Nuclear Risk Research Center (NRRC)
Central Research Institute of the Electric Power Industry (CRIEPI)
1-6-1 Otemachi, Chiyoda-ku, Tokyo, 100-8126, Japan

Dr. George Apostolakis
Director

January 21, 2025

Mr. J.W. Stetkar, Chairman
Technical Advisory Committee

Subject: TAC Report titled "INTERIM REVIEW OF RISK-INFORMED CONTAINMENT VESSEL LEAK RATE TESTING GUIDELINE" (13 January 2025)

Dear Chairman Stetkar:

We appreciated the interactions with TAC throughout the review of risk-informed containment vessel leak rate testing guideline and the Committee's insights. Regarding "5. The following enhancements should be made before the Guideline is issued for inclusion in Japan Electric Association Guideline JEAC4203: ..." of CONCLUSIONS AND RECOMMENDATIONS, NRRC responds as follows.

- "The Guideline should provide guideline that addresses the provisional performance objective to confirm that the frequency of a release of more than 100 terabecquerels (TBq) of cesium-137 (Cs-137) remains below 10^{-6} event per year"
  The guideline will be revised to include a statement that advises guideline users to confirm that extending containment vessel leak rate test interval has no significant impact on the frequency of Cs-137 release exceeding 100 TBq. The guidance for evaluating the frequency of a release of more than 100 TBq of cesium-137 is available in the existing Level 2 PRA standards and safety improvement assessment guidelines.

- "The Guideline should provide methods for evaluating uncertainties related to the completeness and technical quality of the applied PRA models, or it should recommend the use of relevant methods from internationally accepted guidance."
  We will add a note to refer to the method introduced in NUREG-1855. Specifically, we

add the following sentences to the NRRC research report, “3.4 Assessment method”:
“(Uncertainty of completeness)
NUREG-1855 describes the uncertainty of completeness as follows, and it should be handled appropriately in this evaluation: ... “

- “The technical bases for some numerical values and the supporting calculations for some intermediate results should be confirmed.”
  We checked the technical basis for the figures and calculations for errors. Specifically, for containment vessel overpressure (NPSH), the evaluation formulas for $\triangle CFF_{NPSH}$ and CFF_{NPSH} due to NPSH insufficiency will be added to "3.4 Assessment method."
  Regarding CDF for analyzing ΔCFF due to a core damage event occurring during the outage state (POS) when the containment vessel should be intact, "3.6 Performing the risk impact assessment" was described as $\Delta CFF_{SD} = CDF_{POS,CI} \times \Delta CCFP$ as a method for calculating the increase in outage risk due to CVLRT extension.
  The estimate of the failure probability for cases assuming one and two test failures will be revised due to an error in the calculation result.

- “ The Guideline should provide guidance for the identification and implementation of robust and effective compensatory measures which are directly related to reducing the potential impact of extending the test interval.”
  Compensatory measures are identified in “Table 28 Review of proposed amendment of JEAC4203” and this report is provided as guidance. We will state that if the risk assessment results in Region II, we will recommend effective compensatory measures be identified and implemented. The sentences in Table 28 will continue to be reviewed by the JEAC Review Committee and revised as appropriate.

Sincerely,

George Apostolakis