
Joint Accident Prevention Activities by TEPCO and the Contractors

~ Developing a System for Collecting and Analyzing
Information on Near Misses ~

August 24, 2015
Nuclear Power & Plant Siting Division

Activities engaged in thus far

■ Collection of near miss information

Number of cases gathered by TEPCO employees: 110
(performance at F1, April-July)

Cases gathered by contractors: about 3,500 (at F1, April-July)



On-site behavioral observation

■ Collection of information through on-site behavioral observation

Number of cases gathered: about 1,100 (in April-July)

- Carried out from April onwards with monthly or greater frequency by TEPCO's management based on a standard observation perspective.*

* "Standard observation perspective" means that outlined in the World Association of Nuclear Operators (WANO) Performance Objectives and Criteria (WANO PO&C).



Information being shared with TEPCO's contractors (1F)

■ Information analysis

Techniques for effective and efficient analysis are currently under review.

Activity challenges and direction to take in making improvements

Aiming for the beginning of September, develop an activity program shared across the three sites, and resolve the issues listed below within this context.

Issue 1

The collection of information and the analysis of near misses are not sufficiently effective yet.

Improvement 1

- Conduct activities that entail explaining the importance of near misses to TEPCO and contractor staff.

⇒ To start gradually in August

- **Establish effective and efficient techniques** for analyzing information upon studying good practices adopted in Japan and abroad.

⇒ **By October** (analysis is to be standardized, including the codification of information)

Issue 2

On-site behavioral observation by TEPCO management is still not effective enough; they lack the required knowledge and training for accurately identifying "unsafe behaviors".

Improvement 2

Intensify training for TEPCO management in order to hone their behavioral observation skills.

⇒ From September onwards, TEPCO managers will receive the support of staff with peer review experience and experts from overseas, and training by experts from WANO will begin.

Summary

Activities carried out up until March focused on gathering information on accidents that actually occurred, and on horizontally disseminating prevention measures.

Indicated matters

In the course of assessments carried out since January's severe accident, the Nuclear Reform Monitoring Committee and external organizations have pointed out that "the system for gathering and analyzing the warning signs of near misses and other accidents is insufficient".

* JANSI Peer Review, IAEA-OSART

Improvements

New activities ①

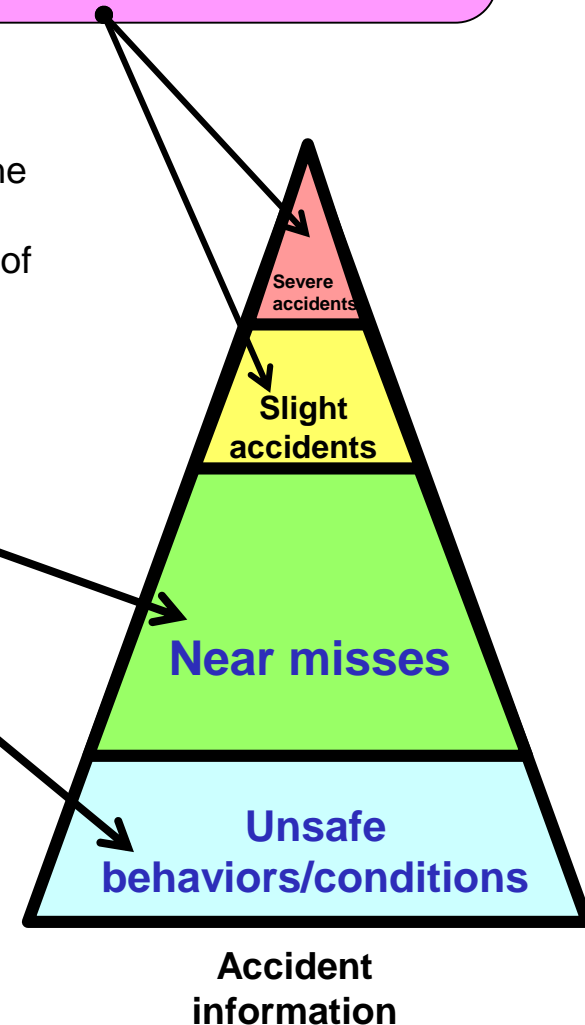
Joint collection of information on near misses by contractor and TEPCO staff.

New activities ②

TEPCO's management will conduct on-site behavioral observation, and gather information on unsafe behaviors and conditions.

New activities ③

TEPCO staff will analyze and share the information in ① and ②, and thus work toward preventing accidents.



IAEA OSART mission at Kashiwazaki Kariwa Nuclear Power Station

August 24, 2015
Nuclear Power & Plant Siting Division

Background and Objective

Background

- TEPCO is currently establishing safety enhancement measures, both hardware and operational measures, at Kashiwazaki Kariwa Nuclear Power Station based on lessons learned from the Fukushima Dai-ichi Accident.
- TEPCO has been realizing that it is very important to have an international independent review on these measures to get information on good practices and knowledge and wanting to invite such review.
- Under such circumstance, METI asked all electric power companies if any of them wanted to invite an IAEA OSART review and TEPCO showed its intention to invite the review in its reply.

Objective

- To acquire useful advices on the safety measures by being reviewed based on the international safety standards, experience and good practices.

Summary Information about the Mission

1. Venue: Kashiwazaki Kariwa Nuclear Power Station

2. Dates: 30th June 2015 (Tue) to 13th July 2015 (Mon)

3. Review method:

The IAEA team member (team leader, deputy team leader and 10 reviewers invited by the IAEA) will visit the plant, review plant activities related to operational safety, identify activities to be improved and provide recommendations and suggestions.

4. Team Composition:

Team Leader: Peter Tarren (Section Head, Operational Safety Section, Division of Nuclear Installation Safety)

Deputy Team Leader: Miroslav Lipar (Former Section Head of the Operational Safety Section)

Other reviewers: IAEA staff member 3, UK 2, Slovakia 1, Sweden 1, France 1, USA 1

Review Areas

TEPCO agreed with the IAEA to have the following review areas. They are based on the standard OSART review areas and the current plant status (many safety enhancement measures are being conducted and all units are under long shutdown)

1. Leadership and management for safety
2. Training and qualification
3. Operation
4. Maintenance and technical support (to cover whole safety enhancement projects, three reviewers (mechanical, electric and I&C, civil and architectural) will be involved in this area)
5. Operational experience feedback
6. Radiation protection and chemistry
7. Emergency preparedness and planning
8. (Severe) Accident management

Summary of the review results (1)

As a result of the review six recommendations, nine suggestions and nine good practices were identified.

1. Examples of the recommendations

- Systems that gather operating experience should be integrated, and the information collected through them should be used more proactively to enable the plant to exchange lessons with the rest of the nuclear industry.
- The station's emergency plans should be fully integrated and documented in a way that is clear and easy to use.

2. Examples of the suggestions

- The plant and Corporate Office should consider formalising their design authority function and establishing a procedure for assurance of availability of complete and reliable important plant design data, including the long term storage and safekeeping of detailed design documentation throughout the plant lifetime. Accident management guidance should cover all plant conditions, including potential events involving the spent fuel pools.

Summary of the review results (2)

3. Examples of the good practices

- Following the March 2011 accident at Fukushima Daiichi NPP, the Kashiwazaki-Kariwa Nuclear Power Station has implemented comprehensive and robust defence measures against severe accidents, including added tsunami and flood protection as well as enhanced site and mobile back-up electrical power supplies, pumps and heat exchangers.
- The plant carries out frequent drills in difficult conditions to ensure that all staff are well-prepared to deal with emergencies
- •The plant has established thorough control of all combustible materials to minimise the fire risk.

Subsequent Schedule

3rd August

Comments on the mission technical note (preliminary texts of the mission report) was submitted to the IAEA from TEPCO.

24th August or later

A draft mission report which takes into account the abovementioned comments will be provided to METI and TEPCO by the IAEA.

14th September or later

METI and TEPCO will send comments of the draft mission report to the IAEA.

5th October

The final mission report will be sent to Japanese Government and TEPCO from the IAEA. TEPCO will open the report in that week.

End of November

Action plans to solve the recommendations and suggestions will be completed and actual actions will be initiated.

March 2017 (provisional)

Follow-up mission.

Making Improvements through Emergency Response Training

~ Reflecting Training in Daily Duties ~

August 24, 2015

Nuclear Power & Plant Siting Division

Making Improvements through Emergency Response Training (1/2)

Examples in which findings and experiences made during training have led to improvements to routine operations

- **Improving communication to prevent human error**
Communication methods used during times of emergency, such as phonetic codes (alpha, bravo, etc.), are being used during normal operations
- **Headlamps**
The need for headlamps has become apparent through night training. Currently all maintenance workers at KK have headlamps on their helmets when working in the field.
- **Improving the skills of the in-house fire brigade**
Training on how to operate the fire engines during emergencies helps to improve emergency fire-fighting skills.
- **Enhancing the ability of TEPCO employees to engage directly in required tasks**
By learning how to use heavy equipment through training the ability of TEPCO employees to directly engage in required tasks in the course of daily work is enhanced along with the skill of these employees.



Making Improvements through Emergency Response Training (2/2)

New endeavors to ensure that routine training leads to improvements

Further identification of lessons learned through training

- Areas for improvement have been pointed out during past training sessions.
 - Areas for improvement (AFI) were indicated on training record sheets.
 - In many cases, these AFI relate to emergency response.
- Adding a mechanism for reflecting skills acquired during training in one's daily duties
 - Add the field "Measures to incorporated into daily duties" to training record sheets.
 - Reflect back on each training session from the perspective of "Measures to incorporated into daily duties".
 - Preparations for the use of these new record sheets are currently underway.

Training record sheets

Date & time of training	09:00-12:00 of August 1, 2015		
Training venue	Skills Training Building		
Activities conducted	Training on connecting high-voltage cables to M/C		
Training under adverse conditions	Implementation Status	Implemented	
	Envisioned adverse working conditions	High radiation levels, darkness, communications problems	
	Safety equipment employed	High radiation levels: Full facemasks Darkness: Headlamps C o m m u n i c a t i o n p r o b l e m s : Transceivers	
Participants	See Attachment		
Results of implementation	See Attachment		
Evaluation, considerations, areas for improvement	◎ Evaluation - Guidelines for wearing masks on the premises ◎ Considerations - Getting used to employing communication tools will be essential. ◎ Areas for improvement - Change procedures so that electricity is discharged after electrical inspections.		
Measures to incorporated into daily duties	All Maintenance Department personnel should wear headlamps used during accident prevention training at all times so that they will be able to use both hands when performing periodic inspections on-site.		

Example of modified training sheet