Climate Turns Chilly for European Fusion Program

Research ministers have agreed to stretch out the program; critics say it has been oversold

Luxembourg

A COLD DRAFT is beginning to blow through Europe's fusion research community. Last week, European research ministers agreed to impose the first significant budgetary constraint on the joint European fusion program since it was launched in the 1950s. The move followed hard on the heels of a critical report suggesting that the economic prospects for fusion have been oversold and the potential environmental problems have been understated.

On 29 June, the research ministers of the twelve member states of the European Economic Community (EEC) decided to stretch out the planned fusion research program for the next 4 years in a manner which, according to officials with the EEC's Commission in Brussels, will represent a cut of 4% from current spending plans.

This reduction will apply both to the research program being carried out at the Joint European Torus (JET) based in Culham in the United Kingdom, and to experiments at facilities in other EEC countries. The amount of money involved is relatively small compared to cuts that have recently been made in the U.S. fusion program, but fusion scientists say the impact will be significant because a large proportion of the future budget is already committed to meeting fixed costs, such as salaries and administration.

One positive decision to emerge from last week's meeting was a formal agreement to extend the experimental life of JET by a further 2 years, to the end of 1992. This is intended to give JET scientists time for a series of tritium injection experiments designed as a culmination of their studies into the scientific and technological conditions for achieving controlled nuclear fusion. When construction on JET started in 1978, the program was expected to be terminated in 1990.

The budget cuts were the outcome of a complex wrangle between Britain and the other 11 members of the EEC over the pace at which the $850 million already approved for the program should be spent. The budget runs for 4 years, through March 1992. Britain, arguing that the Commission was proposing to spend an excessive proportion of the overall figure in the earlier years, suggested that $110 million be held back until the final 3 months. The Commission had originally suggested that only $22.6 million be spent in that period. Eventually, thanks in part to the efforts of West Germany's research minister, Heinz Riesenhuber, a compromise of $56.5 million was reached.

Shortly after this decision, the Commission issued a statement saying that the result would be to stretch out the whole program and that this will "inevitably generate delays" compared to the original plans that had been drawn up with authorities from the 12 member states of the EEC (as well as those from Sweden and Switzerland) in whose laboratories the research is being carried out.

"The proposal that we had made was optimized from the cost-benefit point of view, and since there will not be any cuts in the research program, if you introduce delays it means that the overall costs will be increased," says Charles Maisonnier, the head of the Commission's fusion directorate in Brussels.

Just as they resent efforts led by the British government to cut back on their funding, so fusion scientists have also reacted strongly to charges that they have oversold their case. The charges were made in a report to the European Parliament, the elected body that oversees the activities of the EEC Commission. The report, written by Colin Sweet of the Center for Energy Studies at the Southbank Polytechnic in London, was commissioned by the Parliament's new Science and Technology Options Assessment project, an experimental endeavor based directly on the activities of Congress' Office of Technology Assessment.

The report does not set out to assess the fusion program as such, but to suggest to the Parliament the criteria by which it should assess future demands for funds for a program that currently absorbs about half the EEC's joint spending on energy research.

While accepting the considerable scientific achievements of the European fusion research program, Sweet is highly critical of the methodology used to back up some of the economic claims that have been made for fusion in the past, describing for example a mix of energy accounting with statistics derived from conventional sources in one report as "a shotgun marriage of two sets of data, both of poor quality and inherently incompatible." He also says that there has been "undue complacency" over the environmental aspects of fusion—a key issue in securing public support for the eventual introduction of a fusion power program—and that "the uncertainties here are greater than have been realized."

For example, Sweet points out that the Commission referred at one point to the "non-existence" of important long-term potential hazards and stated that it is confident that radioactive components from fusion reactors could be placed in shallow storage. Yet Britain's National Radiological Protection Board concluded last year that only deep ocean disposal would present an acceptably low hazard.

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Some of Sweet's criticisms are accepted by the fusion research community. There is said to be widespread agreement, for example, that a study produced by the EEC Commission for the Parliament in 1986 on the environmental impact and economic prospects of nuclear fusion suffers from some major methodological flaws.

But other conclusions are sharply contested. To demand a detailed assessment of the economic prospects facing a technology that is unlikely to come into commercial operation until half way through the next century is "a bit like asking for an assessment of the implications of the Concorde in the 1930s" says one scientist.

The major charge being leveled at Sweet's report is that, by focusing on the many technological, economic and environmental uncertainties surrounding nuclear fusion, the report presents what they consider to be an excessively pessimistic and one-sided view of its future prospects.

At the same time, some are prepared to admit that, by raising such questions now, the report may have provided what one describes as a "valuable service" in outlining the questions that will have to be addressed if public and political support is to be guaranteed for fusion research in the future.

■ DAVID DICKSON