

Summary of the 16th Technical Advisory Committee (TAC) Meetings

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| Date: | May 23~May 27, 2022 |
| Place: | Nuclear Risk Research Center (NRRC), Central Research Institute of Electric Power Industry and Webex |
| Participants: | |
| TAC: | Mr. Stetkar (Chair), Mr. Afzali, Dr. Chokshi, Mr. Miraucourt, Prof. Takada, Prof. Yamaguchi |
| NRRC: | Dr. Apostolakis (Director), Experts of the Nuclear Risk Research Center |
| Industry: | Shikoku EPC, Tokyo EPC HD, TEPSYS, MHI |

Proceedings

In the 16th Technical Advisory Committee meetings, the following issues were reviewed: "Ikata SSHAC study", "PSHA Implementation Guide and Regional SSHAC and Site Response (Future Plan)", "Industry Explanation on RIDM", "Hamaoka Tsunami PRA", "Multi-hazard PRA", "Seismic PRA project using a model plant", and "Low Power / Shutdown PRA". In addition to this, opinions were exchanged on "On-Line Maintenance (OLM) Project in Japan".

Monday, May 23, 2022

Topic 1: Ikata SSHAC study

- The results of the Ikata SSHAC level 3 project were discussed regarding the questions addressed by the TAC members after the previous TAC meeting.
- The TAC members commented as follows:
 - The rationality of the truncation criteria of the seismic motion evaluation should be considered carefully and should be described appropriately in the PSHA guide.
 - When the TI team selects a single model, method, and data in the logic tree models instead of multiple branches, the team should clearly describe the grounds for the selection.

Topic 2: PSHA Implementation Guide and Regional SSHAC & Site Response (future plans)

- NRRC presented the outline of "PSHA Implementation Guide and Regional SSHAC & Site Response (future plans)".
- TAC members commented as follows:
 - Independent review of the guide should be conducted since the guide is

important for future reevaluation of PSHA by the utilities.

Tuesday, May 24, 2022

Topic 3: Industry Briefing on RIDM

- NRRC presented "Industry Briefing on RIDM" including the restart status of Japanese NPP and efforts for strategic and action plans of RIDM.

Wednesday, May 25, 2022

Topic 4: Hamaoka Tsunami PRA - Source term evaluation and uncertainty analysis -

- NRRC presented "Outcome of Level 2 PRA on Hamaoka Tsunami PRA Project - Source Term Evaluation and Uncertainty Analysis -".
- TAC members commented as follows:
 - The completion of the Level 1 and Level 2 PRA research project to evaluate the tsunami risk for a model plant is a milestone achievement for the Japanese nuclear industry. It has contributed to the evolution of the methods and modeling tools that enable the analysis of risk in tsunami-prone areas worldwide.
 - The models, data, and supporting analyses should be subject to an independent and in-depth technical review.
 - The NRRC should develop tsunami risk assessment guidance for the Japanese utilities and the standards committee.

Topic 5: Multi-hazard PRA

- NRRC presented the PRA methodology for the superposed hazard of earthquakes and tsunamis.
- TAC members commented as follows:
 - The multi-hazard PRA should demonstrate how much the superposed hazard of earthquakes and tsunamis differs in magnitude or impact from the single-hazard of earthquakes or tsunamis.
 - It is essential that one single PRA model can address a seismic hazard, a tsunami hazard, and the superposed hazard of seismically-caused tsunamis.

Thursday, May 26, 2022

Topic 6: Seismic PRA using a model plant

- NRRC made a presentation on a study of "Update on NRRC Seismic PRA Project Using A Model Plant."
- TAC members provided the following comments:

- We strongly recommend that NRRC Seismic PRA Project Phase-1 be reviewed by independent experts. A specific plan for an independent peer review of the Seismic PRA should be drafted and shared with TAC.
- NRRC selected/adopted RCW piping as an inter-building piping system, which can be affected by the inclination of the foundation ground. NRRC should conduct a specific analysis to identify failure modes and failure mechanisms of the RCW piping system.
- A great number of studies on piping fragility evaluation have been conducted in the US and recognized as bases for international PRA practice. Therefore, NRRC should survey international practice further before conduct studies on the development of piping fragility.

Topic 7: Low Power / Shutdown PRA

- The Shikoku Electric Power Company presented “the overseas expert review results of Low Power / Shutdown PRA” as a part of “the PRA Ikata 3 Pilot Project.”
- TAC members commented as follows:
 - In the 5th review, the scope of the review was limited to about half of all the supporting requirements (SRs). Some SRs were considered out of scope because the shutdown PRA applies the same approach used in the at-Power PRA. It would be useful to compare those low power and shutdown SRs against the at-power SRs. If there are differences in the SRs, those SRs should be examined for the low power and shutdown PRA.
 - The scope of the low power and shutdown PRA should include all low power plant operating states. The at-Power PRA models do not account for unique system alignments, operational activities, and testing that are conducted during low power modes. (This comment applies to both the Ikata 3 PRA and the KK 7 PRA.)
- Tokyo Electric Power Company Holdings presented “the overseas expert review results of Low Power / Shutdown PRA” as a part of “the PRA KK 7 Pilot Project”.