Fukushima: Plan To Flood Reactor Vessel Postponed

Decontamination of radioactive water may begin in June

Friday 29 April 2011, by Nikkei, Yomiuri Shimbun (Date first published: 29 April 2011).

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Japan Nuclear Operator Postpones Plan To Flood Reactor Vessel

TOKYO (Dow Jones)—A plan to flood the containment vessel of one of the reactors at the stricken Fukushima Daiichi nuclear complex to better cool off its nuclear core was postponed Thursday, as concerns about possible leakage in the vessel made workers cautious about filling it with tens of thousands of tons of water.

Meanwhile, Japanese Trade and Industry Minister Banri Kaieda announced a plan to establish an expert panel to draw up the government's new energy policy, as the continued shut-down of two nuclear plants operated by Tokyo Electric Power Co. (9501) has caused power shortages across eastern Japan, with crippling effects on the manufacturing industry. The panel is expected to hold the first meeting in early May.

A test run for an operation to flood Reactor No.1's containment vessel began Wednesday morning in a strategy designed to cool down the pressure vessel, the thick steel cylinder housing nuclear fuel.

The move follows the failure by workers to cool down the fuel effectively, as water leaks out of the vessel apparently through damaged parts. Tepco believes that the fuel, which needs to be submerged in water, is actually partially exposed and estimates that 55% of it could be damaged and is releasing radioactive materials into the water.

The flooding operation is aimed at submerging the entire pressure vessel, instead of just the fuel, by injecting a large amount of water into the pressure vessel, allowing water to overflow into the containment vessel, the beaker-shaped metal container that surrounds the pressure vessel.

The trial run saw a more-than-anticipated drop in the temperature and the pressure inside the reactor, raising the possibility that adding water could deflate the containment vessel too much, allow the atmosphere to enter, and spark a hydrogen-oxygen explosion similar to ones that hit the plant in the first week of the crisis in March.

Officials also had lingering concerns about possible leakage in the containment vessel. "The possibility of leakage cannot be ruled out," said Hidehiko Nishiyama, spokesman of the government's Nuclear and Industrial Safety Agency said in a news briefing Thursday.

No visible leakage has been found in the containment vessel so far, however.

Tepco officials said that any leaks in the vessel should be plugged as they are found before proceeding with a full-scale flooding operation. Leaks could grow bigger if they are left unplugged, as water pressure rises with the injection of water, causing serious contamination, they said. Tepco plans to inject 7,800 tons of water into the containment vessel in the flooding operation.

At his briefing Kaieda also demanded deeper pay cuts to the top executives of Tepco.

“I heard that the amounts of remuneration differ greatly among the senior executives,” he said in response to the company’s announcement of a uniform 50% pay cut for the 20 board members, including Chairman Tsunehisa Katsumata and President Masataka Shimizu.

Kaieda said that the decision on the remuneration should take into account “public feelings” toward the company and implied that Katsumata and Shimizu should give up their entire pay to take responsibility for the widespread radiation contamination caused by the troubled plant.

Nikkei, Thursday, April 28, 2011

* http://e.nikkei.com/e/fr/tnks/Nni20110428D28JF483.htm

Blast may have helped cool rods

A hydrogen gas explosion at the No. 4 reactor of the Fukushima No. 1 nuclear power plant on March 15 may have helped prevent spent fuel rods from melting down by causing a flow of water into the pool the rods are stored in, according to research by Tokyo Electric Power Co.

It seems that shocks from the explosion damaged a water gate and caused water to flow into the pool from a neighboring part of the facility, TEPCO said.

The explosion, which the company assumes was caused by hydrogen gas, was so strong that the outer walls of the reactor building collapsed.

At the time of the explosion, the spent fuel rods had been overheating. If that had continued, the company said, the rods might have melted, spewing a far larger quantity of radioactive materials into the air than actually happened.

The nuclear power plant lost its external electricity supply when it was hit by tsunami following the March 11 earthquake. As a result, injection of coolant water into the pool of the No. 4 reactor also stopped.

Currently, TEPCO is injecting water into the pool with a pump originally meant to pour fresh concrete. Although about 70 tons of water is assumed to be evaporating every day from the pool, company officials said even considering evaporation, the water level is not rising as much as expected.

The company checked the reactor facilities, suspecting water might be leaking from the pool, but cannot confirm water leakage into the bottom structures of the reactor building.

The utility believes one possible answer is that water pumped into the spent rod pool is flowing back across the damaged gate into the No. 4 reactor well located next to the pool.

When the earthquake occurred, the No. 4 reactor was under repair. Covers of the pressure vessel and containment vessel were open at the time and the whole of the well, including the pressure vessel, was filled with water.

The water was injected to allow the removal and transfer of nuclear fuel rods from the pressure vessel to the pool without exposing them to air.

TEPCO assumes that a series of incidents occurred in the following way:

— The water level inside the pool decreased and parts of the spent fuel rods became exposed.

— Metal covering the overheated fuel rods reacted chemically with water and discharged a large quantity of hydrogen gas.

— The gas was ignited and exploded, damaging the gate.

— As a result, hundreds of tons of water entered the pool and the overheating of fuel rods ended.

The Yomiuri Shimbun , Apr. 29, 2011

* http://www.yomiuri.co.jp/dy/national/T110428006723.htm

Decontamination of radioactive water at Fukushima plant may begin in June

The decontamination of radioactive water at the crippled Fukushima No. 1 nuclear power plant could begin in June, according to the unified command headquarters in charge of dealing with the nuclear crisis.

The headquarters, set up by the government and plant operator Tokyo Electric Power Co., announced its plan to process the highly radioactive water Wednesday. Equipment for the waste processing facility will be moved to the power station in May, a headquarters official said.

According to the plan, radiation-contaminated water will be moved to the waste facility, where a separator will remove oil and another device will absorb radioactive cesium using zeolite. The process using the absorbent mineral is expected to reduce radioactive cesium to 0.001 percent of its original level. In the next stage, other radioactive substances will be removed through precipitation using special chemicals. By the end of the process, radioactivity in the water will be reduced to 0.0001 percent of its original level, the official said.

The water will be then be returned to the reactors and used to cool them after going through a desalination process. Part of the contaminated water is seawater TEPCO has been using to cool the reactors.

The facility can process about 1,200 tons of contaminated water a day. According to the headquarters, the facility could clean the 87,500 tons of radioactive water currently at the Nos. 1 to

4 reactors in 73 days. “Even if all 500 tons of water being injected into the reactors every day leaked, the facility could decontaminate all the contaminated water this year,” the official said.

TEPCO will store radioactive materials and other waste from the cleansing process at the Fukushima plant. The official said the headquarters had yet to decide how the waste will finally be disposed of. Kurion Inc., a U.S. nuclear waste management company, Areva SA, a French nuclear power company, and some domestic firms will provide equipment and technology.

The headquarters official said it is planning to install an underground tank that can store up to 10,000 tons of water in case the facility cannot process the amount of water anticipated.

Of all the contaminated water at the nuclear plant, TEPCO has prioritized transferring water leaked from the No. 2 reactor to the waste processing facility, as this water is the most radioactive. But so far the water level at the No. 2 reactor has not declined significantly, the official said.

Goshi Hosono, secretary general of the headquarters, said, “We also need to figure out what to do with the highly radioactive waste produced in the decontamination process.”

Goshi also serves as a special adviser to Prime Minister Naoto Kan.

The Yomiuri Shimbun , Apr. 29, 2011

* http://www.yomiuri.co.jp/dy/national/T110428006443.htm