



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

November 29, 2017

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

SUBJECT: SUMMARY REPORT – 648th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, NOVEMBER 2-3, 2017

Dear Chairman:

During its 648th meeting, November 2-3, 2017, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following report, letter, and memoranda:

REPORT

Report to Kristine L. Svinicki, Chairman, NRC, from Dennis C. Bley, Chairman, ACRS:

“Report on the Safety Aspects of the Construction Permit Application for Northwest Medical Isotopes, LLC, Radioisotope Production Facility,” dated November 6, 2017

LETTER

Letter to Victor M. McCree, Executive Director for Operations, NRC, from Dennis C. Bley, Chairman, ACRS:

- “State-of-the-Art Reactor Consequence Analysis (SOARCA): Sequoyah Integrated Deterministic and Uncertainty Analyses,” dated November 16, 2017

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 November 2017,” dated November 16, 2017

- “Regulatory Guide,” dated November 16, 2017
 - Draft Regulatory Guide DG-1333, “Guidelines for Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems” (not review at this time, but the Committee would like an opportunity to review after the public comment period)

HIGHLIGHTS OF KEY ISSUES

1. Northwest Medical Isotopes Mo-99 Radioisotope Production Facility

The Committee met with representatives of the NRC staff and Northwest Medical Isotopes, LLC (NWMI), to review the staff’s draft safety evaluation report on NWMI’s construction permit application to construct a radioisotope production facility to produce ⁹⁹Mo for use in medical procedures. The Committee’s report fulfills the requirement of Section 182b of the Atomic Energy Act of 1954, as amended, that the ACRS shall review each application under Section 103 or Section 104b for a construction permit or an operating license for a facility.

Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated November 6, 2017, with the following recommendations: NWMI has submitted a preliminary design for a facility that addresses hazards associated with the extraction of ⁹⁹Mo from irradiated targets and the fabrication of targets for irradiation.

- Once the design is finalized, the proposed facility can be constructed and licensed for operation with adequate protection of the public health and safety and no undue risk to the environment.
- A construction permit for the proposed radioisotope production facility can be issue to NWMI.

2. State-of-the-Art Reactor Consequence Analyses (SOARCA) Project – Sequoyah

The Committee met with representatives of the NRC staff and their contractors to review the draft report on “State-of-the-Art Reactor Consequence Analysis (SOARCA) Project: Sequoyah Integrated Deterministic and Uncertainty Analyses.” The original SOARCA report published the results from integrated accident progression and consequence analysis for the Peach Bottom (boiling-water reactor with a Mark I containment) and Surry (pressurized-water reactor with a large dry containment) nuclear power plants. The Sequoyah study includes a focused evaluation of severe accident response for a pressurized-water reactor with an ice condenser containment.

Committee Action

The Committee issued a report to the NRC Executive Director for Operations on this matter, dated November 16, 2017, with the following conclusions and recommendations:

- 1) The Sequoyah SOARCA study has significantly advanced the understanding of severe accident progression in a pressurized-water reactor with an ice condenser containment. It demonstrates the importance of an integrated assessment of uncertainties that account for the best available knowledge about equipment performance, thermal-hydraulic phenomena, and emergency planning.
- 2) This study evaluates the conditional site-specific consequences from a short-term and a long-term station blackout scenario, which are tailored to examine the effects from hydrogen generation, ignition, and containment failure vulnerability. It does not examine other scenarios that may be important for containment failure or bypass, and it does not account for accident mitigation equipment and strategies that have been implemented at Sequoyah. The results from this study should not be extrapolated to other pressurized-water reactors with ice condenser containments at other sites.
- 3) The Sequoyah SOARCA report should be published after the staff more clearly documents the following issues and additional research needed for their resolution: potentially important modeling uncertainties, justification for safety valve failure rates, and MELCOR failures to complete some simulations involving an early stuck-open pressurizer safety valve.
- 4) The staff should examine and resolve the issues regarding safety valve failure rates and MELCOR performance before further enhancements are made to the SOARCA studies.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee considered the Executive Director for Operations' response of September 11, 2017, to the June 26, 2017 ACRS letter, "Safety Evaluation of the NuScale Power, LLC Licensing Topical Report TR-0815-16497-P, 'Safety Classification of Passive Nuclear Power Plant Electrical Systems,' Revision 1." The Committee decided that its report and the staff's response adequately describe the differing points of opinion on this matter, and no further written exchange was needed.

SCHEDULED TOPICS FOR THE 649th ACRS MEETING

The following topics are scheduled for the 649th ACRS meeting, to be held on December 7-8, 2017:

- Annual Reactor Operating Experience Information Briefing
- Assessment of the Quality of Selected NRC Research Projects

Sincerely,

/RA/

Dennis C. Bley
Chairman

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Sincerely,

/RA/

Dennis C. Bley
Chairman

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OFFICE	ACRS/TSB	SUNSI Review	ACRS	ACRS
NAME	MBanks	MBanks	AVeil	DBley (<i>AV for</i>)
DATE	11/28/17	11/28/17	11/29/17	11/29/17

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