

[Summary] Current Status of Shika Nuclear Power Station after the 2024 Noto Peninsula Earthquake (as of March 25)

- Three of the five off-site power supply transmission lines can currently receive power (required on-site power can be supplied by one off-site power supply line). Cooling of the spent fuel pool is also being sustained, and no safety related issues have occurred. Also, emergency diesel generators for use when off-site power becomes unavailable and multiple backup units consisting of high capacity power supply cars and high voltage power supply cars have been secured.
- In restoring the remaining two off-site power supply lines, we are aiming to bring the damaged Naka Noto Substation GIS (Gas Insulated Switchgear) back online by June. Reviews aiming for the complete restoration of the Unit 2 main transformer shall be continued, and we will announce expected dates for restoration of these facilities when ready. We have also started full-scale survey to review any damage to the Unit 2 main turbine.
- Damaged areas other than the facilities above have generally been restored or have had temporary measures implemented, and we are aiming for complete restoration sometime next fiscal year.

Response status regarding power supply facilities

Category	No.	Title	Status of response after the previous notification (on January 30).	Plan for future action	Expected date of completion
Transformer/off-site power supply	1-①	Oil leak from Unit 1 startup transformer and actuation of pressure relief device, activation of sprinkler firefighting system	<ul style="list-style-type: none"> <li>Removed No. 4 radiator and replaced conservator rubber bag.</li> <li>Installed anti-vibration fittings on top of all radiators except for the No. 4 radiator, as temporary measure to improve seismic resistance.</li> <li>Power received by Shika Unit 1 via the Shika nuclear power line (275kV) was switched from Unit 2 house power supply interchange to the Unit 1 startup transformer.</li> </ul>	<ul style="list-style-type: none"> <li>All six radiators shall be replaced. (scheduled in August 2024)</li> <li>Further survey and review, which includes structural analysis, shall be conducted to evaluate damage to the No. 4 radiator.</li> </ul>	August 2024
	2-①	Oil leak from Unit 2 main transformer and activation of sprinkler firefighting system, actuation of pressure relief device	<ul style="list-style-type: none"> <li>Removed No. 11 cooling unit.</li> <li>Confirmed discharge crater and damage on the T phase bushing. Also confirmed discharge crater on the bushing case.</li> <li>Although traces of carbon were found on the wall of the transformer unit, no anomalies were confirmed on the coil and iron core. No anomalies were confirmed on the R and S phase bushings and its bushing cases.</li> <li>Cracks in the coating of No. 1-10 cooling unit upper pipe joint were peeled and inspected visually; and damage was confirmed.</li> </ul>	<ul style="list-style-type: none"> <li>Method of restoration (scope of replacement, work method, test method, etc.) is currently being reviewed while considering results of internal inspection, and the date of restoration is undecided.</li> <li>Further survey and review, which includes structural analysis, shall be conducted to evaluate damage to the No. 11 cooling unit.</li> </ul>	Undecided (to be reviewed while considering inspection results)
	Common-③	Confirmed oil slick on the sea surface in front of the power station	<ul style="list-style-type: none"> <li>Removed gravel from the oil retainer holding leaked oil and confirmed that oil retainer and underground tank were not damaged.</li> <li>Crushed stone outside the oil retainer, gutter and road (pavement) where oil had scattered, were designated as the source of oil leak, and crushed stones were removed and the subject area cleaned.</li> </ul>	<ul style="list-style-type: none"> <li>Establish response procedure to be used (such as operation of discharge gate, etc.) when discovering oil leak on station premises.</li> <li>Install oil trap in gutters. (scheduled for October 2024)</li> </ul>	October 2024
	Common-④	Status of off-site power supply (transmission line, substation facilities)	<ul style="list-style-type: none"> <li>Replaced two insulators on the Shika Naka Noto Line.</li> <li>Replaced jumper connecting terminal and jumper line (one) on the Akasumi line.</li> </ul>	<ul style="list-style-type: none"> <li>No further maintenance planned for the Akasumi line 66kV</li> <li>Regarding Shika Naka Noto 500kV line, loss of insulator on the transmission line (two spots) and damage to bushing (insulator) on Naka Noto Substation GIS (Gas Insulated Switchgear) were confirmed, and insulators shall be repaired quickly in the future, and GIS bushing to be replaced by June 2024.</li> </ul>	June 2024
Emergency power supply	1-④	Automatic shutdown during trial run of Unit 1 high pressure core spray diesel generator	—	—	Completed
Other transformer (No impact on nuclear safety as subject transformers are not used during shutdown)	1-⑥	Actuation of pressure relief devices of Unit 1 house transformer and main transformer	—	<ul style="list-style-type: none"> <li>Visual inspection to be conducted by the end of February 2024, and actuated pressure relief device to be manufactured and replaced by the first half of FY2024.</li> </ul>	First half of FY2024
	2-⑤	Actuation of pressure relief valve of Unit 2 excitator transformer	<ul style="list-style-type: none"> <li>Replaced pressure relief valve. Confirmed that there were no anomalies in the low voltage electric test.</li> </ul>	—	Completed

Response status for other facilities (excluding response completed before January 30<sup>th</sup>)

Category	No.	Title	Status of response after the previous notification (on January 30).	Plan for future action	Expected date of completion
Cooling water/make up water related (Pipes with leaks were used to transfer cooling water for air conditioning and water to clean analysis equipment; therefore, does not impact nuclear safety.)	1-③	Reduction of Unit 1 turbine component cooling water system surge tank level	<ul style="list-style-type: none"> <li>Performed repairs on the damaged cooling coil.</li> </ul>	—	Completed
	1-⑤	Reduction of Unit 1 pure water tank level	—	<ul style="list-style-type: none"> <li>Repair for leaking area to be performed during FY2024.</li> </ul>	During FY2024
Low pressure turbine related (Occurring while turbine was shutdown, and does not impact nuclear safety.)	2-③	"Expansion difference large" annunciator setoff at Unit 2 low pressure turbine	<ul style="list-style-type: none"> <li>Started inspection of turbine</li> <li>Confirmed cracks on welded areas of the generator bearing housing.</li> <li>Confirmed floating of thrust bearing housing and loose bolts, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Turbine to be inspected around the first half of FY2024, and repairs and restoration to be performed after checking for any damage.</li> </ul>	Undecided (to be reviewed while considering inspection results)
Spent fuel storage pool related (Falling article was lightweight, and fell at a location remote from fuel, and therefore does not impact spent fuel.)	2-④	Articles falling into Unit 2 spent fuel storage pool	<ul style="list-style-type: none"> <li>Work is in progress to collect articles that fell in.</li> </ul>	<ul style="list-style-type: none"> <li>Collection of articles planned to be completed by the end of March.</li> </ul>	During FY2023
Building/on-site road related (Facilities continue to satisfy required functions, and damages are minor, and safety and performance are not affected.)	1-④	Inclination of Unit 1 discharge tank sea wall	—	<ul style="list-style-type: none"> <li>Restoration to be completed during FY2024 based on detailed survey involving measurement of subsidence.</li> </ul>	During FY2024
	1-⑦	Foundation of Unit 1 discharge tank and Unit 1 component cooling discharge connection tank sea wall subjected to subsidence	—	<ul style="list-style-type: none"> <li>Restoration to be completed during FY2024 based on detailed survey involving measurement of subsidence.</li> </ul>	During FY2024
	1-⑧	Ground becoming uneven at location where Unit 1 high voltage power car is used	—	<ul style="list-style-type: none"> <li>Recoating using asphalt planned to be conducted by the first half of FY2024.</li> </ul>	First half of FY2024
	Common-①	Units 1, 2 waste treatment building expansion joint seal cover becoming detached	<ul style="list-style-type: none"> <li>Replaced seal cover.</li> </ul>	—	Completed
	Common-②	Subsidence of paved concrete at the reclaimed loading area	<ul style="list-style-type: none"> <li>Detailed survey confirmed subsided area and volume.</li> <li>Measures taken for temporary restoration to eliminate uneven ground using sandbags. Repairs using concrete is in progress.</li> </ul>	<ul style="list-style-type: none"> <li>After conducting detailed survey such as measurement of subsidence by the end of January 2024, restorations are to be completed by the first half of FY2024 in preparation for FY2024 loading work (of low level radioactive waste, etc.)</li> </ul>	First half of FY2024

[Transformer]

○Leak of insulating oil

Insulating oil leaking from Unit 1 startup transformer (1-①) and Unit 2 main transformer (2-①) has been collected.

Both Units 1 and 2 receive power from off-site power.

Unit 1 startup transformer has had its parts replaced and has received power.

Also, emergency diesel generators, high capacity power cars and high voltage power cars have been secured.

⇒Necessary off-site power and emergency power sources have been secured, and there is no impact on nuclear safety, such as capabilities to cool spent fuel, etc.



[Off-site power supply]

○Number of systems secured

Due to the malfunction of Unit 2 main transformer and the Naka Noto Substation Gas Insulated Switchgear (GIS) being partially damaged, two of the five off-site power transmission lines were compromised (Shika Naka Noto Line 500kV 2 lines), but three lines are still online.

Also, emergency diesel generators, high capacity power cars and high voltage power cars have been secured as emergency power sources.

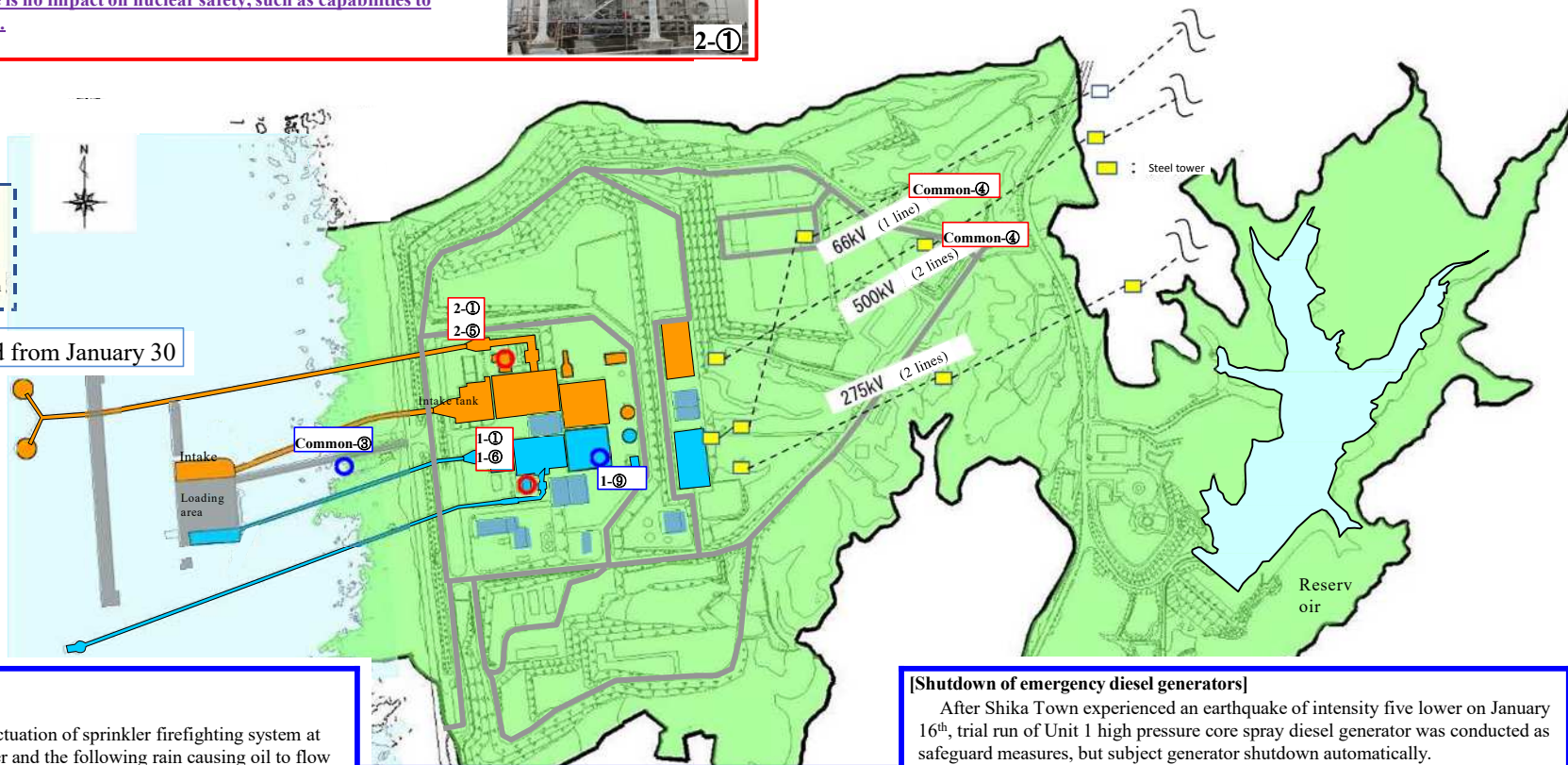
⇒Necessary off-site power and emergency power sources have been secured, and there is no impact on nuclear safety, such as capabilities to cool spent fuel, etc.

(Common-④)

<Key>

- Status of damage
- Other information

Blue=area updated from January 30



[Outflow of insulating oil]

○Outflow of oil

Oil scattered from the actuation of sprinkler firefighting system at the Unit 2 main transformer and the following rain causing oil to flow out into the front sea area via drains. Subject insulation oil (common-③) has been treated and collected.

After the above, insulating oil flowed once again into the front sea area; therefore, oil fences were installed along the coast and oil absorbing materials were installed in the drain to improve the situation. Reinforced monitoring is also in progress.

Removed gravel from the oil retainer holding leaked oil and confirmed that oil retainer and underground tank were not damaged.

Crushed stone outside the oil retainer, gutter and road (pavement) where oil had scattered, were designated as the source of oil leak, and crushed stones were removed and the subject area cleaned.

⇒Oil has been treated and collected. In addition, oil fences have been installed, and there is no impact on the coast.

[Transformer]

○Pressure relief device/pressure relief valve actuation

Pressure relief device/valve of Unit 1 main transformer, house transformer, Unit 2 excitor transformer were actuated, but this is normal and does not present any issues.

⇒Subject transformers are not used during shutdown, and there is no impact on nuclear safety.

(1-⑥, 2-⑤)

[Shutdown of emergency diesel generators]

After Shika Town experienced an earthquake of intensity five lower on January 16<sup>th</sup>, trial run of Unit 1 high pressure core spray diesel generator was conducted as safeguard measures, but subject generator shutdown automatically.

Survey of causes confirmed that equipment failure was not the cause, and subject generator was put on standby after the trial run. Unit 1 has currently secured three off-site power transmission lines, and integrity of three diesel generators has been confirmed.

⇒Unit 1 has secured three off-site power transmission lines and three emergency diesel generators, and there is no impact on nuclear safety, such as capabilities to cool spent fuel, etc.

(1-⑨)



**[Tsunami]**

Details confirmed regarding the tsunami caused by subject earthquake are as follows.

- Based on data from the wave height meter near the unloading dock and data of the intake pit water level, an increase in water level of approx. 3m was confirmed. (disclosed)
- Analysis and survey of traces were conducted regarding the tsunami run-up height in front of the site, and results confirmed subject height to be approx. 4m.

⇒ Power station elevation is 11m, and is therefore not affected.

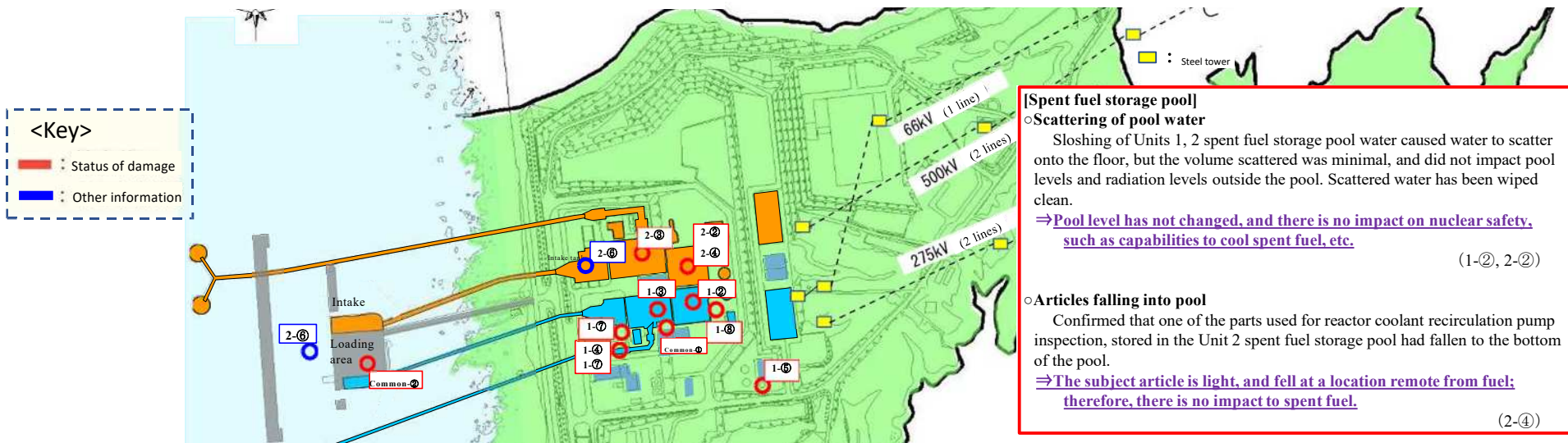
(2-6)

**[Low pressure turbine]**

○ **Turbine annunciator “expansion difference large” set-off**  
 Annunciator “expansion difference large” was set-off at the shutdown Unit 2 low pressure turbine.  
 Turbine inspection is currently in progress.

⇒ Annunciator was setoff while turbine was shutdown, and does not impact nuclear safety.

(2-3)



**[Spent fuel storage pool]**

○ **Scattering of pool water**  
 Sloshing of Units 1, 2 spent fuel storage pool water caused water to scatter onto the floor, but the volume scattered was minimal, and did not impact pool levels and radiation levels outside the pool. Scattered water has been wiped clean.

⇒ Pool level has not changed, and there is no impact on nuclear safety, such as capabilities to cool spent fuel, etc.

(1-2, 2-2)

○ **Articles falling into pool**

Confirmed that one of the parts used for reactor coolant recirculation pump inspection, stored in the Unit 2 spent fuel storage pool had fallen to the bottom of the pool.

⇒ The subject article is light, and fell at a location remote from fuel; therefore, there is no impact to spent fuel.

(2-4)

**[Fault in site premises]**

As a result of directly confirming on-site fault exposure after the earthquake, no trace was confirmed indicating subject fault being active (displacement and deformation of fault, new cracks and shear plane, dragging of stratum) during this earthquake.

⇒ Subject earthquake does not impact evaluation that fault in site premises is not an active fault.

**[Building, on-site roads, etc.]**

○ **Subsidence and inclination, etc.**

Ground deformation such as uneven ground which had an impact on function (such as concrete pavement of reclaimed unloading dock (common-2), etc.\*) has been disclosed.

Deformation of on-site ground has been confirmed through the scope of filled and back-filled soil and paved areas. An excavation survey conducted concluded that these deformations occurred only on the surface layer, and did not continue down to bedrock. Subject deformations are thought to be caused by shake down settlements of filled and back-filled soil and deformation of pavement subjected to seismic force.

Important facilities are directly supported by bedrock capable of providing adequate support; therefore, there is no impact on the function of power station facilities.

⇒ All of the equipment satisfied the necessary functions, the damage was minor, and there are no problems with safety or use.

\* Concrete pavement of reclaimed land unloading dock (common-2), Unit 1 drain tank and Unit 1 component cooling discharge connecting tank sea wall foundation (1-7), subsidence at area in proximity to where Unit 1 high capacity power car is used (1-8), Unit 1 drain tank sea wall tilting (1-4), Units 1 and 2 waste treatment building expansion joint seal cover falling off (common-1)

**[Cooling water, make up water]**

○ **Reduced inventory**

Inventory level reduction of Unit 1 turbine component cooling water system surge tank and pure water tank were confirmed, however causes for both were identified and the reduction in levels were halted.

⇒ Pipe subject to leaks were used to transfer cooling water for air conditioning and cleaning water for analysis equipment, and there is no impact on nuclear safety.

(1-3, 1-5)

# Current Status of Shika Nuclear Power Station after the 2024 Noto Peninsula Earthquake (as of March 25)

Some facilities did receive damage from the 2024 Noto Peninsula Earthquake, but off-site power and necessary monitoring features, cooling features and emergency power supply were secured, and main buildings and on-site roads, etc. were not damaged. No issues have arisen for securing the safety of reactor facilities.

**Unit 2 spent fuel storage pool**  
Photographed on March 21

**On-site road**  
Photographed on March 22

**Unit 2 emergency diesel generator**  
Photographed on March 21

**66kV Akasumi line**  
Photographed on March 22

**Unit 1 spent fuel storage pool**  
Photographed on March 21

**High capacity power car**  
Photographed on March 21

**High voltage power car**  
Photographed on March 21

**Technical Support Center**  
Expanded technical support center  
Photographed on March 21

**On-site road**  
Photographed on March 22

**Unit 1 emergency diesel generator**  
Photographed on March 21

**275kV Shika nuclear power line**  
Photographed on March 22

**< Key >**  
 ■ : Power related  
 ■ : Spent fuel storage pool  
 ■ : Other

Map labels: 66kV (1 line), 500kV (2 lines), 275kV (2 lines)

# Occurring Event and Status of Response Up to the Present

Attachment 2

[as of March 25, 2024]

**\*Blue, underlined text indicates areas updated after disclosure on January 30th  
(Scheduled response period is currently under review)**

**\*Response has been completed for yellow hatched areas (all temporary measures have been completed)**

## Shika Nuclear Power Station Unit 1

No.	Date disclosed	Title	Event overview	Response status
1-①	2024/1/2	Unit 1 Oil leak from startup transformer and actuation of pressure relief device, activation of spray firefighting system	<ul style="list-style-type: none"> <li>Confirmed that approx. 3,600 liters (estimate) of insulating oil* from the transformer had leaked into the weir.</li> <li>*Amount held: 52,200 liters (in the main unit of transformer: 42,000 liters)</li> <li>Confirmed that pressure relief device had actuated when the earthquake occurred.</li> <li>Manually activated spray firefighting system</li> <li>Switched to standby transformer, and currently receiving power from the Akasumi line (66kV). Can also receive power from the Shika nuclear power line (275kV) via the Unit 2 electrical power distribution system. Also, emergency diesel generators, high capacity power cars and high voltage power cars have been secured as emergency power sources.</li> </ul> <p>⇒Necessary off-site power and emergency power sources have been secured, and there is no impact on nuclear safety, such as capabilities to cool spent fuel, etc.</p>	<ul style="list-style-type: none"> <li>Approx. 4,200 liters have been collected on January 2<sup>nd</sup> when including rain water.</li> <li>Closed the gate valve of the radiator leaking insulating oil, and conducted covering to prevent intrusion of rainwater. Also, gate valves for other radiators were closed to prevent leak of insulating oil caused by damage from after quakes.</li> <li>Removed No. 4 radiator and replaced conservator rubber bag.</li> <li>Confirmed that there were no anomalies in the low voltage electric test.</li> <li>Installed anti-vibration fittings on top of all radiators except for the No. 4 radiator, as temporary measure to improve seismic resistance.</li> <li>Conducted confirmation tests, and restored to condition where power can be received</li> <li>On March 14, power received by Shika Unit 1 via the Shika nuclear power line (275kV) was switched from Unit 2 house power supply interchange to the Unit 1 startup transformer.</li> <li>Replacement of all six radiators (No. 1-6) scheduled for August 2024.</li> <li>Further survey and review, which includes structural analysis, shall be conducted to evaluate damage to the No. 4 radiator.</li> </ul>
1-②	2024/1/2	Unit 1 Scattering of spent fuel storage pool	<ul style="list-style-type: none"> <li>Confirmed sloshing in spent fuel storage pool.</li> <li>Amount scattered is approx. 95 liters (approx. 0.8mm decrease in pool inventory), amount of radiation is approx. 17,100Bq, no impact of radiation outside.</li> </ul> <p>⇒Almost no changes to pool level, and there is no impact on nuclear safety, such as capabilities to cool spent fuel, etc.</p>	<ul style="list-style-type: none"> <li>Wiped scattered water on January 4<sup>th</sup>.</li> <li>Spent fuel currently being cooled in stable condition.</li> </ul>

# Occurring Event and Status of Response Up to the Present

Attachment 2  
[as of March 25, 2024]

No.	Date disclosed	Title	Event overview	Response status
1-③	2024/1/2	Unit 1 Reduction of turbine component cooling water system surge tank inventory	<ul style="list-style-type: none"> <li>• Cooling water leaked from the cooling coil of the heating, ventilation and air conditioning system (hereinafter “HVAC”) of the Reactor Building and Turbine Building.</li> </ul> ⇒Cooling water is for air conditioning, and there is no impact on nuclear safety.	<ul style="list-style-type: none"> <li>• Valves were closed and decrease in levels were confirmed to have stopped.</li> <li>• On February 29, performed repairs on the damaged cooling coil.</li> </ul>
1-④	2024/1/2	Unit 1 Inclination of discharge tank sea wall	<ul style="list-style-type: none"> <li>• The steel sea wall (height 4m) autonomously installed as tsunami measures around the Unit 1 discharge tank (perimeter approx. 108m), was confirmed to have inclined by approx. several cm due to impact of the earthquake.</li> </ul> ⇒The deformation is minor and has no impact on performance. No other inclination was identified.	<ul style="list-style-type: none"> <li>• Installed sandbags in the gap identified between the discharge tank sea wall and concrete foundation.</li> <li>• Conduct detailed survey in the future to measure subsidence, etc., and based on results, plan restoration in FY2024.</li> </ul>
1-⑤	2024/1/2	Unit 1 Reduction of pure water tank inventory	<ul style="list-style-type: none"> <li>• Confirmed the inventory of pure water tank to be decreasing by about approx. 7.3 liters (438 liters/hour) every minute.</li> <li>• Amount leaked was tiny compared to production capability for pure water (20,000 liters/hour)</li> </ul> ⇒Water in the pure water tank are to be used to clean analysis equipment, and there is no impact on nuclear safety.	<ul style="list-style-type: none"> <li>• Identified leaking pipe which was buried outdoors. Valve was closed, and confirmed that reduction of inventory levels had stopped.</li> <li>• Pure water was supplied to the destination of pipe subject to leak using different means. Repair for leaking area to be performed during FY2024.</li> </ul>
1-⑥	2024/1/5	Unit 1 Actuation of pressure relief devices of house transformer and main transformer	<ul style="list-style-type: none"> <li>• Confirmed actuation of pressure relief devices of Unit 1 house transformer and Unit 1 main transformer during earthquake.</li> </ul> (Oil enclosed in the transformer sloshed around during an earthquake, causing the internal pressure to rise temporarily, causing the pressure relief device to actuate correctly. Confirmed that there are no oil leaks from the event.) ⇒Actuation of pressure relief devices of the house transformer and main transfer were confirmed, but this is normal and without issue.	<ul style="list-style-type: none"> <li>• Visual inspection was conducted for the main transformer, and no anomalies were confirmed.</li> <li>• Visual inspection was conducted for house transformer. Although cracks were confirmed in the reinforcing plate and fin welds of all radiators, confirmed that there were no abnormal performance of function.</li> <li>• Regarding actuated pressure relief device, new devices shall be manufactured and replaced by the first half of FY2024.</li> </ul>

# Occurring Event and Status of Response Up to the Present

Attachment 2

[as of March 25, 2024]

No.	Date disclosed	Title	Event overview	Response status
1-⑦	2024/1/5	Unit 1 Foundation of discharge tank and Unit 1 component cooling discharge connection tank sea wall subjected to subsidence	<ul style="list-style-type: none"> <li>• The foundation of the steel sea wall (height 4m) autonomously installed as tsunami measures around the Unit 1 discharge tank and Unit 1 component cooling discharge connecting tank, was confirmed to have subsided by approx. several cm due to impact of the earthquake.</li> <li>⇒ There are no abnormalities with the exception of the partial incline of the sea wall (1-4), and sandbags were installed in gaps of few cm confirmed at the subsided area; therefore, there is currently no impact on function.</li> </ul>	<ul style="list-style-type: none"> <li>• Sandbags installed in gaps confirmed between discharge tank sea wall and concrete foundation.</li> <li>• Conduct detailed survey in the future to measure subsidence., and based on results, plan restoration in FY2024.</li> </ul>
1-⑧	2024/1/5	Unit 1 Ground becoming uneven at location where Unit 1 high voltage power car is used	<ul style="list-style-type: none"> <li>• Confirmed that unevenness of several cm had appeared on the road near the site where Unit 1 high voltage power car is used.</li> <li>⇒ The high voltage car can be used without issue of deployed in a different area nearby; therefore, there is no impact.</li> </ul>	<ul style="list-style-type: none"> <li>• Access restriction indication posted for subject area.</li> <li>• Recoating of uneven area using asphalt planned to be conducted by the first half of FY2024.</li> </ul>
1-⑨	2024/1/17	Unit 1 Automatic shutdown during trial run of high pressure core spray diesel generator	<ul style="list-style-type: none"> <li>• After Shika Town experienced an earthquake of intensity five lower on January 16<sup>th</sup>, trial run of Unit 1 high pressure core spray diesel generator was conducted as safeguard measures, but subject generator shutdown automatically.</li> <li>No abnormality was observed in the trial run (conducted January 4<sup>th</sup>) conducted following the Shika Town earthquake of intensity seven on January 1<sup>st</sup>.</li> <li>⇒ No impact on power supply as three off-site power lines (Akasumi line (66kV one line) and Shika nuclear power line (275kV two lines) are secured, and two out of three Unit 1 emergency diesel generators are sound.</li> </ul>	<ul style="list-style-type: none"> <li>• Regarding this event, causal survey did not identify abnormality in equipment. Also, no abnormality was identified in the load test carried out afterwards.</li> <li>• Applied changes to procedures regarding measures to be taken against estimated cause, and high pressure core spray diesel generator was put on standby.</li> </ul>

# Occurring Event and Status of Response Up to the Present

Attachment 2

[as of March 25, 2024]

## Shika Nuclear Power Station Unit 2

No.	Date disclosed	Title	Event overview	Response status
2-①	2024/1/2	Unit 2 Oil leak from main transformer and actuation of pressure relief device, activation of spray firefighting system	<ul style="list-style-type: none"> <li>• Confirmed that approx. 3,500 liters (estimate) of insulating oil* from the transformer had leaked into the weir.</li> <li>*Amount held: 122,500 liters (in the main unit of transformer: 122,500 liters)</li> <li>• Confirmed actuation of pressure relief device and spray firefighting system. (also confirmed that there was no actual fire)</li> <li>• Switched to standby transformer, and currently receiving power from the Shika nuclear power line (275kV). Can also receive power from the Akasumi line (66kV). Also, emergency diesel generators, high capacity power cars and high voltage power cars have been secured as emergency power sources.</li> </ul> <p>⇒Necessary off-site power and emergency power sources have been secured, and there is no impact on nuclear safety, such as capabilities to cool spent fuel, etc.</p>	<ul style="list-style-type: none"> <li>• Approx. 19,800 liters of oil have been collected on January 5th (estimated). (When including rain water, approx. 24,600 liters. Amount collected corrected (January 5<sup>th</sup>))</li> <li>• Closed the gate valve of the radiator leaking insulating oil, and conducted covering to prevent intrusion of rainwater. Also, gate valves for other radiators were closed to prevent leak of insulating oil caused by damage from after quakes.</li> <li>• <a href="#">Removed No. 11 cooling unit.</a></li> <li>• <a href="#">Confirmed discharge crater and damage on the T phase bushing. Also confirmed discharge crater on the bushing case.</a></li> <li>• <a href="#">Although traces of carbon were found on the wall of the transformer unit, no anomalies were confirmed on the coil and iron core. No anomalies were confirmed on the R and S phase bushings and its bushing cases.</a></li> <li>• <a href="#">Cracks in the coating of No. 1-10 cooling unit upper pipe joint were peeled and inspected visually; and damage was confirmed.</a></li> <li>• <a href="#">Method of restoration (scope of replacement, work method, test method, etc.) is currently being reviewed while considering results of internal inspection, and the date of restoration is undecided.</a></li> <li>• <a href="#">Further survey and review, which includes structural analysis, shall be conducted to evaluate damage to the No. 11 cooling unit.</a></li> </ul>
2-②	2024/1/2	Unit 2 Scattering of spent fuel storage pool	<ul style="list-style-type: none"> <li>• Confirmed sloshing in spent fuel storage pool.</li> <li>• Amount scattered is approx. 326 liters (approx. 1.3mm decrease in pool inventory), amount of radiation is approx. 4,600Bq, no impact of radiation outside.</li> </ul> <p>⇒Almost no changes to pool level, and there is no impact on nuclear safety, such as capabilities to cool spent fuel, etc.</p>	<ul style="list-style-type: none"> <li>• Wiped scattered water on January 3<sup>rd</sup>.</li> <li>• Spent fuel currently being cooled in stable condition.</li> </ul>



# Occurring Event and Status of Response Up to the Present

Attachment 2

[as of March 25, 2024]

No.	Date disclosed	Title	Event overview	Response status
2-③	2024/1/2	Unit 2 “Expansion difference large” annunciator setoff for low pressure turbine	<ul style="list-style-type: none"> <li>Annunciator “expansion difference large” was setoff due to swaying from earthquake.</li> </ul> ⇒Occurred when turbine was shutdown, and does not impact securing of nuclear safety.	<ul style="list-style-type: none"> <li>Started inspection of turbine from March 8</li> <li>When the turbine lubricating oil system was started up to separate turbine and generator shaft joint, there was dripping of oil from the bottom of the generator shaft bearing (1 drop/min.), and cracks were confirmed on some welded areas. Repairs to be performed in the future.</li> <li>Confirmed floating of thrust bearing housing* and loose bolts, etc. Detailed inspection and repairs to be performed in the future.</li> <li>Turbine inspection to be performed around the first half of FY2024, and after confirming damage, repairs and restoration are to be conducted.</li> </ul> * Housing containing thrust bearing which receives force applied to the axial direction
2-④	2024/1/2	Unit 2 Articles falling into spent fuel storage pool	<ul style="list-style-type: none"> <li>Confirmed that one of the parts used for reactor coolant recirculation pump inspection, stored in the Unit 2 spent fuel storage pool had fallen to the bottom of the pool.</li> </ul> ⇒The subject article is light (polyester material), and fell at a location remote from fuel (approx. 4m); therefore, there is no impact to spent fuel.	<ul style="list-style-type: none"> <li>From March 19, work is in progress to collect articles that fell in. (Collection scheduled to be completed by the end of March)</li> </ul>
2-⑤	2024/1/3	Unit 2 Actuation of pressure relief valve of exciter transformer	<ul style="list-style-type: none"> <li>Confirmed that actuation of pressure relief valve at the top of transformer caused approx. 100 liters (estimated) of insulation oil of transformer to be discharged to the weir via feed tube. (Earthquake causing the oil in transformer to slosh resulted in temporary increase of internal pressure which led to the normal actuation of the pressure relief valve.)</li> </ul> ⇒The exciter transformer is used during plant operation; therefore, there is no impact on nuclear safety.	<ul style="list-style-type: none"> <li>Approx. 100 liters of oil collected on January 5<sup>th</sup>.</li> <li>On February 26, replaced pressure relief valve, and conducted low voltage electric test.</li> </ul>
2-⑥	2024/1/3  2024/3/25 (Added)	Unit 2 Increase of seawater level inside intake tank	<ul style="list-style-type: none"> <li>Reconfirming power station data from January 1<sup>st</sup> confirmed that Unit 2 intake tank seawater level had increased by approx. 3m compared to normal levels.</li> </ul> ⇒Sea embankment and sea wall 4m high are installed at EL11m on site premises; therefore, an increase of approx. 3m will not have an impact on power station facilities.	<ul style="list-style-type: none"> <li>Confirmed an increase of approx. 3m in the Unit 2 intake tank using a level gauge, and fluctuations in sea levels was analyzed. Also, the data for intake tank levels was used to perform analysis, and evaluation concluded that there was an increase of approx. 3m in levels near the intake port.</li> <li>Furthermore, collection, analysis and evaluation of data from the wave meter confirmed that there approx. 3m of sea level increase near the unloading dock.</li> <li>Analysis and survey of traces were conducted regarding the tsunami run-up height in front of the site, and results confirmed subject height to be approx. 4m.</li> </ul>

# Occurring Event and Status of Response Up to the Present

Attachment 2

[as of March 25, 2024]

## Common for Shika Nuclear Power Station Units 1 and 2

No.	Date disclosed	Title	Event overview	Response status
Common-①	2024/1/2	Units 1, 2 Waste treatment building expansion joint seal cover becoming detached	<ul style="list-style-type: none"> <li>• Confirmed that metallic cover, which protects the rubber sealing material (expansion) connecting Units 1 and 2 waste treatment buildings, had become detached. Also, subject seal cover functions as a degradation prevention part for sealing material.</li> <li>⇒Confirmed that there was no damage to sealing material. Also, there was no radiological impact outside.</li> </ul>	<ul style="list-style-type: none"> <li>• Replaced seal cover on March 19.</li> </ul>
Common-②	2024/1/5	Subsidence of paved concrete at the reclaimed loading area	<ul style="list-style-type: none"> <li>• At the reclaimed part of the loading area, paved concrete had subsided as a result of the earthquake, causing uneven ground.</li> <li>⇒No structural issue regarding the loading area.</li> </ul>	<ul style="list-style-type: none"> <li>• Conducted detailed survey to confirm scope of subsidence and volume subsided.</li> <li>• Measures taken for temporary restoration to eliminate uneven ground using sandbags. Repairs using concrete is in progress.</li> <li>• After conducting detailed survey of subsidence by the end of January 2024, restoration is to be conducted by the first half of FY2024 in preparation of loading work for FY2024 (low level radioactive waste).</li> </ul>
Common-③	2024/1/7	Oil film being confirmed on the sea in front of the power station	<ul style="list-style-type: none"> <li>• Confirmed oil film (approx. 5m by 10m) floating on the sea surface in front of the Shika Nuclear Power Station</li> <li>• Actuation of spray fire fighting system in the event of the January 1 earthquake caused leaked insulation oil of the transformer to scatter, and it is assumed that subject oil flowed out into the sea via drain after rainfall.</li> <li>⇒Leaked oil was neutralized and collected, and there is no impact on the environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Oil film was treated using neutralizers on January 7<sup>th</sup>.</li> <li>• Confirmed that the station in general was not subjected to other oil leaks.</li> <li>• Install oil fence, and continued focused monitored to check for residual oil in drains.</li> </ul>
	2024/1/10	Oil film being confirmed on the sea in front of the power station	<ul style="list-style-type: none"> <li>• Oil film was confirmed in the drain around the Unit 2 main transformer, and confirmation of the downstream side confirmed oil film floating on the ocean in front of the power station (approx. 100m by 30m, approx. 6 liters)</li> <li>⇒There is no environmental impact of installing oil fence on the coast.</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of oil absorbing mats in the drain was improved, and strong monitoring resulting from the increase in monitoring frequency is continued.</li> <li>• Discharge gate for rain water installed in the drain downstream, and sea surface oil fence installation status is monitored round-the-clock and continuously strengthened.</li> <li>• Removed gravel from the oil retainer holding leaked oil and confirmed that oil retainer and underground tank were not damaged.</li> <li>• Crushed stone outside the oil retainer, gutter and road (pavement) where oil had scattered, were designated as the source of oil leak, and crushed stones were removed and the subject area cleaned.</li> <li>• Establish response procedure to be used (such as operation of discharge gate, etc.) when discovering oil leak on station premises.</li> <li>• Install oil trap in gutters. (scheduled for October 2024)</li> </ul>

# Occurring Event and Status of Response Up to the Present

Attachment 2

[as of March 25, 2024]

No.	Date disclosed	Title	Event overview	Response status
Common-④	2024/1/9	Status of offsite power supply (transmission line, sub-station facilities)	<ul style="list-style-type: none"> <li>• Conducted inspection of transmission line connected to Shika Nuclear Power Station, and confirmed the following: (Shika nuclear power line 275kV two lines)                             <ul style="list-style-type: none"> <li>• No abnormality</li> </ul> </li> <li>(Akasumi line 66kV one line)                             <ul style="list-style-type: none"> <li>• An insulator for the transmission line (one piece) and disconnected wire (one area) on the jumper line (cable connecting insulation device before and behind steel towers were confirmed, but there currently are no issues regarding performance of transmission lines. [No. 5 steel tower: one out of six damaged] [No. 3 steel tower: five out of 30 wires disconnected]</li> </ul> </li> <li>• <a href="#">Confirmed deformation (one location) of jumper connecting terminal on the Akasumi line No. 10 steel tower (notified February 9).</a></li> </ul> <p>(Shika Naka Noto 500kV two lines)</p> <ul style="list-style-type: none"> <li>• Confirmed damaged gas insulated switchgear (GIS) bushing (insulating tube) in the Naka Noto Sub-station, damaged isolation on transmission line (two locations). [Line 2 switchyard anchor structure: 4 out of 53 damaged] [Line 1 No. 2 steel tower: 1 out of 36 damaged]</li> <li>• One out of two lines of the Shika Naka Noto line is online, and the Unit 2 main transformer is also out of service and cannot receive power.</li> </ul> <p>• Three lines (Shika nuclear power line No. 1 line, Shika nuclear power line No. 2 line, Akasumi line) are connected to Shika Nuclear Power Station as off-site power, and power can be supplied to both Units 1 and 2. Also, emergency diesel generators, high capacity power cars and high voltage power cars have been secured as emergency power sources. ⇒Necessary off-site power and emergency power sources have been secured, and there is no impact on nuclear safety, such as capabilities to cool spent fuel, etc.</p>	<p>(Akasumi line 66kV) Replaced damaged insulation (one piece) and disconnected jumper line (one area) on January 13<sup>th</sup> (Saturday). <a href="#">On February 10, replaced jumper connecting terminal and jumper line (one area).</a></p> <p>(Shika Naka Noto 500kV) <a href="#">On January 31, replaced two transmission line insulators.</a> Damaged GIS bushing (insulating tube) in the Naka Noto Sub-station shall be replaced by June 2024.</p>