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Japan's Nuclear Crisis: Status of Spent Fuel at Exploded Reactor Buildings Unclear 日本の核危機
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By John McGlynn -- The Institute for Energy and Environmental Research (IEER) is asking an important question about Japan's nuclear crisis that seems to have been ignored by the media and in announcements from the Japanese government and Japan's nuclear power industry: What is happening with the spent fuel pools located at the top of the buildings housing the Unit 1 and Unit 3 reactors at the Fukushima Daiichi nuclear power plant facility? Both reactor buildings have lost their upper structures due to explosions possibly caused by a hydrogen gas build-up (Unit 1 on March 12, Unit 3 on March 14).

IEER writes in its analysis of the situation at the Daiichi nuclear facility: "While Japanese authorities have stated that the reactor vessel is still intact [editor's note: Here IEER refers to reactor #1 but the same applies to reactor #3], there has been no word regarding the status of the spent fuel pool structure, except indirectly. Is it still intact? This is a critical question as to the range of potential consequences of the reactor accident."

The *New York Times* has a visual that indicates the location of the spent fuel pool near the top of the reactor vessel (here; see frame #3 of The Crippled Japanese Nuclear Reactors).

The full IEER analysis can be found here.

This excerpt from the analysis highlights the dangerous implications of any disruption of the spent fuel pools by the two reactor building explosions:

"Both reactors [Units 1 and 3] are of the Mark 1 Boiling Water Design. They do not have the sturdy secondary containment buildings of concrete that is several feet thick typical of later reactor designs.

A special feature of the Mark 1 design is that the used fuel, also called spent fuel, is stored within the reactor building in a swimming pool like concrete structure near the top of the reactor vessel. When the reactor is refueled, the spent fuel is taken from the reactor by a large crane, transferred to the pool, and kept underwater for a few years. This spent fuel must be kept underwater to prevent severe releases of radioactivity, among other reasons. A meltdown or even a fire could occur if there is a loss of coolant from the spent fuel pool. The water in the spent fuel pool and the roof of the reactor building are the main barriers to release of radioactivity from the spent fuel pool."