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China To Build Its Own Fusion Reactor

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by Edward Lanfranco
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Days after France was chosen as the site for an experimental nuclear reactor based on fusion technology, state media said Friday China will build its own.

The six nations participating in the International Thermonuclear Experimental Reactor project reached agreement in Moscow Tuesday to construct the first fusion technology facility at Cadarache, near Aix-en-Provence, France.

The ITER project, aimed at developing fusion-generated electricity, was formed by the United States and Japan in the late 1980s. China joined in 2003.

The European Union (represented by Euratom) will pay 50 percent of the projected \$12 billion cost of the experimental facility while the United States, Russia, China, Japan and South Korea will each contribute 10 percent.

Construction at the French site is expected to begin soon with the first fusion energy experiments possibly starting in 2016.

Scientists believe it will take at least 50 years before the first commercial use of ITER goes on line.

In the meantime, China has decided to take data from the international project and build its own fusion plant.

Quoting an unnamed "leading Chinese plasma physicist" it interviewed Thursday, the official Xinhua news agency announced: "The ultimate goal of Chinese scientists is to build thermonuclear experimental reactors with their own efforts." The anonymous source who made the statement claims to have access to the ITER project.



Like space, having a fusion program is what all big powers need to have in order to demonstrate their technological prowess.

"International cooperative endeavors like the ITER make us keep abreast of the world's most advanced technologies," the source said, adding: "We're entitled to share all top-notch know-how once we entered the global consortium."

Once the decision was made in Moscow, Chinese Minister of Science and Technology Xu Guanhua stated, "As China is short of energy, global research endeavors for energy supply solutions meet our strategic interest."

The Chinese Academy of Sciences Institute of Plasma Physics is developing an ITER prototype, an Experimental Advanced Superconducting Tokamak, costing \$24 million, and scheduled for completion later this year, the government-controlled agency said. It did not mention where the site was located, but analysts have a good idea where to look.

The Xinhua article Friday said China had independently built its "own sophisticated devices in thermonuclear reaction," and that "Chinese scientists started to develop a fusion operation four decades ago in mountains southwest of inland Sichuan province."

Analysts note that much of China's nuclear research has been conducted in Sichuan because of a policy decision made by Mao Zedong in the 1960s known as the Third Line. The goal was to locate key defense industries in provinces far from possible attack by the United States or former Soviet Union.

The September-October 2003 issue of the Bulletin of Atomic Scientists said China's chief nuclear design lab run by the Chinese Academy of Engineering Physics is located in Minyang, Sichuan.

The province also has nuclear weapon assembly-disassembly facilities in Zitong, a plutonium production site in Guangyuan, and a uranium enrichment plant in Heping.

If successful, the next test of the EAST reactor will operate at over 212 million degrees F and produce electricity for 1,000 consecutive seconds, state media said. An official with the CAS Bureau of Basic Research stated, "The EAST is the prototype closest to the ITER and will be unbeatable in at least a decade."

An article from the flagship Communist Party newspaper People's Daily in September 1999 noted China was building an experimental nuclear fusion device, the Tokamak HL-2A, on the outskirts of Chengdu, the capital city of Sichuan.

One perspective on Friday's announcement is that while China is willing to participate in a global consortium attempting to bring the dream of fusion driven electricity to reality, it is also keen to take what it can grab in the quest for energy independence.

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