

DOE uses science court

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process was also proposed in early 1977 by John C. Bailor, editor-in-chief of the *Journal of the National Cancer Institute*, who believed that guidelines were needed for the routine x-ray screening of women for breast cancer. Bailor reports "that the very possibility of a science-court procedure" was sufficient to impel the relevant societies to agree on guidelines.

—CBW

Joint fusion projects

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are willing to go; Hiroshima, Nagoya, Princeton and UCLA have been suggested so far.

At the mid-September dedication of the Doublet III device, Kintner noted that "One of the most interesting possibilities in [the Japanese-American] discussions is a full collaboration between our two nations in the improvements to Doublet III... and in the advanced experimental operations which would then be possible." He explained that additional power supplies could almost double the magnetic-field strength of Doublet III and that "it could accept three times the auxiliary plasma heating power presently committed." If such improvements were done and the machine operates as theoretically predicted, Kintner observed, it could become "the first machine in the world to produce simultaneously the conditions of plasma temperature needed for a practical fusion reactor."

Kintner told us that the Bumpy Torus and the torsatron (a stellarator variant) are among the alternative concepts that could benefit from US-Japan cooperation. Collaboration on the future extension of the Bumpy Torus concept is an obvious possibility, Clarke noted, because the only two devices of this type in the world are at Oak Ridge National Laboratory and the University of Nagoya. He pointed out that more substantive cooperation with the Japanese may be possible if the Elmo Bumpy Torus at Oak Ridge successfully passes an October DOE review of alternative concepts and becomes one of those that the department will test experimentally at the proof-of-principle level.

As for the torsatron concept, the University of Kyoto is presently building Heliotron E ($l = 2$), and the University of Wisconsin and MIT are proposing to build devices of this type: the WISTOR ($l = 3$) and the TOREX-4 ($l = 4$), respectively ($l =$ the number of windings). Larry Lidsky (MIT) told us that, based on unofficial conversations that he and his colleague Peter A. Politzer recently had with Japanese scientists, he foresees US-Japan collaboration on the torsatron

concept possibly occurring in three stages:

- ▶ short-term exchange of personnel, probably requiring little, if any, government sanction;

- ▶ longer-term exchange (with government approval) of personnel such as diagnosticians when the Heliotron (1980), TOREX-4 (1981) and WISTOR devices would come on line, and

- ▶ planning (fairly soon) for the next step—Lidsky believes this will probably be a single fairly large superconducting machine, possibly of ignition scale, that might be built on an international basis.

Clarke told us that the revival of the stellarator concept in a variant form is due at least in part to the successes of the tokamaks: "We've developed heating and vacuum techniques that did not exist back in the days when the stellarators were [originally] being pushed. We've learned a lot about physics, stability, particle transport, energy confinement and so forth. And a lot of that applies directly to stellarators because they are toroidal systems." He also noted that "People suspect that one of the problems of stellarators back in the old days was that their magnetic-field geometry was not correct, because of errors in the winding. It was purely a technological thing that was associated with stellarators." Clarke observed the stellarators built in recent years—CLEO (Culham Laboratory, England), Wendelstein VII (Garching, Germany) and L2 (Lebedev Institute, USSR)—work much better than previously because of the new technology.

Lidsky told us that the torsatron concept allows the coils to be wound in such a way as to reduce the forces on them by a factor of 20 to 30 over the old stellarator concept. He also noted that stellarator and torsatron experiments in Russia, England, Germany and Japan over the last few years have indicated that stellarators can hold plasma at least as well as tokamaks of equivalent size.

The Russian proposal was received by the International Fusion Research Council of the International Atomic Energy Agency in Vienna. It stated that "The Soviet Union considers it important and timely to develop and build a next generation fusion (experimental Tokamak reactor) on a multinational basis and under the auspices of the International Atomic Energy Agency. The USSR considers that it would be appropriate to set up immediately a group of experts at the IAEA to study the problem and initiate a project. On its part, the USSR is ready to participate in the initiation and implementation of the project and to provide a site for the project on the Soviet territory."

In response to this proposal, the IFRC formed a group to suggest objectives, terms of reference and the means of implementing such a project. This group

was headed by R. S. Pease (chairman of the IFRC and director of the Culham Laboratory) and consisted of Kintner, Evgeniy Velikhov (head of the USSR fusion program and associate director of the Kurchatov Institute, Moscow), Donato Palumbo (head of the fusion division of the West European Community) and Segeriu Mori (head of the Japan Atomic Energy Research Institute's fusion program).

This group in turn recommended (and the director general of the IAEA has approved, according to Kintner) the formation of a study group of 12 to 16 people (3 to 4 each from the US, USSR, Japanese and European fusion communities) to meet intermittently over the next year and then issue a report on the scope and function of this proposed device. Heading the respective delegations will be Weston Stacey (Georgia Tech), Boris B. Kadomtsev (director of fusion program, Kurchatov Institute), Mori and G. Grieger (Max-Planck-Institut für Plasmaphysik, Garching).

Kintner told us that there has been only "coffee-klatsch" discussion of the site of the proposed fusion device. In addition to the USSR offer, Sweden and Canada have expressed interest, and Cadarache, France and Ispra, Italy have been suggested as possible locations.

Kintner observed that "All that's being done at this time is just trying to conceptualize what it might look like, what its benefits might be" and basically "Is it worth doing?" He noted that before such an international project could become a reality, a number of political and financial questions would have to be resolved and thus "people are entering this with the idea that it's a long walk, but you have to take the first step."

—CBW

in brief

Copies of the first two supporting papers prepared for the National Research Council's Committee on Nuclear and Alternative Energy Systems (co-chaired by Harvey Brooks and Edward Ginzton) are now available from the Office of Publications, 2101 Constitution Avenue, N.W., Washington, D.C. 20418. The first paper is entitled, "Problems of Uranium Resources and Supply to the Year 2010," and the second, "Energy Modeling for an Uncertain Future." They are being sold for \$6.00 and \$9.75, respectively.

Johannes J. Gruemm, an Austrian, will succeed Rudolf Rometsch as deputy director general for the department of safeguards of the International Atomic Energy Agency. Since 1971 Gruemm has been the scientific director of the Oesterreichische Studiengesellschaft für Atomenergie. □