Seismic Damage Information (the 499th Release)
(As of 14:00 September 11, 2012)

The Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Fukushima Dai-ichi Nuclear Power Station (NPS), Tokyo Electric Power Co., Inc. (TEPCO) as follows:

Major updates are as follows:

1. Nuclear Power Stations (NPSs)
   - Fukushima Dai-ichi NPS (TEPCO)
     - Accumulated water in the basement of the turbine building in Unit 3 was transferred to the miscellaneous solid waste reduction facilities (from 10:22, September 11). (Patrolling was conducted and no abnormality such as leakage was confirmed.)
     - In the heat exchange unit room on the ground floor in the Unit 3 turbine building, it was confirmed that there was a crack in the pipe connecting to the PCV gas control system, and the crack was causing some noise (at 12:19, June 19).
       The piping was considered to have negative pressure and sucked air, and it has been under investigation now.
       In the site confirmation, eight cracks or so were identified in the pipes (accordion hose pipes) of the inlet of the feed water heating room. It was also confirmed that air had been sucked from these cracks (at 14:40 on the same day). Temporary treatment with tape was taken to these crack parts (at 16:30 on the same day). There were no significant changes in the related parameters (PCV pressure, hydrogen gas concentration, the exhaust flow rate of the PCV gas control system).
       The parameter was excluded from the limitation of operation in the operational safety program, and the damaged piping was changed and repaired (from 10:26 to 13:06, September 11). (No abnormality was confirmed in the monitoring parameters during suspension.)
     - In the data confirmation at the fixed time, it was confirmed that the water injection rates into nuclear reactors in Units 1, 2, and 3 decreased (at 15:00,
August 30).

Unit 1: From the necessary water injection rate of 4.3m³/h to the decreased rate of 4.0m³/h
Unit 2: From the necessary water injection rate of 6.1m³/h to the decreased rate of 5.5m³/h
Unit 3: From the necessary water injection rate of 6.1m³/h to the decreased rate of 5.6m³/h

In this reason, it was judged that “securing the necessary water injection rates for cooling reactors” for Units 1, 2, and 3 was not satisfied, which was one of the operational limits on the operational safety program (Unit 1:15:07, Unit 2:15:00, Unit 3:15:05, on the same day).

Operation for increasing the water injection rates was performed on the site, and the necessary water injection rates were secured, however, adjustments of the flow rates continued to be performed because of unstable and decreased injection rates (from 15:11 to 15:21, from 15:48 to 16:12, from 17:58 to 18:17, and 21:56 to 22:30, on the same day). As a result of the site confirmation, no leakage from the reactor injection line was confirmed.

Due to inspection of the pump, the normal high-ground reactor water injection pump (A) was activated (at 23:08 on the same day), and the normal high-ground reactor water injection pump (B) was suspended (at 23:10 on the same day). Regarding the suspended pump (B), air vent was conducted, and it was confirmed that there was no air mixture into the pump.

Then, the pump (B) was activated (at 23:30 on the same day) and the normal high-ground reactor water injection pump (C) was suspended (at 23:31 on the same day). Regarding the suspended pump (C), air vent was conducted, and it was confirmed that there was no air mixture into the pump.

Later, the decreasing trend of the water injection rates was seen again, the water injection rates were adjusted (from 23:53 on the same day to 0:09, August 31, from 3:32 to 3:50, August 31, from 7:16 to 7:24 on the same day, from 9:55 to 11:05 on the same day, and 13:22 to 14:47 on the same day).

Along with the decrease of the water injection rates, the upward trend of the pressure was confirmed on the upstream side of the flow rate adjustment valve, some dirt or extraneous material were possibly attached to the valve, which might have made the flow rates decreased. Therefore, valve flashing was conducted (Unit 1: from 19:00 to 19:30, Unit 2: from 20:14 to 20:27, Unit 3: from 18:00 to 18:25 on the same day).

Later, the decreasing trend of the injection rates was seen, and the injection rates were adjusted (from 22:10 to 22:44 on the same day, from 23:42 to 23:44 on the same day, from 1:40 to 2:00, September 1, from 5:40 to 6:54 on the
same day, 9:25 to 9:40 on the same day, from 14:16 to 14:30 on the same day, from 19:04 to 19:14 on the same day, from 5:51 to 6:03, September 2).
Since the decreasing trend continued, in order to reduce adherence such as crud, etc. due to the narrowness of the flow rate adjustment valve, after improving the flow adjustment valve, utilizing the mini-flow line, the flow rates were adjusted (from 14:30 to 15:36 on the same day.)
Later, the decreasing trend of the water injection rates was seen, and the water injection rates were adjusted (from 6:39 to 6:56, September 3).
No change was observed in the bottom temperature of the RPV in each Unit and other parameters.
For cause investigation, the spool installed on the pump suction side of the suspended normal high-ground reactor water injection pump (C) was removed and inspected (from 11:55 to 13:00, September 4). As for the strainer placed in the inlet of the chiller for buffer tank water (two out of six chillers), the situation of adhered dirt or extraneous material was confirmed (from 12:00 to 12:50 on the same day). Dirt or extraneous material was not confirmed in the inside of the suction piping of the suspended normal high-ground reactor water injection pump (C), however, brown and white extraneous material was confirmed to be attached in the strainer in the inlet of the chiller for buffer tank water. This strainer will be transferred to Fukushima Dai-ni NPS for analysis of the extraneous material. In examining the inside of the buffer tank, some white floating substance was identified. The detailed examination will be conducted later.
Since the decrease of the injection rate was observed, the injection rate was adjusted (from 10:22 to 10:30, September 5, and from 15:12 to 15:23, September 7). The reactor water injection rate of each Unit was as follows (No significant change was confirmed in the RPV bottom temperature and other plant parameters.).

- **Unit 1**: 5.0m³/h (feed-water line: 3.0m³/h, CS line: 2.0m³/h)
- **Unit 2**: 7.0m³/h (feed-water line: 2.0m³/h, CS line: 5.0m³/h)
- **Unit 3**: 7.0m³/h (feed-water line: 2.5m³/h, CS line: 4.5m³/h)

Concerning the white floating substance identified in the buffer tank, the retrieval work was conducted with pumping the water and returning it after filtration in the device (from September 8 to 10).

- The setting values of the alarm for the decrease of reactor water injection rates are as follows (from 8:50 to 10:42, September 11).
  - **Unit 1**: Necessary water injection rate: 3.8m³/h
    - Target water injection rate: 5.0m³/h
    - Alarm setting value: 4.4m³/h
Unit 2: Necessary water injection rate: 5.4m³/h  
Target water injection rate: 7.0m³/h  
Alarm setting value: 6.1m³/h  
Unit 3: Necessary water injection rate: 5.4m³/h  
Target water injection rate: 7.0m³/h  
Alarm setting value: 5.8m³/h  

2. Actions taken by NISA  
[September 10]  
・In light of the water leakage events containing radioactive material from the piping of the concentrated water storage tank of the desalination device in TEPCO’s Fukushima Dai-ichi NPS occurred on March 26 and April 5, 2012, NISA directed TEPCO to set up the environmental impact assessment procedures at the time of occurrence of leakage into the ocean in terms of appropriate and prompt implementation of the environmental impact assessment when leakage into the ocean occurs. NISA received a report from TEPCO on August 27 (Already announced on March 26, April 5, July 30, and August 27).  
Today, NISA has reviewed the contents of the report and compiled the assessment in light of experts’ opinions as it follows:  
(1) Regarding the concept of the environmental impact assessment procedures in leakage events into the ocean, it was confirmed that the concept was shown on the method of establishing monitoring points and the frequency, etc. according to the concentration rates and the amount of leaked water.  
(2) It is very important to promptly prepare the procedures and to conduct an appropriate and prompt environmental impact assessment when leakage events into the ocean occur.  

<Instructions on Foods>  
・Instruction of restriction on shipments (September 9)  
  ・Meat of bear captured in Iwate Prefecture  
  ・Meat of bear captured in Yamagata Prefecture  
  ・Meat of bear captured in Gunma Prefecture  
  ・Landlocked salmon (Yamame) caught in the Nagano River (including river branches) in Tochigi Prefecture (excluding those farmed).
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