The SSC's Price Tag Troubles Congress

The particle accelerator proposal is the talk of Capitol Hill; legislators worry about the machine's cost

With the aim of beginning operations by 1997, the Department of Energy has set next August as the deadline for the nation's governors to submit proposals to locate the Superconducting Super Collider (SSC) in their states. The Reagan Administration wants to make its final site selection in January 1989—perhaps before the President's term expires.

The department hopes to identify a "preferred" site by July 1988 based on recommendations of the National Academy of Sciences and the department's own Energy System Acquisition Advisory Board. Final adoption of the preferred site will then hinge on the outcome of an environmental impact statement.

But just 2 weeks after Energy Secretary John Herrington announced that President Reagan had approved the $4.4-billion SSC, there are signs that congressional wrangling could stretch out the project's schedule. How to pay for the SSC while maintaining other federal programs is the question that troubles Congress. This concern is sure to intensify when the Administration notifies Congress that the SSC could cost $5.3 billion after accounting for inflation.

For example, Senator Wendell Ford (D–KY), chairman of the Senate Energy Committee's subcommittee on energy research and development, says he will withold support until it is clear how the costly project will affect other research programs. In the House, Representative Marilyn Lloyd (D–TN) is equally concerned. The chairman of the House Science Committee's subcommittee on energy research and development, fears that funding could be stretched out for more than $2.7 billion in assorted physics and energy science projects that are slated to get under way by 1994.

Herrington contends that other research programs will not be held back by the SSC. But aides on key authorization and appropriations committees, noting that the next administration will have to cope with the SSC's burdensome costs, say there is bound to be some pressure on existing programs. While outlays for the SSC will only amount to $35 million in fiscal year 1988, they rocket to $348 million the next year and hit $615 million in 1990. Expenditures peak at $709 million in 1994.

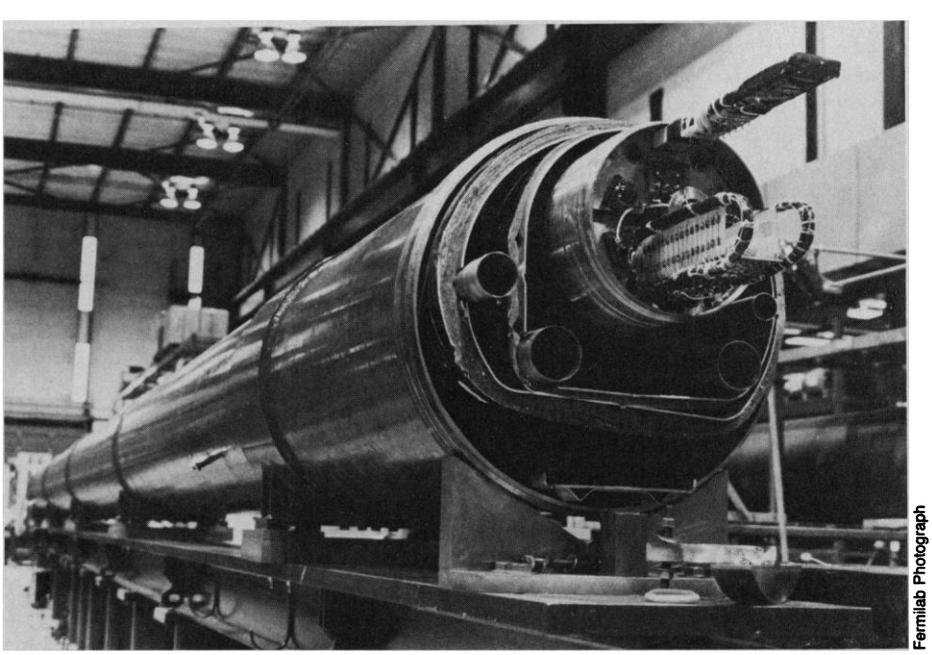
Beyond practical concerns about the SSC's budgetary effects, the project also is being touted as a cure-all for the nation's faltering nuclear waste disposal program. Senator Bennett Johnston (D–LA) on 10 February went so far as to suggest that the SSC be used as an inducement to get a state to agree to become the country's first permanent nuclear waste repository. Herrington says such an approach to siting the SSC would be "bad public policy and bad politics."

Representative Phil Sharp (D–OK), chairman of the House Energy and Commerce subcommittee on energy and power, wants DOE to extend the deadline for submitting proposals. Sharp complains that a handful of states have a jump on the rest of the nation in competing for the mammoth facility, which will produce thousands of new jobs. States were forewarned that the project might proceed. On 14 June 1985, Alvin W. Trivelpiece, director of DOE's Office of Energy Research, wrote to all 50 governors outlining the project. The states also were told that a technical report on the SSC's site parameters was available.

Whether DOE will extend its schedule, as Sharp suggests, is uncertain. Herrington says the selection process "is designed to be fair and equitable without favoring anybody." Still, it appears that states with national physics research laboratories and strong physics programs at the universities are further along in their planning. California, Illinois, New York, and Texas, for example, have been working for several years to land the project. In addition, scientists in each of these states have been involved in core research on the SSC.

The actions taken by states toward submitting a proposal to DOE for the SSC varies:

- California has identified a site near Stockton, about 80 miles northeast of San Francisco. The state's bid for the SSC is being coordinated through the California Collider Commission. The state anticipates providing basic services to the site, including waterlines and roads. Bipartisan support at the local level is assured.
- Illinois is staking its chance on a site that encompasses Fermi National Accelerator Laboratory. The existing infrastructure there could cut SSC's costs as much as 10%. The state has spent $4.5 million on siting activities to date. And the state's legislature in 1986 empowered the Illinois Department of Energy and Natural Resources with eminent domain authority to obtain land and



Fermilab Photograph

Superconducting magnet. *The SSC will use 10,000 superconducting magnets. The prototype shown here is surrounded by coolant tubes, shielding, and a vacuum shell.*

rights-of-way for the SSC. It also has set up a nonprofit corporation, SSC for Illinois, Inc., to coordinate the private sector's role in the state's drive.

■ New York has narrowed its site candidates to Wayne County in the central part of the state, an area encompassing Stewart International Airport near New Jersey, and Franklin County along the Canadian border. It plans to make its final site decision in the next few weeks.

■ Texas began planning 5 years ago and has ten potential sites. To coordinate efforts on the SSC, the state legislature in 1985 established the National Research Laboratory Commission. In the past, officials have said that the state might fund construction of the SSC tunnel and provide the land, but no firm decisions have been made.

Despite these activities, Herrington stresses that there are no "preordained decisions" at DOE on the SSC. Illinois, he says, does not necessarily have an advantage because Fermilab is located there. The existing campus, buildings, and accelerator rings are thought to have a potential value of $500 million. Herrington says, however, that there may be problems in trying to use these existing rings as an injector for the SSC. In any case, he says, states seem to recognize that they will have to match anything that Fermilab has to offer.

Although DOE's siting criteria document will not be published for several weeks, it is clear that the ability of states to provide land, rights-of-way, buildings, and other financial support will greatly influence the selection decision. Comments DOE's Trivelpiece, "There is no point in submitting a proposal if you are not going to be in the competitive range." Just how far states will go in the bidding war to land the SSC may not be clear until the filing deadline draws near this summer. ■ **MARK CRAWFORD**

Teacher Certification Program Under Way

In an effort to improve standards, status, and pay of science teachers, a novel certification program is being launched

THE National Science Teachers Association has named the first group of teachers to win approval under a novel teacher certification program. The program, launched last October in response to accumulating evidence that science teachers in many American schools are inadequately prepared, is aimed at establishing high standards for training and employment of science teachers. NSTA, the biggest professional association for science teachers, also hopes that by identifying those who are well qualified to teach science, certification will become a criterion for decisions on hiring and pay.

The first round of certification was something of a trial run, with the committee meeting in Washington and the first group of candidates offering unusually strong qualifications. The eight teachers certified represented elementary, middle/junior high, and high schools. NSTA plans to form regional committees to handle the process as the volume of applicants rises. The committees will be made up of science teachers at the appropriate grade levels, a college professor of science, and a professor of science education. NSTA has planned the certification program to be self-financing. The application fee is $50.

The new certification process is an exacting one requiring documentation of academic background and noncredit educational experience, official evaluations of teaching performance, and testimony from colleagues on the candidate's effectiveness as a teacher based on recent observation in the classroom. To be considered, a teacher must have at least 3 years of teaching experience.

Since the program went into operation in early October, requests for more than 1700 applications for certification have been filled, says NSTA executive director Bill G. Aldridge. Aldridge says that despite the fact that there has been little publicity on the certification program so far, NSTA sees signs of interest in it that lead him to think the program "will get a huge response." NSTA has about 50,000 members. Aldridge says that there are some 56,000 science teachers in grades 7 to 12. A recent survey indicated that among the roughly 1.2 million teachers in elementary grades, as many as a third have the kind of preparation in science that would lead them to seek certification.

The NSTA certification process is a direct product of the education reform campaign in this decade. NSTA collects data on science teachers and in the early 1980s called attention to a worsening shortage of science and mathematics teachers as few college students prepared to teach in these fields. More recently, the association noted that school boards were responding to pressures for reform by raising science requirements and had to have science teachers teach subjects outside their fields or assign teachers without training in science to science courses. NSTA acknowledges that multiple assignment is a fact of life in U.S. education and is lobbying for a number of measures by the federal government to ameliorate the problem. The association offers multiple certification to allow teachers to qualify in more than one subject.

While not mounting a head-on challenge to the current system, the NSTA program is obviously aimed at influencing teacher training. Colleges and universities with teacher training programs set standards in teacher specialties, and generally conform to the requirements of regional accrediting organizations such as those that operate under the National Council of Accreditation of Teacher Education (NCATE). NCATE is using NSTA standards in deciding on its accreditation of science teaching programs in colleges and universities.

A major influence on standards in teacher preparation in the past has been state licensing requirements in those states that license

Bill Aldridge: *NSTA president predicts program "will get a huge response."*