

June 8, 2011

Nuclear and Industrial Safety Agency

Regarding Another Change to the Storage Water Level During the Transfer of Water Containing a High Concentration of Radioactive Materials to the Process Main Building of Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co. Inc.

Regarding the above-referenced matter, on June 4, Tokyo Electric Power Co. Inc. wished to change the storage water level to be a depth of 1.4m on the B1 floor (OP5100) this time by placing the penetration part to B1 of the Process Main Building (OP4200). As a result, the storage water capacity will increase from about 11,500 m³ to about 14,200 m³.

This is to inform the public that, among the evaluations conducted to date, the evaluation results regarding the issues impacted by the subject change (measures against outflow and measures against exposure) showed that this action is valid.

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1. Background

As there was an outflow of water containing a high concentration of radioactive materials (hereinafter, “Contaminated Water”) from the High-Temperature Incinerator Building to the neighboring underground channels, the Tokyo Electric Power Co. Inc. (TEPCO) temporarily suspended transferring the Contaminated Water from the basement of the turbine buildings to the Radioactive Waste Treatment Facilities (Process Main Building or the High-Temperature Incinerator Building). However, since the accumulated Contaminated Water in the turbine buildings of Units 2 and 3 is increasing and the likelihood of the outflow from the Process Main Building is low, TEPCO restarted transferring the Contaminated Water from the turbine buildings of Unit 2 to the Process Main Building. Accordingly, considering the given water capacity would not increase the risk of the outflow, TEPCO changed the storage water level, which was at the B1 level of the Process Main Building (OP3700) to the penetration parts of the B1 (OP4200). (Storage water capacity changed from 10,000m³ to 11,500m³.)

In order to secure further storage water capacity, TEPCO wishes to change the storage water capacity to a depth of 1.4m (OP5100) on the B1 floor the Process Main Building. (Storage water capacity would become about 14,200 m³.)

2. Evaluation by NISA

Among the evaluations conducted to date, NISA evaluated again the issues that would be impacted (measures against outflow and measures against exposure) by the change in this transfer capacity. For the evaluation, NISA made its considerations, including the reliability of the results for blocking the penetration parts, in consideration of the occurrence of outflow from the High-Temperature Incinerator Building

to the underground channels.

➤ Measures against outflow

NISA made the following evaluations regarding the penetration parts being placed an additional 1.4 m depth on the B1 floor of the Process Main Building by this change, and determined that the measures against outflow were sufficient.

- ✓ As the reasons that might cause the outflow to the underground channels in the High-Temperature Incinerator Building, TEPCO considered: (1) defects in the concrete filling, (2) defects in the piping or electric cable closures, or (3) forgotten construction, in the penetration parts. TEPCO predicts that a gap could arise between the concrete and the wall by (1) from the construction records and the outflow estimates.
- ✓ On the other hand, the penetration parts where the additional storage water level this time will be placed was not blocked by concrete filling, and therefore, there is no risk for the outflow to occur similar to the outflow predicted to occur in the High-Temperature Incinerator Building.
- ✓ Regarding the 19 places of the piping penetration parts where the additional storage water capacity will be placed, TEPCO reconfirmed that there was no doubt about the external appearance or defective construction by records including photographs taken during construction.
- ✓ Hypothetically, if outflow from the piping penetration parts were to occur, NISA determined that there would be no risk for leakage to outside the buildings, as explained below.
 - The outside of the penetration parts are all trenches, and there are rise parts in the connecting points to the buildings or their immediate vicinity. Accordingly, the range where outflow could happen at all is limited.
 - If outflow did happen, dams have been built of concrete, etc. to the furthest extent possible.
 - It was confirmed that there are no significant cracks, etc. in the trenches.

- The penetration parts, which are adjacent to the incinerator buildings and side bunker buildings, are fully blocked; accordingly, the Contaminated Water could not seep into any of these buildings via the trenches.
- As the water level in the Process Main Building is less than the underground water, the water level for the trenches where the outflow would go is also less than the underground water. Moreover, there would be no leakage to outside of the trenches due to underground water pressure.
- After operations begin for the processing facilities, the Contaminated Water in the B1 of the Process Main Building will be processed first.

➤ Measures against exposure

When the storage water capacity was increased to the tip of the penetration parts of B1 of the Process Main Building, NISA found that the radiation impact on B1 would be low, but these findings were based on the conservative assumption that the entire B1 was filled with Contaminated Water. Accordingly, by increasing the storage water capacity this time to the depth of 1.4m on the B1 floor, there would be no change to the evaluation results.

On the other hand, hypothetically, if there were outflow of Contaminated Water from the penetration parts, there is a possibility for the radiation level at the end of the outflow to rise but, as explained in the following, in this event, the necessary actions would be taken. NISA also determined that the details of said actions were valid.

- ✓ Assuming that an outflow from the Process Main Building to the underground channels occurs, it would be connected to the High-Temperature Incinerator Building, and thus, it can be predicted that the water level in the High-Temperature Incinerator Building would be the level in B1. In this event, the radiation dose for B1 of the same building would be measured as 100 mSv/h, and so, operations in the B1 area would be prohibited, in principle; as well, if operations were necessary, operations in the high-level dose areas such as around the openings, etc., would be avoided as much as possible, and radiation protection instructions would be issued and respected, while operations would be conducted in compliance therewith and with appropriate equipment.

- ✓ Furthermore, in the underground channels connected to the incinerator buildings, dams have been prepared, and preventive measures against influx into B1 of the same building have been implemented. Moreover, via these routes, discharge lines have been installed from the underground channels to the High-Temperature Incinerator Building and the Process Main Building; accordingly, a method enabling the water to be discharged, as necessary, has been prepared.
- ✓ For the openings at the trench connection points where the outflow is destined (in the auxiliary buildings, from B1 to the 1F portion where the trenches appear standing and are the openings), the radiation protective measures will be in place, similar to when the water level in B1 of the High-Temperature Incinerator Buildings rises.