

# Reports indicate breach in Japanese nuclear reactor containment vessel

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The discovery of highly radioactive water in areas outside reactor containment buildings at the Fukushima Daiichi nuclear facility may be due to one or more breaches of the protection vessels.

Richard Lahey, who was head of safety research for boiling-water reactors at General Electric when the company installed the units at Fukushima, told the *Guardian* that material, including melted fuel rods and zirconium alloy cladding, appeared to have sunk through the steel containment pressure vessel in the number 2 reactor. The vessel is supposed to prevent radioactive contaminants leaking into the atmosphere in the event of a meltdown.

“The indications we have, from the reactor radiation readings and the materials they are seeing, suggest that the core has melted through the bottom of the pressure vessel in unit two, and at least some of it is down on the floor of the drywell,” he explained. “I hope I am wrong, but that is certainly what the evidence is pointing towards.”

The containment vessel may have been damaged in one of the hydrogen explosions seen at the facility in the first few days of the crisis. “The reason we are concerned is that they are detecting water outside the containment area that is highly radioactive and it can only have come from the reactor core,” Lahey said. “It’s not going to be anything like Chernobyl, where it went up with a big fire and steam explosion, but it’s not going to be good news for the environment.”

The *Asahi Shimbun* yesterday reported that the Fukushima plant’s owner, TEPCO (the Tokyo Electric Power Company), had admitted for the first time that core pressure containers may be damaged. The newspaper stated: “TEPCO officials told reporters Monday morning that despite the continuous pumping in of water to cool down the No. 1, No. 2 and No. 3 reactor cores, water levels were not rising as expected, meaning the pressure containers may not

be completely sealed off. The water, which is believed to be mixing with radioactive materials from the fuel rods within, is likely leaking from the pressure containers, they said.”

Some nuclear experts are predicting it will now take months to get the situation at Fukushima under control. If one or more containment vessels has been breached, it means that even when normal cooling systems are finally restored, water may need to be poured into the cores to prevent further overheating. This heightens the danger of more radioactive contamination leaking into the environment, as there is limited space to store the water being used to cool the reactors and spent fuel rods.

Storage tanks may already be full, and overflow is feared to be contributing to radiated water leakage. According to the *Wall Street Journal*, a 750-gallon tank inside reactor number 3 is already full, and a smaller tank is half-full. Reactor 3 is potentially the most dangerous of the six reactors at the facility, as it is the only one to have used plutonium-uranium mixed oxide fuel (MOX).

The *Wall Street Journal* quoted Hidehiko Nishiyama, a top official at Japan’s Nuclear and Industrial Safety Agency (NISA), as saying: “When there is no more room in the tanks we will need to think of another option.”

The emergency response remains highly improvised, with authorities desperately resorting to untested methods. In reactor 1, radioactive water is being pumped into the condensation unit. This unit, which usually functions to convert the steam that powers turbines back into water, is now being used as a storage tank. This cannot be done at reactors 2 and 3, however, because the units there are already filled with water.

Those in charge at Fukushima now have to weigh up the counterposed dangers of using too little water—potentially triggering the further heating of reactor cores and spent

rods—and too much water—which could increase the quantity of radiated liquid spilling into the environment.

The temperature in number 1 reactor yesterday increased from 273 degrees Celsius to 309 degrees, and in reactor 2 from 130 degrees to about 150 degrees. Government spokesman Yukio Edano said that a reduction in water use was the likely cause. NISA's Nishiyama told a press conference: "While we don't know exactly the relationship between the need to inject water to cool [the reactor core] and the outflow of water, we have reduced the amount of injected water to a minimum given the reactor number 2's tendency to spew highly radioactive water."

Prime Minister Naoto Kan yesterday addressed the parliament, seeking to defend his response to the disaster. Kan issued his first criticisms of TEPCO since the crisis began—though still in the most tepid terms. "It's undeniable their [TEPCO's] assumptions about tsunamis were greatly mistaken," he declared. "The fact that their standards were too low invited the current situation." He said a state of "maximum alert" would be maintained until Fukushima was safe.

Kan has not spoken about rumours that TEPCO may be nationalised. The company's shares plunged further after national strategy minister Koichiro Gemba said the measure could not be ruled out. But government spokesman Edano said it was his understanding that Kan "is not considering it". If TEPCO is entirely nationalised, or the state becomes a majority share holder, this will mark a further move to ensure that public funds, not corporate profits, are used to clean up the disaster and compensate the victims. (See: "Japanese government prepares to protect TEPCO from liability")

The *Wall Street Journal* pointed to the cosy relations between Japan's corporate nuclear firms and the government agency supposed to regulate their activities. "Bucking the global standard, Japan's Ministry of Economy, Trade and Industry (METI) has two distinct and often competing roles: regulating the nuclear power industry, and promoting Japanese nuclear technology at home and abroad," it explained. "The setup recalls US regulation of offshore drilling before last year's oil spill in the Gulf of Mexico, in which the same agency regulated the industry and promoted offshore oil-and- gas development."

The financial newspaper's investigation noted that in 2006, METI ordered nuclear companies to review their earthquake preparedness—but set no deadline. TEPCO filed

an interim review in 2009 which mentioned tsunamis, only to say "it was continuing to study the subject."

The article further observed that there was a well-trodden path of senior Japanese bureaucrats retiring early to take up lucrative positions with major corporations. Last year, METI energy official Toru Ishida became a senior adviser at TEPCO. Ishida followed Susumu Shirakawa, a METI veteran who was a board member and executive vice president at TEPCO until retiring last year June.

The low level of readiness for potential natural disasters at Fukushima is not, however, a peculiarly Japanese phenomenon. Internationally, under the profit system, the safety of the world's population and eco-system is subordinated to the financial interests of nuclear power companies and the geo-strategic calculations of major imperialist powers.

David Lochbaum, director of the Union of Concerned Scientists' Nuclear Safety Project, yesterday testified before the US Senate Energy and Natural Resources Committee. He stressed the substandard provision of backup power supplies at many American nuclear reactors. "I cannot emphasise enough that the lessons from Japan apply to all US reactors, not just the boiling water reactors like those affected at Fukushima," he said. "None are immune to station blackout problems."

He continued: "As at Fukushima, US reactors are designed to cool the reactor core during a station blackout of only a fairly short duration. It is assumed that either the connection to an energised electrical grid or the repair of an emergency diesel generator will occur before the batteries are depleted. Eleven US reactors are designed to cope with a station blackout lasting eight hours, as were the reactors in Japan. Ninety-three of our reactors are designed to cope for only four hours."



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