

Update of Japan's Comprehensive Report on Conditions at TEPCO's Fukushima Daiichi Nuclear Power Station updated on IAEA's webpage

The Government of Japan has updated its comprehensive report on the recovery operation at the Fukushima Daiichi Nuclear Power Station (NPS). This report is on the IAEA's website together with the IAEA's assessment for the purpose of disseminating information to the international community.

Highlight of IAEA's Latest Assessment:

- The IAEA considers that a groundwater bypass system will allow for better management of contaminated water at the Fukushima Daiichi NPS.
- Identifying the location of a water leak in the Unit 3 reactor containment unit and the establishment of both the Fukushima Daiichi D&D Engineering Company and Fukushima Advisory Board on Decommissioning and Contaminated Water Management are positive developments.
- As has been the case, the food supply chain is under control with appropriate measures in place for monitoring and responding to issues of radionuclide contamination in food products.

The updated report as of June 20th, 2014 is uploaded in the following link:
<http://www.iaea.org/newscenter/news/2014/eventshighlightsjune2014.pdf>

The same information is also available on the Ministry of Foreign Affairs' webpage as well as on the webpage of Prime Minister of Japan and His Cabinet.

Ministry of Foreign Affairs:

http://www.mofa.go.jp/dns/inec/page18e_000038.html

Prime Minister of Japan and His Cabinet:

http://www.kantei.go.jp/foreign/96_abe/decisions/2014/osensui_e.html

An excerpt from the IAEA's full report:

IAEA assessment on aspects presented in the June 2014 report 'Events and highlights on the progress related to recovery operations at Fukushima Daiichi NPS'

'Groundwater Bypassing' Activities

As reported by Japan, on 21 May 2014, the operation of a groundwater bypass system was begun at the Fukushima Daiichi Nuclear Power Station (NPS). This work aims to reduce the amount of water flowing into the reactor buildings by first pumping the groundwater from the upstream side of the buildings and transferring it into temporary storage tanks, then analysing the quality of the water in the tanks to determine if it falls below the discharge criteria, and finally discharging to the sea the water that fulfils the discharging criteria. TEPCO reported in a press release (http://www.tepco.co.jp/en/press/corp-com/release/2014/1236559_5892.html), that bypass operations had begun and expressed appreciation for the understanding of many stakeholders, including Fukushima Prefecture and members of the fishing industry.

As also reported by Japan, groundwater which was determined to be below the discharge criteria at the Fukushima Daiichi NPS has been discharged three times to date into the coastal area of the Fukushima Daiichi NPS; on 21 and 27 May and 2 June 2014. This groundwater was pumped hydrostatically upstream of the plant, and was not directly in contact with any contaminated groundwater under the nuclear power units. The levels of tritium and radiocaesium were monitored in this groundwater and were determined to be significantly below the legal discharge limits. The water was analysed by two analytical centres and the values were in good agreement. The levels of ^{134}Cs and ^{137}Cs were determined to be below the limit of detection of 0.64 to 0.71 Bq/L, and tritium levels were measured at roughly 200 Bq/L. As reference, note that legal discharge limits established by Japanese authorities are 60 Bq/L for ^{134}Cs and 90 Bq/L for ^{137}Cs , and 60,000 Bq/L for tritium).

The extremely low levels of the two radiocaesium isotopes are as expected, because caesium fixes mainly to clay minerals in the soil and does not migrate over long distances in groundwater. This is not the case for tritium, which exists as tritiated water and follows the behaviour of water. However, due to the fact that this groundwater was not in contact with contamination from the effluent waters of the reactors, the discharge into the ocean is equivalent to the regular submarine groundwater inflow. The detected level of tritium is very low in relation to the discharge level of 60 000 Bq/L, or the operational target limit of 1500 Bq/L, and does not significantly increase the radiation exposure of the marine environment or organisms.

The levels of ^{90}Sr are monitored by gross-beta measurements and also showed levels below the detection limit of 0.53 or 0.87 Bq/L, as determined by the two analysing laboratories. Any risk arising from ^{90}Sr can also be excluded in the marine environment due to the low concentrations detected. Rapid dilution by tidal and other ocean currents will also further reduce the ^{90}Sr concentration.

The IAEA considers that a successful operation of the groundwater bypass could contribute not only to reducing the volume of contaminated water to be stored at Fukushima Daiichi NPS, but also may rebuild confidence in TEPCO and its on-site activities. The IAEA encourages TEPCO to continue to verify the water quality before discharge, and to monitor the radioactive concentrations in the Fukushima

Daiichi NPS and the surrounding areas, including the area off coast the Fukushima Daiichi NPS.

It is noted that the quantity of groundwater pumped out to date is relatively small compared to the volume of contaminated water accumulated and stored at the site. Further, the groundwater bypass system is expected to reduce the amount flowing into the building basements by up to 100 tons per day, a reduction of 25 percent (http://www.tepco.co.jp/en/press/corp-com/release/2014/1236566_5892.html) It will take time before a significant reduction in contaminated water requiring treatment and storage is reflected in day to day operational activities. In this regard, the IAEA encourages TEPCO to continue to monitor the water balance as a measure of the effectiveness of the groundwater bypass.

Overall, the IAEA considers that the discharge of this groundwater will lead to a more manageable situation at the Fukushima Daiichi NPS regarding contaminated water management.

Location of water leakage from Unit 3 reactor container

As reported by TEPCO (http://www.tepco.co.jp/en/press/corp-com/release/2014/1236458_5892.html), on 15 May 2014, a location of water leakage in the main steam isolation valve room in Unit 3 was identified by using a remotely operated video camera. According to information published by TEPCO (http://www.tepco.co.jp/nu/fukushima-np/handouts/2014/images/handouts_140515_05-j.pdf), this leak was found at an expansion joint connected before the main steam isolation valve to a steam pipe coming from the primary containment vessel (PCV). This leak was approximately four metres away from the surface of the PCV. It was reported that this was the first time a leakage location was pinpointed at Unit 3.

The IAEA considers this to be an important step towards stopping water leakage and pursuing the eventual work of removing fuel debris from the Unit 3 reactor. The IAEA also considers that this discovery is important toward gaining an understanding on how and when the leak started, and suggests that TEPCO carry out further investigations to identify the failure mechanisms for this and any other damage to the PCV.

Request for Proposal for the project of tritium separation technology

Although the multi-nuclide removal equipment (Advanced Liquid Processing System) was installed to reduce the contamination levels of contaminated water to the legal discharge limit or lower, tritium cannot be removed. To address the tritiated water issue, the Government of Japan opened a Request for Proposal that called for entities to implement a demonstration project for verification tests of tritium separation technologies. This project is financially subsidized by Japan's fiscal year 2013 supplementary budget. According to the announcement made by the Government of Japan, this project aims to verify the performance of tritium separation technologies, to assess construction and operation costs required for installing such equipment in the Fukushima Daiichi NPS and to treat the remaining water through the Advanced Liquid Processing System.

The IAEA notes that this is part of the multi-pronged efforts being made by the Government of Japan to address the contaminated water issue. The IAEA also notes that at this time, no decision has been taken on whether or not to conduct tritium separation.

Fukushima Daiichi D&D Engineering Company

As reported by TEPCO (http://www.tepco.co.jp/en/press/corp-com/release/2014/1235009_5892.html),

on 1 April 2014, the Fukushima Daiichi D&D Engineering Company was established by TEPCO to clearly distinguish the responsibilities within TEPCO and to exclusively address decommissioning and contaminated water at the Fukushima Daiichi Nuclear Power Station.

The IAEA considers that this dedicated D&D unit is a positive development that should enhance Japan's capacity for meeting current and future decommissioning and decontamination demands.

Removal of fuel assemblies from Unit 4 spent fuel pool

As reported by Japan, as of 2 June 2014, in total 968 (946 spent fuel assemblies and 22 non-irradiated fuel assemblies) out of 1533 fuel assemblies (1331 spent fuel assemblies and 202 non-irradiated fuel assemblies) have been transferred to the common pool through 44 cask transfers since the first fuel assemblies were removed from the Unit 4 spent fuel pool beginning 18 November 2013 (<http://www.tepco.co.jp/en/decommision/index-e.html>).

The IAEA acknowledges the work of TEPCO toward achieving milestones in the fuel removal activities and in the decommissioning of the plant.

Fukushima Advisory Board on Decommissioning and Contaminated Water Management

As reported by the Ministry of Economy, Trade and Industry (METI) (<http://www.meti.go.jp/english/earthquake/nuclear/decommissioning/pdf/20140227-e.pdf>), on 17 February 2014, the first meeting of the Fukushima Advisory Board on Decommissioning and Contaminated Water Management was held by METI, and included the participation of the Fukushima prefectural government, municipal governments, the commerce and industry association, agricultural cooperatives, fishermen's cooperatives, the university, non-profit organizations, relevant ministries and agencies and TEPCO. A second meeting was held on 14 April 2014. The Board was established to promote dissemination of information to relevant stakeholders, to enhance public relations, and to hear opinions about the approaches and measures taken, or to be taken, for the decommissioning of Fukushima Daiichi NPS as well as for the management of contaminated water.

The IAEA considers that the establishment of the Board is a commendable step toward strengthening public communications and engagement of stakeholders in decommissioning and contaminated water management in a structured manner. This is in line with the advice given during the second IAEA International Review Mission on Mid-and-Long-Term Roadmap towards the Decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station Units 1-4 conducted from 25 November to 4 December 2013 (http://www.iaea.org/newscenter/focus/fukushima/final_report120214.pdf).

Monitoring of food products

According to information provided by Japan in the past months, the situation with regards to food, fishery and agricultural production remains stable. The authorities are continuing to monitor food, both on the market and at production areas. Monitoring results are made openly available and are published on the internet. And based on this information the results of food monitoring to date, do not raise any new or immediate issues regarding safety of the food supply chain.

There are regulatory limits that apply to levels of radionuclides in food products, and a comprehensive surveillance and control regime remains in place to monitor radionuclide levels in food against these legal limits. The mechanism for placing and lifting restrictions on food products is based on the results of the surveillance monitoring.

Based on information provided by Japan, monitoring measurements indicate that the concentration of radiocaesium in over 99% of the food items sampled are either not detectable or are below regulatory limits. Also, the revisions and updates to the food restrictions indicate the continued vigilance of the authorities in Japan and their commitment to protecting consumers and trade.

The IAEA considers that in summary, systems are in place and are being implemented that prevent food and agricultural products with levels of caesium radionuclides in excess of the legal limits from entering the food supply chain. Based on the information that has been made available, the Joint FAO / IAEA Division understands that the measures taken to monitor and respond to issues regarding radionuclide contamination of food are appropriate and that the food supply chain is under control