



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

ACNWS-0154

May 16, 2005

The Honorable Nils J. Diaz
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: SUMMARY REPORT ON THE 159TH MEETING OF THE ADVISORY COMMITTEE
ON NUCLEAR WASTE, APRIL 18–19, 2005, AND OTHER RELATED
COMMITTEE ACTIVITIES

Dear Chairman Diaz:

During its 159th meeting April 18–19, 2005, the Advisory Committee on Nuclear Waste (ACNW) discussed the following matters.

REPORT

Report to Nils J. Diaz, Chairman, NRC, from Michael T. Ryan, Chairman, ACNW, Subject: Briefing on RES-USDA Research: Estimating Ground Water Recharge and Evaluating Model Abstraction Techniques, dated April 27, 2005

HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE

1. Office of Nuclear Material Safety and Safeguards Division Directors' Quarterly Program Update

Directors from the Divisions of High-Level Waste Repository Safety (HLWRS) and Waste Management and Environmental Protection (DWMEP) briefed the Committee on recent activities of interest in their respective divisions.

HLWRS activities are oriented around the completion of pre-licensing activities in anticipation of a license application for the Yucca Mountain repository scheduled for submittal in December of 2005. Consequently, HLWRS expects to conduct the following activities: make a determination for docketing the application, formulate a position, adopt the environmental impact statement (EIS) for the repository, prepare for adjudicatory hearings before the licensing board, prepare to conduct a limited number of inspection activities, respond to allegations, monitor the Department of Energy's performance confirmation activities, improve NRC's understanding in the consequence modeling area, and perform package performance studies.

The Director of DWMEP provided an overview of activities, including new responsibilities for waste incidental to reprocessing under the 2005 National Defense Authorization Act, the National Low Level Waste Program, greater-than-Class C (GTTC) waste disposal, the Integrated Decommissioning Improvement Program, the legislative proposal for NRC to regulate radium and accelerator-produced materials, risk-informing the Division's activities, integration of the ACNW action plan into the NMSS operation plan, and responses to recent staff requirement memoranda.

Conclusions/Action Items

DWHLW agreed to:

1. Provide a schedule of deliverables from the NRC's Center for Nuclear Waste Regulatory Analyses (CNWRA).
2. Provide supporting technical documents for the TPA code to the Committee as they become publicly available.
3. Inform the Committee when the revised TPA code will be available.
4. Provide the Commission's schedule for the decision on waste confidence.
5. Develop a briefing for the Committee on Waste Confidence.

DWMEP stated the following plans for interactions with the Committee:

1. As appropriate, they will request that the Committee review documents in preparation for international meetings.
2. DWMEP will possibly brief the Committee on the preparation of the Joint Convention report this summer.
3. DWMEP will brief the Committee on the decommissioning guidance sometime in June.
4. DWMEP will brief the Committee, combining the topics of the draft rulemaking package and the EIS for the control and disposition of solid materials.
5. DWMEP will give a combined briefing to the Committee on the United States Enrichment Corporation environmental reviews and safety reviews.

2. Low-Level Waste Annual Update

The staff briefed the Committee on planned and emerging activities in the area of low-level waste (LLW). The staff discussed the National Low-Level Waste program, NRC's LLW program (which tracks the national program), and recommendations on how the Committee can enhance the performance of the staff's work. In particular, the staff discussed the uncertainty of future disposal options, developments in congressional

interest, the General Accounting Office report on storage of Class B and C waste, the National Academy of Sciences (NAS) Study on low activity waste disposal, major milestones in past LLW activities, and comparison of radioactivity levels in radioactive wastes. The staff also discussed the revision of the NRC's LLW storage guidance, the standard review plan for 10 CFR 20.2002 requests, GTCC disposal, and involvement with outside agencies and stakeholders.

Conclusions/Action Items

This briefing was for information only. The Committee plans to follow up on the progress of the staff's activities annually.

The staff stated that it will consider briefing the Committee on the GTCC EIS and licensing criteria. ACNW staff committed to brief the Committee on applying reactor risk approaches to nonreactor issues.

3. ACNW White Paper on Low-Level Radioactive Waste

The Committee commented on the revised draft outline for the proposed white paper. In particular, the Committee suggested reference sources that should be considered in the paper.

The Committee added a fifth section on "Next Steps" and plans to provide an up-front statement of the overarching objective.

Conclusions/Action Items

C The next version of the white paper will include expanded text.

C The Committee agreed to develop a scope statement. (On April 18 Dr. Ryan distributed a paragraph on the scope and the Members provided comments.)

4. Discussion of the April 14–15, 2005, Visit to the Center for Nuclear Waste Regulatory Analyses

A group of ACNW members and ACNW consultants visited the CNWRA in San Antonio, Texas, on April 13–15, 2005, to gather information for later presentation to the ACNW in preparation for the ACNW discussion of the CNWRA work and an ACNW report to the Commission. The meeting was attended by ACNW Members R. Weiner, W. Hinze, and J. Clarke and ACNW consultants B. Marsh and P. Shewmon. The NRC staff and the CNWRA staffs were provided a detailed agenda before the meeting. The agenda included various questions and specific topics that the ACNW members wanted addressed. The principal focus of the discussions was the CNWRA's work on igneous activity. The discussions also addressed selected topics related to decommissioning and CNWRA work on Yucca Mountain related to container life, source term, the near-field environment, radionuclide retardation, spent fuel dissolution, site seismicity, and performance assessment. The ACNW Members who participated in this visit to the CNWRA

provided a brief summary of their visit during this session of the Committee's 159th meeting.

Conclusions/Action Items

The ACNW Members who participated in the visit will develop a summary and analysis of the responses they received to the questions and topics identified in the agenda and will identify what additional information is needed. This information will be provided to the ACNW and to the NRC staff.

5. National Sealed Source Tracking System

The NRC staff briefed the Committee on the current rulemaking being used to develop a National Sealed Source Tracking System. The tracking system would include isotopes identified in the International Atomic Energy Agency Code of Conduct plus seven additional isotopes the Commission added to the list. Licensees will be required to report the manufacture of new sources, the transfer of sources to another licensee, receipt of sources, and the disposal of sources.

Conclusions/Action Items

The ACNW plans to send a report to the Commission on the National Sealed Source Tracking System after the Committee's June 2005 meeting.

6. Department of Energy Repository Design

A DOE representative updated the Committee on the status of its geologic repository design. Mr. Bruce Hinkley of the engineering consulting firm Shaw, Stone and Webster, a DOE contractor, did the briefing on behalf of DOE. Mr. Hinkley discussed a number of recent design changes being considered by the Department. The most important proposed changes were a return to a rail-based waste package canister transporter system within the geologic repository operations area and a smaller fuel-aging facility pad with a capacity of 21,000 MTHM (down from an earlier proposed design capacity of 40,000 MTHM). Mr. Hinkley also reviewed DOE's use of the fuel-aging facility for thermal management of the underground repository.

DOE has previously suggested that the license application might contain mostly conceptual information at the construction authorization phase and that more detailed design information will be given when DOE seeks a license to receive and emplace waste. Mr. Hinkley noted that the NRC staff has been critical of this proposed approach and that there had recently been a DOE/NRC technical exchange to review the level-of-detail design issues. The NRC staff is scheduled to brief the Committee on the results of these recent DOE meetings later in the calendar year.

Conclusions/Action Items

The Committee intends to track program developments in this area and to advise the Commission on repository design as requested.

7. Transportation Aspects of the Yucca Mountain Environmental Impact Statement Update

The purpose of this briefing was to update the Committee on the DOE Office of National Transportation's (ONT's) ongoing and planned activities with regard to the transportation of spent fuel and high-level radioactive waste to a potential geologic repository at Yucca Mountain, Nevada.

Gary Lanthrum, ONT Director, briefed the Committee on the responsibilities of his office, and summarized ONT's organizational structure and ongoing and planned activities. He said that ONT was established in DOE's Office of Civilian Radioactive Waste Management (OCRWM) in August 2003. The office currently has two organizational units, the Operations Development Division and the Infrastructure Development Division. The office will conduct activities in four areas: institutional activities, operational infrastructure, fleet acquisition, and Nevada rail. Mr. Lanthrum said that ONT responsibilities are meeting the requirements of the Nuclear Waste Policy Act, interacting with the stakeholders, and integrating transportation program activities. He said current office priorities are to support the Nevada "rail alignment" EIS and activities of the State regional group (SRG), cooperative agreements, tribal interactions, and Transportation External Coordination (TEC) Working Group.

Mr. Lanthrum discussed some of ONT's accomplishments in FY 2004 and planned activities for FY 2005. He said DOE announced its preference for the Caliente corridor in December 2003 and issued a notice of intent in April 2004 to determine a rail alignment and prepare an EIS for construction and operation of a rail line for transportation of waste in Nevada. He said DOE has held public meetings at five locations in Nevada and has received over 4,000 comments, and that work on the rail alignment EIS was moving forward. He said that the actual funding for 2005 was significantly below the budget request. He added that in FY 2005 the office will focus on acquisitions that will advance infrastructure development without major capital requirements, on completing field surveys and technical data collection along the Caliente corridor, and on issuing a draft and final EIS and a "record of decision" for the rail alignment. He said his office plans to complete the final EIS in FY 2006.

The shipping cask system requirements and the next steps in cask procurement were also discussed, along with fleet management and support facilities, operational planning, security, and institutional activities. Mr. Lanthrum answered questions from the Committee Members.

Conclusions/Action Items

The Committee will follow up on the shipping cask testing that the NRC may decide to undertake in the near future.

8. Electric Power Research Institute Topical Report on Future System States

In a decision dated July 9, 2004, the U.S. Court of Appeals for the District of Columbia Circuit found that the 10,000-year compliance period (time of compliance or TOC) specified by the U.S. Environmental Protection Agency (EPA) for the Yucca Mountain site-specific radiation standards in 40 CFR Part 197 violated Section 801 of the Energy Policy Act of 1992. EPA is now revising Part 197 to be consistent with the 1995 findings and recommendations of the NAS. Over the last several months, program stakeholders have given the ACNW their views on what changes to the regulatory framework are necessary to address the 2004 court remand.

A representative from the Electric Power Research Institute (EPRI) briefed the ACNW on the Institute's interim report on "Yucca Mountain Licensing Standard Options for Very Long Time Frames—Technical Bases for the Standard and Compliance Assessments." For several years, EPRI and its contractors have been conducting performance assessments for the Yucca Mountain site independent of the DOE and NRC staff assessments.

Because a much longer regulatory TOC is now under consideration for Yucca Mountain, in the 2005 interim report, EPRI is reminding program participants of the internationally recognized concern about the utility of long-timeframe performance assessment results to decisionmakers given the temporal uncertainties of the analyses. Because of temporal variations in geologic repository system components (both natural and man-made), NAS has recommended the use of incremental or discrete timeframes for evaluating repository performance, similar to earlier ACNW recommendations. The EPRI 2005 interim report concerns potential regulatory approaches for implementing the ruling that are consistent with the 1995 NAS recommendations. The EPRI 2005 report argues that some aspects of the Yucca Mountain system, particularly the future climate at the Yucca Mountain site, must be treated fundamentally differently if the TOC is extended beyond 10,000 years. This is because uncertainties in the estimate of peak health risk (dose risk) grow with time until roughly the time of peak risk. For example, uncertainties in future climate states (magnitude and rate of change) increase with time, especially beyond 10,000 years. Other key EPRI recommendations were as follows:

- Because the court rejected all challenges to the existing regulations for the first 10,000 years, EPA should specify beyond 10,000-year requirements as separate, stand-alone provisions and let stand the requirements for the first 10,000 years.
- Another approach should be adopted for timeframes beyond 10,000 years if the regulation as a whole is to remain implementable.
- NRC should use a "stylized" approach to identifying scenarios and the required level of rigor in the models for periods beyond 10,000 years.

Conclusions/Action Items

EPRI's representatives said that they sought feedback from all interested parties on the content and recommendations made in their 2005 interim report. The Committee plans to review this report and report back to the Commission.

9. Japan Waste Management Visit

In final preparation for the Japan trip, the lead staffer gave a presentation on the itinerary. The Members will visit nuclear regulators in Tokyo, travel to the high-level waste demonstration site in northern Japan, and then visit the nuclear complexes at Rokkasho-Mura and Tokai-Mura. The Members reviewed three of the five talks that the ACNW travelers will present in Tokyo on May 16, 2005. The Japanese have requested that Chairman Ryan give his talk on low-level waste twice, in Tokyo and then at Rokkasho.

10. Proposed Agenda for the 160th ACNW Meeting

The Committee agreed to consider the following topics at its 160th meeting on June 15–17, 2005:

- C Full Report on the Visit to the CNWRA in San Antonio, Texas
- C Status of Seismic Design Issues for Yucca Mountain
- C License Termination Rule Working Group Meeting
- C Risk Informing Office of Nuclear Material Safety and Safeguards Activities
- C Generic Waste-Related Research in the Office of Nuclear Regulatory Research
- C Control and Disposition of Solid Materials
- C International Commission on Radiological Protection — Foundation Documents
- C Preparation of ACNW Reports

Sincerely,

/RA/

Michael T. Ryan
Chairman