UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

April 4, 2018

The Honorable Kristine L. Svinicki
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: SUMMARY REPORT – 651st MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, MARCH 8-9, 2018

Dear Chairman:

During its 651st meeting, March 8-9, 2018, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following letters and memoranda:

LETTERS

Letters to Victor M. McCree, Executive Director for Operations, NRC, from Michael L. Corradini, Chairman, ACRS:

- "Regulatory Guide 1,232, 'Guidance for Developing Principal Design Criteria for Non-Light-Water Reactors'," dated March 26, 2018
- "Safety Evaluation for ANP-10333P, Revision 0, 'AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Control Rod Drop Accident (CRDA)'," dated March 26, 2018
- "Safety Evaluation for Topical Report APR1400-F-M-TR-13001, Revision 1, 'PLUS7 Fuel Design for the APR1400'," dated March 26, 2018

MEMORANDA

Memoranda to Victor M. McCree, Executive Director for Operations, NRC, from Andrea D. Veil, Executive Director, ACRS:

- "Documentation of Receipt of Applicable Official NRC Notices to the Advisory Committee on Reactor Safeguards for March 2018," dated March 19, 2018

- "Regulatory Guide," dated March 19, 2018
    - RG 1.234, "Evaluating Deviations and Reporting Defect and Noncompliance Under 10 CFR Part 21" (no review)

HIGHLIGHTS OF KEY ISSUES

1. Regulatory Guide 1.232, "Guidance for Developing Principal Design Criteria for Non-Light-Water Reactors"

The Committee met with representatives of the NRC staff to review draft final Regulatory Guide 1.232, "Guidance for Developing Principal Design Criteria for Non-Light-Water Reactors." As part of developing a non-light-water reactor regulatory review process, the staff developed draft regulatory guide, DG-1330, describing the proposed guidance on how the General Design Criteria of 10 CFR Part 50, Appendix A, should be used to establish principal design criteria for non-light-water reactors. Draft final Regulatory Guide 1.232 incorporates public comments regarding DG-1330 and includes technology-specific criteria for sodium-cooled fast reactors and modular high temperature gas-cooled reactors, as well as general advanced reactor design criteria that the staff expects to be applicable to most other designs.

Committee Action

The Committee issued a report to the NRC Executive Director for Operations on this matter, dated March 26, 2018, with the following recommendation and conclusion: 1) The draft final Regulatory Guide 1.232 should be issued and 2) The advanced reactor-, sodium-cooled fast reactor-, and modular high temperature gas-cooled reactor design criteria in the appendices to the regulatory guide may not be appropriate to a specific design (even if it is a variant of the sodium-cooled fast reactor or modular high temperature gas-cooled reactor) and compliance may be difficult to demonstrate, since there is limited operating experience.

2. Topical Report ANP-10333P, Revision 0, "AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Control Rod Drop Accident (CRDA)"

The Committee met with representatives of the NRC staff and Framatome to review topical report ANP-10333P, Revision 0, "AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Control Rod Drop Accident (CRDA)" and the associated staff's safety evaluation. AURORA-B is a multi-physics, multi-code package developed for predicting the dynamic response of boiling water reactors during a variety of transient and accident scenarios, including control rod drops.

Committee Action

The Committee issued a report to the NRC Executive Director for Operations on this matter, dated March 26, 2018, with the following conclusion and recommendation: oh 1) AURORA-B provides an acceptable methodology to evaluate boiling water reactor CRDAs and 2) The staff's safety evaluation, with its associated limitations and conditions, should be issued.

3. APR1400: PLUS7 Fuel

The Committee met with representatives of the NRC staff, Korea Electric Power Corporation, and Korea Hydro & Nuclear Power Company, Ltd., to review the staff's safety evaluation for topical report APR1400-F-M-TR-13001-P, Revision 1, "PLUS7 Fuel Design for the APR1400." This topical report was submitted by KHNP in conjunction with its affiliate company, KEPCO, in support of the APR1400 design certification. The PLUS7 fuel, jointly developed by Westinghouse Electric Corporation and KEPCO, includes additional features beyond the Westinghouse Guardian fuel design to promote mixing and improve heat transfer between the fuel and the coolant, increasing the thermal margin to departure from nucleate boiling. As of 2017, over 5000 PLUS7 fuel assemblies have been produced and placed in service. The South Korean Shin-Kori Unit 3, the first APR1400 plant, began commercial operation using a full core of PLUS7 fuel assemblies in December 2016.

Committee Action

The Committee issued a report to the NRC Executive Director for Operations on this matter, dated March 26, 2018, with the following conclusion and recommendation: 1) There is reasonable assurance use of the PLUS7 fuel design is acceptable for the APR1400, provided the conditions and limitations identified in the safety evaluation are met and 2) The staff should issue their safety evaluation.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee considered the Executive Director for Operations' response of December 8, 2017, to the November 6, 2017 ACRS letter, "Report on the Safety Aspects of the Construction Permit Application for the Northwest Medical Isotopes, LLC, Radioisotope Production Facility." The Committee was satisfied with the Executive Director for Operations' response.

SCHEDULED TOPICS FOR THE 652nd ACRS MEETING

The following topics are scheduled for the 652nd ACRS meeting, to be held on April 5-7, 2018:

- Meeting with the Commission
- Advanced Reactor Functional Containment SECY Paper
- WCAP-17938-P, Revision 2, “AP1000 In-Containment Cables and Non-Metallic Insulation Debris Integrated Assessment”

Sincerely,

/RA/

Michael Corradini
Chairman

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Sincerely,

/RA/

Michael Corradini
Chairman

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OFFICE	**ACRS/TSB**	**SUNSI Review**	**ACRS**	**ACRS**
NAME	MBanks	MBanks	AVeil	MCorradini *(AVeil for)*
DATE	04/4/18	04/4/18	04/4/18	04/4/18

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