April 17, 2018

Kyushu Electric Power Company Inc.

Genkai Nuclear Power Station Unit 3: Cause and measures for the small steam leak from the air vent pipe of the deaerator

After experiencing small steam leak from the air vent pipe of the deaerator, Genkai Nuclear Power Station Unit 3 (a 1180Mwe pressurized water reactor), which was under periodical inspection and operating with controlled output, stopped power generation on March 31.

The self-inspection afterwards discovered a penetrating hole on one of the 16 air vent pipes which was created due to erosion of the pipe surface.

Since the damaged pipe was located outside the building, it is assumed that the insulator was dampened by rainwater coming though a gap between the protection panels, which caused the surface of the pipe to partly erode until it got penetrated.

(as already reported on March 30 and April 2)

[New information as of April 18]

- As a countermeasure, all the 16 vent pipes including the affected one, the protection panels and the heat insulators for these 16 pipes have been replaced. Overall equipment examination was conducted for the Unit 3 with a focus on discovering any sign of abnormality such as rust indicating erosion. As a result, no such abnormality was detected.
- In addition, we are going to take the following actions:
  - To draw and implement a plan to replace outdoor protection panels and insulators taking their service condition into account and to examine the pipes located outside with the aforementioned panels and insulators equipped
  - To conduct trainings for the station staff to ensure detecting abnormality in advance, in the attempt of creating an environment for deciding appropriate actions when needed. Viewing things from various perspectives without being bound by the past practice will be emphasized, so that even a small sign of change will be found out.
- Other actions like the following will be taken based on inputs provided in the experts' meeting organized by Saga prefecture on April 13:

- To consider changing the material of pipes to stainless steel and installing the roof to cover the outside pipes around the deaerator, in order to improve rainproof property.
- To deepen knowledge of the occurrence and development of rust and reflect the findings in formulating self-inspection and replacement plans.

The Genkai NPS Unit 4 is subject to the equivalent reviews and actions to the Unit 3.

Kyushu Electric Power Company will continue to conduct each examination and work attentively with ensuring safety as No.1 priority so that safe and stable operation of the unit will be achieved and maintained.

(Translated by JANSI)

(Appendix)

Genkai Nuclear Power Station Unit 3:

Counter measure of the small steam leak from the air vent pipe of the deaerator (Outline)

1. Correspondence to vent pipe

Replacement of pipes, exterior board, and heat insulation material was carried out for all 16 pipes including one in which through holes were confirmed.

2. Future Initiatives

(1)In order to raise awareness during inspection / patrol, Kyushu Electric Power will conduct following education repeatedly.

・Staff at the power plant always keep awareness that may be hidden in case of small changes in the facilities are recognized.

・When a power station staff finds symptoms of abnormality of equipment, they will report it actively and share the information within the organization.

(2) Review of inspection method and maintenance contents of the exterior boards, heat insulation material, and pipes.

・Formulate a replacement plan for outdoor exterior boards and heat insulation considering the usage environment

・Establish a planned inspection plan for outdoor pipes on which exterior board and heat insulating material are wound.

(3) Perform inspection to ascertain abnormal symptoms from aging of the exterior board using a check sheet.

(4) In order to make a mechanism to judge correspondence, we do as follows.

Educate power staff of the power station to prevent abnormalities.

Educate the staff of the power station to recognize small changes and prevent abnormalities beforehand.

Collect and consolidate information at a new conference.

Confirm the information from various perspectives without being caught in the past.

3. Further efforts based on expert opinions afterward.

Based on the opinion of the expert committee of Saga prefecture, we will do the following further efforts.

(1) For outdoor pipes around the degassing device including steam leakage pipes, we are working on replacing it with stainless steel pipes and installing a roof to improve reliability against rainwater intrusion.

(2) Deeply understand the occurrence and progress of rust, and reflect insight into replacement plan formulation.
(3) Considering that power plant exists in coastal area, gather knowledge on plating methods for exterior boards and rustproof paint on piping.
(4) Consider optimization of installing method of external board.
(5) Collect and utilize non-destructive inspection methods of facilities that are difficult to check the appearance.
(6) Observe cross section of steam leaked pipe.