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EXPERIMENTAL FUSION REACTOR ENGINEERING DESIGN AGREEMENT SIGNED

Representatives of the European Community, Japan, Russia and the United States signed today in Washington an agreement to cooperate in the engineering design of an International Thermonuclear Experimental Reactor (ITER).

The ITER engineering design activities will extend for six years and result in completion of a test facility design that would, if built, demonstrate the scientific and technological feasibility of fusion energy for peaceful purposes. The estimated cost of the engineering design and its associated research and development is of the order of \$1 billion to be shared equally among the four parties. The information developed during the engineering design stage will provide the basis for future decisions on the construction of ITER.

Ambassador Andreas van Agt, Head of the Delegation of the EC Commission to the US, signed the agreement for the European Community, and Minister Hiroshi Hirabayashi, Deputy Chief of Mission in the Embassy of Japan in Washington, Viktor Mikhailov, Minister of the Russian Federation for Atomic Energy, and Secretary of Energy James D. Watkins signed for their parties. Dr. Hans Blix, Director General of the International Atomic Energy Agency, under whose auspices the cooperation will take place, conducted the ceremony.

Ambassador van Agt said "The ITER cooperation has no precedent in size and scope and could well become the model for other worldwide joint ventures in big science".

"Today's agreement is truly a milestone in the development of a safe, environmentally sound energy source for the next century", said Admiral Watkins.

The principle of equality of the four parties, in status, contributions and benefits, is fundamental to ITER. A joint central team will coordinate and integrate the design and the research and development (R&D) work that will be done by institutions located on the four parties' home territories. This joint team will be located in three equally important co-centers at Garching, Germany, in Naka, Japan and in San Diego, California. The R&D and design work will be assigned to the participating parties through a joint decision process.

The ITER project will be headed by a director from the EC. The project will be overseen by a Council composed of two members from each party. This ITER Council will be chaired by a member from the Russian Federation and co-chaired by a member from Japan. The Council will be supported by an international

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Technical Advisory Committee, chaired by a US person, and a Management Advisory Committee, chaired by a Japanese person who will also serve as the co-chair of the Council. The formal seat for the ITER Council meeting will be in Moscow.

Two countries outside the European Community but fully associated with the Community's Fusion Program, Sweden and Switzerland, participate through the Community in the ITER cooperation.

The parties have already cooperated on conceptual design activities for ITER completing their joint work in December 1990. The conceptual design yielded a construction cost estimate of \$5 billion (1989 US dollars). The engineering design will develop a more detailed cost estimate.

Fusion is the process that provides the sun and other stars with their energy. The process involves combining fuel such as hydrogen into heavier atoms such as helium, with a resultant release of energy. Fusion energy has long-term potential as a virtually limitless, environmentally acceptable and economically competitive source of energy.

Background on the EC Fusion Program and its relation to ITER

The annual overall European expenditure on fusion has settled since the late 1980s at about 450 million ECU (1 ECU = \$1.38) of which the Community finances about 45% through multiannual programs. The Community Fusion Program, the origins of which date back to 1959, embraces all work carried out in the twelve member states plus Sweden and Switzerland in the field of fusion by means of magnetic confinement. About 1,750 professionals work directly for the Program. The long-term aim of the Program is the joint creation of safe, environmentally sound prototype reactors.

The European approach in fusion research has been through concentration of the efforts on magnetic toroidal confinement, mainly along the so-called Tokamak line, while maintaining a watching brief on other approaches to controlled fusion.

Theoretical and experimental achievements in Europe's associated fusion laboratories have enabled the construction of the largest Tokamak in the world, the Joint European Torus (JET). The success of the Program presently culminates in the outstanding performance of JET whose main plasma parameters have individually reached the values needed for the reactor. For the first time ever in a laboratory, in November 1991, an important step was taken on JET: a mixture of the appropriate fuels for a reactor, deuterium and tritium, was used and fusion power in the megawatt range was produced for two seconds. Together with JET, the specialized devices operating in the associated laboratories in Europe have been instrumental in developing reactor relevant concept improvements and fusion technology.

The first priority objective of the 1990-1994 Community Fusion Program is to provide the scientific and technological base, to establish environmental and safety criteria and to prepare industry for the construction of the next step after JET, an experimental thermonuclear reactor of the Tokamak type. On the basis of today's Agreement, the engineering design of this next step will be undertaken in the frame of the quadripartite ITER cooperation.

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