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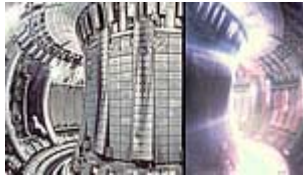
European Research Headlines

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ENERGY, NUCLEAR FUSION

□ 'Fusion for Energy' ready for ignition

The Commission has unveiled concrete plans to manage its portion of ITER.



Fusion may be the energy source of the 21st century.
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The European Commission has published its blueprint for the Joint Undertaking, popularly known as 'Fusion for Energy', the proposed entity to manage Europe's obligations to the international ITER fusion energy project. It is expected to be in operation by mid-2007. Under the ITER agreement, Europe is responsible for approximately half of the high-technology components required to build the fusion reactor.

The new Joint Undertaking will work with industry and research organisations to produce the needed parts for the reactor. It will consist of a governing board, composed of the

members of the Joint Undertaking, i.e. EURATOM, EU Member States and other associated countries. Regular day-to-day activities will be the responsibility of the Director, to be named at a later date.

"Building upon the success of the integrated Euratom fusion research programme, the Joint Undertaking will be a dynamic new organisation that will play a leading role in the construction of ITER and enhance Europe's role in the technological development of fusion energy," Commissioner Potočník said recently in a statement.

The undertaking will be responsible primarily for managing the EU's financial contribution to the ITER project. As part of long and complicated negotiations ensuring construction of the ITER site within Europe (in Cadarache, France), the EU has agreed to shoulder about half of the construction costs of the project. The current estimate of the cost for the thirty-year project is set at €10 billion. With a price tag like that, it is second only to the International Space Station as the most expensive international scientific undertaking. The reactor is expected to be up and running by 2016.

The stated objectives for 'Fusion for Energy' are, among other things, to oversee preparation of the ITER site in Cadarache, to arrange for European industry to manufacture the components that ITER Europe has agreed to provide, to prepare for the exploitation of ITER, i.e., for scientists to carry out experiments with it.

The Joint Undertaking will also contribute to the implementation of the "Broader Approach", an agreement between the EU and Japan aimed at collaboration to accelerate the development of fusion energy. In addition, the Joint Undertaking will prepare in the future a programme of activities for the future development of DEMO, a demonstration reactor expected to come after the construction of ITER.

Cadarache, located near Lyon, was chosen as a candidate site for ITER for several reasons. It is already the home of world's largest super-conducting fusion experiment, Tore-Supra at the CEA Cadarache Research Centre, one of the biggest civil nuclear research centres in Europe. Therefore, the Cadarache site has existing technical support facilities and expertise, which significantly reduces the risks associated with the construction of a project such as ITER.

The ITER consortium countries represent over one-half of the world's population; perhaps a telling indicator of the perceived potential fusion has as the energy source of the future. Fusion does indeed have many attractive qualities. The raw materials required as fuel for a fusion reaction - deuterium and lithium - occur naturally in almost limitless quantities. In the proposed fusion reaction, there is a small amount of fuel that is only able to sustain a reaction for about a minute, therefore, there is also no possibility of a runaway chain reaction leading to a meltdown, as experienced at the Chernobyl nuclear fission reactor. Also, in contrast to the burning of fossil fuels, a fusion reaction releases no 'greenhouse' gases into the atmosphere, so it does not contribute to global warming.

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