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Head

January 15, 2020

Mr. J.W. Stetkar, Chairman

Technical Advisory Committee

Subject: TAC Report titled "PROPOSED NRRC RESEARCH PLAN FOR FISCAL YEAR

                   2020" dated November 19, 2019

Dear Chairman Stetkar:

We appreciated the discussions throughout the review of our research plan and the
Committee's insights. The NRRC reply to the TAC recommendations is as follows.

1. Research plan for fiscal year 2020

In the subject report, the Committee stated: "We did not identify any major gaps in the overall
research plan for fiscal year 2020."   We are gratified to receive this comment.

2. Practical demonstrations to support the development of good quality PRAs

The committee expressed the view that some research activities are about to reach maturity
and can be practically verified.   We have the same opinion and hope to move steadily to the
demonstration stage after discussions with power companies.

3. Recommendations for specific activities

With regard to nine recommendations for specific research activities, we will reconsider the
plans for fiscal year 2020 and beyond for those research activities.   In that case, in addition to
resource constraints, we would like to confirm the needs of electric power companies and
make efforts to make the results more effective in practical use at nuclear power plants.
Responses to each recommendation are as follows.

(1) **Methods and Guidance for Evaluating Risk during Low Power and Shutdown Modes**

By analyzing the results of the expert reviews (including interviews with PRA analysts, if necessary) in fiscal year 2020, we will consider setting up an appropriate research program in fiscal year 2021, if the NRRC finds common research issues concerning the LPSD risk assessment.

(2) **Methods and Guidance for Evaluating Risk from Events that affect Stored Spent Fuel**

By analyzing the results of the expert reviews (including interviews with PRA analysts, if necessary) in fiscal year 2020, we will consider set-up an appropriate research program in fiscal year 2021, if the NRRC finds common research issues to be implemented concerning the spent fuel risk assessment.

(3) **Demonstration of PRA Methods and Models for Evaluating the Risk from Combined Effects of Earthquakes and Tsunamis**

NRRC has been conducting a study which aims at developing methods of hazard and fragility evaluations against superposed seismic and tsunami events. We are planning to investigate and determine whether we need to conduct a full-scope PRA (risk quantification) against the superposed external events for a specific site while continuing the development of the related studies addressed above. We have also recognized that screening of external hazards is a key issue.

(4) **Scope of Multi-Unit PRA Research**

We will consider our resources and technical issues required for integrated assessment of Level 1 and Level 2 risks in fiscal year 2020.

(5) **Planned Use of the Fire PRA Guide**

A revised version of the NRRC Fire PRA Guide will be released on the NRRC web site by the end of fiscal year 2019.   Therefore, the practical use by electric power companies is expected. Moreover, we are discussing a plan for a model plant analysis using the Guide starting in fiscal year 2021.

(6) **Seismic PRA Demonstration Project**

NRRC has been conducting various R&D activities on seismic hazard evaluation and seismic fragility evaluation of SSCs (e.g., ground foundation, surrounding slopes and reactor buildings) using model plants.

Utilities will perform Seismic PRAs using pilot plants the internal PRA of which will be "state-of-the practice" and implementing the output from the NRRC's project mentioned above. This approach will allow utilities to obtain a more comprehensive seismic risk profile.

(7) Level 2 PRA Demonstration Project
Regarding the Level 2 target plant, in consideration of the future practical implementation of Level 2 pilot applications among utilities, we will select an appropriate model plant, including the optimal use of the pilot plant PRA model for Ikata Unit 3 or Kashiwazaki-Kariwa Unit 7.

(8) High Wind Prediction Tool
Basically, we are conducting research based on the needs of utilities, but we will check again.

(9) Phenomenological Relationship Diagram (PRD) Methodology
Basically, we are conducting research based on the needs of utilities, but we will investigate again the usefulness of the proposed PRD methodology and the needs of the utilities. If deemed necessary, we will conduct the comparison of PRD methodology with the conventional methods, such as MAAP etc.

Sincerely,

George Apostolakis