News Release

Ministry of Economy,
Trade and Industry (METI)

PRI-07-56

Press Release Information	Nuclear and Industrial Safety Agency (NISA), Ministry of Economy, Trade and Industry (METI)
Consequences of "the Niigataken Chuetsu-oki Earthquake in 2007" at Kashiwazaki-Kariwa Nuclear Power Station, Tokyo Electric Power Company (the 15th report)	

August 6, 2007
NISA/METI

On August 6, 2007, Nuclear and Industrial Safety Agency (NISA) received information from Tokyo Electric Power Company on the situation of Kashiwazaki-Kariwa Nuclear Power Station as shown below.

(Excerpts from the report submitted by Tokyo Electric Power Company)

Tokyo Electric Power Company submitted the report on the plant status of Kashiwazaki-Kariwa NPP as shown on the attachment.

On August 6, 2007, it was found that about 24 liter of hydraulic oil was leaking from the stud bolt tensioner on the operating floor at the 4 floor of the Unit 6 reactor building.

In addition, the status of workers at the occurrence of the earthquake was checked. It was found that the water from the spent fuel pool had been poured over several number of workers who had been working at the reactor building operating floor. The workers went out of the controlled area after they had checked their body is not contaminated by radioactive materials.

(Actions of NISA)

1. The NISA Nuclear Power Safety Inspectors confirm the plant status reported by Tokyo Electric Power Company, including details of the facts and causes of the incidents.
2. At present, no significant reading of fluctuation is identified by either the radiation monitoring systems of the main stacks nor the monitoring posts.

Contacts:
Mr. Nei
Nuclear Power Inspection Division, NISA/METI
Phone: +81-3-3501-9547

Mr. Morita
Nuclear Incident Response Office,
Nuclear Emergency Preparedness Division, NISA/METI
Phone: +81-3-3501-1637

Mr. Imai
Kashiwazaki-Kariwa Nuclear Safety Inspector's Office, NISA/METI
Phone: +81-257-23-9798, +81-257-23-8632

Attachment:

Plant Status of Kashiwazaki-Kariwa Nuclear Power Station after the Niigataken Chuetsu-oki Earthquake in 2007 (as of August 6, 2007)

Plant Status : All unit were shutdown after the occurrence of the earthquake.

1. Visual Inspection Results After the Earthquake: A total of 65 incidents have been confirmed to date (excluding 4 incidents of reactor automatic scram due to the earthquake).

(1) Incidents related to radioactive materials (15 events)

Unit	Status Prior to Earthquake	Status at the Time of Earthquake	Current Status
Unit 1	Shutdown (in an outage)	Displacement of the duct connected to the main exhaust stack. Detailed investigation underway.	Investigation on the size of the displacement and whether there had been a leakage of radioactivity is being conducted. (Already announced on July 17).
		Damage to fire protection system pipings leading to a 40cm-deep puddle of water on the B5 floor (the lowest floor, controlled area) of the Reactor Combination Building.	Amount of leakage: about 1,670m^3. Confirmed re-leakage with radioactivity. (Already announced on July 19). After repairing the fire protection system piping, depth of water is 48 cm. Maximum amount of leakage: about 2,000m^3. (Already announced on July 23).
		Water puddle on the reactor building refueling floor.	Already announced on July 17. Completed soaking up water from the floor on July 27. (Already announced on July 27).
Unit 2	Starting up	Displacement of the duct connected to the main exhaust stack. Detailed investigation underway.	Investigation on the size of the displacement and whether there had been a leakage of radioactivity is being conducted. (Already announced on July 17).
		Water puddle on the reactor building refueling floor.	Already announced on July 17. Completed soaking up water from the floor on July 24. (Already announced on July 25).
Unit 3	Operating	Displacement of the duct connected to the main exhaust stack. Detailed investigation underway.	Investigation on the size of the displacement and whether there had been a leakage of radioactivity is being conducted. (Already announced on July 17).

Bold type characters: newly registered incident. Underlined part: incident already announced or corrected part.

Unit	Status Prior to Earthquake	Status at the Time of Earthquake	Current Status
		Water puddle on the reactor building refueling floor.	Already announced on July 17. Completed soaking up water from the floor on July 20. (Already announced on July 23).
Unit 4	Operating	Displacement of the duct connected to the main exhaust stack. Detailed investigation underway.	Investigation on the size of the displacement and whether there had been a leakage of radioactivity is being conducted. (Already announced on July 17).
		Water puddle on the reactor building refueling floor.	Already announced on July 17. Completed soaking up water from the floor on July 23. (Already announced on July 24).
Unit 5	Shutdown (in an outage)	Displacement of the duct connected to the main exhaust stack. Detailed investigation underway.	Size of the displacement: about 4cm. Investigation whether there had been a leakage of radioactivity. (Already announced on July 17).
		Water puddle on the reactor building refueling floor.	Already announced on July 17. Completed soaking up water from the floor on July 24. (Already announced on July 25).
Unit 6	Shutdown (in an outage)	Minuscule amount of radioactivity found on the 3rd floor of the reactor building (0.6 liter; 2.8×10^2Bq) and mezzanine 3rd floor of the reactor building which is an uncontrolled area (0.9 liter; 1.6×10^4Bq). Leaked water discharged to the sea via water discharge outlet (Total amount of discharged water: $1.2m^3$; radioactivity: 9.0×10^4Bq; no change observed on the seawater radioactivity monitor.) No water is discharged at this moment.	Radionuclides discharged to the sea is as follows: Co-58 (7.7×10^3Bq) Co-60 (4.3×10^4Bq) Sb-124 (3.5×10^4Bq). (Already announced on July 20).
		Water puddle on the reactor building refueling floor.	Already announced on July 17. Completed soaking up water from the floor on July 23. (Already announced on July 24).
Unit 7	Operating	Detected Iodine and particulate materials (Cr-51 and Co-60) during a weekly periodic measurement of the main exhaust stack. Detected radioactivity: 3×10^8Bq.	Already announced on July 17. The measurements made on July 18 detected the release of I-131 and I-133. However, for the period of July 19 to July 23, no radioactive material has been detected. (Already announced on July 24).

Bold type characters: newly registered incident. Underlined part: incident already announced or corrected part.

Unit	Status Prior to Earthquake	Status at the Time of Earthquake	Current Status
		Water puddle on the reactor building refueling floor.	Detected radioactivity on July 20. Completed soaking up water from the floor on July 21. (Already announced on July 23).

Bold type characters: newly registered incident. Underlined part: incident already announced or corrected part.

(2) Incidents not related to radioactive materials (54 events)

Unit	Status Prior to Earthquake	Status at the Time of Earthquake	Current Status
Unit 1	Shutdown (in an outage)	Departure from Limiting Condition of Operation (LCO) due to low water level of spent fuel pool and subsequent return to normal level.	Already announced on July 16.
		Small amount of oil leakage (still continuing) from the exciter power transformer; displacement from foundation base.	Unknown amount of oil leakage. Small amount of leakage continues. (Already announced on July 17). Confirmed that oil leakage ceased on July 27. (Already announced on July 30).
		Double door of the reactor building kept open due to power loss.	No departure from LCO since the unit is in cold shutdown condition. (Already announced on July 17). Closed the double door after the power had been restored on July 24. (returned to normal condition) (Already announced on July 24).
		A puddle of water extending from the electrical instrument room of the emergency diesel generator (A) controlled room boundary door to non-controlled area.	Amount of leakage: about 4 liters. Leakage ceased. No radioactivity. (Already announced on July 17).
		Power loss of liquid waste treatment system control room control panel.	No impact on plant monitoring. (Already announced on July 17).
		Displacement at the connection between house transformers 1A and 1B and isolated phase bus. Breakage of foundation bolt.	Investigating the size of the displacement. (Already announced on July 17).
		Subsidence, slant, crack and abruption of concrete, opening of the joint on the oil protection bank of transformer.	Opening of the joint: 10 locations, maximum width 7cm. (Already announced on July 19).
		Discovery of the pair of type-C shoes (red shoes) on the bulkhead inside the reactor well at the reactor building refueling floor.	The pair of type-C shoes left at the working area close to the opening of well fell down into the well during the earthquake. It is planned to be collected. (On August 3, non-compliance to requirements classification was changed from C grade to B grade).
Unit 2	Starting up	Reactor automatic scram due to earthquake.	Already announced on July 16.
		Departure from LCO due to low water level of spent fuel pool and subsequent return to normal level.	Already announced on July 16.

Bold type characters: newly registered incident. Underlined part: incident already announced or corrected part.

Unit	Status Prior to Earthquake	Status at the Time of Earthquake	Current Status
		Oil leakage from between the main transformer and its cooler main piping (still continuing). Breakage of foundation bolt.	Unknown amount of leakage. Considering oil removal. (Already announced on July 17). Leakage stopped by covering with filler. (Already announced on July 25).
		Lateral displacement of exciter power transformer foundation and duct for power bus.	Investigating the size of the displacement. (Already announced on July 17).
		Water intake screen washing pump unable to start.	Already announced on July 17. Restoration of 2 pumps on July 27. (Already announced on July 30).
		Displacement of the turbine building blowout panel.	No leakage radioactivity. (Already announced on July 17). Temporarily restored on July 20. (Already announced on July 21).
		Oil leakage in the oil tank room of the turbine driven reactor feedwater pump (B).	Amount of oil leakage: about 800 liters. Leakage ceased. (Already announced on July 17). Completed oil recovery on July 19. (Already announced on July 19).
		Subsidence, lateral displacement of the oil protection bank of transformer.	Lateral displacement : one location, 2cm wide. (Already announced on July 19).
Unit 3	Operating	Reactor automatic scram due to earthquake.	Already announced on July 16.
		LCO due to low water level of spent fuel pool and subsequent return to normal level.	Already announced on July 16.
		Departure from LCO due to displacement of the reactor building blowout panel and subsequent return to within the LCO due to cold shutdown of the unit.	Already announced on July 16. (Returned within the LCO since the unit came to a cold shutdown condition). Temporarily replaced the blowout panel on July 21. (Already announced on July 21).
		Displacement of the turbine building blowout panel.	Already announced on July 18. Temporarily replaced on July 20. (Already announced on July 21).
		House transformer 3B caught on fire.	On July 16 at 10:15AM, house transformer 3B was found on fire. Fire extinguished at 12:10PM on the same day. (Already announced on July 16).

Bold type characters: newly registered incident. Underlined part: incident already announced or corrected part.

Unit	Status Prior to Earthquake	Status at the Time of Earthquake	Current Status
		Oil leakage from oil exhaust piping of K-3/4 low voltage start-up transformer (3SB).	Unknown amount of oil leakage. Leakage continuing. Low voltage start-up transformer shutdown due to continuing oil leakage. (Already announced on July 17). Confirmed that oil leakage ceased on July 23. (Already announced on July 23).
		Displacement in exciter power transformer foundation and power bus duct.	Investigating the size of the displacement. (Already announced on July 19).
Unit 4	Operating	Reactor automatic scram due to earthquake.	Already announced on July 16.
		Leakage of seawater from crack occurred in rubber flexible joint between condenser B seawater box and connecting valve.	Size of the crack: 3.5m. Amount of leakage: 24m^3. (Already announced on July 17). Leakage ceased on July 19. (Already announced on July 19).
		Service platform in the spent fuel pool fell on the spent fuel storage rack with spent fuels. No damage to the fuels.	Spent fuel pool water analyses confirmed there is no damage to fuels.
		Subsidence and tilt of the oil protection bank of transformer.	Opening of the joint: one location, maximum width 20cm. (Already announced on July 19).
Unit 5	Shutdown (in an outage)	Leakage from No.4 filtered water tank.	Amount of oil leakage: about 900m^3. Leakage ceased. No radioactivity. (Already announced on July 17).
		Water intake screen washing pump unable to start.	Already announced on July 17.
Unit 6	Shutdown (in an outage)	Oil leakage from low voltage start-up transformer (6SB).	Low voltage start-up transformer shutdown due to small amount of continuing oil leakage. (Already announced on July 17). Confirmed that oil leakage ceased on July 23. (Already announced on July 23).
		Dislocation of the service platform in the spent fuel pool.	Spent fuel rack is underneath the dislocated service platform; however the platform is fixed on a wire. Considering how to handle the situation. (Already announced on July 19). Stabilization measures, such as fixing the wire to a handrail, have been taken on July 25. (Already announced on July 26).

Bold type characters: newly registered incident. Underlined part: incident already announced or corrected part.

Unit	Status Prior to Earthquake	Status at the Time of Earthquake	Current Status
Unit 7	Operating	Reactor automatic scram due to earthquake.	Already announced on July 16.
		Degradation of water tightness of the water-tight doors of the Reactor Core Isolation Cooling System and Residual Heat Removal System (A) and (C).	Already announced on July 17.
		Subsidence, slant, opening of the joint on the oil protection bank of transformer.	Opening of the joint: 2 locations, maximum width 4cm. (Already announced on July 19).
		Service platform in the spent fuel pool fell on the spent fuel storage rack with spent fuels. No damage to the fuels.	Spent fuel pool water analyses confirmed there is no damage to fuels. (Already announced on July 19).
		Ornamental lights at the main control room of Unit 6 and Unit 7 fell, dressing panel of ceiling fell, crack, displacement of emergency light, opening of inspection hole.	(On August 3, non-compliance to requirements classification was changed from C grade to B grade). (Already announced on August 3).
Switch yard	—	500kV New Niigata 2L shut down.	Already announced on July 16. Re-started operation on July 29. (Already announced on July 30).
		Slight gas leakage from breaker of 500kV New Niigata 2L.	Temporarily repaired with rubber bands. (Already announced on July 17). Completed repair on July 28. (Already announced on July 30).
		Oil leakage from 500kV South Niigata 2L black phase bushing. (South Niigata 2L shut down.)	Unknown amount of oil leakage. Considering oil removal. (Already announced on July 17). Partially removed oil and confirmed oil leakage ceased on July 28. (Already announced on July 30).
		Slippage of soil from the east-side slope.	Cracks with width of about 10cm. (Already announced on July 19).

Bold type characters: newly registered incident. Underlined part: incident already announced or corrected part.

Unit	Status Prior to Earthquake	Status at the Time of Earthquake	Current Status
Solid Waste Storage Warehouse	—	Several hundred of drums in the solid waste storage warehouse tipped over and several tens of drums were found with their lids open.	No radioactive material detected from measurement of airborne radioactive material concentration in 4 locations of the solid waste storage warehouse. Confirmed water leakage from tipped over drums. Amount of leakage: 16 liters. No radioactivity. Soaked up leakage from floor. (Already announced on July 18). Although no impact on external environment has occurred, all intake and exhaust opening of the warehouse were sealed on July 20. (Already announced on July 21).
Administration Office Building	—	Normal power supply to the main office building were shut down. Power is supplied from emergency power source for the emergency response room, etc.	Power supply to the emergency response room has been restored to normal power. (Already announced on July 17). Normal power supply to the administration office building is under the restoration. (Already announced on August 3).
		No damage occurred to the building structure (columns and beams) of the office and information buildings. An expansion joint was damaged; many cracks occurred; many glass panes broke; the rooftop air conditioning unit was damaged; the waterproof tank was damaged; ducts fell; cooking equipment fell.	Already announced on July 17.
Site and others	—	Partial damage to the diagonal steel frame of the lightning arrestor tower.	No damages found on main frame. (Already announced on July 18).
		Penetration of the joint in the bank of heavy oil tank.	Already announced on July 18. Restored on July 20. (Already announced on August 3).
		Part (north slope) of the soil disposal area collapsed.	Already announced on July 17. Under the restoration. (Already announced on August 3).
		Water leaked from the drinking water tank.	Already announced on July 17. Restored on August 2. (Already announced on August 3).

Bold type characters: newly registered incident. Underlined part: incident already announced or corrected part.

Unit	Status Prior to Earthquake	Status at the Time of Earthquake	Current Status
		Fire protection system: the pipe was damaged at five locations, resulting in water leaks. KK-1: Northeast side of the reactor building KK-1: West side of the turbine building KK-1: Near the fire hydrant adjacent to the diesel oil tank KK-2: Feed line to the service building KK-2: Feed line to the heat exchanger building	KK-1: Northeast side of the reactor building: Restored on July 18. (Already announced on July 19). KK-1: West side of the turbine building: Restored on July 20. (Already announced on July 21). KK-1: Near the fire hydrant adjacent to the diesel oil tank: Restored on July 19. (Already announced on July 19). KK-2: Feed line to the service building: Restored on July 17. (Already announced on July 19). KK-2: Feed line to the heat exchanger building: Restored on July 20. (Already announced on July 21).
		The environmental minicomputer (Unit 1 service building) and telemeter transmission to the prefecture became disabled.	Restored telemeter transmission to the prefecture on July 17 at 15:40. (Already announced on July 17). Restored all system on July 18 at 18:00. (Already announced on July 19).
		The station road was cut off. Soil liquefaction occurred in a wide area of the site.	Currently travelable. (Already announced on July 17).
		A 50 cm difference in road level occurred in the approach road, making it impassable. Repair work begun.	Currently travelable. (Already announced on July 17).
		Bank protection of the north-south discharge outlet sunk.	Already announced on July 17.
		Water intake bank protection joint crack.	Size of crack: maximum about 8cm. (Already announced on July 17). Completed repair the crack on August 2. (Already announced on August 2).
		Onsite control panel of heavy oil tank fire protection system damaged.	Restored on July 19. (Already announced on July 17).

Bold type characters: newly registered incident. Underlined part: incident already announced or corrected part.

2. Incidents found after start of detailed inspection.

Incidents Found after Start of Detailed Inspection	Current Status
Damage found on the coupling of the drive axis of the reactor building overhead crane. (Unit 6)	Damage found on the coupling at two locations. (Already announced on July 24). Later on, when visual inspection was conducted for two locations, another damage was newly found at one location. Detail inspection will be continued to other areas. (Already announced on August 3).

Reference

- Total number of injured person at the Kashiwazaki-Kariwa site at the occurrence of earthquake: 9 (no radiation exposure).
- Total number of injured person at the Kashiwazaki-Kariwa site after the occurrence of earthquake: 3 (no radiation exposure).
  - **On August 3, a worker felt unwell when he was working for the prevention of inflow of rainwater at the slope on the site for the preparation for typhoon. Although he was conscious and was able to walk by himself, he was sent to a hospital by a company car just in case. At the hospital, he was diagnosed as "light heatstroke".**
  - **The status of workers in the controlled area at the occurrence of earthquake: 817 workers (Unit 1: 418, Unit 2: 6, Unit 3:26, Unit 4: 1, Unit 5: 94, Unit 6: 270, Unit 7: 2) 52 workers attended to their work such as check of the overhead crane, preparation of check of the control rods, decontamination work at the reactor building refueling floor. Although water from the spent fuel pool was scattered over several workers, they went out of the controlled area as they checked their body is not contaminated with radioactive materials.**

Other information:

- Reactor water analyses for Units 2 through 7, which have fuels in the reactor core, confirmed there was no damage to fuels in the reactor core.
- Periodic measurements for radioactivity from the main exhaust stacks for Units 1, 2, and 6 confirmed there was no radioactivity (during the period from July 17 through August 6).
- Periodic measurements for radioactivity from the main exhaust stacks for Units 3, 4, 5 and 7 confirmed that there was no radioactivity (during the period from July 17 through July 31 for Units 3, 4 and 5, and from July 23 through July 31 for Unit 7).
- Periodic manual start-up surveillance testing of emergency diesel generators for each unit (totaling 20 diesel generators excluding one for Unit 1 that has been under inspection since before the earthquake) were conducted and all were confirmed to be functional.
- The following incidents, all of which are presumed to be effects of rainfall, were found in the controlled area:

  (Unit 1) A water puddle was found in the Low Pressure Condensate Pump Room at the B2 floor of the turbine building. Rainfall is suspected to have flowed in from the connection passage between the turbine building and the support building and subsequently flowed into the B2 floor via B1 floor of the turbine building. No radioactivity has been detected. Completed transferring the water from the puddle to the waste processing system on July 26. Confirmed no more inflow into the B1 floor of the turbine building on July 27. Small amount of water continues to dribble into the connection passage between the turbine building and the support building. Commenced soaking up water from the connecting passage floor on July 30.

Bold type characters: newly registered incident. Underlined part: incident already announced or corrected part.

(Unit 3) Water inflow found from the wall in the B1 floor of the turbine building. This water is presumed to have pooled in the pit adjacent to the turbine building and subsequently flowed into the turbine building via the penetration of electrical cable conduits, etc. No radioactivity has been detected. Collected water that flowed in on July 26. Confirmed no more inflow into the turbine building on July 27.

(Solid Waste Storage Warehouse) A water puddle suspected to have occurred from ground water due to rainfall was found near the boundary of the 1st building in the B1 floor of the solid waste storage warehouse and the administrative building. No radioactivity was detected. Completed soaking up water from the floor on July 26. Confirmed no more inflow on July 27.

(Support Building) A water puddle suspected to have occurred from ground water due to rainfall was found in the B1 floor of the support building. No radioactivity was detected. Confirmed no more inflow on July 27. Completed soaking up water from the floor on July 27.

- The following incidents concerned with oil leakage on the site were confirmed
  - A small amount of oil was found in the sub-drain of the Unit 1 turbine building and at the discharge canal on the side of Units 1, 2, 3 and 4. At present, water discharge from the sub-drain is suspended and the temporal water tank for treatment of the water is under preparation. The status of oil film at the discharge canal after termination of the discharge of the sub-drain water will be observed.
    On July 31, a temporary tank for oil separation was installed. Oil boom with oil absorption mat was installed at the discharge canal outlet. Incidentally, oil boom was installed at discharge canal yards of Arahama-side (for Units 1 through 4) and Ohminato-side (for Units 5 through 7).
  - As the result of the detailed investigation of transformer oil weir of Unit 1,2 and 3, cracks were found at the base of oil weir. It was judged that the insulation oil has filtered into the soil. The amount of leaked insulation oil together with those from transformers of other units where the detailed investigation of the oil weir has not finished was estimated to be approximately 200kilo liter at the most. Investigation and collection of the soil close to and under the oil weir into which insulation oil might have filtrated will be considered in the future.
  - **It was found that about 24 liter of hydraulic oil was leaking from the stud bolt tensioner on the refueling floor at the 4 floor of the Unit 6 reactor building. Leakage has been already ceased and so the oil is being collected and wiped.**
- On August 1, it was confirmed that water puddle was found in the cable trench passing from the 1B (uncontrolled area) of the reactor building to the B2 (uncontrolled area) of the control building of Unit 6. And it was confirmed that amount of the water was about $3m^3$ and no radioactive material was detected in it.

Bold type characters: newly registered incident. Underlined part: incident already announced or corrected part.