

Global fusion plans face three-year delay

[MUNICH] A decision about whether to build a multibillion dollar international facility to test the feasibility of nuclear fusion as an energy source is almost certain to be delayed by three years because of lack of political enthusiasm.

The four partners in the International Thermonuclear Experimental Reactor (ITER) project — the European Union (EU), Japan, United States and Russia — set up an 'exploratory' committee last year to look at non-scientific issues relating to the siting of the facility. The committee has concluded that, given the financial difficulties faced by all the partners, it is too soon to move to the construction phase when the current design phase ends in July next year. A formal decision by the partners on the proposed delay is expected early next year.

The conclusions of the committee coincide with new thinking about support for the project within the EU. The union's member states finance a joint fusion programme to which the European Commis-

sion has contributed nearly ECU900 million (US\$1 billion) during its five-year fourth Framework research programme (FP4).

The level of support for fusion research in the fifth Framework programme (FP5), due to succeed FP4 in 1999, is currently under discussion. If the construction of ITER were to start next year, as originally planned, then the support would need to be increased in FP5 and future Framework programmes by between 10 and 40 per cent, depending on whether the facility is sited in Europe.

Keilhacker: time to improve design?

Some EU member states, such as the United Kingdom, Sweden and Austria, strongly oppose any increase in the fusion budget, and France and Germany are unenthusiastic about the idea. The European Parliament, which has the final say in approving the FP5 budget, is deeply divided about support for fusion research on both

financial and environmental grounds.

Final financial decisions on FP5 must be made by early next year. To help decision-making, the Netherlands, which holds the EU's rotating presidency until the end of June, has asked the commission for its response to five options it has set out for ITER's future, including its comments on their implications for FP5 funding.

Two of the options are relatively extreme, and few take them seriously. One would be to stop fusion research completely. The second option would be to abandon the four-way ITER partnership and pursue a European-only version of ITER.

A further option would be to abandon plans to build ITER, but continue scientific research into fusion. But the Dutch paper warns that this option could cause the research to lose its focus on developing a source of future energy, because it would no longer be linked to the building of a reactor.

Another option, to start construction next year as originally planned, would mean increasing the fusion budget by 12 per cent in FP5 compared to FP4.

The option favoured by the Netherlands — and apparently by the commission — would be to postpone a decision on construction until after 2000, and to maintain the fusion budget at its FP4 level, extending funding for JET (the Joint European Torus) as a scientific bridge.

The predicted delay does not necessarily mean that ITER would come into operation later than planned, says Martin Keilhacker, director of JET. Instead, things would be done in a different order. A two- to three-year interim phase would allow a more detailed technological review of ITER to be completed, for example.

Keilhacker says that this would give time to carry out more scientific experiments to help reduce the uncertainty about the design, particularly the key issue of ignition of the fusion plasma.

ITER partners also suggest that this time could be used to make progress on choosing potential sites for the facility. Keilhacker says it would make sense for pre-licensing procedures to begin for several potential sites at the same time, because licensing is a factor in determining the rate of progress in construction of a reactor, which can take many years.

But companies involved in reactor building have expressed disappointment about the proposed delay. Matthias Kohler, executive director of Siemens's fusion programme, says that "as a taxpayer" he can understand the need for delay. But as a representative of industry he is "disappointed, because ITER represents the first chance for industry to begin to be a real player in the development of fusion technology".

Alison Abbott

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REASONS

Collapse of study complicates US participation

[WASHINGTON] An independent study that would have played a key role in determining the shape of US participation in the ITER project has collapsed, the first major victim of a legal impasse at the National Academy of Sciences over the status of its expert panels.

The United States will spend \$55 million on ITER this year. The Department of Energy (DoE) had commissioned the study to help to decide what to do after the ITER engineering design assessment ends in July 1998 (see above).

Perhaps more importantly, from the department's point of view, the study would probably have endorsed at least some of ITER's achievements, making it easier to win congressional support for continued US participation.

Earlier this year, the DoE asked the National Research Council — the operating arm of the National Academies of Science and Engineering — to set up a panel to assess the ITER design by October, in time to help prepare the

department's 1999 budget proposal for fusion energy sciences. But as a result of a recent court case the council and the DoE fear that they could face legal action under the Federal Advisory Committee Act if they appoint a panel in the usual way (see *Nature* 387, 220; 1997).

Lawyers have been trying to design a study that would avoid the act's rules by putting a single investigator in charge. But they abandoned their efforts after being told by congressional staff that the outcome of such a process was unlikely to have much credibility in the Congress. Martha Krebs, assistant energy secretary, confirms that, as a result, the study will not now proceed.

The DoE will now have to rely on its own Fusion Energy Science Advisory Committee (FESAC) to assess ITER and plot a way forward. The latest ITER design was endorsed in April by a FESAC panel chaired by Robert Conn, dean of engineering at the University of California at San Diego (see *Nature* 386, 745; 1997).

Another panel, led by Herman Grunder, director of the Thomas Jefferson National Accelerator Facility in Newport News, Virginia, is now being asked to produce some recommendations for US involvement in an extended ITER design assessment.

Krebs is pragmatic about the setback. The academy review would have been helpful, she says, but advice from FESAC will have to do instead. "I believe we can make a strong case that the activities we'd do [under an extended design assessment] would be science-driven and would sustain our domestic capability in fusion."

But, despite a more positive attitude towards fusion research in the Congress than in the past, selling future US involvement in ITER, already a tough task, is likely to become still more difficult. Although FESAC has some scientists from outside fusion research, the committee is seen primarily as the voice of the fusion community. **Colin MacLwain**