

# Japan - Rat caused second Fukushima No. 1 blackout: Tepco

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Tokyo Electric Power Co. confirmed Monday that a rat disabled the cooling systems of the spent-fuel pools at the meltdown-stricken Fukushima No. 1 power plant last week.

The animal apparently touched a live wire after managing to get into the plant's truck-mounted switchboard, creating a short circuit that knocked out power to the pools' cooling systems on the evening of March 18, the beleaguered utility said.

The 25-cm rodent was found dead in a ring of fried fur within the switchboard apparatus.

Masayuki Ono, Tepco's spokesman on the rat blackout, said the utility will take stronger measures to prevent small animals from entering the switchboard.

It took about 29 hours to return the spent-fuel pools to their normal temperatures.

**Kyodo News**, March 26, 2013

<http://www.japantimes.co.jp/news/2013/03/26/national/rat-caused-second-fukushima-no-1-blackout-tepc/#.UWI3aPJUpWE>

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## Tepco testing new water decontamination system at Fukushima No. 1 plant

Full-fledged operation of the advanced liquid processing system (ALPS) will start in about four months after its performance is verified. Tepco said it plans to process 250 tons of irradiated water a day using the new multinuclide removal system, which has the capacity to dispose of up to 500 tons when fully operational.

ALPS has been installed to clean the contaminated water flowing through a 4-km loop and used to cool the crippled reactors. Unlike the existing system that can only remove radioactive cesium, ALPS

can extract almost all radioactive substances except for tritium.

Although the utility initially planned to start a test run by the end of December, its introduction was delayed after containers used to store processed wastewater were found to lack robustness. As Tepco has enhanced the containers' durability, the Nuclear Regulation Agency approved the start of the trial run.

**Kyodo News**, March 31, 2013

[http://www.japantimes.co.jp/news/2013/03/31/national/tepco-testing-new-water-decontamination-system-at-fukushima-no-1-plant/#.UWNpp\\_JUpWE](http://www.japantimes.co.jp/news/2013/03/31/national/tepco-testing-new-water-decontamination-system-at-fukushima-no-1-plant/#.UWNpp_JUpWE)

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## **Power still out for fuel-pool cooling system at Fukushima No. 1 plant**

Four fuel storage pools at the crippled Fukushima No. 1 nuclear plant have been without fresh cooling water for more than 15 hours due to a power outage, but Tokyo Electric Power Co. said Tuesday morning it was trying to repair a broken switchboard that might have caused the problem.

Tepco said pool temperatures were well within safe levels at Fukushima No. 1, and the pools would remain safe for at least four days without fresh cooling water.

The utility was preparing a backup system in case the repairs didn't fix the problem, Tepco official Masayuki Ono told reporters.

"If worse comes to worst, we have a backup water injection system," said Ono.

The command center at the plant suffered a brief power outage before 7 p.m. Monday. Electricity was quickly restored to the center but not to equipment pumping water into the fuel pools.

The utility was investigating the cause of the power outage and believes it might be due to problems with the switchboard it is now trying to repair. At the same time, the utility is preparing to connect another switchboard if repairs cannot fix the problem.

The temperature in the four pools had risen slightly, but was well below the utility's target control temperature of 65 degrees, Tepco said.

The spent-fuel pool for reactor 4, which contains spent and new fuel rods, had risen to 30.5 degrees as of 10 a.m. Tuesday from 25 degrees before the power outage. A common pool storing spent fuel for all reactors was at 28.6 degrees, while the reactor 1 pool was at 17.1 degrees and reactor 3 was at 15.9 degrees.

Tepco said the reactors were unaffected and no other abnormalities were found.

The March 11, 2011, earthquake and tsunami destroyed the plant's power and cooling systems, causing three reactor cores to melt down and fuel storage pools to overheat. The plant is now using makeshift systems.

**AP**, March 19, 2013

<http://www.japantimes.co.jp/news/2013/03/19/national/power-still-out-for-fuel-pool-cooling-system-at>

## **No. 1 plant outage fuels worries in Fukushima**

FUKUSHIMA — Fukushima Prefecture residents expressed anxiety Monday after a power outage left three fuel storage pools without fresh cooling water for hours at the disaster-hit Fukushima No. 1 nuclear power plant.

Masahide Matsumoto, mayor of Katsurao village, which was evacuated after the outbreak of the nuclear crisis in March 2011, said the incident came at a sensitive time, as evacuation zones were set to be reclassified Friday, with some residents granted permission to make day trips to their homes.

“We will be in trouble unless Tokyo Electric Power Co. properly investigates the cause (of the outage) and restores power,” Matsumoto said, citing growing concerns among residents.

A 27-year-old housewife in the city of Fukushima said, “I am very worried because I have a baby. I want the information to be disclosed as quickly as possible because it will be difficult to evacuate promptly if (an emergency occurs) at night.”

The power outage occurred just before 7 p.m. and was made public by the Nuclear Regulation Authority three hours later.

Takashi Haga, a 49-year-old office worker in the city, appeared surprised by the latest incident.

“It revived the memory of the nuclear accident two years ago,” Haga said. “I thought it was under control.”

At the Fukushima prefectural government office, four staff members at a nuclear safety division received information from Tepco and communicated with local municipal officials. The staffers appeared relatively calm, with one of them saying, “We want Tepco to pin down the cause and respond to the situation.”

Makoto Yanagida, a representative of the “Tanpoposha” (No Nukes Plaza Tokyo) antinuclear group said, “It’s just nonsense that a power company is hit by a blackout. We need to be vigilant, though, to see if Tepco is going to make public what really happened.”

**Kyodo News**, March 19, 2013

[http://www.japantimes.co.jp/news/2013/03/19/national/no-1-plant-outage-fuels-worries-in-fukushima/#.UU\\_EKjfA55s](http://www.japantimes.co.jp/news/2013/03/19/national/no-1-plant-outage-fuels-worries-in-fukushima/#.UU_EKjfA55s)

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## **TEPCO restores Fukushima plant's spent fuel pool cooling system**

TOKYO (Kyodo) — Tokyo Electric Power Co. said Tuesday it has resumed cooling the spent fuel pools of the Nos. 1, 3 and 4 reactors at the crippled Fukushima Daiichi nuclear power plant, a day after the key system was suspended due to a suspected problem with a power switchboard.

The incident did not affect the injection of water into the Nos. 1, 2 and 3 reactors that suffered core meltdowns, but indicated that the situation remains vulnerable more than two years after the plant was ravaged by the quake-triggered tsunami on March 11, 2011.

TEPCO spokesman Masayuki Ono told a press conference that the utility has yet to nail down the cause of the incident as it has devoted its energy to restoration efforts.

Electricity went out at a total of nine facilities, including an installation to remove radioactive substances from water used to cool reactors and a cooling system for a common pool located inside another building at the site.

Ono admitted that it was the first time such a large number of facilities, including important devices, had suffered an electricity failure simultaneously since the plant was brought under control in December 2011.

TEPCO initially noticed the problem after electricity instantaneously went out at the plant's accident response center at 6:57 p.m. Monday.

TEPCO had placed the highest priority on restoring the cooling system of the No. 4 spent fuel pool, as the number of fuel assemblies stored in the tank is higher than those left in the pools of the Nos. 1, 2 and 3 units. It succeeded in resuming the system by 4:13 p.m. Tuesday.

The cooling system for the Nos. 1 and 3 spent fuel pools was also put back online on Tuesday.

The temperature of the No. 4 spent fuel pool stood at 30 C at 4:30 p.m., compared with 25 C at 4 p.m. a day earlier. TEPCO has set an upper limit of 65 C to secure safety during normal operations.

TEPCO said the cooling system of the common pool was restored shortly after midnight Tuesday, meaning the operation of all nine facilities has recovered. The pool stores a total of 6,377 fuel assemblies.

The company suspects a problem at a makeshift power switchboard caused the suspension of the cooling system. The equipment in question is the only remaining makeshift power switchboard at the plant, installed after the nuclear crisis, according to Ono.

Given that it took TEPCO about three hours before announcing that the cooling system had been suspended, the company said it will seek to convey information more quickly on issues that could stir public concern.

**Kyodo News**, March 20, 2013

<http://mainichi.jp/english/english/newsselect/news/20130320p2g00m0dm001000c.html>

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## **Fukushima plant outage reveals lack of backup power source 2 years after crisis outbreak**

The operator of the crippled Fukushima No. 1 Nuclear Power Plant suspects that the power outage that knocked out the plant's cooling systems for spent fuel pools was likely caused by a short circuit blamed on a small animal, revealing the utility's insufficient measures against those creatures.

A Tokyo Electric Power Co. (TEPCO) investigation found that a short circuit in a makeshift power switchboard — which was installed two months after the March 2011 outbreak of the Fukushima nuclear disaster as part of a temporarily outdoor facility — was likely caused by a small animal. The switchboard had no backup power sources.

It was the plant's first major blackout that affected multiple facilities for longer than 24 hours since the onset of the nuclear crisis, sending shivers throughout the country. The switchboard is connected to the cooling systems for the spent fuel pools of the No. 3 and No. 4 reactors as well as a shared pool, according to TEPCO. The malfunction of the switchboard is suspected to have further affected other equipment connected to it by cables.

The destroyed switchboard was one of four brought in by trailer, and was the last one in operation as TEPCO worked to replace the temporary outdoor switchboards with those inside reactor buildings. The work was scheduled to be completed by the end of the current fiscal year, or later this month.

A shutdown of the cooling systems for spent fuel pools causes fuel temperatures to rise, evaporating coolant water and eventually exposing fuel to bring about meltdowns. While multiple power sources are secured for the cooling systems of nuclear reactors, there were no reserve power sources for the spent fuel pools.

"It takes time for temperatures to rise in spent fuel pools even if their cooling systems are down. There is no need to take the same emergency countermeasures as those for nuclear reactors," TEPCO spokesman Masayuki Ono said.

The blackout also revealed TEPCO's lack of measures against small animals, such as the use of rodent deterrents and other medical agents. Because the switchboard's container has a half-open door to lead in cables, "it leaves the system vulnerable" to place the switchboard outdoors compared to inside the highly-sealable plant buildings, said TEPCO officials.

*Mainichi Shimbun*, March 21, 2013

<http://mainichi.jp/english/english/newsselect/news/20130321p2a00m0na011000c.html>

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## **Tepco smells a rat in Fukushima No. 1 fuel pool cooling glitch**

A rat apparently gnawed on a switchboard or its wiring, causing the 30-hour power cutoff for the spent-fuel pool cooling systems at the triple-meltdown-hit Fukushima No. 1 nuclear plant that led to renewed fallout fears, Tokyo Electric Power Co. indicated Wednesday.

Tepco said it found the burnt carcass of what appeared to be a rat near the makeshift switchboard

as well as burn marks on the equipment, although it has yet to determine the exact cause of the power outage.

The switchboard runs the cooling systems of the spent-fuel pools of reactors 3 and 4 as well as a common pool located inside another building at the site that contains 6,377 nuclear fuel assemblies.

Tepco said it had not taken any steps to prevent wildlife, such as rodents, from getting at the switchboard and said it is continuing to investigate other factors that may have caused the power outage, which was apparently resolved minutes after midnight Tuesday.

The makeshift switchboard was located on the back of a truck that had been parked outside since May 2011. Tepco was planning to stop using the equipment and switch to a new permanent switchboard by the end of this month.

The cooling system for reactor 1 has a separate electrical system from the makeshift power switchboard, but at the time of the power outage it was connected to the makeshift switchboard due to ongoing multiple tasks and was affected, the utility said.

Tepco restarted all nine power outage-hit facilities, including an installation to remove radioactive substances from water used to cool the crippled reactors, by midnight Tuesday after electricity went out a day earlier.

**Kyodo News**, March 21, 2013

[http://www.japantimes.co.jp/news/2013/03/21/national/tepco-smells-rat-in-fukushima-no-1-fuel-pool-cooling-glitch/#.UU\\_PvDfA55s](http://www.japantimes.co.jp/news/2013/03/21/national/tepco-smells-rat-in-fukushima-no-1-fuel-pool-cooling-glitch/#.UU_PvDfA55s)

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## **TEPCO apologizes for delay in reporting plant power outage**

Tokyo Electric Power Co. (TEPCO) apologized on March 21 for a delay of around three hours in reporting a power outage at the disaster-stricken Fukushima No. 1 Nuclear Power Plant that left it unable to cool spent nuclear fuel.

The power outage occurred at 6:57 p.m. on March 18, stopping cooling systems for facilities including the number 1, 3, and 4 reactors' spent nuclear fuel pools. By 12:12 a.m. on March 20, power had been restored.

TEPCO notified the Fukushima Prefectural Government and the governments of 13 municipalities near the plant of the outage around one hour after it occurred, but it did not contact the media until around three hours after the outage.

Meanwhile, the Nuclear Regulatory Agency on March 21 decided that it will call on TEPCO to speed up the implementation of additional power sources, installing long-term equipment, and improving its ability to recovery from power outages.

The agency took around three hours to announce the power outage after being notified of it by TEPCO, and has said that it will "endeavor to appropriately release information" from now on.

*Mainichi Shimbun*, March 22, 2013

<http://mainichi.jp/english/english/newsselect/news/20130322p2a00m0na012000c.html>

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