

Nuclear fusion power project to start in slimmed-down version

June 8 2009, by Laurence Chabert

A multi-billion-dollar project to prove whether nuclear fusion, the power that fuels the Sun, can be a practicable energy source is to be scaled down in its early stages, sources said on Monday.

The test reactor, to be built at a site in southern France, will start its experiments in 2018 as scheduled but will initially be built in a slimmed-down form, they said.

"Discussions are underway about the best timetable," Catherine Cesarsky of France's Atomic Energy Commission (CEA) told journalists on the sidelines of a science conference here.

"There is a new commissioning strategy, a detailed discussion about the machine's deployment."

A decision approving the change will be put next week to the partners in the International Thermonuclear Experimental Reactor (ITER), she said.

Launched in 2006 after years of debate, the scheme aims at building a testbed at Cadarache, near Marseille, to see whether fusion, so far achieved in a handful of labs at great cost, can be a feasible power source.

Its seven backers are the European Union (EU), China, India, South Korea, Japan, Russia and the United States. Kazakhstan is poised to become the eighth member.

[Nuclear fusion](#) entails forcing together the nuclei of light atomic elements in a super-heated plasma, held in a doughnut-shaped chamber called a tokamak, so that they make heavier elements and in so doing release energy.

The process, used by the Sun and other stars, would be safe and have negligible problems of waste, say its defenders.

In contrast, nuclear fission, which entails splitting the nucleus of an atom to release energy, remains dogged by concerns about safety and dangerously radioactive long-term waste.

Cesarsky said the first experiments would begin on schedule in 2018 "but with a machine that will be less complete than initially thought."

"Technically, it is far more valuable to do the first plasma with an ITER that is not completely finished, because if there is a simple problem it can be detected."

A spokesman for ITER told AFP that the scaled-down version would entail using hydrogen initially.

Key experiments using tritium and deuterium, designed to validate fusion as a producer of large amounts of power, would not take place until 2026, the spokesman said.

This would be around five years later than previously scheduled.

The planned changes will be submitted to the ITER council, meeting in Mito, Japan, on June 17 and 18, he said.

The council will meet again in November to make a new assessment of costs, the official said.

Four years ago, ITER was priced at around 10 billion euros (13.8 billion dollars today), spread among its stakeholders, led by the EU, which has a 45-percent share.

Five billion euros (6.9 billion dollars) would go to constructing the tokamak and other facilities, and five billion euros to the 20-year operations phase.

Last month, the British science journal Nature said construction costs "are likely to double" and the cost of operations "may also rise."

If ITER is a success, the next step would be to build a commercial reactor, a goal likely to be further decades away.

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