

Japan: TEPCO filling containment vessels; experts raise doubts

Wednesday 27 April 2011, by [HIDERONI Tsuboya](#), [KOBORI Tatsuyuki](#), [MATSUO Ichiro](#) (Date first published: 26 April 2011).

Tokyo Electric Power Co. started the unprecedented and potentially risky measure of allowing water to flood the containment vessels of three troubled reactors at the Fukushima No. 1 nuclear power plant, company sources said.

It is the world's first attempt to saturate the entire containment vessel with water with the aim of cooling the pressure vessels inside the containment vessels and ultimately the reactor cores themselves.

So far, TEPCO has been injecting water into the pressure vessels at the No. 1 through No. 3 reactors. Under the new plan, TEPCO will allow the water to overflow from the pressure vessels through valves and ruptured pipes until the water fills the outer containment vessels.

According to TEPCO's road map, the water levels will reach the upper end of the fuel rods within three months.

The amount of water injected into the pressure vessels is about one ton larger per hour than the amount that evaporates due to the intense heat from the fuel rods.

The water level at the No. 1 reactor has been raised to about 6 meters above the bottom of the containment vessel. That level is 3 meters below the bottom of the pressure vessel.

But TEPCO has been unable to verify the water levels at the No. 2 and No. 3 reactors, and suspect that water is leaking from the damaged containment vessels.

Industry specialists have raised doubts about the effects and safety of TEPCO's new operation.

Since the concrete-made building of the No. 1 reactor may have been weakened by the March 11 earthquake and tsunami as well as aftershocks, it might not be able to bear the weight of the water, which will reach up to 7,400 tons. TEPCO said it is re-calculating the structural strength of the building.

At the No. 2 reactor, highly radioactive water is believed to be seeping through a hole in the suppression pool, which leads into the lower part of the containment vessel.

TEPCO plans to plug that hole with adhesive cement.

The Oak Ridge National Laboratory, a top U.S. scientific research institution, reported in a study that this method can mitigate damage from nuclear incidents. Nonetheless, the U.S. study did not take into account a nuclear crisis continuing for more than one month, as has the Fukushima nuclear incident.

Keiji Miyazaki, professor emeritus of nuclear reactor engineering at Osaka University, said that

filling the containment vessel with water would cool the pressure vessel from the bottom, which would likely prevent it from being destroyed by melting fuel.

However, he added that the method is not an effective way to cool the fuel rods.

Another problem will be adjusting pressure levels inside the containment vessel should the temperature and pressure again rise. The amount of gas inside the containment vessel will be substantially reduced by the injected water.

TEPCO is considering draining the water from the pressure suppression pools, cooling that water with air and seawater and then re-injecting it.

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<http://www.asahi.com/english/TKY201104250125.html>