Summary of the 7th Technical Advisory Committee (TAC) Meeting

Date:	May 22 – 26, 2017
Place:	Nuclear Risk Research Center (NRRC), Central Research Institute of Electric Power Industry
Participants:	
TAC:	Mr. Stetkar (Chair), Mr. Afzali, Dr. Chokshi, Mr. Miraucourt, Prof. Takada, Prof. Yamaguchi
NRRC:	Dr. Apostolakis (Head), Experts of the Nuclear Risk Research Center
Industry:	Experts of TEPCO Holdings, TEPCO SYSTEMS, Shikoku EPCO for respective topics

Proceedings

All topics were discussed in full committee. In addition, two discussion sessions took place with lectures by Mr. Stetkar and Mr. Afzali on Failure Criteria and RIDM in Design respectively.

May 22 (Mon.)

Topic 1: External Natural Event Research

- NRRC presented the current R&D status of the "Tornado", "Senior Seismic Hazard Analysis Committee (SSHAC) Project at Ikata 3", and "Tsunami PRA".
- TAC members commented as follows:
  - High winds of typhoon may be a more significant risk than tornado. It is important to consider this factor in risk assessment for NPP.
  - Various parameters of a tornado (rotation speed, moving velocity, path width, path length, etc.) have a correlation. You should consider this interrelationship in modeling the tornado hazard.
  - You should be cautious about excessive confidence in the results from single research papers regarding ground motion modeling. Several models should be reviewed and considered in the uncertainty analysis.
  - Median Tectonic Line is a significant contributing factor to the seismic motion evaluation of Ikata3. Uncertainty in estimating seismic motion due to MTL should be examined.
  - As to the methodology to determine scenario tsunami conditions for

tsunami fragility analysis, you should explain the meaning and role of the hazard control point (CP) in more detail.

(Handouts)

1-1. Estimating tornado and typhoon wind hazards

1-2. Tornado Missile Strike Probability Assessment

1-3. An Estimation Method for Tornado Missile Strike Probability under Assumption of Statistically Isotropic Tornado Path Directions (Reference)

1-4. Current Status of Ikata SSHAC Level 3 Project

1-5. Determination of scenario tsunami conditions for fragility assessment based on hazard disaggregation

May 23 (Tue.)

Topic 2: Risk Assessment Research

- NRRC presented the current R&D status of "Human Reliability Assessment (HRA) Guide" and "Fire PRA Guide".
- TAC members commented as follows:
  - From the experience of the US, the process of timeline creation is very important for HRA. It would be better to state explicitly how to develop a timeline in the guide. Times should be derived from the simulator or plant-specific thermal-hydraulic analyses.
  - The HRA guidance should describe how to perform a "time uncertainty analysis" and how to account for that analysis during quantification of the human error probabilities (HEPs).
  - The HRA guide should provide one or more practical examples that show how a deviation scenario is developed and how it is included in a PRA model.
  - To collect past fire events, some ingenious ways should be considered such as getting access to the logbooks of the NPP fire brigades.
  - The proposed screening approach of the fire events should be reexamined to avoid improper screening-out.
  - All tasks of the fire PRA guidance should be tested in an integrated pilot application for a Japanese NPP before the guide is issued for general use.

(Handouts)

2-1. NRRC HRA Guide Combining the NRC Narrative Approach with the EPRI HRA Calculator

2-2. Implementation Guide on Human Reliability Analysis (HRA) for PRA
2-3. Current Status of the Fire PRA Research Activities

May 24 (Wed.)

Topic 3: Risk-Informed Decision Making (RIDM) Promotion Team and Pilot Projects

- TEPCO and TEPCO SYSTEMS presented the current status of the Kashiwazaki-Kariwa (KK) 6/7 pilot project. Shikoku EPCO presented the current status of the Ikata 3 pilot project.
- NRRC presented the current status of the activities of the RIDM Promotion Team.
- TAC members commented as follows:
  - The initiating event groups should carefully account for transients and a comprehensive list of plant-specific support system failures.
  - The review of seismic PRA should be held at the NPP site because it necessitates an actual plant walk-down. Also, experts of both system and fragility should participate in the review.
  - It is strongly recommended that operators at the site be involved in all stages of PRA model development.

(Handouts)
3-1. KK-7 Project, Internal Event Operating Level 1 PRA Model, Sophistication Progress Report
3-2. KK Project – Comments & Answers
3-3. Ikata Unit3 Project Status Update
3-4. Expert meeting summary
3-5. RIDM Promotion Team Status Update

May 25 (Thu.)

Topic 4: Discussions on Failure Criteria and RIDM in Design

- "Discussion on Failure Criteria" took place with a lecture by Mr. Stetkar and a presentation of NRRC. "Discussion on RIDM in Design" took place with a lecture by Mr. Afzali and a presentation of NRRC.

(Handouts)
4-1. Comments on Plant-Specific Failure Data (Mr. Stetkar)
4-2. Component Failure Analysis Examples from Ikata 3
4-3. Discussion on Risk Informed Decision Making Applied in Design of

Nuclear Power Plants
4-4. Direction of Risk Informed /Performance Based Design Application related to Seismic Evaluation
4-5. Technology Inclusive Risk-Informed, Performance-Based Design and Licensing Technical Requirements for Non-LWRs (Mr. Afzali)

Topic 5: Exit Meeting

TAC and NRRC had a discussion on how to organize future meetings.

May 26 (Fri.)

Committee internal meeting.