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Fukushima Daiichi Status Report

10 November 2011

The IAEA issues regular status reports to the public on the current status of the Fukushima Daiichi Nuclear Power Plant, including information on environmental radiation monitoring, the status of workers, and current conditions on-site at the plant.

The information cited in this report is compiled from official Japanese sources, including the Ministry of Economy, Trade and Industry (METI), the Nuclear and Industrial Safety Agency (NISA), the Ministry of Education, Culture, Sports, Science and Technology (MEXT), the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), the Ministry of Health, Labour and Welfare (MHLW) and the Ministry of Foreign Affairs (MOFA) through the Japanese Permanent Mission in Vienna and the Cabinet's Office of the Prime Minister. Information is also provided by the Tokyo Electric Power Company (TEPCO), the operator of the Fukushima Daiichi Nuclear Power Plant.

Questions on the information provided in this report may be directed to info@iaea.org.

What are the recent developments at the Fukushima Daiichi nuclear power plant?

On 5 November TEPCO reported details of its removal of obstacles to robots surveying the Unit 3 Reactor Building. Removing these obstacles has allowed for greater access to areas on the first floor and subsequently enabled more detailed surveys of dose rates and environmental conditions (e.g. temperatures) that can be conducted via robotic survey.

TEPCO is working to desalinate radioactive water that has accumulated as a result of efforts to cool the reactors and spent fuel pools with seawater. Desalination of the water reduces the potential for corrosion caused by salt. On 5 November TEPCO released a detailed document outlining its capability to desalinate water onsite. This document outlines the operation of reverse osmosis desalinisation facilities and their evaporative concentration capabilities. Included are a number of figures showing salt concentration over time at the outlet and inlet to the system. A video explaining the water treatment process for salt removal has also been posted online.

On 6 November TEPCO released details of a new water treatment system intended to remove contamination from the Spent Fuel Pool of Unit 2. Due to the limited space around that pool, the system will be installed on two trucks parked nearby. Details of the latest reported values of the radioactive material concentration in each Spent Fuel Pool are available. On 7 November TEPCO released new results for the current decontamination efforts of its onsite accumulated water treatment process.

The process of removal of contaminated rubble using remote controlled heavy machinery is on-going.

Table 1: Status of Cooling Water Flow, Temperatures and Pressure at Units 1, 2 and 3

TEPCO's Fukushima Daiichi nuclear power plant station reactors 1, 2 and 3 require circulating water to remove heat from their fuel.

Plant operators are working to bring the reactors into a "cold shutdown condition" defined by TEPCO and the Nuclear Emergency Response Headquarters as:

1) Lowering the coolant water temperature to below 100 degrees centigrade while reducing the pressure inside the reactor vessels to the same as the outside air pressure, or 1 atmosphere (atm), and

2) Bringing release of radioactive materials from primary containment vessel under control and reducing public radiation exposure by additional release (not to exceed 1 mSv/year at the site boundary as a target).

Indications	Measurement	Reactor		
		Unit 1	Unit 2	Unit 3
Water flow into the reactor[1]	Litres/hour	7800	10200	10800
Reactor vessel pressure	atm	1.11	1.07	Downscale
Outer containment vessel pressure[2]	atm	1.21	1.15	1.02
Reactor vessel temperature (feed water nozzle)[3]	°C	40.8	67.8	61.8
Reactor vessel temperature (at bottom of reactor)[4]	°C	43.8	71.4	70.7
Suppression Pool Pressure[5]	atm	0.84	Below scale[6]	1.87
Date/Time of Data Acquisition		9 Nov 12:00 UTC	9 Nov 12:00 UTC	9 Nov 12:00 UTC

Notes

1. Plant operators are pumping water into Unit 1 through one injection point and through two injections points in Units 2 and 3.
2. The containment vessel completely surrounds the reactor vessel and support systems. It is designed to prevent the release of radioactive materials following an accident. Japanese plant operators are working to reduce the pressure in the containment vessel to 1 atmosphere, the same as the outside air pressure.
3. The temperature of the coolant water as it is pumped into the reactor vessels.
4. The temperature of the coolant water, measured at the bottom of the reactor vessel.
5. The suppression pool is designed to limit pressure in the containment vessel during an accident by condensing steam from the containment vessel. Japanese workers are aiming to get this pressure down to 1 atmosphere.
6. “Below scale” means the reading is below the lowest indication the instrument is capable of detecting. This is typically an indication that an instrument has somehow failed.

Table 2: Most recently reported temperatures in the Fukushima Daiichi Spent Fuel Pools

Spent fuel removed from a nuclear reactor is highly radioactive and generates intense heat. Nuclear plant operators typically store this material in pools of water that cool the fuel and shield the radioactivity. Water in a spent fuel pool is continuously cooled to remove heat produced by spent fuel assemblies.

According to IAEA experts, a typical spent fuel pool temperature is kept below 25 °C under normal operating conditions. The temperature of a spent fuel pool is maintained by constant cooling, which requires a constant power source.

Location	Water Temperature	
	Temperature °C	Date measured
Unit 1	22.0	09 November
Unit 2	24.9	09 November
Unit 3	22.6	09 November
Unit 4	31.0	09 November
Unit 5	24.1	09 November
Unit 6	24.0	09 November
Common Spent Fuel Pool	25.0	09 November

What is the latest information regarding radiation monitoring of foodstuffs?

Food monitoring data were reported from 2 to 8 November by the Ministry of Health, Labour and Welfare (MHLW) for a total of 3585 samples collected on 23 and 30 April, 3 May, 17 and 19 August, 8, 12-14 and 26-28 September, 2, 6-7, 8, 10-11, 13-14 and 17-31 October and 1-8 November in 32 different prefectures (Aichi, Akita, Aomori, Chiba, Ehime, Fukui, Fukushima, Gifu, Gunma, Hokkaido, Hyogo, Ibaraki, Iwate, Kagoshima, Kanagawa, Kyoto, Mie, Miyagi, Miyazaki, Nagano, Nagasaki, Niigata, Okayama, Saitama, Shimane, Shizuoka, Tochigi, Tokushima, Tokyo, Tottori, Yamagata, Yamanashi).

These data included samples of various vegetables, fruit and fruit products, mushrooms, nuts, cereals, dairy products, baby food, tea leaves, meat, eggs, honey, fish and seafood.

Analytical results for 3555 (over 99%) of the 3585 samples indicated that Cs-134 and Cs-137 or I-131 were either not detected or were below the regulation values set by the Japanese authorities. However, 30 samples were above the regulation values for radioactive caesium (Cs-134 and Cs-137), as follows:

- As reported on 2 November, seven samples of fish collected on 25 and 31 October in Fukushima prefecture, three samples of mushrooms collected on 31 October and 1 November in Ibaraki and Tochigi prefectures, one sample of beef collected on 1 November in Miyagi prefecture and one sample of unrefined tea leaves collected on 28 October in Kanagawa prefecture.
- As reported on 4 November, three samples of mushrooms collected on 2 November in Kanagawa and Tochigi prefectures.
- As reported on 7 November, six samples of meat collected on 10, 27, 29 and 31 October from Fukushima prefecture and two samples of mushrooms collected on 4 November from Tochigi prefecture.
- As reported on 8 November, five samples of meat collected on 2, 17, 19, 22 and 25 October and one sample of persimmon collected on 4 November in Fukushima prefecture, and one sample of dried shiitake mushrooms (log-grown) collected on 7 November in Kanagawa prefecture.

Updated information on food restrictions were reported by MHLW on 7 November indicating that restrictions were lifted on the distribution and/or consumption of non-head type leafy vegetables and turnips produced in specific areas of Fukushima prefecture. Restrictions were implemented on the distribution of log-grown brick cap mushrooms (outdoor cultivation) in specific areas of Tochigi prefecture.

Additional information on food restrictions were also reported by the MHLW on 8 November indicating that restrictions were implemented on the distribution of log-grown brick cap mushrooms (outdoor cultivation) in additional areas of Tochigi prefecture.

A full list of instructions regarding food restrictions was provided by MHLW on 9 November.

The IAEA will continue to issues regular status reports to the public on the current status of the Fukushima Daiichi Nuclear Power Plant.

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