

December 14, 2000

The Honorable Richard A. Meserve
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Chairman Meserve:

SUBJECT: SUMMARY REPORT — 122ND MEETING OF THE ADVISORY COMMITTEE ON
NUCLEAR WASTE ON OCTOBER 17–19, 2000, AND OTHER RELATED COMMITTEE
ACTIVITIES

During its 122nd meeting October 17–19, 2000, at Two White Flint North, 11545 Rockville Pike, Rockville, Maryland, the Advisory Committee on Nuclear Waste (ACNW or the Committee) discussed several matters and approved the following reports:

“Comments on NRC Draft Policy Statement on Decommissioning Criteria for the West Valley Demonstration Project and West Valley Site” (Report to The Honorable Richard A. Meserve, Chairman, NRC, from B. John Garrick, Chairman, ACNW, November 1, 2000).

“Advisory Committee on Nuclear Waste — Yucca Mountain Stakeholders Meeting” (Report to The Honorable Richard A. Meserve, Chairman, NRC, from B. John Garrick, Chairman, ACNW, November 1, 2000).

HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE

1. Planning and Procedures

The ACNW approved issues to be considered during the 123rd ACNW meeting to be held on November 27–29, 2000. Topics discussed included the following:

- **Planning and Procedures** — The Chairman will open the meeting with a few brief remarks. The Committee will then review items under consideration at this meeting and consider topics proposed for future consideration by the full Committee.
- **Preparation of ACNW Reports** — The Committee will discuss planned reports on the following topics: 10 CFR Part 40, entombment, transportation, alloy C-22, and other matters considered during the 123rd ACNW meeting.

- **Objectives of ACNW's CNWRA Review** — The Committee will discuss the objectives of its review of the Center for Nuclear Waste Regulatory Analyses' (CNWRA's) research and technical assistance program.
- **Program Overview: Developing Review Capability and Risk Information for Pre- and Post-Closure** — The Committee will hear and discuss presentations by representatives of the NRC staff, CNWRA, and consultants on a proposed regulatory framework, regulatory guidance for site recommendation and license application reviews, analytical tools, and field and laboratory experimental facilities.
- **Progress Toward Key Technical Issue Resolution** — The Committee will hear and discuss a presentation by the NRC staff regarding the issue resolution process and its current status.
- **ACNW's Sufficiency Review Task Action Plan** — The Committee will discuss its Sufficiency Review Task Action Plan.
- **Yucca Mountain Total System Performance Assessment Code and External Review** — The Committee will discuss the total system performance assessment (TPA) external review and current and planned code capability.
- **Capability of NRC Staff to Evaluate Risk-Significance of Information Submitted by DOE for Post-Closure** — The Committee will hear presentations on the analytical tools and methods for evaluating the relative importance of issues and subissues; parameter-level sensitivity methods; post-processor techniques; philosophy for addressing uncertainty; and the use of the TPA code to support decision making for site recommendation and license application.
- **Pre-Closure Safety Analysis Tool** — The Committee will discuss the status of the Pre-Closure Safety Analysis Tool and a sample application.
- **Alloy C-22 Studies** — The Committee will review the Department of Energy (DOE) waste package material selection and degradation studies and applicable CNWRA confirmatory studies.
- **Draft NRC's Office of Nuclear Regulatory Research Plan for Waste Research** — The Committee will discuss and review the Draft Plan for Research Supporting the Nuclear Waste Safety Arena.
- **Tour of Experimental Facilities** — The Committee will tour selected CNWRA experimental facilities.
- **Investigation and Importance of Coupled Processes Related to Repository Design** — The Committee will discuss ongoing CNWRA investigations of coupled processes.

2. Discussion of Updated Site Suitability and License Application Task Action Plan

The Committee reviewed agreements from the September ACNW meeting concerning the Task Action Plan (TAP) and revisions made to the TAP since the September meeting, including changes in scope and strategy, technical exchange meetings and commitments to attend these meetings, progress since last month, and remaining issues and questions. In the revised approach, instead of a comprehensive independent review of the DOE's Site Recommendation and Considerations Report (SRCR), each ACNW member will perform a vertical slice review of one open, closed, or closed pending issue in one of the key technical issues (KTIs). The vertical slice will involve reviewing the process model reports, analysis and model reports, issue resolution status reports, etc., and using the Yucca Mountain Review Plan, if desired, to provide insight into the staff's resolution of KTIs. To meet the objectives of the task action plan, the lead member, the supporting staff member, and the assigned consultant will determine whether the NRC's issue resolution finding and the information being requested of DOE are defensible and realistic, and whether a risk-based approach is evident. Each member and supporting staff member will identify which KTI and issues or subissues they have selected for the vertical slice review and develop a one page summary.

Conclusions/Action Items

Following a discussion on the approach and possible KTIs for consideration, the Committee members agreed to the revised approach and schedule. The Committee discussed writing possible letter reports at the CNWRA meeting, including a letter report on the KTI resolution process (possibly featuring a KTI, such as igneous activity, that has been resolved successfully).

3. West Valley License Termination Report

The Committee heard presentations on the West Valley draft policy statement and decided to write a letter report to the Commission on this topic. In its report, the Committee will recommend that there be clear lines of regulatory responsibility. The ACNW will also ask how risk-informed and flexible the license termination rule will be when applied to the West Valley Demonstration Project.

Conclusions/Action Items

The Committee wrote a letter report to the Commission on this topic on November 1, 2000.

4. Corrosion Resistance of Alloy C-22

The Committee was briefed by corrosion researchers, sponsored by the State of Nevada, on their preliminary research results for alloy C-22 corrosion. The researchers stated that the literature data and nuclear power reactor experience show that certain trace chemical species in water (e.g., lead and mercury) may enhance the corrosion rate of alloys similar to alloy C-22. They said that DOE has not investigated this possible degradation mode for the proposed waste package material. The state's consultants stated that their results show that under specific laboratory testing conditions alloy C-22 may degrade relatively quickly. They claimed that this was due to the

presence of lead and other chemical species in the test solutions. They also discussed the possible presence of these trace elements in the Yucca Mountain environment. The Committee questioned the researchers about the relevance of the specific conditions in their laboratory experiments to potential environmental conditions at the proposed Yucca Mountain high-level waste repository.

Conclusions/Action Items

The Committee will hear presentations on this topic with representatives of NRC/CNWRA and DOE during its November meeting. After this review, the Committee plans to write a letter report to the Commission on this issue.

5. Entombment Option for Decommissioning Power Reactors

The Committee was briefed on the entombment option for decommissioning power reactors. The Commission has directed the staff to keep the ACNW informed on this subject. At the meeting, a representative of the Nuclear Energy Institute stated that the industry supports this option in light of the uncertainty associated with the disposal of low-level waste.

Entombment is defined as an alternative when (1) the radioactive contaminants are encased in structurally long-lived material, (2) the structure is maintained, and (3) surveillance is continued until the radioactivity decays to levels permitting termination of the license and unrestricted release of the site. Two types of entombment were being considered, namely, *immediate* entombment (material sealed and monitored for 130 years) and *deferred* entombment (material placed into safe storage for 100–120 years, then sealed and monitored for another 10 years). The advantages of entombment over prompt dismantlement is the greatly decreased estimated personnel exposures and disposal costs.

After discussing the current requirements for entombment, it was noted that the staff intends to propose the release of an Advance Notice of Proposed Rulemaking (ANPR), a mechanism that provides for the involvement of stakeholders. The evaluation of the responses to that ANPR is to be completed and reported back to the Commission by February 2001.

Conclusions/Action Items

The Committee indicated its desire to see the ANPR as soon as it is released and its intention to comment on this issue.

6. Consultant Report

The Committee heard comments from William J. Hinze, consultant for the ACNW, on recent research activities in the areas of igneous activity and on structural deformation technical exchange meetings between NRC and DOE staff. The purpose of these meetings is to provide a basis for resolving open issues related to the KTI on structural deformation and seismicity. Dr. Hinze stated that DOE had satisfied many of the concerns previously identified by the NRC staff in

the seismicity and structural deformation KTI. As a result, the tectonic framework subissue has been closed. However, the NRC staff has several concerns about the remaining three subissues such as faulting and fracturing, structural deformation, and seismicity. The concerns are substantive, and DOE has agreed to respond to them issues. Meanwhile, the status of these three subissues remain closed pending.

Conclusions/Action Items

ACNW will continue its discussion of these issues in future meetings.

7. 10 CFR Part 40 Low-Level Radioactive Waste Source Material and Improvement of Control of Regulated Source Material

The Committee heard a staff presentation on exemptions in 10 CFR Part 40 for material less than 0.05 percent by weight source material (uranium and thorium). The staff has been tasked by the Commission to develop a more risk-informed and coherent set of requirements for licensing source material.

Conclusions/Action Items

The ACNW may write a letter report to the Commission on this topic during its next meeting.

Sincerely,

/RA/

B. John Garrick
Chairman