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# Japanese Reactor Damage Is Worse Than Expected

By **HIROKO TABUCHI** and **MATTHEW L. WALD**

TOKYO — In a development that is likely to delay efforts to bring the Fukushima Daiichi Nuclear Power Station under control, the plant's operator said Thursday that one reactor, No. 1, had sustained much more damage than originally thought and was leaking water.

The company released a plan last month to bring the plant into a relatively stable state in six to nine months, but that was predicated on the notion that it could efficiently cool the fuel in several reactors — a harder task if water is leaking out. The company had long suspected that the containment vessels at two other reactors were breached and leaking, but it had hoped the No. 1 reactor was intact and therefore easiest to bring under control.

The company, Tokyo Electric Power Company, or Tepco, was able to better assess the reactor on Thursday because workers had recently been able to get close enough to fix a water gauge. It showed that the water level in the reactor was much lower than expected despite the infusion of tons of water since a devastating earthquake and tsunami knocked out the plant's crucial cooling systems.

One of the most startling findings announced Thursday was that water levels in the reactor vessel, which houses the fuel rods, appeared to be about three feet below where the bottom of the fuel rods would normally stand. Ever since the reactor shut down, workers' primary task has been to keep pouring water into the reactors to ensure the nuclear fuel remained covered so that it would not melt. But the new information suggests the fuel was uncovered for at least some time, probably early in the crisis.

That indicated that the exposed fuel has probably melted and slumped to the bottom of the vessel in little pellets, Junichi Matsumoto, a Tepco spokesman, said Thursday at a news conference.

Still, the worst fears did not materialize. Experts have long worried that such melting would allow a nuclear chain reaction to restart, producing enough heat to burn through all barriers — resulting in a full meltdown and a catastrophic release of radioactive material.

Mr. Matsumoto said relatively low temperature readings on the surface of the reactor, between 100 and 120 degrees Celsius (or 212 to 248 degrees Fahrenheit), suggested that the slumped fuel was being kept cool to some extent by the water inside the reactor and therefore was not as dangerous as some expected.

“We are not seeing a China Syndrome,” Mr. Matsumoto said, using a term coined in the United States in the 1970s to describe a severe nuclear meltdown of the fuel, which could sink into the ground and cause an explosion. The term is a satiric reference to the idea that in such an uncontrolled reaction, the core could burn through the earth.

David Lochbaum of the Union of Concerned Scientists, a nonprofit group usually critical of the nuclear industry, agreed that the temperature readings were a good sign.

He said he believed that the damage to the fuel at Reactor No. 1 was already finished, and that even if some fuel rods were still standing — and therefore exposed — they were no longer hot enough to keep melting.

“As bad as things are,” Mr. Lochbaum said, “they’re getting better.”

He cautioned that dangers remain. Conditions could get worse, he said, if the continued addition of water creates conditions more conducive to a nuclear reaction.

At the Nuclear Regulatory Commission in Washington, R. William Borchardt, the top staff official, briefed the five members of the commission on Thursday morning about the new disclosures, but did not describe them as major developments. Over all, he described the status of the Fukushima complex as “not exactly stable, but you might say that they’re static.”

*Hiroko Tabuchi reported from Tokyo, and Matthew L. Wald from Washington.*