



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON NUCLEAR WASTE
WASHINGTON, D.C. 20555-0001

ACNWS-0110

PDR

December 27, 1999

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

SUBJECT: SUMMARY REPORT—114TH MEETING OF THE ADVISORY COMMITTEE ON
NUCLEAR WASTE, NOVEMBER 17–19, 1999, AND OTHER RELATED COMMIT-
TEE ACTIVITIES

Dear Chairman Meserve:

During its 114th meeting on November 17–19, 1999, at Two White Flint North, Room T-2 B3, 11545 Rockville Pike, Rockville, Maryland, the Advisory Committee on Nuclear Waste (ACNW or the Committee) discussed the following issues.

HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE

1. **Discussion of Research Plan for Environmental Transport**

Ms. Margaret V. Federline, Deputy Director of the Office of Nuclear Regulatory Research (RES), discussed the self-assessment process utilized by RES for planning and prioritizing research activities. Of particular interest to the Committee were RES activities in the waste arena and their relationship to NRC performance goals. She noted the three critical aspects of the RES vision, namely, to be technically independent from licensees, to be realistic in the technical bases, and to be forward looking.

After describing the approach used by RES, Ms. Federline discussed the multi-attribute, decision-analytic hierarchy process, as well as some of the process refinements that will contribute not only by simplifying the process but also by making it more transparent. She closed her presentation by discussing the Fiscal Year 1999 self-assessment results and the link between agency goals and operating plan milestones.

Ms. Cheryl Trottier, Chief of the Radiation Protection, Environmental Risk and Waste Management Branch, RES, discussed the radionuclide transport and decommissioning projects underway in her branch. After indicating several projects that support the performance goal of maintaining safety and those that support the goal of reducing unnecessary regulatory burden, she focused on the path being taken over the next 3 years to provide more realistic dose models. This discussion provided an update to the Committee on the status of the DandD, RESRAD, and SEDSS codes. Ms. Trottier ended her discussion by noting RES's intent to obtain significant stakeholder and industry input for the definition of future research efforts.

RSO2

Conclusions/Actions

The Committee will continue to follow relevant research activities and will factor this presentation into its annual letter report to the Commission on agency waste-related research.

2. Rubblization

Mr. Larry Camper, Chief of the Decommissioning Projects Branch, NMSS, presented the rubblized dismantlement approach to meeting the license termination rule. Mr. Camper was assisted by Mr. Larry Pittiglio from his branch.

After describing the concept, Mr. Camper discussed the issues and concerns associated with the concept, noting that the path to resolution involved many stakeholders. He indicated that although the staff had yet to receive an application utilizing such an approach, in discussions with the industry (noticeably the licensee for Maine Yankee), it appears likely that an application using the rubblization approach will be submitted. At this time, the Committee is preparing a paper advising the Commission of the concept and committing to inform the Commission in greater detail if an application is received requesting approval of the concept.

Representatives from the Nuclear Energy Institute and the Maine Yankee facility clarified several questions asked by the Committee, and a representative from the Office of the General Counsel discussed several legal questions.

Conclusions/Actions

The Committee indicated its intent to follow this issue closely as part of its overall responsibilities in the area of decommissioning. It also intends to provide a letter on the rubblization concept.

3. Discussion of 10 CFR Part 63, NRC's Proposed High-Level Waste Regulation

Mr. Timothy McCartin, Office of Nuclear Material Safety and Safeguards (NMSS), provided a summary of the public comments on draft 10 CFR Part 63 and reviewed the schedule for finalizing the rule. He described the categories of public comments and the staff's proposed responses. He also discussed the NRC comments on the proposed Environmental Protection Agency (EPA) High-Level Waste (HLW) standard. Ms. Christiana Lui, NMSS, discussed the staff's current thinking on multiple barriers in 10 CFR Part 63 and public comments on multiple barriers. Mr. Robert Bernero made comments following the staff's presentations.

The staff received approximately 100 sets of written comments, approximately 700 specific comments, and comments from five public meetings. The staff will use an issue, comment, and response format to address the comments. The staff may also plan public workshops to communicate responses to comments. The staff plans to complete responses to all comments by December 30, 1999, and to complete the final draft rule by January 31, 2000. The

staff will submit to the Commission the rulemaking package, along with the first revision of the draft Yucca Mountain Standard Review Plan by March 31, 2000.

NRC grouped the public comments into the following categories: NRC's regulatory authority; safety analysis; dose limit; lack of ground water protection; multiple barriers; additional requirements, including retrievability, human intrusion, emergency planning, quality assurance, changes, tests, and experiments; transportation, and selection of the Yucca Mountain site. Mr. McCartin summarized comments and NRC responses under these categories. The NRC is still considering how to address several questions from the public, including (1) Why does the NRC require the Department of Energy (DOE) to evaluate alternative designs? (2) Should NRC require DOE to demonstrate its plans for retrieval? (3) Should NRC prescribe a more realistic approach for the stylized calculation of human intrusion? (4) Will NRC require that DOE provide funding to local communities to enhance emergency preparedness? (5) Should NRC use an adjudicatory or a legislative hearing process? and (6) Should NRC allow DOE to receive waste before completion of construction? Mr. McCartin indicated that he would appreciate the Committee's comments on the topic.

Mr. McCartin reviewed the three points NRC made to EPA on HLW standard 40 CFR Part 197, that is, (1) NRC objects to the inclusion of separate ground water protection requirements because these requirements result in non-uniform risk levels, are a misapplication of the maximum contaminant levels, and far exceed what is needed for public health and safety; (2) NRC objects to those portions of the proposed standard that address technical matters of compliance determination and implementation; and (3) NRC objects to the 15-mrem-per-year individual dose limit from all pathways.

Ms. Lui briefed the Committee on the staff's current thinking on philosophical and technical issues regarding multiple barriers and highlights from the meeting on November 2, 1999, with stakeholders on defense in depth held in Las Vegas, Nevada.

Ms. Lui indicated that the multiple-barrier requirement is intended to provide confidence that known uncertainties are addressed in performance assessment (PA) and that the repository system is sufficiently robust to account for imperfect knowledge. She noted that the NRC intends for DOE to conduct an as-realistic-as-possible PA. Multiple barriers are intended to go beyond what would be needed for the PA alone.

DOE is required to assess all significant impacts on safety in the PA, identify all barriers and describe and quantify their capabilities, perform additional analyses to show that safety does not wholly depend on a single barrier, and provide a technical basis for the analyses. Further, DOE must demonstrate multiple barriers by showing that the repository system has the ability to compensate for an under-performing barrier. This goal can be accomplished by assuming the barriers do not perform as intended.

One of the technical issues the staff is evaluating includes the degree of under-performance that should be acceptable. The staff does recommend that the barrier performance should be performance based rather than prescribed. She also described other NRC staff recom-

mendations for several technical issues. For example, regarding how NRC should evaluate the outcome of barrier under-performance analysis, the staff recommends that all the evidence be weighed, rather than establishing a predetermined numerical limit.

Ms. Lui indicated that members of the public have suggested using the approach in 10 CFR Part 60, the approach in the proposed 10 CFR Part 63, and the approach in the proposed 10 CFR Part 63 with clarification. Another suggestion from the public is that the NRC should specify performance of individual barriers. The NRC does not recommend this step because the goal is for the barriers to work together to meet the safety objective.

In its review, the NRC will determine if DOE has met all of the requirements, conduct a detailed technical evaluation of DOE's work, make a determination of acceptability, and conduct independent calculations to probe DOE's analysis. In reviewing DOE's PA, NRC will evaluate the data collected and the data quality, conceptual and mathematical models, application of the models, results, and conclusions. In ensuring that DOE has demonstrated multiple barriers, NRC will examine whether DOE has demonstrated a contribution from both natural and engineered barriers and has conducted additional analyses that assume barriers do not perform as intended ("what if" analyses).

The staff plans to modify the statement of considerations of the rule to clarify the intent of the multiple barriers requirement and discuss the potential methods DOE can use to demonstrate multiple barriers.

Conclusions/Actions

The ACNW indicated that the approach is flexible and that it generally approves of the approach.

4. Annotated Outline for a Yucca Mountain Review Plan

The ACNW was given a status update by representatives from the NRC and the Center for Nuclear Waste Regulatory Analyses staffs on the development of the Yucca Mountain Review Plan (YMRP). The staff described its progress in developing the YMRP, including utilizing guidance from other staff initiatives in formulating the YMRP where appropriate and identifying areas in which support may be needed from other NRC entities. The staff also described the progress in the preclosure and postclosure safety areas. The staff noted that it is streamlining its efforts by systematically examining work performed in the Issue Resolution Status Reports, focusing on the DOE's safety strategy and prioritizing work based on risk significance.

Conclusions/Actions

The ACNW will continue to follow the development of the YMRP.

5. **NRC Staff Review of the Yucca Mountain Draft Environmental Impact Statement**

Representatives from the NRC staff presented the results of their review of DOE's draft environmental impact statement (DEIS) for the proposed Yucca Mountain repository. The staff reviewed the document for overall completeness and the validity of the evaluation methods, for example, Do the analyses support the conclusions? The staff identified 10 areas of concern, which included the evaluations associated with transportation, consultations, the "no-action" alternative, and socioeconomic impacts.

Conclusions/Actions

The Committee intends to meet with DOE representatives in December and to complete a report to the Commission in January 2000.

6. **Meeting With Managers From the Office of Nuclear Material Safety and Safeguards**

Mr. William Kane, Director of NMSS, discussed priority issues for NMSS on which ACNW collaboration would be welcomed. He mentioned areas in the high- and low-level waste fields, in the decommissioning and transportation fields, and for radiological assessment for clearance of equipment and materials from nuclear facilities.

Conclusions/Actions

Mr. Kane will continue to meet periodically with the Committee.

PROPOSED SCHEDULE FOR THE 115th ACNW MEETING

The Committee agreed to consider the following issues at its 115th meeting on December 14-16, 1999:

- **ACNW Planning and Procedures** — The Committee will hear a briefing from its staff on issues to be covered during this meeting. The Committee will also consider topics proposed for future consideration by the full Committee and Working Groups. These topics will include strategic planning and self-assessment, as well as topics for the next Commission briefing. The Committee will discuss ACNW-related activities of individual members. The Committee may also discuss potential ACNW members.
- **Department of Energy's Yucca Mountain Draft Environmental Impact Statement** — The Committee will discuss various aspects of the draft environmental impact statement with representatives of DOE. Topics will likely include a discussion on transportation issues, the nature of public comments to date, and future activities on the part of the DOE.
- **Prepare For and Meet With the NRC Commissioners** — The Committee will meet with the Commissioners to discuss items of mutual interest. Topics are expected to include risk

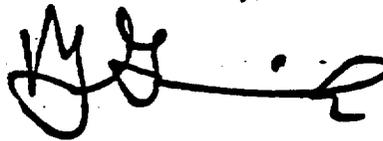
communications, the repository design white paper, NRC's proposed HLW regulation, decommissioning issues, and the ACNW action plan and self-assessment.

- **Clearance Rule** — The Committee will discuss this proposed rule. The rule will address the level of radioactive contamination on solid material that is acceptable for unrestricted release.
- **Meeting With the Director of the Division of Waste Management, Office of Nuclear Material Safety and Safeguards** — The Committee will meet with the Director of the Division of Waste Management to discuss items of mutual interest.
- **Preparation of ACNW Reports** — The Committee will discuss planned reports, including reports on the Yucca Mountain DEIS, the rubbleization decommissioning option, waste-related research, the role of safety assessment in regulatory decisionmaking, defense in depth, the proposed NRC HLW regulation, and other topics discussed during this and previous meetings.

OTHER RELATED ACTIVITIES OF THE COMMITTEE

The 115th ACNW meeting was held on December 14-16, 1999.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. John Garrick', with a long horizontal flourish extending to the right.

B. John Garrick
Chairman