

Plant Status of Kashiwazaki-Kariwa Nuclear Power Station after the Niigata-Chuetsu-Oki Earthquake (as of July 27th)

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

1. Visual Inspection Results After the Earthquake: A total of 63 incidents have been confirmed to date (excluding 4 incidents of reactor automatic scram due to the earthquake).

(1) Incidents related to radioactive materials (15 cases).

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.
		Damage to fire protection system piping leading to a 40 cm-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. After repairing the fire protection system piping, depth of water is 48 cm. Maximum amount of leakage: about 2,000m ³ .
		Water puddle on the reactor building refueling floor.	Completed soaking up water from the floor on July 27 th .
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.
		Water puddle on the reactor building refueling floor.	Completed soaking up water from the floor on July 24 th .
Unit 3	Operating	Displacement of a 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.
		Water puddle on the reactor building refueling floor.	Completed soaking up water from the floor on July 20 th .
Unit 4	Operating	Displacement of a 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.
		Water puddle on the reactor building refueling floor.	Completed soaking up water from the floor on July 23 rd .
Unit 5	Shutdown (in an outage)	Displacement of a duct connected to the main exhaust stack. Detailed investigation underway.	Size of the displacement: about 4cm. Investigating whether there had been a leakage of radioactivity.
		Water puddle on the reactor building refueling floor.	Completed soaking up water from the floor on July 24 th .
Unit 6	Shutdown (in an outage)	Minuscule amount of radioactivity found on the 3rd floor of the reactor building (0.6 liter; 2.8x10 ² Bq) and mezzanine 3rd floor of the reactor building, which is an uncontrolled area (0.9 liter; 1.6x10 ⁴ Bq). Leaked water discharged to the sea via water discharge outlet (Total amount of discharged water: 1.2 m ³ ; radioactivity: 9x10 ⁴ Bq; no change observed on the seawater radioactivity monitor.) No water is discharged at this moment.	Radionuclides discharged to the sea is as follows: Cobalt-58: 7.7 x 10 ³ Bq Cobalt-60: 4.3 x 10 ⁴ Bq Antimony-124: 3.5 x 10 ⁴ Bq
		Water puddle on the reactor building refueling floor.	Completed soaking up water from the floor on July 23 rd .
Unit 7	Operating	Detected Iodine and particulate material (Cr-51 and Co-60) during a weekly periodic measurement of the main exhaust stack. Detected radioactivity: 3x10 ⁸ Bq.	The measurements made on July 18th detected the release of iodine-131 and iodine-133. However, for the period of July 19th to July 23rd, no radioactive material has been detected.
		Water puddle on the reactor building refueling floor.	Detected radioactivity on July 20 th . Completed soaking up water from the floor on July 21 st .

(2) Incidents NOT related to radioactive materials (52 cases).

Unit	Status prior to earthquake	Events	
Unit 1	Shutdown (in an outage)	<p>Departure from Limiting Condition of Operation (LCO) due to low water level of spent fuel pool and subsequent return to normal level.</p> <p>Small amount of oil leakage (still continuing) from the exciter power transformer; displacement from the foundation base.</p> <p>Double door of the reactor building kept open due to power loss.</p> <p>A puddle of water extending from the electrical instrument room of the emergency diesel generator (A) controlled room boundary door to non-controlled area.</p> <p>Power loss of liquid waste treatment system control room control panel.</p> <p>Displacement at the connection between house transformers 1A and 1B and isolated phase bus. Breakage of foundation bolt.</p> <p>Subsidence, slant, crack and abruption of concrete, opening of the joint on the oil protection bank of transformer.</p>	<p>Unknown amount of oil leakage. Small amount of leakage continues.</p> <p>No departure from LCO since the unit is in cold shutdown condition. Closed the double door after the power had been restored on July 24th (returned to normal condition).</p> <p>Amount of leakage: about 4 liters. Leakage ceased. No radioactivity.</p> <p>No impact on plant monitoring.</p> <p>Investigating the size of the displacement.</p> <p>Opening of the joint: 10 locations; maximum width 7cm.</p>
Unit 2	Starting up	<p>Reactor automatic scram due to earthquake.</p> <p>Departure from LCO due to low water level of spent fuel pool and subsequent return to normal level.</p> <p>Oil leakage from between the main transformer and its cooler main piping (still continuing). Breakage of foundation bolt.</p> <p>Lateral displacement of exciter power transformer foundation and duct for power bus.</p> <p>Water intake screen washing pump unable to start.</p> <p>Displacement of the turbine building blowout panel.</p> <p>Oil leakage in the oil tank room of the turbine driven reactor feedwater pump (B).</p> <p>Subsidence and lateral displacement of the oil protection bank of transformer.</p>	<p>Unknown amount of oil leakage. Considering oil removal. Leakage stopped by covering with filler.</p> <p>Investigating the size of the displacement.</p> <p>No leakage of radioactivity. Temporarily restored on July 20th.</p> <p>Amount of oil leakage: about 800 liters. Leakage ceased. Completed oil recovery on July 19th.</p> <p>Lateral displacement: one location; 2cm wide.</p>
Unit 3	Operating	<p>Reactor automatic scram due to earthquake.</p> <p>LCO due to low water level of spent fuel pool and subsequent return to normal level.</p> <p>Departure from the LCO due to displacement of the reactor building blowout panel and subsequent return to within the LCO.</p> <p>Displacement of the turbine building blowout panel.</p> <p>House transformer 3B caught on fire.</p> <p>Oil leakage from oil exhaust piping of K-3/4 low voltage start-up transformer (3SB).</p> <p>Displacement in the exciter power transformer foundation and power bus duct.</p>	<p>Returned within the LCO since the unit came to a cold shutdown condition. Temporarily replaced the blowout panel on July 21st.</p> <p>Temporarily replaced on July 20th.</p> <p>On July 16 at 10:15AM, house transformer 3B was found on fire. Fire extinguished at 12:10PM on the same day.</p> <p>Unknown amount of oil leakage. Leakage continuing. Low voltage start-up transformer shutdown due to continuing oil leakage. Confirmed that oil leakage ceased on July 23rd.</p> <p>Investigating the size of the displacement.</p>

Unit 4	Operating	Reactor automatic scram due to earthquake.	
		Leakage of seawater from a 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 . Leakage ceased on July 19 th .
		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 (partial opening of the joint).	Opening of the joint: one location; maximum width 20cm.
Unit 5	Shutdown (in an outage)	Leakage from No. 4 filtered water tank.	Amount of oil leakage: about 900 m ³ . Leakage ceased. No radioactivity.
		Water intake screen washing pump unable to start.	
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. Confirmed that oil leakage ceased on July 23 rd . Spent fuel rack is underneath the dislocated service platform; however the platform is fixed on a wire. Considering how to handle the situation. Stabilization measures, such as fixing the wire to a handrail, have been taken on July 25 th .
		Dislocation of the service platform in the spent fuel pool.	
Unit 7	Operating	Reactor automatic scram due to earthquake.	
		Degradation of water tightness of the water-tight doors of the Reactor Core Isolation Cooling System and Residual Heat Removal Systems (A) and (C).	
		Subsidence, slant, opening of the joint on the oil protection bank of transformer.	Opening of the joint: 2 locations; maximum width 4cm.
		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.
Switch yard	-	500kV New Niigata 2L shut down.	
		Slight gas leakage from breaker of 500kV New Niigata 2L.	Temporarily repaired with rubber bands.
		Oil leakage from 500kV South Niigata 2L black phase bushing (South Niigata 2L shut down.)	Unknown amount of oil leakage. Considering oil removal.
		Slippage of soil from the east-side slope.	Crack with width of about 10 cm.
Solid Waste Storage Warehouse	-	Several hundred 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 the floor. Although no impact on external environment has occurred, all intake and exhaust opening of the warehouse were sealed on July 20 th .
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.
		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.	
Site and others	-	Partial damage to the diagonal steel frame of the lightning arrestor tower.	No damage found on main frame.
		Penetration of the joint in the bank of heavy oil tank.	Restored on July 20 th .
		Part (north slope) of the soil disposal area collapsed.	

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

2. Incidents found after start of detailed inspection.

Unit	Status Prior to Earthquake	Incidents Found after Start of Detailed Inspection	Current Status
Unit 6	Shutdown (in an outage)	Breakage found on the coupling of the drive axis of the unit 6 reactor building ceiling crane.	

[Other Information]

- Total number of injured person at the Kashiwazaki-Kariwa site since the occurrence of earthquake: 9 (no radiation exposure).
- Reactor water analyses for units 2 through 7, which have fuels in the reactor core, confirmed there is no damage to fuels in the reactor core.
- Periodic measurements for radioactivity from the main exhaust stacks for units 1, 2, 3, 4, 5, and 6 confirmed there is no radioactivity.
- 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 26th. Confirmed no more inflow into the B1 floor of the turbine building on July 27th. Small amount of water continues to dribble into the connection passage between the turbine building and the support building
 - (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 26th. Confirmed no more inflow into the turbine building on July 27th.
 - (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 26th. Confirmed no more inflow on July 27th.
 - (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 27th.