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NEWS

TEPCO confirms unit 1 core melted, but remains in RV

17 May 2011

On 12 May, TEPCO concluded the Fukushima Daiichi unit 1 fuel has melted down, but is still being safely cooled.

Last week's manual work to calibrate the unit 1 reactor water level gauge revealed that the water level was much lower than expected (and below the level of the bottom of the fuel). But at the same time, the reactor pressure vessel (RPV) temperature suggests that it is stable and cool; its temperature ranges only between 100°-120°C.

TEPCO also noted that RPV and primary containment vessel pressures vary with water injection. This suggests that fuel remains in the core, since in the absence of cooling water the fuel generates steam, and increases pressure. Likewise, a high feedwater nozzle temperature suggests the presence of superheated steam, TEPCO said. Temperatures in the upper and lower portions of the control rod drive housing, and the reactor pressure vessel bottom, are consistent with this picture, it said.

It also said that RPV leaks are likely, because despite continued water injection the water level inside the reactor has not risen.

It concluded that because of the continuous cooling, the likelihood of an event that would lead to a large-scale release of radioactivity is unlikely.

However, it added that limitations of available data renders these conclusions as provisional.

TEPCO estimates that the core melted very early on in the incident, according to the Electric Power Research Institute-developed simulation Modular Accident Analysis Program (MAAP). The simulation suggested that the fuel melted about 17 hours after the tsunami reached the station, approximately an hour after the earthquake.

Workers continue to inject water at an increased rate to flood the primary containment vessel. A two-day 10m3/hr injection test (up from 8m3/hr) was begun on 15 May to assess its effects on pressure and temperature.

In other news, a contractor carrying items for the wastewater treatment system fell unconscious and stopped breathing on 14 May. Although he was taken to a doctor offsite, he was declared dead later that morning. TEPCO confirmed he had not received a radiation dose. His death marks the first onsite since the tsunami.

Also, TEPCO has begun ground preparation for a temporary

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modular cover of the unit 1 reactor building. TEPCO plans to bring in crawler cranes to assemble the cover.

A seismic report has found that at only three units did the acceleration in the reactor basemat caused by the magnitude 9.0 Tohoku-Tahiheiyou-Oki earthquake exceed design earthquake resistance: unit 2 (actual 550 gal; designed: 438 gal), unit 3 (actual 507; designed 441) and unit 5 (actual 548 gal; designed 452). All three points of exceedence were in the east-west direction. At both units 1 and 6 the actual acceleration approached the design limits.

Reactor-by-reactor Fukushima Daiichi summary, 17 May from JAIF

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Fukushima Daiichi parameters as of 16 May by JANTI

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