Argonne and provide greater stability to its ongoing and future programs." —IG

NSF helps advance computer research

From 1959 to 1972 the National Science Foundation spent \$72 million in support of computer-research facilities at 184 universities. This was seed money to plant computers on campuses for science and engineering "number crunching" and to stimulate growth in computer studies. The program was marked by some success—sprouting new architectures, including the Rice Research Computer and the Illiac series, as well as new programming languages, such as BASIC, developed by John G. Kemeny at Dartmouth, and new concepts of time sharing, initiated at MIT. Still, by 1977, NSF counted only 50 university departments in computer science and found to its dismay that most centers were not being used for computer research at all but for serving administrative paperwork and classroom projects. What's more, universities were neither buying advanced computers nor upgrading old ones. An NSF study under the chairmanship of Gerald Feldman of the University of Rochester pointed in 1979 to a crisis in academic computer research, with the number of PhDs leveling off at a time when demands for faculty and graduate students were increasing.

To deal with the problem, NSF set up its Coordinated Experimental Research Program with the intention of improving experimental projects, expanding existing computer centers, supporting large-scale multi-investigator studies and developing a nationwide computer network to serve industry, government and universities. Using the facilities of ARPANET, PhoneNet, Telenet and Timenet, the NSF network now services 120 clients, including IBM, Hewlett-Packard, Rand,

Atari, Digital Equipment and Wang Labs, as well as MIT, Stanford, Cornell and Yale, among others. It also has made 14 five-year awards totaling \$50 million to universities since the CER program began in 1980.

NSF's first grant went to the University of Washington for its Eden Project, which seeks to develop a distributed system of powerful work stations and mini-computers. In 1981, awards were made to Cornell, Yale, the University of Illinois and the University of Wisconsin at Madison. Last year's grants went to Brown, Rice, UCLA, the University of Texas at Austin and the University of Utah. In July, NSF announced the latest grants: The University of Maryland received \$4.5 million over the next five years to develop new procedures in image processing, numerical computation and knowledge-based systems, using a special, highly parallel multiprocessor machine developed at the university; the University of Pennsylvania got \$3.8 million for work on artificial intelligence and robotics; the University of North Carolina was awarded \$3 million and Duke \$1.7 million to create a joint center for Very Large Scale Integrated circuit research for use particularly in computer-aided design and computer-aided manufacturing systems.

Along with this program, NSF is participating with the Defense Advanced Research Projects Agency, NASA and the Department of Energy in a searching review of the entire computer field—from the needs of scientific researchers to the general problem of high-performance supercomputers. These agencies were directed by the White House Office of

Science and Technology Policy last year to come up with government initiatives, limited, of course, by the current Administration's philosophic preference for relying on the commercial market.

NSF had a head start in its study through an examination of many of the problems by a panel headed by Peter D. Lax of New York University, which issued a report last January on "Large Scale Computing in Science and Engineering." While the US currently is "the leader in supercomputer technology and in the use of supercomputers in science and engineering," the Lax panel warned of "alarming" evidence that "US dominance of the supercomputer market may soon be a thing of the past." The fastest and most powerful computers are now made by two US firms—Cray Research and Control Data Corp, both in Minneapolis. Currently Britain, West Germany, France and Japan are starting "aggressive" programs to develop supercomputers, the panel observed. Japan's "Fifth Generation Project," clearly the most ambitious, calls for a "a revolutionary approach to computer design based on artificial intelligence" and development by 1989 of a machine 1000 times faster than existing ones," said the Lax report. "There is no comparable technical program in the US."

A working group within NSF has prepared a report that sets forth various ways of carrying out the recommendations of the Lax panel, especially as it relates to access by scientists and engineers to local computer facilities, national networks and supercomputers. The draft of that report was approved by the executive committee of the National Science Board on 22 July and sent on 26 July to the interagency Federal Coordinating Council for Science, Engineering and Technology, charged by OSTP with producing a government-wide policy on supercomputers, to be presented to Congress as a program in the hundred million dollars range for the FY 1985 budget. —IG

A quick and dirty look at high-school science

Stating his position on US education before the Democratic National Committee meeting in Detroit on 14 July, Senator John Glenn (D-Ohio) observed that 34 states require high-school students to take only one mathematics or science course to graduate. "In most of those states that requirement can be fulfilled by taking a course in hygiene or physiology," said Glenn. "In other words, if you know when to take a bath, once a week or so, and wash your hands a couple of times a day, you qualify in science." □