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 (Progress in August 2007)

Wednesday August 1

TEPCO and other power utilities and JANTI (Japan Nuclear Technology Institute)

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

- In new developments, water was discovered in the cable trench (unrestricted area) running between the B1 level of the No. 6 reactor building (unrestricted area) and the B2 level of the control building (unrestricted area). The volume of water is estimated at 3 m^3, and no radioactive matter was detected.
- In light of the thin oil films detected on the No. 1 turbine building sub-drain and the discharge outlets for the Nos. 1- 4 reactors, a temporary oil separator tank was set up on July 31, together with oil-proof fencing with absorbent mats around the discharge outlets and, as an extra precaution, oil-proof fencing around the afterbay on the Arahama side (Nos. 1 – 4) and the Ominata side (Nos. 5 – 7).
- All plants are shut down and stable at present. There are no significant changes in real-time data for the main exhaust stack radiation monitor and monitoring posts. There is no radiation impact on the surrounding environment.

TEPCO press conference: Non-conformities update (as at July 26)

Non-conformities report for Kashiwazaki-Kariwa nuclear power station (as at July 26) posted on website

Grade	Description	Total incidents	Incidents attributable to earthquake	Comments
As	Reportable incident under legislation/safety agreements Incident with major impact on plant safety and/or performance	10	10	• Water on operating floor • Transformer fire in the Unit No. 3
A	Serious non-conformity in relation to quality assurance criteria Incident with major impact on regular inspection processes	34	33	• Misaligned connecting ducts on main exhaust stack • Damaged fire protection piping
B	Non-conformity identified by the competent authorities Incident necessitating stricter operational monitoring	25	21	• Loose blowout panel
C	Minor non-conformity in relation to quality assurance criteria	527	491	
D	Incident that can be corrected during normal maintenance procedures	927	706	
N/A	Replacement of expendables or equivalent	4	(2)	Figures in brackets taken from newspaper reports
Total		1527	(1263)	

Note by JANTI

The majority of the 70 or so incidents described in press releases to date are between As and B grades. The incidents described here are C grade and below and are related to normal ongoing operation i.e., part of regular non-conformity reporting.

National and local government

NISA press release: Earthquake update (12th report)

- Information received from TEPCO (as per column on left)
- Safety inspectors are currently investigating the causes and other details at the plants based on TEPCO findings
- There are no significant changes in the main exhaust stack radiation monitor and monitoring posts at present

Local government site examinations (through to August 2)

On-site examinations were conducted in accordance with Article 10 of the Safety Agreement to check the extent of damage and confirm current safety conditions at the plant. The examination team was accompanied by the Technology Committee for Safety Management at the Niigata Prefecture Nuclear Power Plant.

<Inspection by> Niigata prefecture; City of Kashiwazaki; City of Kariwa; Technology Committee (August 1: Eight persons under Chairman Miya; August 2: Seven persons under Chairman Miya)

<Details> Examination and confirmation of extent of damage and current safety conditions at the plant, based on the opinions and advice of the Technology Committee

<Other> Press conference held on August 2 at the completion of the inspection

Thursdaysday August 2

TEPCO and other power utilities and JANTI (Japan Nuclear Technology Institute)

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

- No new developments or updates.
- All plants are shut down and stable at present. There are no significant changes in real-time data for the main exhaust stack radiation monitor and monitoring posts. There is no radiation impact on the surrounding environment.

National and local government

NISA press release: Earthquake update (13th report)

- Information received from TEPCO (as per column on left)
- Safety inspectors are currently investigating the causes and other details at the plants based on TEPCO findings
- There are no significant changes in the main exhaust stack radiation monitor and monitoring posts at present

NISA press release: IAEA inspection team visit to Kashiwazaki-Kariwa Nuclear Power Plant

A request was received on July 19 from the IAEA regarding the dispatch of an examination team in the name of international cooperation to inspect the Kashiwazaki-Kariwa nuclear power plant and assess the impact of the Niigata-ken Chuetsu-Oki earthquake. NISA announced that the team would be accepted on July 20 and 23. After further negotiation, the IAEA has provided the following details of the examination team

1) Dates

August 6 – 10, 2007

- August 6 – 9: Inspect Kashiwazaki-Kariwa nuclear power plant, interview key officials
- August 10: Hold discussions with NISA and other agencies

2) Location

TEPCO Kashiwazaki-Kariwa Nuclear Power Plant and Tokyo

		3) Team Five-member team headed by IAEA nuclear safety commissioner Phillip Jamet, Director of the Nuclear Installation Safety Division 4) Objectives The objectives appear to be: to inspect the facility and interview key officials regarding radioactive leakage and safety operational management, particularly with respect to earthquake protection; to establish the facts and circumstances and identify the key outcomes; and to compile an official IAEA report on the situation.
		Nuclear Safety Commission Meeting • Impact on nuclear power plant • Findings from analysis of seismic observation data at Kashiwazaki-Kariwa Nuclear Power Plant generated during the Niigata Chuetsu offshore earthquake
Friday August 3	**TEPCO press release: Earthquake update (as at 2:00 p.m.)** <New developments> • C shoe (red shoe) discovered on the bulkhead in the reactor well on the No. 1 reactor building operating floor. It was dislodged by the earthquake from its position near the well opening and fell into the well. It will be recovered. (Non-conformity classification changed from C to B grade on August 3.) • Lighting fixtures and ceiling panels fell to the floor in the No. 6/7 central control room; cracks appeared; emergency lights were shifted out of alignment; and inspection apertures were left open. (Non-conformity classification changed from C to B grade on August 3.) <Changes> • There was damage in two locations to joints on the drive shaft of the ceiling crane in the No. 6 reactor building. A subsequent inspection of two other locations identified damage in one new location. Other sections will be checked thoroughly. • A thorough investigation of oil retaining walls in the transformers of the Nos. 1 – 3 reactors found fissures and cracking in the bottom surface of the retaining walls. The soil directly underneath the retaining walls and in the vicinity is thought to be contaminated with insulating oil and may need to be removed. All plants are shut down and stable at present. There are no significant changes in real-time data for the main exhaust stack radiation monitor and monitoring posts. There is no radiation impact on the surrounding environment.	**NISA press release: Earthquake update (14th report)** • Information received from TEPCO (as per column on left) • Safety inspectors are currently investigating the causes and other details at the plants based on TEPCO findings • No significant changes in the main exhaust stack radiation monitor and monitoring posts at present **Minister of Economy, Trade and Industry Akira Amari: press conference following Cabinet meeting** • In the event of any incident or phenomenon at any nuclear reactor in any country, information should be shared with all other nuclear power producing nations to enable prompt action to be taken. A database should be compiled so that such information can be shared throughout the world. • The IAEA has stressed the importance and significance of the examination of the Kashiwazaki-Kariwa Nuclear Power Plant and of information sharing. This is highly valid in this context. All nuclear power producing nations should treat this incident as if it were their own. • The examination process and information sharing will be conducted by the IAEA working in conjunction with local authorities. All comments and recommendations will be reported in full in Japan. • We are attempting to correct misinformation, but we are inevitably perceived as biased towards the Japanese perspective. As a result, the impact of the earthquake is not being reported accurately in the domestic media, nor overseas. The IAEA represents a neutral third party so it is in our interests to have them deliver a balanced assessment of the situation that will encourage accurate reporting. For this reason we believe the IAEA examination is important and necessary. • We will ask for the IAEA report to be compiled as quickly as possible.
Monday August 6	**TEPCO press release: Earthquake update (as at 2:00 p.m.)** <New developments> • Approximately 24 liters of oil has leaked from a stud bolt fastener on the Level 4 operating floor of the No. 6 reactor building. The leaking has now stopped, and the oil is being wiped up and disposed of. • Workers in restricted areas at time of earthquake: Total 817 418 at No. 1 reactor, six at No. 2, 26 at No. 3, one at No. 4, 94 at No. 5, 270 at No. 6 and two at No. 7. There were 52 workers on the operating floors of reactor buildings, involved in tasks such as checking ceiling cranes, preparing control rods for inspection, and performing decontamination procedures. Water from the spent fuel pool splashed onto a number of workers, but checks showed no radioactive material, and they were allowed to leave the restricted area. All plants are shut down and stable at present. There are no significant changes in real-time data for the main exhaust stack radiation monitor and monitoring posts. There is no radiation impact on the surrounding environment.	**NISA press release: Earthquake update (15th report)** • Information received from TEPCO (as per column on left) • Safety inspectors are currently investigating the causes and other details at the plants based on TEPCO findings • No significant changes in the main exhaust stack radiation monitor and monitoring posts at present **Nuclear Safety Commission Meeting** • Non-conformities at nuclear power station caused by earthquake • Impact on nuclear power station • Site examination by Chairman Suzuki and visits to local government bodies **IAEA examination (1st day)**
	TEPCO press release: Announcement Release of digital seismic monitoring data from the Kashiwazaki-Kariwa Nuclear Power Plant during the 2007 Niigata-ken Chuetsu-Oki earthquake Digital observation records contained in the report presented to NISA on July 30 have been presented at no cost to the Association for Earthquake Disaster Prevention for the purpose of academic investigation in seismology, seismic engineering and seismic technology. <Details of records provided> 1) Data: Digital data on acceleration-time history waveforms for 33 seismographs where such data was available in the earthquake 2) Provided to: Association for Earthquake Disaster Prevention <For reference> from the Association for Earthquake Disaster Prevention website Regarding observation records provided by TEPCO from the Kashiwazaki-Kariwa Nuclear Power Plant during the 2007 Niigata Chuetsu-Oki earthquake • TEPCO notified the Association of its willingness to provide seismic monitoring records for the Niigata Chuetsu-Oki earthquake as part of the process of repairing and restoring equipment and ascertaining safety levels at the Kashiwazaki-Kariwa Nuclear	

	Power Station • The data, taken close to the epicenter of the earthquake, is highly valuable for academic investigation in the fields of seismology, seismic engineering and seismic technology. For this reason, the Association has decided to make the data available on CD-ROM. • For applications and inquiries contact: +81-3-3457-7453, FAX: +81-3-3457-7076, email: office@aedp-jp.com	
Tuesday August 7	**TEPCO press release: Earthquake update (as at 2:00 p.m.)** New developments • Approximately 200 liters of hydraulic oil has leaked from a stud bolt tensioner* on the Level 3 operating floor of the No. 4 reactor building. The leaking has now stopped, and the oil is being wiped up and disposed of. * A hydraulic mechanism used to tighten the bolts that hold down the reactor pressure cover All plants are shut down and stable at present. There are no significant changes in real-time data for the main exhaust stack radiation monitor and monitoring posts. There is no radiation impact on the surrounding environment.	**IAEA examination (2nd day)** **Nuclear Safety Commission —Statement from Chairperson Atsuyuki Suzuki: Site inspection and meetings with local government authorities** The study team confirmed the latest information regarding the impact of the Niigata Chuetsu offshore earthquake on the nuclear plant, and held discussions with local government authorities (the Niigata Prefectural Government, Kashiwazaki City Offices, Kariwa Town Offices). **NISA press release: Earthquake update (16th report)** • Information received from TEPCO (as per column on left) • Safety inspectors are currently investigating the causes and other details at the plants based on TEPCO findings • No significant changes in the main exhaust stack radiation monitor and monitoring posts at present
Wednesday August 8	**TEPCO press release: Earthquake update (as at 2:00 p.m.)** • No new developments or updates. • All plants are shut down and stable at present. There are no significant changes in real-time data for the main exhaust stack radiation monitor and monitoring posts. There is no radiation impact on the surrounding environment.	**IAEA examination (3rd day)** **NISA press release: Earthquake update (17th report)** • Information received from TEPCO (as per column on left) • Safety inspectors are currently investigating the causes and other details at the plants based on TEPCO findings • No significant changes in the main exhaust stack radiation monitor and monitoring posts at present
Thursday August 9	**TEPCO press release: Earthquake update (as at 2:00 p.m.)** • No new developments or updates. • All plants are shut down and stable at present. There are no significant changes in real-time data for the main exhaust stack radiation monitor and monitoring posts. There is no radiation impact on the surrounding environment.	**IAEA investigation (4th day)** **NISA press release: Earthquake update (18th report)** • Information received from TEPCO (as per column on left) • Safety inspectors are currently investigating the causes and other details at the plants based on TEPCO findings • No significant changes in the main exhaust stack radiation monitor and monitoring posts at present **Nuclear Safety Commission meeting** • Report on site inspection and visits to local authorities by Chairman Suzuki. • Proposed scope of study of the impact of the Chuetsu offshore earthquake on the nuclear facility and associated countermeasures
Friday August 10	**TEPCO press release: Submission of accident and failure report and electrical damage report in relation to the impact of the Niigata Chuetsu-Oki earthquake on the Kashiwazaki-Kariwa nuclear power Station** ・ Following on from the report dated July 25, key data on plant operation at the time of the earthquake (listed below) was submitted to METI. <Data submitted to METI> 1. Computer printouts 2. Position of control rods 3. Neutron flux density 4. Reactor pressure 5. Reactor water level 6. Reactor water temperatures 7. Exhaust stack radiation monitors 8. Core flow rate 9. Main steam flow/supply water flow • The three key functions in terms of reactor safety stop, cool, shut off were all executed correctly. After the earthquake the reactors remained in a stable state at low temperature. • We will continue conducting investigations and submitting reports as necessary. We will also investigate the causes of the incidents described in the July 25 report and take appropriate action to prevent a recurrence, and submit a report on same to METI. **TEPCO press release: Earthquake update (as at 2:00 p.m.)** <New developments> • The number of operators working on the operating floor of the reactor building at the time of the earthquake has been revised to 65, an increase of 13. The 13 additional operators were conducting scheduled inspection tasks and inspecting fuel rod exchangers at the time of the earthquake. None were affected by water splashes from the spent fuel pool. • After the earthquake there was only one exit monitor still working at the Nos. 1 and 2 reactors. To ensure operator safety, TEPCO ordered the operators (approximately 400) to leave the restricted areas without using the exit monitor, after confirming that there were no operators wearing C type clothing for contaminated areas. This is classified as an emergency procedure. All plants are shut down and stable at present. There are no significant changes in real-time data for the main exhaust stack radiation monitor and monitoring posts. There is no radiation impact on the surrounding environment.	**IAEA investigation (5th and final day)** **Minister of Economy, Trade and Industry Akira Amari: press conference following Cabinet meeting** • A new Fire Preparedness and Responses Office will be set up at NISA by the end of the month, with a manager and a staff of around five. Since the new unit will liaise directly with the Fire and Disaster Management Agency, the manager will be appointed from the Fire and Disaster Management Agency of the Ministry of Internal Affairs and Communications. • The Fire Preparedness and Response Office will work closely with the Fire and Disaster Management Agency to develop effective fire protection strategies and fire response procedures for nuclear power stations as quickly as practicable. These will be forwarded to electric power companies. **NISA press release: Earthquake update (19th report)** • Information received from TEPCO (see column on left) • The Working Group on Management Procedures and Equipment Operation within the Committee for Studying the Impact of the Chuetsu Offshore Earthquake on the Nuclear Power Plant will conduct an in-depth investigation into operations directly after the earthquake in light of the reported parameters indicating conditions at the plant at the time of the earthquake • NISA will examine strategies developed by TEPCO to prevent recurrence of other reported nonconformities. • Safety inspectors are currently investigating the causes and other details at the plants based on TEPCO findings • No significant changes in the main exhaust stack radiation monitor and monitoring posts at present

<table>
<tr><td></td><td></td><td>Nuclear Safety Commission: FY2006 White Paper on Nuclear Power
A summary was prepared on amendments to the 2006 licensing safety review regarding seismic safety standards.
• The summary of amendments to the licensing safety review regarding seismic safety standards provides an overall description seismic protection strategies using simplified language, divided into three sections as follows:
1. Basic principles of seismic safety for nuclear power plants and role of seismic safety guidelines
2. History of seismic safety guidelines; details of amendments and new guidelines
3. New initiatives introduced with the amendments, such as back checking, and future issues</td></tr>
<tr><td></td><td></td><td>Press conference by Niigata Prefectural Government: 4th radiation measurement in farming and marine produce
The Niigata Prefecture Radiation Monitoring Centre and the Kashiwazaki-Kariwa Radiation Monitoring Center (also located in Niigata prefecture) conducted radiation testing farm produce sourced within a radius of approximately 10 km of Kashiwazaki-Kariwa nuclear power plant and marine produce sourced within a radius of approximately 20 km.
• Radiation was not detected in any of the produce tested. This is consistent with the results of previous radiation tests released on July 21, 26 and 27.</td></tr>
<tr><td>Monday
August 13</td><td></td><td>Nuclear Safety Commission
• Impact on nuclear power plant</td></tr>
<tr><td>Tuesday
August 14</td><td>JANTI: Kashiwazaki-Kariwa Nuclear Power Plant on-site investigation by four-member team</td><td></td></tr>
<tr><td>Wednesday
August 15</td><td></td><td></td></tr>
<tr><td>Thursday
August 16</td><td></td><td></td></tr>
<tr><td rowspan="2">Friday
August 17</td><td>TEPCO press release: nonconformities in post-earthquake inspection and restoration program
Notification of nonconformities (for discussion) in the period August 1 – 8 2007 based on the document “Update Announcement Regarding Nonconformities in Inspection and Restoration Program in the Aftermath of the Niigata Chuetsu-Oki earthquake”
<Nonconformity information (Chuetsu offshore earthquake: As – not included) >
<table><tr><td colspan="2">August 1 – 8, 2007 (cumulative total since July 16, 2007)</td></tr><tr><td>Items</td><td>470 (1,948)</td></tr></table></td><td>NISA press release: Earthquake update (20th report)
• Information received from TEPCO (as per column on left)
• TEPCO will roll out an inspection program extending to the reactor bases, starting with an inspection of the top of the No. 1 reactor pressure vessel scheduled for August 21, and will also release video material as appropriate. NISA will check for instances of damage and significant deformation.
• Inspection of the No. 7 reactor pressure vessel will begin in October. As with the No. 1 reactor, NISA will check for instances of damage and significant deformation.
• NISA inspectors are conducting an in-depth investigation into the causes of plant issues identified by TEPCO
• No significant developments in the main exhaust stack radiation monitor and monitoring posts</td></tr>
<tr><td>TEPCO press release: Geological surveys of TEPCO nuclear power plant in light of the Niigata Chuetsu-Oki earthquake
• In light of the recent earthquake, TEPCO conducted a geological survey involving marine sonic profiling of the sea area in the vicinity of the facility. The survey will include the range of aftershocks. (Announcement made July 26, 2007).
• Following the in-depth investigation, it was subsequently decided to Augustment the marine sonic profiling by widening the scope of the geological survey to include sub-ground exploration of the land area surrounding the Kashiwazaki-Kariwa nuclear power plant (this had in fact been underway since the previous year as part of a seismic safety evaluation). Sub-ground exploration will concentrate on the land area including the Nagaoka Hirano Nishi Midori fault zone, and will evaluate the underground structure, including assessment of active fault lines.
• Meanwhile, boring studies of the site area will be used to assess the underground structure to considerable depth. Ground and rock samples will be analyzed to assess subsidence and/or liquefaction of the ground as a result of the earthquake.
• Geological surveys of surrounding land and sea areas will be conducted at the Fukushima Nos. 1 and 2 nuclear power plants in light of the recent earthquake, in order to Augustment and supplement previous surveys.</td><td></td></tr>
<tr><td>Saturday
August 18</td><td></td><td>IAEA
Report of the IAEA study group released (conclusions section)</td></tr>
<tr><td>Sunday
August 19</td><td></td><td></td></tr>
</table>

Monday August 20		**NISA press release: Release of the Conclusions section of the report of the IAEA mission on the impact on the Kashiwazaki-Kariwa nuclear power plant** • On August 18, the International Atomic Energy Agency (IAEA) released a report on investigations conducted August 6 – 10. • NISA welcomes the thorough and professional investigation by IAEA and the prompt release of the report following the conclusion of the investigation • In particular, the IAEA has vindicated our initial position regarding groundless rumors on the impact of the earthquake being put forward by local governments in the area, by adjudging the risk of radiation exposure due to leakage of radioactive material as being well below the prescribed limits. • NISA will examine the report in detail and incorporate its findings into future initiatives, including deliberations by the Chuetsu-Oki Earthquake Study and Response Committee. <Study of the report of the IAEA Study Group> 1) Reactors operating at the time of the earthquake shut down automatically without incident. All reactors were safe both during and after the earthquake. The three fundamental safety functions — "reactivity control", "removal of heat from the core", "confinement of radioactive materials" — functioned properly. 2) There was very minor radioactive releases which occurred shortly after the earthquake; however this was well below the authorized limits for radioactive exposure. 3) Safety structures, systems and equipment all withstood the earthquake extremely well — better than expected in fact, given the magnitude of the earthquake — with no signs of visible damage. This can be attributed to the generous safety margins built in at various stages of the design process. 4) A secondary evaluation must be performed in line with the new seismic design guidelines to assess the impact of the earthquake and determine the likelihood of an active fault beneath the power plant. 5) While all equipment appears to be functioning properly during normal operation, the potential for hidden damage should also be taken into consideration
	Electric Power Companies: Modifications to seismic design safety evaluation programs for nuclear power plants The power companies have been evaluating seismic design safety under Seismic Design Safety Evaluation Programs submitted on October 18 2006 in accordance with a NISA directive accompanying amendments to the Seismic Design Review Guidelines for Nuclear Power Plants. The Program was revised in accordance with a written directive* from the Ministry of Economy, Trade and Industry received on July 20, 2007, in light of the Niigata Chuetsu-Oki earthquake, and resubmitted to the Ministry today. * 3. Seismic design predicated on public safety • Knowledge gained through the Niigata Chuetsu-Oki earthquake should be incorporated into seismic safety evaluation • Investigate the potential for modifying Programs to ensure proper implementation in accordance with progress of current evaluations and to promote earliest possible completion; report back within one month with conclusions <Example from TEPCO press release> The main modifications are as follows: • In light of the Niigata Chuetsu-Oki earthquake, the scope of existing surveying will be expanded to include geological surveying. • An overview of seismic design safety evaluation of leading nuclear power plants — the Fukushima No. 1 plant and the Fukushima No. 2 plant — will be included in the intermediate report completed by the end of March 2008 • Seismic design safety at the Kashiwazaki-Kariwa nuclear power plant following the Niigata Chuetsu-Oki earthquake will be assessed, and an evaluation of seismic design safety under the new Guidelines will be conducted. Given that seismic ground motion in excess of the Kashiwazaki-Kariwa nuclear power plant design specifications was recorded during the Niigata Chuetsu-Oki earthquake, an independent study will be conducted to compare seismic records at the foundation slabs of the reactor buildings in the Kashiwazaki-Kariwa nuclear power plant with the seismic ground motion data used in the design of the Fukushima No. 1 plant and the Fukushima No. 2 plant. The study will look at the impact on the three fundamental safety functions of Stop, Cool down and Containment. It will report back within one month. It will be in addition to the seismic design safety evaluation.	**NISA press release: Reports from power companies regarding updating of seismic design safety evaluation (seismic back checking) programs** • Following amendments to the seismic safety guidelines dated September 19 2006, the Ministry for the Economy, Trade and Industry on September 20 2006 ordered power companies to submit implementation schedules ahead of seismic design safety evaluation (seismic back checking) of nuclear power plants (both operational and under construction) in line with the amended seismic safety guidelines. • Implementation schedules were duly submitted by the power companies on October 18 2006 • Following the Niigata Chuetsu-Oki earthquake on July 16 2007, the Ministry instructed the power companies to investigate revisions to seismic back checking schedules • The power companies today reported on revisions to implementation schedules. The report is summarized below: 1) With the exception of the Kashiwazaki-Kariwa nuclear power plant and the Hamaoka nuclear power plant (which has already submitted a report on seismic back checking), the power companies will complete geological surveying and associated preliminary ground movement strategies by the end of the current fiscal year, as well as evaluation of key safety equipment and facilities at each plant. 2) In light of the earthquake, additional marine sonic profiling will be conducted at the seven power plants* and the Rokkasho reprocessing plant. With the exception of the Hamaoka nuclear power plant (which has already submitted a seismic back checking report and is being discussed by the seismic safety and structural design sub-committee), all the power plants reported on today will conduct marine sonic profiling in accordance with the amended guidelines. * The seven power plants are Kashiwazaki-Kariwa, Fukushima No. 1, Fukushima No. 2, Shimane, Ikata, Genkai and Tokai No. 2 3) Voluntary measures adopted by the power companies include seismic back checking as well as safety analysis based on the level of seismic ground motion recorded in the foundation slabs of the Kashiwazaki-Kariwa nuclear power plant, to be completed within one month.

<table>
<tr>
<td>Wednesday
August 22</td>
<td>TEPCO Press Release: Analysis of seismic observation data from the Kashiwazaki-Kariwa Nuclear Power Plant (2nd report)
• The first report on the analysis of seismic observation data from the main part of the Niigata Chuetsu offshore earthquake was presented to NISA on July 30 (notified on July 30 2007).
• Further investigations including analysis of seismic observation data from aftershocks were presented in the form of the second report to NISA today.
• In light of the loss of the main earthquake observation records for the No. 1 and No. 5 Units, the aftershock data will be used to supplement the lost data.
• We will use the outcomes obtained thus far for the main earthquake and aftershocks to continue analyzing seismic observation records and assessing seismic safety levels of key facilities.
• Observation data from the report has today been provided, free of charge, in digital form, to the Association for Earthquake Disaster Prevention for use in seismology, seismic engineering and seismic technology studies.</td>
<td>NISA Press Release: Analysis of seismic observation data from the Kashiwazaki-Kariwa Nuclear Power Plant (part 2)
• Information received from TEPCO (see left-hand column)
• NISA will analyze the reports in consultation with experts in the field</td>
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<td>TEPCO Press Release: Report of Damage to Reactor Facilities and Electrical Equipment at Kashiwazaki-Kariwa Nuclear Power Plant caused by the Niigata Chuetsu offshore earthquake investigation into the fire in internal transformer 3B
• A summary of the findings from our investigation into the fire in the internal transformer 3B in the No. 3 reactor that was caused by the earthquake was presented to the Minister for Economy, Trade and Industry today as a follow-up to the Report in accordance with Article 19 (17) of the Installation and Operating Regulations for Nuclear Power Reactors and Article 3 of the Electrical Reporting Regulations submitted on August 10, 2007.
• We will continue to investigate the impact of the earthquake on the power plant and submit further reports as necessary, while also investigating the causes of phenomena reported to date and working to prevent reoccurrence in the future and reporting these processes to the Minister for Economy, Trade and Industry
<Possible chain of events>
1) The earthquake caused subsidence in the foundations of the connecting bus wire duct on the transformer secondary side
2) The subsidence caused the duct connections to come loose; the duct then fell and came into contact with the connection terminals
3) The duct damaged the bushings, causing oil to start leaking
4) The duct came into contact with the connection terminals, causing short-circuits (including ground faults) and sparks/arcing
5) The sparks ignited the oil and started the fire
<Action taken> Action will be taken on the basis of the investigation findings to prevent future recurrence of such incidents</td>
<td>NISA Press Release Earthquake update (21st report)
• TEPCO provided an update on issues identified during inspection and restoration work in the period 17 – 22 August 2007 as well as a schedule of future inspection and restoration work at the Kashiwazaki-Kariwa Nuclear Power Plant, and reported that no damage, deformities or loose components were identified during Phase 1 of the No. 1 reactor internal inspection at Kashiwazaki-Kariwa Nuclear Power Plant, conducted between 21 and 23 August.
• Today a follow-up report was received from TEPCO to complement the mandatory accident and failure reports submitted previously (received 25 July and 10 August). Today's report provided new information about the causes of the fire in the No. 3 reactor internal transformer (B)
• NISA will investigate equipment and facility damage via a special four-week safety investigation starting 3 September; this will include analysis of internal reactor equipment identified in today's report. The Operation Management and Equipment Safety WG (part of the Chuetsu Offshore Earthquake Nuclear Power Plant Investigation and Countermeasures Committee) will also conduct an in-depth investigation.
• Inspection of the reactor pressure vessels at the No. 7 reactor will commence during October. NISA will check for signs of damage and significant deformation, as per the No. 1 reactor
• Safety inspectors are currently in the process of an in-depth investigation to establish the causes of issues at the plant identified by TEPCO
• No significant developments in the main exhaust stack radiation monitor or monitoring posts at present
• A thorough evaluation will be conducted into the cause of the fire at the No. 3 reactor internal transformer (B), and action will be taken to prevent a recurrence</td>
</tr>
<tr>
<td>Thursday
August 23</td>
<td>TEPCO Press Release: Nonconformities in post-earthquake inspection and restoration process (weekly report for 17 – 22 August)
Report of issues identified in the period 17 – 22 August 2007 and nonconformities (as per discussions) identified in the period 9 – 15 August 2007 as per the report Update on nonconformities identified in inspection and restoration work following the Niigata Chuetsu-Oki earthquake
1. Issues related to the Chuetsu-Oki earthquake
<table>
<tr><td colspan="2">17 – 22 August 2007
(cumulative total since 10 August 2007)</td><td colspan="2">By category (cumulative total since 10 August 2007)</td></tr>
<tr><td rowspan="3">No. of issues</td><td rowspan="3">1
(1)</td><td>I</td><td>0 (0)</td></tr>
<tr><td>II</td><td>0 (0)</td></tr>
<tr><td>III</td><td>1 (1)</td></tr>
</table>
<17 – 22 August 2007>
<table>
<tr><th>Category</th><th>Date identified</th><th>Name</th><th>Description</th></tr>
<tr><td>I</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>II</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>III</td><td>22 August</td><td>Cracks in oil retaining wall in No. 5 reactor</td><td>Cracks identified in foundations after laying gravel</td></tr>
</table>
2. Nonconformities (related to Chuetsu-Oki earthquake: As excluded)
<table>
<tr><td colspan="2">9 – 15 August 2007 (cumulative total since 16 July 2007)</td></tr>
<tr><td>No.</td><td>432 (2,380)</td></tr>
</table>
Elsewhere, no damage/deformation/dislodgement or other issues identified in No. 1 reactor internal inspection (Phase 1) conducted 21 – 23 August</td>
<td></td>
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<td></td>
<td>TEPCO Press Release: cracking in transformer oil retaining wall in No. 5 Unit
• Cracks were identified in the foundations of the oil retaining wall of the transformer in the No. 5 reactor on 22 August, together with gaps in the jointing and caved-in section
• Damage to oil retaining walls in the Nos. 1, 2 3, 4 and 7 reactors has already been notified
• The only remaining reactor No. 6 will be checked by the end of August using gravel</td>
<td></td>
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<tr>
<td>Friday
August 24</td>
<td>JANTI: Delegation visited NEI in the United States to introduce an update report and engage in discussion (4 members including Dr. Ishikawa, President of JANTI)</td>
<td></td>
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<tr>
<td>Monday
August 27</td>
<td>TEPCO website: Inspection of No. 1 reactor
• Visual inspection at the power plant following the earthquake found no problems with key equipment inside reactor vessels
• Regular inspection was being conducted at the time of the earthquake. The lid of the No. 1 reactor was open, and internal inspection was in progress
• The three-stage inspection process involves checking for internal damage or significant internal deformation and abnormalities in bolts, brackets and other hardware that holds machinery in place. Lights and cameras are lowered into the reactor and the operators check the video display (process illustrated with video).
• The first stage inspection, conducted on 21 – 23 August 20007, found no evidence of damage, deformation or loose components.
NB: Stage 1: Upper section of reactor (21 – 23 August): completed
Stage 2: Middle section of reactor (mid to late September)
Stage 3: Lower section of reactor (November – December)</td>
<td>WG on internal fire protection systems and incident reporting structures in relation to the Chuetsu-Oki earthquake</td>
</tr>
<tr>
<td>Thursday
August 30</td>
<td>TEPCO Press Release: Nonconformities identified in post-earthquake inspection and restoration process (Weekly report for 23 - 30 August)
Notification of inspection and restoration process at Kashiwazaki-Kariwa Nuclear Power Station following the Niigata Chuetsu -Oki earthquake (from 26 August to 22 September 2007) including nonconformities
1. Inspection and restoration
Inspection/restoration completed between 24 and 30 August 2007
• No. 1 reactor: main transformer: external visual inspection completed 29 August
• No. 2 reactor turbine building ceiling crane inspection completed 24 August
Inspections commencing during the period 31 August – 6 September 2007
• No. 2 reactor operating floor service tools
• No. 2 reactor internal transformer
• No. 3 reactor main transformer
• No. 4 reactor turbine building ceiling crane
• No. 5 reactor building ceiling crane
2. Nonconformities identified during inspection/restoration work following the Niigata Chuetsu offshore earthquake
inspection and restoration work following the Niigata Chuetsu offshore earthquake
Report of issues identified in the period 23 – 29 August 2007 and nonconformities (as per discussions) identified in the period 16 – 22 August 2007 as per the report Update on nonconformities identified in inspection and restoration work following the Niigata Chuetsu-Oki earthquake
1) Issues related to the Chuetsu-Oki earthquake
<table>
<tr><td colspan="2">23 – 29 August 2007
(cumulative total since 10 August 2007)</td><td colspan="2">By category (cumulative total since 10 August 2007)</td></tr>
<tr><td rowspan="3">No. of issues</td><td rowspan="3">0
(1)</td><td>I</td><td>0 (0)</td></tr>
<tr><td>II</td><td>0 (0)</td></tr>
<tr><td>III</td><td>0 (1)</td></tr>
</table>
<23- 29 August 2007>
<table>
<tr><th>Category</th><th>Date identified</th><th>Name</th><th>Description</th></tr>
<tr><td>I</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>II</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>III</td><td>-</td><td>-</td><td>-</td></tr>
</table>
2) Nonconformities (related to Chuetsu offshore earthquake: As excluded)
<table>
<tr><td colspan="2">16 – 22 August 2007 (cumulative total since 16 July 2007)</td></tr>
<tr><td>No.</td><td>175 (2,555)</td></tr>
</table></td>
<td>NISA Press Conference: Earthquake update (22nd report)
• A progress report on inspection and restoration work at the Kashiwazaki-Kariwa Nuclear Power Plant following the Niigata Chuetsu offshore earthquake during the period 26 August – 22 September was received from TEPCO (see attached)
• Internal reactor inspection (Phase 2) at the No. 1 reactor is due to begin on 14 September; NISA will check for signs of damage and significant deformation
• Inspection of reactor pressure vessels in the No. 7 reactor is due to commence during October; NISA will check for signs of damage and significant deformation, as per the No. 1 reactor
• Safety inspectors are currently in the process of an in-depth investigation to establish the causes of issues at the plant identified by TEPCO
• No significant developments in the main air stack radiation monitor or monitoring posts at present</td>
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Friday August 31		