

Summary of the 3rd Technical Advisory Committee (TAC) Meeting

Date: May 25 – 29, 2015

Place: Central Research Institute of Electric Power Industry

Participants:

TAC: Mr. Stetkar (Chair), Mr. Afzali, Dr. Chokshi, Mr. Pouget-Abadie, Prof. Takada, Prof. Yamaguchi

NRRC: Dr. Apostolakis (Head), Experts of Nuclear Risk Research Center

Industry: Representatives of Federation of Electric Power Companies (FEPC), Experts of Shikoku EPCO for respective topics

Proceedings

TAC and NRRC agreed that some technical topics would be discussed in focused sessions. The purpose of the focused sessions was to examine details of specific topics that could not be covered in the same depth during the Full Committee briefings. Focused sessions were conducted in parallel in the morning and afternoon on Tuesday, May 26, and in the morning on Wednesday, May 27. TAC members attended the focused sessions according to their respective areas of technical expertise. The Full Committee briefings were conducted in the afternoon on Monday, May 25, the afternoon on Wednesday, May 27, and on Thursday, May 28. All TAC members participated in the Full Committee briefings.

May 25 (Mon.)

Full Committee: Topic 1: Japan PRA Standard for Internal Events

- NRRC explained the Japanese Level 1 PRA standard for internal events.

(Handouts)

1-1. AESJ - Standard for Level 1 PRA during power operation

1-2. Amendment of Standard for Procedures of Level 1 PRA

Full Committee: Topic 2: Japan PRA Standards for External Events

- NRRC explained the Japanese PRA standards for seismic and tsunami events.

(Handouts)

- 2-1. AESJ - Implementation Standard for Seismic PSA
- 2-2. AESJ - Implementation Standard Concerning the Tsunami PRA

May 26 (Tue.)

Focused session: Group 1: Topic 3: Ikata 3 PRA Event Trees and Fault Trees

- In response to the questions asked by Mr. Stetkar after the 2nd TAC meeting, Shikoku EPCO answered a list of technical questions about Ikata Unit 3 Event Trees.
- Mr. Stetkar stated that follow-up questions about the Ikata Unit 3 Event Trees and new technical questions from the review of the Ikata Unit 3 Fault Trees would be sent after this meeting.

(Handout)

- 3-1. Ikata 3 PRA Event Trees and Fault Trees
- 3-1. (Attachment). Response to Mr. Stetkar's Comments

Focused session: Group 1: Topic 4: Ikata 3 PRA Project Plan

- Shikoku EPCO presented the detailed plan, schedule, and specific tasks for the Ikata Unit 3 PRA project.

(Handouts)

- 4-1. Ikata 3 PRA Project Plan
- 4-2. AESJ - Standard for ensuring quality of PRA (Excerpt from the chapter on PRA Peer Review)

Focused session: Group 2: Topic 5: Ikata 3 PRA Seismic Hazard Analysis Methods

- Shikoku EPCO reported on the current status of investigations for use of the Senior Seismic Hazard Analysis Committee (SSHAC) process in the Ikata Unit 3 project.
- TAC members commented that it is important for parties involved in the SSHAC process to have common and clear understanding of probabilistic hazard assessment methods and the SSHAC process.

(Handout)

- 5-1. SSHAC Application for the Seismic Hazard Assessment for Ikata Unit 3

Focused session: Group 2: Topic 6: Ikata 3 PRA Seismic Fragility Analysis Methods

- NRRC presented the JAERI method as an analytical method for producing seismic fragilities for the Ikata Unit 3 PRA.
- TAC members commented that uncertainty should be evaluated appropriately in the fragility analysis.

(Handout)

6-1. Seismic fragility analyses to be performed for Ikata 3 PRA

May 27 (Wed.)

Focused session: Group 1: Topic 7: Ikata 3 PRA Data

- Shikoku EPCO presented the methods and plan for collecting and assessing plant-specific data.
- TAC members advised Shikoku EPCO to have enough time to decide on the scope of data collection and prepare so that the data collection can be done only once, because additional data collection after finishing the original work would be a large effort.

(Handout)

7-1. Ikata 3 PRA Data Analysis

Focused session: Group 2: Topic 8: Ikata 3 PRA Tsunami Hazard Methods

- Shikoku EPCO presented procedures for tsunami hazard analysis for Ikata Unit 3.

(Handout)

8-1. Ikata Nuclear Power Station (Tsunami Evaluation - probabilistic tsunami hazard assessment)

Full Committee: Topic 9: Ikata PRA Scope and Project Plan

- Shikoku EPCO presented the tentative scope of PRA which is under consideration for the submission of the first Safety Analysis Report (SAR) and the detailed plan of the Ikata Project. It was also confirmed that the topics of discussion in TAC meetings should be determined based on the requests by NRRC and/or utilities.

- TAC members commented that the Ikata project should be conducted to bring the PRA to the international state of the practice independently of the SAR process. NRRC added that research conducted by the NRRC and the industry will push the Ikata Unit 3 PRA beyond the state of the practice in certain areas. It was agreed that TAC would be offering recommendations to bring the Ikata PRA, at a minimum, to the international state of the practice. The SAR process will be outside the scope of TAC's deliberations. It was also agreed that the concepts of "state of the practice" and "state of the art" will be discussed and clarified further at the next TAC meeting in Tokyo.

(Handouts)

Same as Topic 4

May 28 (Thu.)

Full Committee: Topic 10: Ikata PRA Seismic Hazard and Fragility Analyses

- Shikoku EPCO reported on the SSHAC process application study for the Ikata Unit 3 project.

(Handouts)

Same as Topics 5 and 6

Full Committee: Topic 11: Ikata 3 PRA Tsunami Hazard

- Based on the comments in the focused sessions, it was agreed that NRRC will increase priority for the combination of seismic and tsunami hazards, rather than performing a separate evaluation of only tsunamis.
- TAC members commented that the Ikata site has a relatively low tsunami hazard. It was noted that this analysis methodology should be applied at other sites to confirm the reliability of the method.

(Handout)

Same as Topic 8

Full Committee: Topic 12: Ikata 3 PRA Data Analysis

- Shikoku EPCO presented the process to collect Ikata NPP plant-specific data and the method of collecting failure data by using the Enterprise Asset Management (EAM) system.

- TAC members commented that data for equipment failures and maintenance times should be available from the sources that were discussed. However, additional effort may be needed to compile consistent data for the respective equipment operating times and demands.

(Handout)

Same as Topic 7

Full Committee: Topic 13: Japanese Industry Safety Goals for Multi-Unit Sites

- NRRC presented the preliminary concept and plan to consider Japanese Industry Safety Goals.
- TAC was supportive of this effort.

(Handout)

13-1. Japanese Industry Nuclear Safety Goals for Multi-Unit Site

Full Committee: Topic 14: Cabinet Fire Experiments and NRRC Research Plan

- NRRC presented the issues on fire PRA and the status of fire testing research.
- TAC members commented that fire tests should be executed in more realistic conditions and discussed topics that should receive priority.

(Handout)

14-1. Fire Test Research and Fire PRA of Japan

Full Committee: Topic 15: Human Reliability Analyses

- NRRC presented the near-term target of HRA and asked TAC to give advice.
- TAC members agreed that Option 2 of the NRRC presentation should be implemented in the near-term, pending further research on evolving HRA methods. Option 2 means to upgrade the current HRA methods by using the EPRI HRA calculator with enhanced guidance for the scenario narratives.

(Handout)

15-1. NRRC's HRA Upgrade