

(Summary) Reinvestigation results, causes and prevention measures regarding mistakes in the reports of the emergency countermeasures for safety

Tokyo Electric Power Company

1. Introduction

In accordance with the instruction document by NISA, on September 15, 2011, titled "Investigation on mistakes in the reports of emergency countermeasures for safety (instruction)"(September 14, 2011, No.5), we have reported result of investigation on mistakes in the reports of emergency countermeasures for safety and its causes and prevention measures to NISA on September 15 and having *received* confirmation of the contents of the report, on October 26, NISA has published a statement titled "Regarding Evaluation of the Report on Investigation on mistakes in the reports of emergency countermeasures for safety (Kansai Electric Power Co. etc)" and so long as TEPCO is concerned, NISA has pointed out that "NISA could not confirm the fact of collation with the source" and we received instruction titled "Regarding the reinvestigation of the Mistakes in the Reports of Emergency Countermeasures for Safety (Instruction) (October 25, 2011, No.2)"* from NISA to carry out reinvestigation of the Reports.

This report describes the investigation results on mistakes in the reports of emergency countermeasures for safety and its causes and prevention measures in accordance with the instruction.

2. Investigation on Mistakes in Reports

(1) Scope of Investigation

We investigated mistakes in the following submitted reports in accordance to the instruction documents.

We investigated amended reports in case we submitted the amendment.

<Instruction document>

- "Regarding Implementation of Emergency Countermeasures for Safety at Other Nuclear Power Stations based on the Accident in Fukushima Daiichi and Daini Nuclear Power Stations in 2011 (instruction)" on March 30, 2011 (March 28, 2011, No.7)
- "Regarding Off-site Power Supply Security at Nuclear Power Stations and Reprocessing Plants (instruction)" on April 15, 2011 (April 15, 2011, No.3)
- "Regarding Emergency Countermeasures for Safety at Fukushima Daini Nuclear Power Station (Instruction)" on April 21, 2011 (April 20, 2011, No.20)
- "Regarding Implementation of Countermeasures against Severe Accidents based on the Accident in Fukushima Daiichi Nuclear Power Station (Instruction)" on June 7, 2011 (June 7, 2011, No.2)
- "Regarding Anti-earthquake Countermeasures of the Switchyard etc. with a View to Securing Reliability of Offsite Power Supply for Nuclear Power Stations (Instruction)" on June 7, 2011 (June 7, 2011, No.1)

<TEPCO's reports in accordance to instruction documents>

- Regarding Emergency Countermeasures for Safety at Kashiwazaki Kariwa Nuclear Power Station (Implementation status report)
(Reported on April 21, 2011. Amendment reported on May 2, 2011.)
- Regarding Offsite Power Supply Security at Nuclear Power Stations and Reprocessing Plants
(Reported on May 16, 2011.)
- Regarding Emergency Countermeasures for Safety at Fukushima Daini Nuclear Power Station (Implementation status report)
(Reported on May 20, 2011. Amendment reported on July 21.)
- Regarding Implementation of Countermeasures against Severe Accidents based on the Accident at Fukushima Daiichi Nuclear Power Station (Implementation status report)
(Reported on June 14, 2011)
- Regarding the Security of the Offsite Power Supply of Fukushima Daini Nuclear Power Station
(Reported on July 7, 2011)
- Regarding the Anti-earthquake Countermeasures of the Switchyard etc. with a View to Securing Reliability of the Offsite Power Supply for Nuclear Power Stations (Report)
(Reported on July 7, 2011)

(2) Instruction from NISA for re-Investigation and our policy

NISA has indicated following two issues as basis of their instruction for reinvestigation;

- In the report of Emergency Countermeasures for Safety at Fukushima Daini Nuclear Power Station, NISA could not confirm the fact of collation with the source in relation to the actual training time of emergency response training in the absence of power source
- In the report of "Anti-earthquake Countermeasures of the Switchyard of the Fukushima Daini Nuclear Power Station, in relation to the buffer of the switchyard and transformer in the Nuclear Power Station, NISA has pointed out that while it is collated with original source of manufacturer's documents (evaluated value of the facility), but could not confirm the fact that the confirmation was carried out that the facility described in the documents has the same technical specification with the facility that TEPCO possesses.

In light of above matters, confirmation will be carried out through newly additional two points of view and review of investigation method, keeping the collation status with the source documents clear.

- (a) Clearly describe description of the collation with the source documents in the report and evidence
- (b) Confirm the sameness with the object to be collated in the source documents such as drawings

(3) Methodology

The organizational structure for investigation was as follows; the head which managed the investigation is Nuclear Power Plant Management Dept., project directors are unit general managers of power plants and general managers of departments in charge, (Nuclear Power Plant Management Dept. and Nuclear Asset Management Dept. depending on the issues) of the headquarter. In addition, Quality Management Group of power plants and Nuclear Quality & Safety Management Dept. of headquarter conducted random check of process appropriateness. The investigation was conducted under this framework.

- 1) Mistakes in reading data regarding measures and evaluation
We confirmed no mistakes in the original data (values) which were used for measures and evaluation
Groups in charge of making reports double checked about the mistakes.
- 2) Mistakes in the process of calculation
We confirmed no mistakes in calculation method and the results.
Groups in charge of making reports double checked about the mistakes.
- 3) Mistakes in writing reports
We confirmed no mistakes in writing reports.
Groups in charge of making reports double checked about the mistakes.
- 4) Appropriateness of Collation Source
We confirmed the sameness with the object to be collated in the source documents such as drawings.
When using facility library for the collation documents, we use those manually controlled documents and check if that is the latest version.
Groups in charge of making reports double checked about the mistakes.

Regarding the original data (values), we checked especially the source and confirmed the consistency between the source and the reports.

- Values for measures (basis values, calculation quotation etc.)
load equipment and equipment power capacity for power supply vehicle, supply water and water source necessary for scenario, other calculation results etc.
- Values to describe measure results
capacity and number of power supply vehicles, possible days of continuous fuel supply of power supply vehicles, number of fire pumps, number of fire hoses etc.

(4) Result

As a result of investigation, no mistakes were found in the reports of the head quarter and Kashiwazaki Kariwa. However, in addition to the mistakes, we found in the previous investigation, in writing reports concerning the installation level of the main equipment in the report of emergency countermeasures for safety at Fukushima Daini Nuclear Power

Station, we newly found mistakes in the report of emergency countermeasures for safety and in the report of severe accidents such as part of description of power load.

3. Mistakes in the Reports and its Impact

- (1) Mistakes in the report of emergency countermeasures for safety at Fukushima Daini Nuclear Power Station regarding installation location of main equipment (previously reported on September 28, 2011)

Mistakes in writing reports were found in the following two parts. However, we confirmed that they had no impact on the evaluation.

a. Installation location of main equipment (underlined two parts)

- Description: Attachment-5 Installation location of main equipment

Original (Mistake)	Revised
· Control center of make-up water system of Unit 3 Turbine Building 1 st Floor O.P.12000	· Control center of make-up water system of Unit 3 Turbine Building 1 st floor O.P.12200
· Places of fire engines, power supply vehicles O.P.18727	· Places of fire engines, power supply vehicles O.P.18500

b. Power load

- Description: Attachment-4 4), 5)

Reference	Original (Mistake)	Revised
RHR Heater shell side inlet valve (B) (Unit 2)	4.7 kVA	9.8 kVA
Plant vital power source facility UPS (B) (Unit 3)	34.0 kVA	36.0 kVA
RHR cooling pump (D) (Unit 3)	203.3 kVA	215.2 kVA
RHR sealing pump (D) (Unit 3)	6.2 kVA	5.9 kVA

- (2) Mistakes in Reports of Severe Accidents

- Description: Attachment-2 2)

Reference	Original (Mistake)	Revised
Air conditioning system of Main control room (Unit 1)	170 kVA	171 kVA

4 . Probable causes

- (1) Mistakes of the description concerning the installation level of the main equipment in the report of emergency countermeasures for safety at Fukushima Daini Nuclear Power

Station (previously announced on September 28, 2011)

Our employee engaged in writing reports mistakenly input wrong data from a drawing of equipment installation. The description of the report was double-checked among the writers and other employees but they focused on the values, evaluation results, etc., which directly affect the evaluation results. Therefore the checking of the data which have proven to be wrong with the equipment installation (the source) was not enough and the writers and the checkers failed to realize the mistakes.

To summarize, they focused on the values etc. which directly affect the evaluation results and recognition of checking data which were read from drawings was not sufficient. As a result, it is presumed that double-checking did not work adequately.

- (2) Mistakes concerning the description of power load and so forth in the emergency countermeasures for safety report and the severe accident report at Fukushima Daini Nuclear Power Station (previously announced on September 28, 2011)

We keep and administer books and documents about equipment from manufacturers in a consistent manner based on manuals with ledgers including revisions of the books and documents.

In this case of Fukushima Daini Nuclear Power Station, when a writer (our employee) makes document based on books and documents about equipment such as single wire connection drawing of power load, the writer should have collected books and documents kept with ledgers in the library but the writer mistakenly thought that the library was used as an office for affiliated companies and therefore could not be used as library due to the earthquake, and so the writer mistakenly collected documents from books and documents management system which is used in work supplementally.

The books and documents from the system are prepared only for reference but the writer misunderstood that they can be used as sources for the report.

In the last investigation, writers misunderstood that such documents are right sources for making reports and used them.

5 . Prevention Measures

- (1) Mistakes of the description concerning the installation level of the main equipment in the report of emergency countermeasures for safety at Fukushima Daini Nuclear Power Station (previously announced on September 28, 2011)

We will establish a clear checking framework in making reports which may affect the safety of nuclear power plants and keep the employees engaged in the reports informed that mistakes in the reports may undermine the credibility of the reports, ensuring that employees share the recognition of the importance of the reports.

In addition, we will double-check more thoroughly by checking the data of the reports with the drawing data (original source) before submission.

- (2) Mistakes concerning the description of power load and so forth in the emergency countermeasures for safety report and the severe accident report at Fukushima Daini Nuclear Power Station (previously announced on September 28, 2011)

Based on the “Appropriateness of Collation Source”, focused on this investigation, we have confirmed all the equipment documents we collected as collation source are the latest equipment documents in the management ledger based on manuals and that there are no events of mistakes other than the above-mentioned ones.

Also, we will inform all the employees who are concerned or can be concerned of these nonconformity cases and that when they write reports that could affect the safety in nuclear power stations, they use the same equipment (as the equipment that they are using at the time) which they should collate with based on our manuals as collation sources in the reports and the writers, double-checkers, reviewers and authorizers check the sources.

We will also inform that the users of the books and documents management system in Fukushima Daini should be careful in using the system as it is used in work supplementally, by popping up a cautionary statement at the initial screen.

- (3) Prevention measure based on the result of a sequence of the investigation

Considering a sequence of the investigation and nonconformity cases, from now on, when we make reports that could affect the safety in nuclear power plants, we will clearly include in company standards the following 4 points in accordance with the investigation and nonconformity cases and make the employees more aware of the importance of checking in making reports and reviewing, in order to make sure that they confirm the sources and reports are double-checked by employees other than those who made that reports.

1. Do not misread the data concerning the countermeasures and evaluation
2. Do not miscalculate the countermeasures and evaluation
3. Do not miswrite with regard to the descriptions
4. Check with the right sources

6 . Other matters

- (1) Instructions from NISA on nonconformity case management from

In the instruction of reinvestigation, NISA pointed out the following point.

- With respect to the nonconformity case management found in the mistake this time, TEPCO need to surely improve the management of nonconformity cases, which is important for improving and enhancing organization themselves as to the probable causes and prevention measures in the submitted reports, because TEPCO did not approve the result of treatment based on the “ Report on nonconformity cases ” , probable causes of nonconformity (corresponding to the causes in the report) and countermeasures (corresponding to prevention measures in the report) before the submission of the report.

Pursuant to the aforementioned instructions, we will take following measurement. Against the mistakes this time, we addressed based on the process of countermeasures which are the process of nonconformity case management. However, as stated in the instructions, we think that we have to manage the nonconformity cases more carefully in order to avoid the important framework of the countermeasures in the nonconformity report from differing from those in the investigation report, by the submission of the investigation report before the approval of the countermeasures. Therefore, we will surely make a company rule to, in case we write countermeasures in the nonconformity report after submitting investigation reports (reports pursuant to the laws and regulations or instructions), confirm the prevention measures written in the reports and will the dates of the reports.

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