Report on the impact of the Niigata-Chuetsu-Oki Earthquake on the Kashiwazaki-Kariwa Nuclear Power Station and response by Tokyo Electric Power Company (TEPCO), national and local governments and other bodies (as at July 26, 2007)

<table>
<tr><th>Date</th><th>TEPCO and other power utilities and JANTI (Japan Nuclear Technology Institute)</th><th>National and local government</th></tr>
<tr><td rowspan="4">Monday
July 16,
2007</td><td colspan="2">10:13 approx. Earthquake occurs</td></tr>
<tr><td>TEPCO press release: Earthquake update (as at 1 p.m.)
• Kashiwazaki-Kariwa nuclear plant reactors 2, 3, 4 and 7 scrammed automatically. Reactors 1, 5 and 6 were already shut down for periodical inspection.
• The fire department confirmed that a fire in the transformer of the No. 3 reactor was brought under control (12:10 p.m.)
• There is no environmental impact from the earthquake and associated fire.</td><td></td></tr>
<tr><td>TEPCO press release: Earthquake update (as at 6:30 p.m.)
• Several aftershocks were recorded but did not affect any sections of the plant
• All sections were checked for Departure from Limiting Condition of Operation (LCO)
- Reactors 1, 2 and 3: low water level in spent fuel pool (violation rectified)
- Reactor 3: Reactor building blow-out panel removed (investigation of violation continuing)
- Reactors 4, 5, 6 and 7: no violations</td><td></td></tr>
<tr><td>Seismic observation records at the plant (preliminary data)
• Recorded earthquake movement provisional values for foundation mat at lowest part of reactor building (with design acceleration response at the same location shown in brackets), in gal
<table>
<tr><th>Recorded</th><th>No. 1 reactor</th><th>No. 5 reactor</th><th>No. 6 reactor</th></tr>
<tr><td>Horizontal (N-S)</td><td>311(274)</td><td>277(249)</td><td>271(263)</td></tr>
<tr><td>Horizontal (E-W)</td><td>680(273)</td><td>442(254)</td><td>322(263)</td></tr>
<tr><td>Vertical</td><td>408(235)</td><td>205(235)</td><td>488(235)</td></tr>
</table></td><td>Directives from Director of Nuclear and Industrial Safety Agency (NISA) to TEPCO: Analyze seismic observation data and determine impact on earthquake resistance
Directed to base the report on the fact that the maximum seismic acceleration recorded at Unit 1, 5 and 6 exceeded the maximum response acceleration based on the base level of seismic motion
• Analyze seismic observation data from the earthquake
• Check whether the earthquake has compromised safety of key equipment and facilities</td></tr>
<tr><td rowspan="3">Tuesday 17
July</td><td>TEPCO press release: Leakage of radioactive matter from Unit 6
• Confirmation of water leakage in uncontrolled areas on 3rd level and mid 3rd level of reactor chamber (12:50)
• Confirmation of radiation in water (18:20)
• Volume of water leak: 3rd level = 0.6 l, approx 2.8 x 102 Bq; mid 3rd level = 0.9 l, approx 1.6 x 104 Bq
• The water then flowed out to the sea via a discharge outlet (approx. 1.2 m^3, 6 x 10^4 Bq)
• Water is no longer reaching the sea. No significant change in sea level monitor reading, which is below the legislated value</td><td>Directives from Director of NISA to power utilities: directives to power companies affected by fire and radiation leak
Directions to power companies in receipt of directives from the METI Minister regarding unacceptable delays in launching fire-fighting response and in communicating the radiation leak to NISA at the Kashiwazaki-Kariwa nuclear plant
• Inspection and report on fire-fighting procedures for fires at the nuclear plant
• Review and report on organization of communication structure between nuclear plant and head office and between head office and the relevant government authorities in regards to incidents such as radiation leaks</td></tr>
<tr><td></td><td>NISA press release: Leakage of radioactive material from Unit 6
NISA response to the report from TEPCO dated July 16 regarding radioactive leak from Unit 6
• NISA inspectors confirmed that discharge of radioactive water had ceased, and vindicated TEPCO’s original outlook
• TEPCO was ordered to maintain a strict program of monitoring for leakage in the surrounding surveillance area; to put in place a rigid reporting structure; and to identify and rectify the causes</td></tr>
<tr><td>TEPCO press release: iodine and other substances detected from main exhaust stack of Unit 7
• At approximately 1:00 p.m., iodine and radioactive particulate matter (Cr-51, Co-60) were detected during regular observation of the main exhaust stack
• Total radiation was 3 x 10^8 Bq, dosage was approximately 1.1 x 10^{-7} mSv, well below the legally prescribed maximum (1 mSv per individual)
• No significant changes in the main air stack radiation monitor or monitoring post
• Other exhaust stacks will be monitored</td><td>NISA press release: Iodine detected in main air stack of Unit 7
• Information received from TEPCO (see left)
• Cause unknown. Potential causal relationship with earthquake unclear. NISA to launch full investigation</td></tr>
<tr><td></td><td>TEPCO press release: Earthquake update (as at 5:00 p.m.)
Unit 1: 8 incidents including: oil leak from exciter transformer (minimal, ongoing); water puddle under damaged fire-fighting pipes (1,670 m^3)
Unit 2: 7 incidents including: oil leaking from flange under main transformer (ongoing)
Unit 3: 5 incidents including: fire in 3B house transformer (brought under control)
Unit 4: 3 incidents including: misaligned connecting ducts on main exhaust stack
Unit 5: 4 incidents including: water leaking from No. 4 filtrate water tank
Unit 6: 3 incidents including: oil leak from low-start transformer B (minimal, ongoing)
Unit 7: 3 incidents including: cracks in joints of reinforcement along inlet channel embankment (up to 8 cm in size)
Switch yard: 3 incidents including: 500 kV New Niigata 2L shut down
Solid waste storage warehouse: Around 100 drums toppled (some with lids open)
Administration office building: 2 incidents including: normal power supplies shut down
Site/other: Seven incidents including: damage to fire-fighting equipment in four locations; water leaks</td><td>NISA press release: earthquake update
• Information received from TEPCO (see left)
• Council member Kato has today dispatched four more NISA officials to work alongside the inspectors at the site
• TEPCO findings that iodine detected in the main exhaust stack of the Unit 7 has no impact on the surrounding environment were accepted
• All values detected at the main exhaust stacks of Unit 1 through 6 were below the minimum requirements
• Instructed to immediately assess the situation with toppled solid waste drums</td></tr>
</table>

Wednesday 18 July

TEPCO press release: Amendment to notification of radiation leak from Unit 6 (dated 16 July)

- Discharge out to sea: Amended from 6 x 10^4 Bq to 9 x 10^4 Bq

NISA press release: Radiation leak from Unit 6

- Information received from TEPCO as per amendment
- TEPCO still maintains that the three-month radioactivity concentration in the surrounding surveillance area is less than 2 in 10 billion Bq/cm^3, due to dilution of radioactive matter. This figure is a billion times less than the maximum allowable discharge concentration in the surrounding surveillance area over three months (0.2 Bq/cm^3).
- The error in the announcement on the 16th was extremely regrettable
- A full investigation will be conducted into the source of the calculation error. Faster and more rigorous reporting was ordered.

TEPCO press release: Earthquake update (as at 5:00 p.m.)

Unit 1 = 9 incidents, Unit 2 = 9 incidents, Unit 3 = 8 incidents, unit 4 = 4 incidents, Unit 5 = 4 incidents, Unit 6 = 3 incidents, Unit 7 = 5 incidents, Switch yard = 3 incidents, Solid waste storage warehouse = 1 issue, Administration office building = 2 incidents, Site/others = 9 incidents

- Observations of the concentration of radioactive matter in the air in the solid waste storage warehouse were taken at four locations. No radioactive matter was detected. Approximately 16 l of water had leaked from the toppled drums, but no radiation was detected. Inspection is continuing

NISA press release: Earthquake update

- Information received from TEPCO (see left)
- Investigations by Mr. Kato and inspectors at the plant are continuing
- Confirmation that radioactive water did not leak from toppled drums
- As yet, no significant directives confirmed for main air stack radiation monitor and monitoring posts

Mayor of Kashiwazaki, Hiroshi Aida

- Issued direction of emergency prohibition of use of some facilities for all Units at the plant (in relation to dangerous facilities such as outdoor tanks), in accordance with the Fire Services Law

Thursday 19 July

TEPCO press release: Seismic observation records at K-K NPS (subsequent to preliminary data released 16 July)

- Data for the earthquake has been collected from all Units
- Seismic acceleration observations measured at foundation mat at lowest part of reactor building (with design acceleration response at the same location shown in brackets), in gal

Recorded	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
Horizontal (N-S)	311(274)	304(167)	308(192)	310(193)	277(249)	271(263)	267(263)
Horizontal (E-W)	680(273)	606(167)	384(193)	492(194)	442(254)	322(263)	356(263)
Vertical	408(235)	282(235)	311(235)	337(235)	205(235)	488(235)	355(235)

Nuclear Safety Commission

1) Findings from site investigation
2) Impact on the nuclear power station
3) Outbreak of fire in the transformer at Unit 3 and subsequent response

<Findings from site investigation>

a. Investigation conducted by three officials, including acting Chairman Higashi and Mr. Hayata
b. Sites visited: Unit 3 house transformer (fire outbreak), Unit 2 transformer (damage to foundation bolts), No. 6 reactor exhaust stack area (water leak), control room for Unit. 6 and 7, solid waste storage warehouse
c. Observations from Mr. Higashi:

- The No. 7 reactor scram automatically at the time of the earthquake. A readout in the central control room of indicated that the reactor is under cold shutdown. Operators will need to continue checking the reactor core.
- The response to the fire in the transformer at Unit 3 at the time of the earthquake constitutes a key issue. It is important that the lessons learned from this incident are passed on to other power stations.
- Water containing trace levels of radiation spilled from the spent fuel pool of the No. 6 reactor due to major tremors during the earthquake, and also because containment did not function adequately. We were told that it may have reached the uncontrolled area

<Statement from Chairperson Atsuyuki Suzuki>

- The power plant is essentially safe. It did not reach a serious state. All operating reactors scramed automatically as they were designed to do, and the key safety features providing multiple layers of protection from highly radioactive material inside the reactor functioned properly. Nevertheless, the earthquake has had a significant impact on the plant, as exemplified by the transformer fire.
- The radioactive water leak into the uncontrolled area will be investigated based on reports from operators and government authorities as well as the findings of the Nuclear Safety Commission.
- According to the Nuclear Safety Commission findings, there are many lessons learned from the transformer fire, with respect to procedures at other nuclear plants and fire-fighting techniques in general. The necessary studies should be carried out as soon as practicable in order to identify the salient issues.
- We have put in a strong request to the government authorities to instruct the operators to evaluate the impact of the earthquake on the seismic resistance of the plant. The operators will also be asked to perform additional studies to identify the location of the fault line.
- We will lobby the operators and the government authorities for a thorough investigation in line with the newly amended guidelines with respect to the suitability of the original design and the emergence of new knowledge which was not available at the time.
- We believe that the back check will demonstrate the validity of the new guidelines for the recent earthquake. Now is not the time to debate the pros and cons of further amendments to the new guidelines. The validity depends on whether the requirements are adequate. We must not make any assumptions.

TEPCO press release: plant status (as at 5:00 p.m.)

All facilities have been inspected externally where possible. The results are as follows:

- Reactors 2, 3, 4 and 7 shut down automatically and are now stable in cold shutdown
- Two incidents involving radioactivity emission

1) Water leak from Unit 6 discharged into the open seas (July 16 press release)

- Level of radiation discharged into the sea was approximately 9 x 10^4 Bq; total radiation exposure was approximately 2 x 10^{-9} mSv (well below the legally prescribed maximum of 1 mSv per individual per year)
- The SF pool water that flooded into the operating floor of the reactor chamber (a controlled area) is thought to have made its way into the uncontrolled area along the fuel exchanger cables and wire ducts. The cause is still under investigation.

2) Iodine and radioactive particulate matter detected in main exhaust stack monitor of No. 7 reactor (July 17 press release)

- Radiation level detected thus far from the main air stack is approximately 4 x 10^8 Bq; total radiation exposure was approximately 2 x 10^{-7} mSv (well below the legally prescribed maximum of 1 mSv per individual per a year)
- Evaluation of radiation levels continuing

- Main findings identified thus far:
  - 14 incidents involving radioactive matter: the 2 incidents described above, misaligned connecting ducts on main exhaust stack (Unit 1 through 5), water puddle under damaged fire-fighting pipes (1,670 m^3) (Unit 1), water on operating floor in reactor building (Unit 1 through 6)
  - 53 incidents not involving radioactive matter

NISA press release: Earthquake update

- Information received from TEPCO (see left)
- Mr. Kato and inspectors at the plant reported no problems with reactor vessels and associated equipment and machinery based on visual inspection
- As yet, no significant directives confirmed for main air stack radiation monitor and monitoring posts

	TEPCO press release: Update on investigation into iodine detected in main exhaust stack of Unit 7 <Origin of iodine discharge into the environment> • Delay to shut off turbine ground exhaust ventilator after automatic reactor scram • As a result, residual iodine and radioactive particulate matter in the condenser was sucked into the exhaust ventilator and discharged via the exhaust stack. The investigation is continuing. • Analysis of reactor water samples indicates that there was no leakage of radioactive matter from the fuel rods into the reactor water <Environmental impact> • The monitoring frequency for radioactive iodine and particulate matter in the main exhaust stack has been increased from once per week to daily. Atmospheric monitoring in the surrounding surveillance area is also being conducted daily as of July 18 onwards. • Iodine 131 and iodine 133 were detected in the main exhaust stack on July 18, but were not detected in the surrounding surveillance area on July 18 or 19. • The total radiation dose from the main air stack thus far is approximately 2 x 10^{-7} mSv	**NISA press release: iodine detected in main exhaust stack of Unit 7 (the second report)** • Information received from TEPCO (see left) • NISA officers are currently confirming iodine emissions from air stack and reactor water measurements • TEPCO to be instructed to take necessary actions with respect to emission controls **NISA press release: investigation of damages** Mr. Kato and three other officers were dispatched to the plant to conduct an investigation together with NISA inspectors. Their findings are as follows: 1) Outbreak of fire in the Unit 3 and containment thereof • The initial response to the fire was inadequate, primarily because those on duty were too busy to provide the required notification of the reactor scram, and also they did not have a proper understanding of the extent of the fire • NISA will advise on developing better initial response procedures 2) Radioactivity leakage from the Unit 6 • Radioactive material leaked from a terminal box in the mid 3rd level ceiling of the uncontrolled area directly below the operating floor, and traveled through the mid 3rd level and via the 3rd level floor drain to the non-radioactive storm drain sump (NSD), from where it was pumped out to sea. • For the moment, leakage from mid 3rd level is being collected in a container, and the pump at the NSD has been reconfigured to prevent it starting up automatically. • The delay in reporting can be attributed to two main factors: the lack of a proper structure dictating procedures required of the radiation monitoring officer immediately after an earthquake, from sampling through to radiation monitoring; and the prevailing mindset among the operators that leakage in the uncontrolled area could not possibly be radioactive, which lead them to distrust the initial radioactivity readings and recheck the measurements repeatedly. • NISA has instructed TEPCO to continue with investigations in order to identify the route taken by the leaked material. NISA will also advise TEPCO as necessary based on the findings of the investigation and associated preventative measures. 3) Other damage and leakage caused by the earthquake • Confirmation of pool water splashing, leakage from the filtrate tank, misaligned ducts on main air shaft and key safety equipment in storage vessels • Confirmation of seismograph location and acceleration amplitude records; found to be consistent with TEPCO statements • Confirmation from observation data that iodine was indeed detected in the main air shaft of the No. 7 reactor; unable to determine exactly when the iodine (and other materials) were released however • Confirmation from sample analysis that iodine was not detected in the Nos. 1 through 6 reactors during the week of the earthquake • NISA will order an investigation into potential causal relationships with detection of iodine (and other materials) and the earthquake
Friday July 20	**TEPCO press release: Results of radiation readings from main exhaust stack of Unit 7** Environmental impact • Iodine 131 and iodine 133 were detected in the main air stack on July 18, but not on July 19. • The total radiation dose from the main exhaust stack thus far is approximately 2 x 10^{-7} mSv (no change from July 19) • Monitoring for iodine and radioactive matters in the main exhaust stack will be conducted on a daily basis for the immediate future	**NISA press release: Iodine detected in main exhaust of Unit 7 (the third report)** • Information received from TEPCO (see left) • NISA officers at the plant are currently checking over data for iodine discharge from the air shaft and reactor water measurements. NISA will continue to monitor the situation strictly
	TEPCO press release: Earthquake update (as at 1:00 p.m.) 63 issues confirmed to date (not including the four automatic reactor scrams at the time of the earthquake) 1) Incidents related to radioactive materials (15 issues) - Discharge of water containing radioactive material out to sea (Unit 6) - Iodine and radioactive particulates detected at main exhaust stack monitor (Unit 7) - Misaligned connecting ducts on main exhaust stack (Unit 1 through 5) - Water puddle in combined reactor building from damaged fire-fighting pipes (1,670 m^3) (Unit 1) - Water puddle on operating floor in reactor building (Unit 1 through 7) 2) Incidents NOT related radioactive materials (52 issues, including the four automatic reactor scram at the time of the earthquake)	**NISA press conference: Earthquake update (the fourth report)** • Information received from TEPCO (see left) • NISA officers are currently at the plant: - The data demonstrates that there was no radiation in the collected water that was discovered on the 5th floor below ground of the reactor combined building, which had come from damaged fire-fighting pipes in the Unit 1. - Observations data shows that iodine and particulates were not detected in the main exhaust stack of the Unit 7 on July 18 and 19. - NISA officers are present at the TEPCO investigation into the route taken by the water leak in the uncontrolled area of the No. 6 reactor to determine whether TEPCO's assumptions were correct • There are no significant changes in the main air stack radiation monitor and monitoring posts

TEPCO press conference: Investigation into fire in the house transformer 3B at Unit 3

Inspection involved mainly above-ground inspection and found the following:

- The connecting bus line section on secondary side of the transformer had slipped downwards relative to the transformer foundations
- The transformer and the connecting bus line on the secondary side are out of vertical alignment
- Oil is leaking from the bushing on the transformer secondary side
- The fire has caused extensive damage to the connecting ducts of the connecting bus line section on the transformer secondary side; the bus line section is melted and broken in some places
- There does not appear to have been any other serious fire-related damage to date

TEPCO press release: Reporting on safety levels

Internal investigations are continuing in accordance with the directive from NISA dated July 16. A report of the findings, covering the events, causes and responses, will be submitted to NISA, and preventative measures will be implemented as soon as practicable.

<NISA directive dated July 16>

1) Investigation of causes why it took so long to deliver the report on the water leakage
2) Confirm the response to a transformer fire
3) Analyze seismic observation data from the earthquake and check safety (seismic resistance) of key equipment and facilities

Power utilities: Report on findings of review of fire-fighting and incident communicating procedures and structures

Report to NISA in response to written directive from NISA dated July 16

<Summary of directive>

1) Report on an immediate review of fire-fighting procedures and structures in response to the fire at the nuclear power plant
2) Report on an immediate review of the communication structure between nuclear plant and head office and between head office and the relevant government authorities in regards to incidents such as radiation leaks

Directive from METI minister to power utilities

Stipulates measures required in order to ensure the safety and security of the people. Details of planned modifications/upgrades in accordance with 1) and 2) below must be submitted by July 26.

1) Upgrade to internal fire-fighting capacity
   - Move immediately to put in place a structure designed to facilitate immediate deployment of staff in sufficient numbers in the event of a fire
   - Maintain chemical fire-fighting vehicles and other equipment required for oil fires
   - Provide dedicated communication lines for fire-fighting activities
   - Provide the relevant employees with more opportunity to work closely with fire-fighting services, such as taking part in drills and exercises

2) Faster and more rigorous incident communication procedures
   - Move immediately to put in place a structure for immediate deployment of staff to check for radioactive leakage in the event of a fire due to earthquake or other cause
   - Set up robust communication lines designed to withstand the effects of a fire due to earthquake or other cause and enable internal communication and communication between the plant and the emergency headquarters set up by the operator
   - Inform local and national governments immediately of any confirmed or suspected leakage of radioactive material

3) Check earthquake resistance with a view to public safety
   - Incorporate new information and insights gained from this incident into ongoing evaluation of earthquake resistance and facility safety levels
   - Review of the implementation program in order to complete the evaluation as quickly as possible (findings should be made available within one month)

METI minister: non-scheduled press conference

- Notwithstanding peripheral facilities and equipment, the key reactors themselves all shut down safely and automatically as designed
- Radioactive emissions from the power plant were detected; emissions from the Unit 7 main exhaust stack had ceased as of today. The volume of radiation generated thus far is equivalent to one part in ten million of the volume of radiation that an average person would absorb from natural sources during normal daily activities. Similarly, the radioactive water that leaked from the Unit 6 is equivalent to nine liters of hot water from a radon thermal spring, and will have no impact on the surrounding environment.

Saturday
July 21

TEPCO

・Site open to press (Unit 1 Diesel Oil Tank, Unit 3 House Transformer, No.4 Filtered Water Tank and etc.)

TEPCO press release: Earthquake update (as at 3:00 p.m.)

- 63 issues confirmed to date (not including the four automatic reactor scrams at the time of the earthquake): no additions since July 20
  1) Incidents related to radioactive materials (15 issues)
  2) Incidents NOT related to radioactive materials (52 issues, including the four automatic reactor scram due to the earthquake)

・An analysis of reactor water from reactors 2 through 7, which were loaded with fuel, indicated no damage to the fuel. It is considered highly unlikely that fuel was damaged by the release of radioactive iodine, for several reasons: the iodine 131 concentration inside the No. 7 reactor was normal at around 3 x 10^{-2} Bq/g during operation; after shutdown it fell to 9 x 10^{-3} Bq/g, according to analysis of reactor water samples; and the high-sensitivity off-gas monitor reading declined after the emergency shutdown due to the earthquake.

・ Summary of increased monitoring for radioactive emissions from the main exhaust stack of Unit 7

<Radioactive iodine and particulate emissions from the main exhaust stack of Unit 7>

Sampling period	Radioactive iodine	Particulate matter
July 9 – 17	3 x 10^{8} Bq	2 x 10^{6} Bq
July 17 – 18	2 x 10^{7} Bq	Not detected
July 18 – 19	Not detected	Not detected
July 19 – 20	Not detected	Not detected
Total	4 x 10^{8} Bq	2 x 10^{6} Bq

<Radioactive iodine and particulate levels at boundaries of surrounding surveillance area>

Sampling period	MP-1		MP-5		MP-8	
	Iodine	Particulates	Iodine	Particulates	Iodine	Particulates
July 18 – 20	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected
July 21	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected

Sunday July 22

TEPCO press release: Earthquake update (as at 3:00 p.m.)

• 63 issues confirmed to date (not including the four automatic reactor scrams due to the earthquake): no additions since July 20

<Radioactive iodine and particulate emissions from No. 7 reactor air stack>

Sampling period	Radioactive iodine	Particulate matter
July 20 – 21	Not detected	Not detected
Total (July 9 – 21)	4 x 10^8 Bq	2 x 10^6 Bq

<Radioactive iodine and particulate levels at boundaries of surrounding surveillance area>

Sampling period	MP-1		MP-5		MP-8	
	Iodine	Particulates	Iodine	Particulates	Iodine	Particulates
July 22	Not detected	Not detected	Not detected	Not detected	Not detected	Not detected

Governor of Niigata Prefecture Hirohiki Izumida

• Submits written request to national government regarding investigation by IAEA group

• "This incident has damaged local industry through rumor-mongering. In order to restore public confidence, we must provide the outside world with full and accurate information"

Monday July 23

TEPCO press release: Radiation measurements at the main exhaust stack of Unit 7 for July 22

<Radioactive iodine and particulate emissions from No. 7 reactor air stack>

Sampling period	Radioactive iodine	Particulate matter
July 21 – 22	Not detected	Not detected
Total (July 9 – 22)	4 x 10^8 Bq	2 x 10^6 Bq

TEPCO press release: Earthquake update (as at 3:00 p.m.)

• 63 issues confirmed to date (not including the four automatic reactor scrams due to the earthquake): no additions since July 20

1) Incidents related to radioactive materials (15 issues)

2) Incidents NOT related to radioactive materials (52 issues, including the four automatic reactor scrams due to the earthquake)

• The amount of puddle on the 5th floor below ground of the reactor combined building. 1,670m^3 ==> 2,000m^3

• Radiation was not detected during regular testing for radioactive emissions at the main exhaust stacks of the Unit 1, 2 and 6. Unit 3, 4 and 5 will be tested tomorrow.

TEPCO press release: Investigation into leakage of radioactive matter in Unit 6

Following a thorough investigation, the water leak in the uncontrolled areas on the 3rd and mid 3rd levels of the reactor building was attributed to the following factors.

• Water overflowed from the spent fuel pool on the operating floor on the 4th level of the reactor building and entered the fuel exchanger power supply box on the same floor, where it got into a cable duct via gaps in the seal around the cable passages in the box.

• The water traveled through embedded the cable duct, and dripped from upper air conditioning ducts on the mid 3rd level of the reactor building. It also dripped from openings in the mid 3rd level floor down to the 3rd level floor.

• Puddle on the 3rd level floor surface drained out through drain outlets into a non-radioactive wastewater tank in the basement level. From here, it was sent out to sea via discharge outlets

JANTI: On-site investigation (the team of 3 members) — until 24 July

NISA press release: Earthquake update (the fifth report)

• Information received from TEPCO (see left)

• NISA Chairman Mr. Komoda visited Niigata prefecture today and met with the governor of Niigata prefecture, the mayor of Kashiwazaki City and the mayor of Kariwa town to discuss the NISA response to the incident

• NISA officers are currently at the plant:

- The data demonstrates that no iodine or particulates have been detected in the main air stack of the No. 7 since July 18.
- With respect to the leakage of radioactive material from the Nos. 6 and 7 reactors, NISA will be present at the TEPCO investigation into the route taken by the water leak to determine whether the suspected route initially announced by TEPCO was correct

• There are no significant changes in the main air stack radiation monitor and monitoring posts

METI Vice Minister, Kitabatake: regular press conference

• In light of the growth of nuclear power throughout the world, it is most important to provide safety information about nuclear power around the world via the medium of the IAEA, and to share information about strategies and initiatives. To this end, the Ministry has formally notified the IAEA today that its staffs will be permitted to visit the Kashiwazaki-Kariwa nuclear power plant in Japan.

Tuesday July 24

TEPCO press release: Radiation readings at the main exhaust stack of the Unit 7 for July 23

Radioactive iodine and particulate emissions from Unit 7 main exhaust stack

Sampling period	Iodine	Particulates
July 22 – 23	Not detected	Not detected
Total (July 9 – 23)	4 x 10^8 Bq	2 x 10^6 Bq

TEPCO press release: Earthquake update (as at 2:00 p.m.)

• In addition to the 63 issues confirmed to date (which excludes the four automatic reactor scrams at the earthquake), we have confirmed damage to drive shaft joints on a ceiling crane in the No. 6 reactor building

• Radiation monitoring in the main exhaust stack was conducted at Unit 3, 4 and 5 but no radioactive material was detected

Minister of Economy, Trade and Industry Akira Amari: press conference following Cabinet meeting

1) Committee set up to investigate effect of the Chuetsu offshore earthquake on the nuclear power plant

• The Committee, acting from the perspective of a third party, will conduct an in-depth examination of the background to incidents such as the transformer fire and emissions of radioactive materials from the power plant, and will use this to identify future issues to be addressed by the national government and operators of nuclear plants. The Committee will be headed by Professor Haruki Madarame from Tokyo University, and will report to the Nuclear Safety and Security Chapter of the Resources and Energy Study Group

2) IAEA delegation

• Last week the IAEA requested access for a joint study mission. Our response is that Japan believes the international sharing of information to be beneficial

• Proposals from Japan:

- IAEA delegation will be permitted to investigatie the site
- The incident will be discussed at the IAEA General Conference in September with senior officials from regulatory bodies around the world
- Japan will host an international workshop composed of expert consultants from around the world

• We will continue to release information about the impact on the nuclear power plant in clear and simple language in order to restore the confidence of local communities

<table>
<tr><td>Wednesday
July 24</td><td></td><td>NISA press release: Earthquake update (6th report)
• Information received from TEPCO (as per left-hand column)
• TEPCO reports that since radiation has not been detected in the main air stack of the Unit 7 since July 19, the measurement frequency will revert to weekly rather than daily as at present.
• NISA inspectors are currently inspecting the damage to the No. 6 ceiling crane
• TEPCO is currently preparing to evacuate the water that has collected on the B5 level of the No. 1 reactor combination building, by transferring water from the Unit 1 tank to the Unit 2. NISA inspectors are supervising the use of temporary pools, pumps and hoses at the B5 level of the composite building, the underground tunnel connecting Unit 1 and 2, and Unit 2 waste treatment facility.
• NISA inspectors were present at helium gas tests to determine the route taken by radiation that leaked from the Unit 6
• No other significant developments in main exhaust stack radiation monitor and monitoring posts.</td></tr>
<tr><td rowspan="3">Thursday
July 25</td><td>TEPCO
・No. 6 reactor building and the turbine building operating floor (gallery room) opened to the media</td><td></td></tr>
<tr><td>TEPCO press release: Earthquake update (as at 3:00 p.m.)
・Results of external inspection conducted after earthquake: 63 issues have been confirmed to date (not including the four automatic reactor scram due to the earthquake)
1) Incidents related to radioactive materials (15 issues)
2) Incidents NOT related to radioactive materials (52 issues, including the four automatic reactor shutdowns at the time of the earthquake)
・Results of follow-up inspection: one issue (damage to drive shaft joints on a ceiling crane in the No. 6 reactor building)
・Scheduled manual startup testing was performed on one of the three emergency diesel generators in each of the No. 1, 2, 5 and 7 reactors without error. Generators in the No. 3, 4 and 6 reactors will be tested today.</td><td>NISA press release: Acknowledgement of accident and failure report and earthquake update (7th report)
• NISA has received the Accident and Failure Report from TEPCO, along with an update on conditions at the plant
• Mr. Kato returned to the plant today for a further inspection together with NISA officials. The inspection covered the scheduled manual testing of emergency diesel generators. No issues have been identified today.
• The team is also inspecting the water in the B5 level of the No. 1 reactor combination building and the damage to drive section of the ceiling crane in the No. 6 reactor building.
• No other significant developments in the main air stack radiation monitor and monitoring posts.</td></tr>
<tr><td>TEPCO press release: Submission of report on nuclear plant accident and failure report and electrical damage report
• Water containing radioactive material leaked into an unrestricted zone in the No. 6 reactor building (Operating Regulations Article 19, Paragraph 17, Item 9)
• Water spilled on the operating floors of Nos. 1 through 7 reactor buildings (Operating Regulations Article 19, Paragraph 17, Item 10)
• Damage was sustained to drive shaft joints on a ceiling crane in the No. 6 reactor building (Operating Regulations Article 19, Paragraph 17, Item 3)
• A fire occurred in the transformer (B) in the Unit No. 3 (Reporting Regulations on Electrical Incidents Article 3, Part 1, Item 3)</td><td>NISA press release: safety check
<Manual startup test on emergency diesel generators>
• Manual startup tests were performed on seven emergency diesel generators today. All satisfied the safety criteria.
• NISA will continue monitoring testing of the remaining emergency diesel generators to be completed by July 27.
<Confirmation of flooding on B5 level of No. 1 reactor combination building caused by damage to fire protection system piping.>
• Flooding on the B5 level of the reactor combination building entered the restricted area. As such, NISA believes that the water should be treated as radioactive, irrespective of whether radiation monitoring shows the levels to be below the detection limit.
• A system of pumps and hoses will be used to pump water from the waste output tank at the Unit 1 to the waste output tank at the Unit 2. The transfer process will be checked by inspectors when appropriate.
<Confirmation of damage to drive shaft joints in ceiling crane in No. 6 reactor building>
• Issued order for immediate check for similar damage to cranes in other reactor buildings. Further investigation is required to identify causes of damage and prevent reoccurrence
<Radioactivity monitoring>
• NISA has questioned TEPCO regarding assessment of radiation exposure to workers since the day of the earthquake (July 16). NISA is satisfied that TEPCO is managing this area appropriately.
• NISA will continue to monitor radiation exposure assessment procedures as necessary.</td></tr>
<tr><td>Friday July
26</td><td>TEPCO press release: Geological survey in surrounding marine area
• Insights from the Chuetsu offshore earthquake will be incorporated into an evaluation of anti-earthquake safety standards at the Kashiwazaki-Kariwa nuclear plant
• The seismic design of the power plant is based on detailed studies of the surrounding land and sea areas conducted at the time of the original construction application
• Sonic marine surveying will be conducted as part of geological studies of the sea area in the vicinity of the plant to evaluate the recent seismic behavior including aftershocks</td><td></td></tr>
</table>

TEPCO press release: Earthquake update (as at 3:00 p.m.)

- All plants are shut down and stable at present. There are no significant changes in real-time data for the main air stack radiation monitor and monitoring posts. There is no radiation impact on the surrounding environment.
- Plant update

<Results of external inspection conducted after earthquake> 63 issues have been confirmed to date (not including the four automatic reactor shutdowns at the time of the earthquake)

1) Incidents related to radioactive materials (15 issues)
2) Incidents NOT related to radioactive materials (52 issues, including the four automatic reactor shutdowns at the time of the earthquake)

<Results of follow-up inspection> one issue (damage to drive shaft joints on a ceiling crane in the No. 6 reactor building)

- Scheduled manual startup tests were performed on the second emergency diesel generator in each of the No. 1, 2, 5 and 7 reactors without error. The same tests will be performed at the No. 3, 4 and 6 reactors today.
- The following issues, attributable to rain, have been confirmed. No radiation has been detected.
  - Water has been discovered on the floor of in the low-pressure condensing pump room on the B2 level of the No. 1 turbine building. This is believed to be rainwater that has entered the B1 level via a connecting corridor between the turbine building and the auxiliary building (and possibly from other points), and then flowed down to the B2 level.
  - A water leak has been discovered in the wall of the south corridor on the B1 level of the No. 3 turbine building. It is believed that the water has collected in the pit adjoining the turbine building, then traveled along wiring tunnels into the turbine building.
  - Water has been discovered on the floor of the B1 level of the solid waste storage warehouse in the vicinity of the boundary between the No. 1 building and the administration building. It is believed to be rainwater which has been absorbed into the ground and subsequently risen up.
  - Water has been discovered on the floor of the B1 level of the auxiliary building. It is believed to be rainwater which has been absorbed into the ground and subsequently risen up.

METI press release: Establishment of Committee to Investigate Impact of Chuetsu-Oki earthquake on Nuclear Power Plant Facility (provisional title)

The Committee investigation will examine in depth the effects of the Chuetsu offshore earthquake on the Kashiwazaki-Kariwa nuclear plant and report to the national government and the operator of the plant on future actions and other considerations

<Specific issues to be examined>

1) Adequacy of internal fire protection procedures at the time of the earthquake, as well as reporting and liaison structures and information disclosure to local communities
2) Evaluation of seismic safety standards at the plant in light of outcomes from the Chuetsu-Oki earthquake
3) Operational procedures and equipment and facility safety at the plant at the time of the Chuetsu-Oki earthquake

NISA press release: Earthquake update (8th report)

- Information received from TEPCO (as per column on the left)
- Mr. Kato and the NISA inspectors continued today with their on-site investigations; they witnessed scheduled manual testing of emergency diesel generators and reported no errors.
- They also inspected the site of the flooding that was confirmed today, and confirmed that no radiation was detected. TEPCO was instructed to identify and repair the sources of the leakage.
- No other significant developments in the main air stack radiation monitor and monitoring posts.

NISA press release: safety checks

<Manual startup tests on emergency diesel generators>

- Manual startup tests were performed on seven emergency diesel generators today, and all satisfied the safety criteria
- NISA will monitor manual startup tests to be performed on the remaining six emergency diesel generators on July 27

<Water leak (suspected rainwater)>

- The newly discovered leaks are believed to be primarily the result of earthquake damage to pipe tunnels leading into the building. TEPCO was instructed to identify the entry route and repair and/or rectify as necessary

<Damage to drive shaft joints on ceiling crane in reactor building>

- In light of confirmed damage to the drive shaft joints of the ceiling crane in the No. 6 reactor building, the drive shaft joints of the ceiling cranes in the No. 2 and No. 3 reactor buildings were also inspected
- There were no safety issues according to the on-site inspectors. The remaining ceiling cranes will be inspected in due course.

Power utilities: Submission of upgrade programs for internal fire protection systems and incident reporting structures

Upgrade programs to be submitted in accordance with a directive from the Ministry of the Economy, Trade and Industry (METI) dated July 20 (parts 1) and 2) only at this stage)

Requirements of METI directive

1) Strengthening of internal fire protection systems
2) Faster and more accurate incident communication
3) Assessment of seismic safety standards predicated on public welfare

NISA press release

- NISA today received reports of upgrade programs from nuclear plant operators in relation to 1) Strengthening of internal fire protection systems and 2) Faster and more accurate incident reporting in accordance with the Ministerial directive dated July 20.
- A Working Group on disaster response procedures will be set up within the Committee to Investigate Impact of Chuetsu-Oki earthquake on Nuclear Power Plant Facility in conjunction with the Fire and Disaster Management Agency (FDMA). The sub-committee will take three months to investigate internal fire protection systems and reporting and liaison structures. The recommendations from the sub-committee will be expected to contribute to improvement of the emergency response programs of power utilities.