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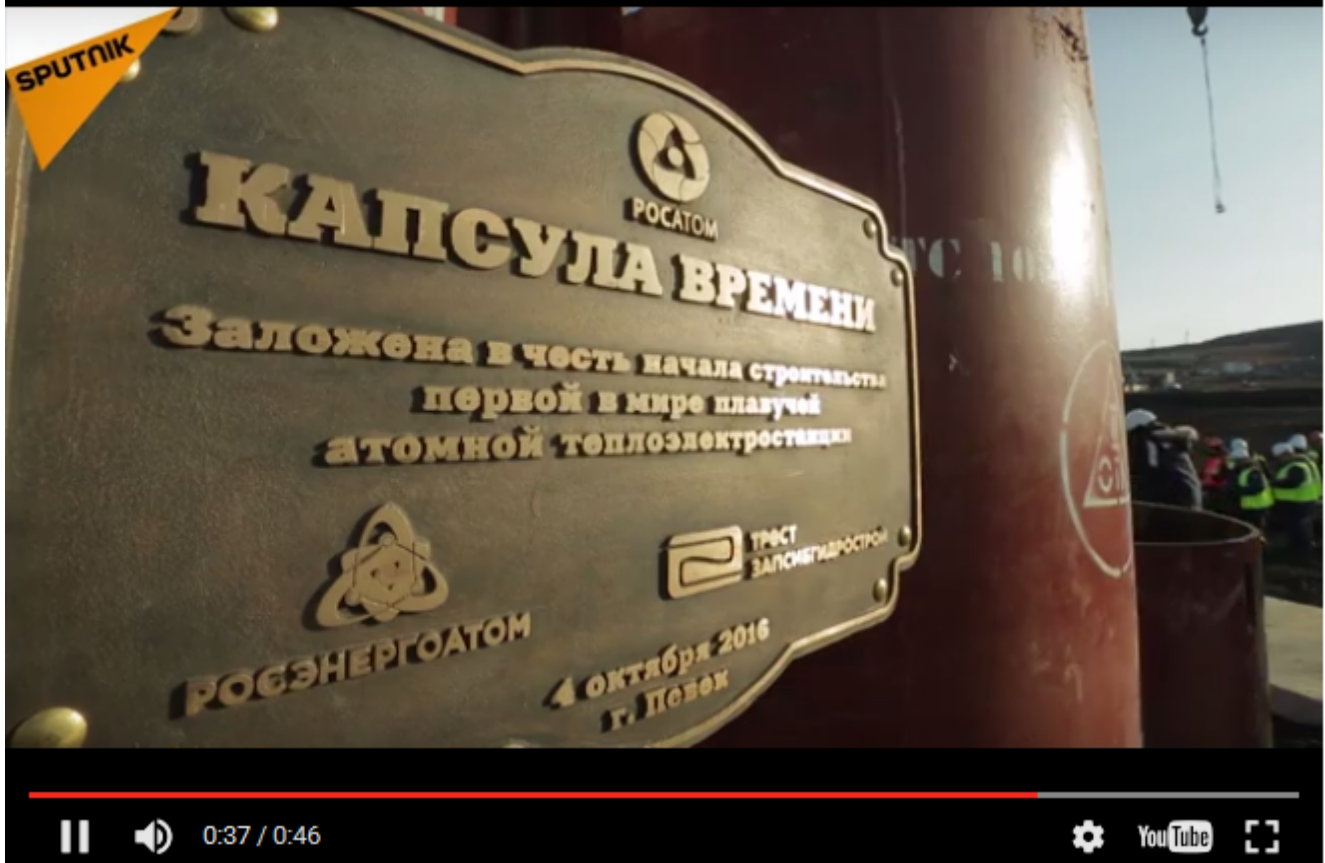
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Fukushima 'ice wall' linchpin not living up to high hopes

THE ASAHI SHIMBUN

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Although 34.5 billion yen (\$309 million) in taxpayer money has funded an "ice wall" to keep out groundwater from the Fukushima No. 1 nuclear power plant site, the frozen barrier may not be meeting hopes and expectations.

In particular, the wall has been vulnerable to heavy rain brought by typhoons.

Reducing the volume of radiation-contaminated water is vital to proceeding with the removal of melted fuel from the reactors at the Fukushima No. 1 plant so it can be decommissioned.

But officials of Tokyo Electric Power Co., the operator of the plant, are still not completely sure if the ice wall is performing as designed.

Heavy rain appears to pose a major problem because the ice wall has so far proved incapable of stopping groundwater when typhoons have passed near the plant.

In theory, the ice wall should serve as a dam to prevent groundwater from the mountainside of the plant from flowing into the reactor buildings.

The total length of the wall is about 1,500 meters, and the wall surrounds the reactor and turbine buildings of four reactors at the No. 1 plant. Pipes have been buried about 30 meters deep at one-meter intervals.

Liquid at temperatures of minus 30 degrees have been poured into the pipes to freeze the surrounding ground. Freezing of the final section of the wall began on Aug. 22, but TEPCO officials on Nov. 22 still stopped short of offering an assessment of whether the ice wall was actually working as

planned.

Utility officials have said that after about two months, ground temperatures where the freezing had begun have fallen below 0 degrees.

The estimated volume of groundwater that has leaked into the reactor and other buildings was 190 tons a day at the start of 2016, but it had decreased to 110 tons a day by early October.

However, the situation changed dramatically when two typhoons passed by in late October.

The groundwater level rose rapidly and the average daily flow of groundwater into the building basements for October was estimated to be 310 tons. That was close to the 400 tons that was flowing into the building basements before any measures were implemented to deal with the contaminated water.

There was no realistic expectation of building a ice wall that would keep out all groundwater because the pipes had to be buried in a way that would avoid underground piping from the reactors that were already in place. That meant there were underground portions that could not be frozen.

Masashi Kamon, a professor emeritus at Kyoto University who specializes in environmental geotechnics, said TEPCO should have considered a number of measures to stem the flow of groundwater from the long-term perspective of eventually removing the melted fuel from the reactors.

Another measure that is receiving more attention of late is pumping up groundwater from the 42 wells located around the reactor buildings and releasing it into the ocean. TEPCO plans to double the number of pumps and processing capacity of decontamination facilities by early 2018.

But other measures will likely have to be considered before work can begin to remove melted fuel from the reactor cores. The first step would be to remove as much as possible the highly radioactive water that remains in the reactor building basements. Such water poses a huge risk to the workers who will have to enter the buildings to remove the fuel.

Toyoshi Fuketa, chairman of the Nuclear Regulation Authority, said the ice wall was a measure implemented when the situation was much more serious, but that now is the time for calmer consideration about whether that investment of time and money was the proper one.



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