

Reagan Okays the Supercollider

Now Congress must be convinced that the mammoth \$4.5-billion project is worthwhile and that the nation can afford the investment

AFTER months of suspense, President Reagan on 30 January announced that he will ask Congress to support building the world's largest and most costly experimental device—the Superconducting Super Collider (SSC). The \$4.5-billion particle accelerator would enable physicists to peer deeper into the structure of matter. Proponents argue that the SSC is needed so the United States can maintain its lead in high energy physics research.

The White House endorsement of the SSC is a major victory for the high energy physics community. An outgrowth of a 1982 summer workshop conducted by the American Physical Society, the SSC project was endorsed by the Department of Energy's High Energy Physics Advisory Panel in 1983. DOE has since spent about \$60 million on research on the SSC's overall design and on component engineering studies.

The collisions of protons traveling at near the speed of light within the SSC are expected to allow researchers to push beyond the Standard Model's electroweak theory. Without a more powerful accelerator, American high energy physics research could falter, the SSC's backers claim, while new machines planned in Western Europe and the Soviet Union for the 1990s would give researchers there an edge.

With a circumference of about 87 kilometers (52 miles) the SSC would have 20 times the energy of any existing particle accelerator in the world today. The proton-proton collider would be fitted with two 20-trillion electron volt (TeV) beams that would yield particle collisions with a total energy of 40 TeV. The racetrack-shaped machine would utilize 10,000 helium-cooled superconducting magnets. The design draws on the engineering experience of superconducting magnets developed for Fermi National Accelerator Laboratory's 1.8-TeV Tevatron.

"I feel shaken," said Leon Lederman, Fermi's director, reacting to President Reagan's decision on the atom smasher. Lederman has been a strong advocate of the SSC during the 4-year drive to win approval for the project, but he says much of the credit for securing the Administration's endorsement should go to Alvin W. Trivelpiece,

director of the Department of Energy's Office of Basic Research, who got Energy Secretary John Herrington to recognize the merits of the project.

Without Herrington's support the SSC would have stood little chance of getting through the White House, Administration officials note. In September Herrington began priming cabinet members for an SSC vote through informal discussions. At about the same time, a formal White House review

In December, about 60% of the cabinet members opposed the project, largely because of its cost.

of the project was initiated. In December, however, about 60% of the President's cabinet opposed the project, says a senior Administration official. At issue was not the value of the experimental facility, but the budgetary effects of the SSC on federal support for other research programs and on efforts to roll back the federal deficit.

Despite deficit concerns, the Iran arms scandal, and other pressing issues, Herrington was able to keep the SSC on the White House agenda. Although some of the concerns raised in December by the Commerce, Interior, State, and Treasury departments may persist, the cabinet voted on 29 January to support the project. But while the President apparently is fascinated with the SSC, Fermi's Lederman notes that "It's not sufficient that the SSC has been proposed by the Administration."

Congressional approval of the project is not assured. The SSC has been controversial from the start because of its potential for dampening future federal funding of research in other disciplines. Herrington has stated publicly that the SSC must be funded with new money, not with funds from other programs. Administration officials note that the President's proposal to double spending at the National Science Foundation in the

next 5 years should allay researchers' fears. Furthermore, DOE officials add that building the SSC does not mean that other billion dollar projects such as mapping the human genome will be ruled out.

Privately, though, Administration officials admit that the SSC's costs may dominate congressional debate. They hope that ultimately the question will be decided on the basis of "whether this is important for America in the 21st century." In the end, the White House set aside budget issues and evaluated the SSC on its merits. Some Administration officials are betting Congress will do the same.

The real question before Congress may not be whether, but when to build the SSC. The Administration hopes to embark on the project in 1988, but veteran physicists worry that Congress could delay things. This happened in 1959 when President Dwight D. Eisenhower formally proposed construction of the Stanford linear accelerator—the country's first \$100-million particle accelerator. Eisenhower did not enlist the support of the Democratic leadership in the House and Senate before announcing the project. A partisan squabble subsequently broke out and delayed funding for several years (*Science*, 16 June 1961, p. 1907).

The Administration did not seek the support of House Speaker James C. Wright, Jr. (D-TX), and Senate Majority Leader Robert C. Byrd (D-WV) in advance. Reached by telephone in West Virginia, where the House Democratic leadership was holding a strategy session, Wright expressed total surprise and said he would withhold comment.

Nevertheless, mounting concern about U.S. industrial competitiveness could generate political support for the SSC in Congress. Moreover, states such as California, Illinois, New York, and Texas are already pushing for the project, which will generate thousands of jobs during construction and afterwards. DOE hopes to select a site by the end of 1988, assuming a congressional commitment is forthcoming. With the economies of many industrial and oil-producing states in upheaval, legislators may find it hard to say "no" to the SSC. ■

MARK CRAWFORD