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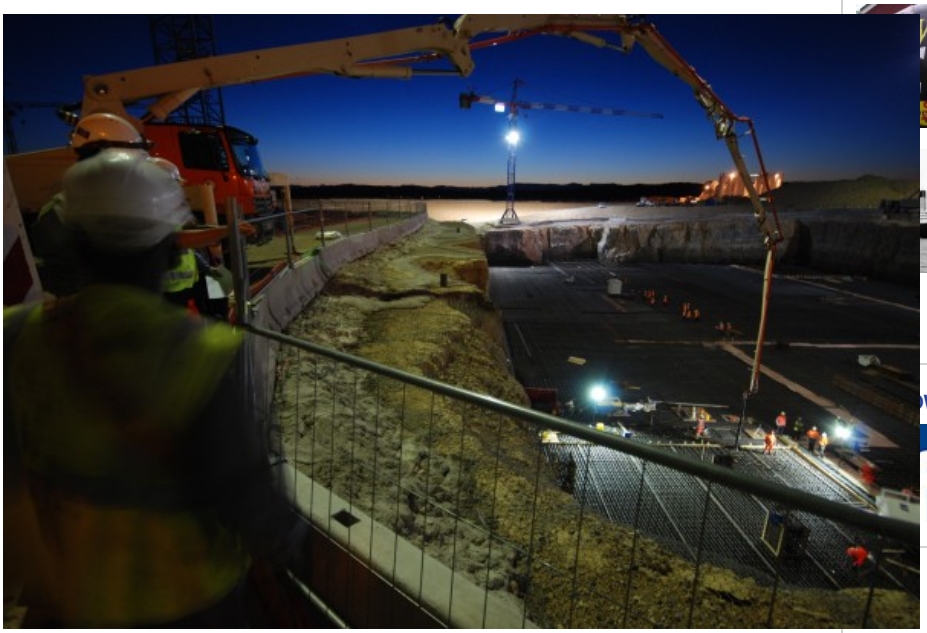
ADRIAN CHO Staff Writer

Cost Skyrockets for United States' Share of ITER Fusion Project

10 April 2014 6:30 pm | 9 Comments



ITER

Costs rising. The U.S. share for the ITER fusion energy project, under construction in France, could

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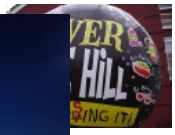
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reach $3.9 billion overall, according to a new estimate.

ITER, the international fusion experiment under construction in Cadarache, France, aims to prove that nuclear fusion is a viable power source by creating a "burning plasma" that produces more energy than the machine itself consumes. Although that goal is at least 20 years away, ITER is already burning through money at a prodigious pace. The United States is only a minor partner in the project, which began construction in 2008. But the U.S. contribution to ITER will total $3.9 billion—roughly four times as much as originally estimated—according to a new cost estimate released yesterday. That is about $1.4 billion higher than a 2011 cost estimate, and the numbers are likely to intensify doubts among some members of Congress about continuing the U.S. involvement in the project.

The United States and ITER share a complicated history. The project was first proposed in 1985 as a joint venture with the Soviet Union and Japan. The United States backed out of that effort in 1998, citing concerns over cost and feasibility—only to jump in again in 2003. At the time, ITER was envisioned to cost roughly $5 billion. That estimate had grown to $12 billion by 2006, when the European Union, China, India, Japan, Russia, South Korea, and United States signed a formal agreement to build the device. The United States agreed, essentially, to build 9% of the parts for the reactor, at whatever price was necessary.

ITER was supposed to start running by 2016. Since then, however, the project has been plagued by delays, cost increases, and management problem. ITER is now expected to cost at least $21 billion and won't turn on until 2020 at the earliest. And a recent review slammed ITER's management.

The cost of the U.S. contribution has increased, too, although by how much has been unclear. Officials with U.S. ITER had not released an updated cost profile for several years, until Ned Sauthoff, project manager for U.S. ITER at Oak Ridge National Laboratory in Tennessee, did so yesterday. Speaking to a meeting of the Department of Energy's (DOE's) Fusion Energy Sciences Advisory Committee in Rockville, Maryland, Sauthoff reported that the total cost of the U.S. contribution would be $3.9 billion by the time the project is done in 2034. The schedule assumes that ITER won't start running until 2024 or 2025. In comparison, an April 2011 funding profile pegged the cost of U.S. ITER at $2.5 billion.

The reason for the difference lies mainly in the timing. The 2011 cost profile would have seen spending on U.S. ITER plateau at $350 million per year from 2014 through 2016. However, in 2013, DOE officials decided (as part of their budget request for the following year) to cap spending on ITER at $225 million per year to prevent the project from consuming the entire budget of DOE's fusion energy sciences program. Stretching out the budget invariably increases costs, researchers say. This year, the fusion program has a total budget of $505 million, including the $200 million Congress ultimately decided to spend on ITER. Sauthoff stresses that ITER researchers are making concrete progress in construction. "There is very strong progress in the fabrication of components around the world," he said in an e-mail after the meeting. "US components needed for the construction sequence are being completed for delivery in 2014 and 2015."

The new numbers appear to be giving some members of Congress heartburn. In a separate hearing yesterday on the proposed 2015 budget for DOE, Senator Dianne Feinstein (D-CA), the chair of Energy and Water Development Subcommittee of the Senate Committee on Appropriations, said that a review by DOE officials suggested that the cost of U.S. ITER could rise as high as $6 billion—more, if the concerns over ITER management are not addressed. "I'm really beginning to believe that our involvement in ITER is not practical, that we will not gain what we hope to gain from it, and instead this money could be much better be spent elsewhere," Feinstein said.

Could the United States really back out of ITER? The Obama administration conceives of the U.S. commitment to ITER as being on a par with a treaty agreement, one Washington insider says, so the administration simply cannot walk away from that commitment. But one Senate staffer who works for the Democratic majority says that's only the administration's position. In fact, the staffer says, the administration seems to be split, with officials at the State Department arguing that the U.S. commitment to ITER is inviolable and officials at DOE indicating that they'd be just as happy without the project on their hands. The staffer suggests that the conflict explains why the administration requested only $150 million for ITER next year instead of the supposed maximum of $225 million it had set earlier.

The Senate staffer suggests that if administration officials can't make up their minds about ITER, Congress could do it for them in the next several months, as they write annual spending bills. "Our intention is make a decision for ourselves in our markup [of the 2015] budget," the staffer says. "They won't have a choice."

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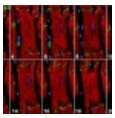

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Wayne Williamson • 4 hours ago

This just sucks....
The best bet was to get other 1st world nations to chip in on something that actually had measurable goals. Which it appeared to have been working, but now I don't know. I truly hope someone digs into this and can determine if it is worth while pursuing.
Fusion is the perfect power source, I just don't know if we have the "resources" to make it practical....so sad....

• Reply • Share ›

Ernesto Mazzucato • 12 hours ago

According to this article:
1) The U.S. agreed to build 9% of the parts for the reactor;
2) The U.S. contribution to ITER will total $3.9 billion.
This mean that the cost of ITER is not $21 billion, as stated in the article, but $43.3=3.9/0.09 billion.

• Reply • Share ›

Adrian Cho ↗ Ernesto Mazzucato • 11 hours ago

Dear Ernesto, As you may know, the issue is somewhat more complicated than that because the United States costs projects differently than European countries do. Factors such as contingency and labor costs are handled differently. So projects generally appear to be less expensive in Europe than they do in the United States--although in the end everything must be paid for all the same. The ITER organization dealt with this issue by making each partner responsible for some fraction of the hardware. Exact costing was then left to the partner itself. Sincerely, Adrian

1 • Reply • Share ›

Dexter La Motte ↗ Adrian Cho • 18 minutes ago

I would like to see the science behind the fusion reactor

• Reply • Share ›

Ernesto Mazzucato ↗ Adrian Cho • 8 hours ago

Dear Adrian,
How do you figure out what is 9% of the pie if you do not know the cost of the entire pie? Sincerely, Ernesto

• Reply • Share ›

Adrian Cho ↗ Ernesto Mazzucato • 8 hours ago

Dear Ernesto, As I understand it, when the ITER agreement was written, the various parties attempted to estimate the bare value of all the different parts and subsystems of the device--not counting contingency, overhead, etc. They then divide the pieces up in some way so that the U.S. would be responsible for parts and systems accounting for 9% of that value. Moreover, the U.S. agreed to produces those parts and systems--not to provide 9% of the total money spent on ITER. So, roughly speaking, that's how the U.S. is nominally responsible for 9% of the project but, given its accounting standards, could end up appearing

to pay more--assuming that a total is ever calculated and released. Sincerely, Adrian

Reply • Share ›

Uncle Al → Adrian Cho • 10 hours ago

Entire buildings of professional bean counters coming up short by $22 billion, more than a factor of two, is not *contingency*. Contingency is 10%. A factor of two is corruption. "The Obama administration" is a confluence of overwhelming ignorance with overweening arrogance. It is delusional, honorless, and astoundingly incompetent in all things.

1 • Reply • Share ›

Ernesto Mazzucato → Uncle Al • 8 hours ago

Dear Uncle Al,
As explained in the article, the Obama administration believe that the US cannot walk away from an international agreement that was signed by the G.
Bush administration!. Sincerely, Ernesto

1 • Reply • Share ›

Uncle Al • a day ago

Why would anybody suspect that 840 cubic meters of 150 million degree centigrade plasma belching 400 megawatts of 14.1 MeV neutrons snugged hard by 100,000 km of niobium stannide and titanide superconducting microfilament bathed in thousands of gallons of four degrees above absolute zero liquid helium that will dump 41 billion joules (20,000 lbs of TNT) given a thermal quench...might not work perfectly (at all, ever)?

Who would doubt that liquefying 12,300 liters/hour of liquid helium/hr to offset *estimated* 110,000 watts of dynamic thermal dump into the supercon coils could do anything but succeed?

Putting a dense iron rebar network under the planetary-scale supercon coils shows the depth of ITER commitment to faith-based engineering. Will the cooling water lines be black iron? We can hope.

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Dexter La Motte → Uncle Al • 22 minutes ago

they will never contain it will be a bomb

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