

Revised March 19, 2007

March 7, 2007

The Honorable Dale E. Klein  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Dear Chairman Klein:

SUBJECT: SUMMARY REPORT—176TH MEETING OF THE ADVISORY COMMITTEE ON  
NUCLEAR WASTE, FEBRUARY 13–15, 2007, AND RELATED ACTIVITIES OF  
THE COMMITTEE

During its 176<sup>th</sup> meeting on February 13–15, 2007, the Advisory Committee on Nuclear Waste (ACNW) discussed several matters and completed the following letter to Dr. Dale E. Klein, Chairman of the U.S. Nuclear Regulatory Commission (NRC), from Dr. Michael T. Ryan, Chairman of ACNW:

- “Comments on “Draft Recommendations of the International Commission on Radiological Protection,” dated February 28, 2007

#### HIGHLIGHTS OF KEY ISSUES

##### 1. Working Group on the Igneous Activity White Paper

On February 13–14, 2007, ACNW convened a working group meeting to solicit comments on the draft white paper on volcanism that was published in December 2006. At the Commission’s request in Staff Requirements Memorandum M060111B (meeting with the ACNW), dated February 9, 2006, the Committee has reviewed and analyzed the current state of knowledge regarding igneous activity, including a range of technical views from experts and stakeholders. The Committee developed a draft white paper that summarizes current knowledge of potential igneous activity at the proposed repository site, including igneous activity scenarios and their potential impacts on repository performance. The white paper also provides an assessment of differing professional views, including those of experts representing the U.S. Department of Energy (DOE), the NRC, the State of Nevada, the Electric Power Research Institute (EPRI), and other organizations and stakeholders.

ACNW member Dr. William J. Hinze offered opening remarks that set the stage for the working group meeting. The Committee has invited scientifically based criticism and recommendations for improving the draft white paper in an effort to prepare the best possible report for the Commission. Dr. Hinze noted that day 1 of the working group would focus on the nature and probability of igneous activity at Yucca Mountain, while day 2 would emphasize discussions on the consequences of igneous activity. Roundtable discussions held at various times during the meeting would solicit additional insights from the invited experts.

**Day 1—Discussion of the Nature and Probability of Igneous Activity**

The working group meeting began with a series of invited talks by recognized experts in volcanism. Dr. Steven Sparks of the University of Bristol in England discussed the state of volcanology science and eruption analogs for Yucca Mountain. Dr. Bruce Crowe from Battelle Corporation discussed the volcanic history of the Yucca Mountain region and implications for the risk triplet (i.e., what can go wrong, the likelihood that it will, and potential consequences). Dr. Charles Connor of the University of South Florida gave an overview of methodologies for probabilistic volcanic hazard assessment and their application at Yucca Mountain. Dr. Eugene Smith, from the University of Nevada at Las Vegas and also a Clark County, Nevada, contractor, discussed the importance of understanding the process of magma generation for volcanic hazard studies related to Yucca Mountain. Dr. Kevin Coppersmith, a contractor for the DOE Yucca Mountain Project Office (YMPO) and leader of both the probabilistic volcanic hazard assessment (PVHA) and the probabilistic volcanic hazard assessment update (PVHA-U), discussed the use of expert elicitation in predicting the probability of volcanic events at the proposed Yucca Mountain repository, including details such as objectives, methodology, and implications of the PVHA and PVHA-U.

Additional briefings on day 1 included a talk by an NRC staff representative about the staff's regulatory role and responsibilities with respect to volcanism. A representative from DOE YMPO explained the department's views on the ACNW draft white paper in relation to the nature and prediction of igneous activity. A representative from the EPRI also gave feedback to the Committee regarding the draft white paper.

**Day 2—Discussion of the Consequences of Igneous Activity**

Dr. Bruce Marsh of Johns Hopkins University, who also serves as an ACNW consultant, gave a presentation about potential magma, repository, and canister processes in both eruptive and intrusive scenarios as well as the implications for risk from igneous activity at the proposed Yucca Mountain repository. Dr. Art Montana of the University of California at Los Angeles (retired) discussed potential thermal and mechanical magma/canister interactions associated with the intrusion scenario at the proposed Yucca Mountain repository. ACNW staff member Mr. Neil Coleman briefed the Committee about the flooding history and geomorphology of Fortymile Wash near Yucca Mountain. Flooding represents one of the key processes for eroding and transporting any contaminated volcanic ash that may be deposited by extrusive volcanism through a repository at Yucca Mountain. Dr. Sara Rathburn from Colorado State University briefed the Committee about important processes in fluvial and eolian transport of sediments. Representatives from DOE, the NRC staff, and EPRI then presented their views on the ACNW draft white paper in relation to the consequences of igneous activity.

A wrap-up round table discussion at the end of the day addressed any topics that might not have been adequately covered during the meeting. Dr. Hinze also invited working group participants to furnish additional written comments for consideration by the Committee within 2 weeks after the meeting, by March 1, 2007. The Committee will use the proceedings of the working group meeting and these written comments to further enhance and finalize the white paper.

### Committee Action

The working group briefing materials, discussions, transcripts, and any followup written comments will assist ACNW in preparing a final version of the white paper that will provide an analysis of the current state of knowledge of igneous activity that the Commission can use as a technical basis for decisionmaking.

#### 2. Semiannual Briefing by the Office of Federal and State Materials and Environmental Management Programs

Dr. Charles Miller, the Office Director, and Mr. George Pangburn, the Deputy Office Director, introduced the organization chart for the new Office of Federal and State Materials and Environmental Management Programs (FSME) and briefly discussed the FSME budget and its relationship with the NRC regions. In addition, a senior manager from each of the FSME technical divisions addressed the Committee, describing recent and future activities of interest to the Committee.

Mr. Larry Camper, the Director of the Division of Waste Management and Environmental Protection (DWMEP), discussed recent key items affecting the use of resources in DWMEP, including new DWMEP responsibilities for decommissioning uranium mining sites and reactors, the growth of the uranium mining industry, and the probable increase in the need to prepare environmental reviews. He mentioned that interactions with the Committee will be needed to discuss the rulemaking regarding the prevention of legacy sites, an assessment of dose modeling that his division will conduct, the revision of uranium recovery guidance documents, and the annual review of low-level radioactive waste storage rules and guidance.

Mr. Scott Moore, the Deputy Division Director of the Division of Materials Safety and State Agreements, explained that this division is a combination of some programs formerly in the Division of Industrial and Nuclear Medical Safety (INMS) and the Office of State and Tribal Programs (OSTP). He discussed key ongoing programs in the division, noting that the Committee has not recently interacted regarding any of the programs in the division. He identified the Orphan Radioactive Material Disposition Program and the DOE Off-Site Source Recovery Program as two activities that might be of interest to the Committee. ACNW Chairman Dr. Michael T. Ryan observed that the Commission's Advisory Committee on the Medical Uses of Isotopes (ACMUI) already reviews many of the safety activities of the division and that ACNW would not duplicate any ACMUI advisory roles or responsibilities.

Mr. Dennis Rathbun, the Director of the Division of Intergovernmental Liaison and Rulemaking, explained that his division includes the remaining programs formerly in INMS and OSTP, including rulemaking responsibilities and liaison roles with States and other governmental regulatory agencies. He reported that his division uses the technical bases for rulemakings developed in the other divisions within FSME and carries out the rulemaking process. In this capacity, his division will interact with the Committee on the naturally occurring or accelerator-produced radioactive material rulemaking (if necessary), the rulemaking regarding the prevention of legacy sites and the issuance of high-level waste final rules based on the revised U.S. Environmental Protection Agency standard (in the near future), and other future rulemakings as they are implemented.

### Committee Action

The Committee agreed not to write a letter to the Commission at the conclusion of this meeting. However, the Committee staff will meet with FSME upper management to solicit input on the draft ACNW action plan, which is being prepared for transmittal to the Commission.

#### 3. Briefing on International Conferences on Decommissioning and Low-Level Waste Subjects

Mr. Andrew Persinko of FSME discussed his participation and that of Dr. Charles Miller of FSME at the International Conference on Lessons Learned from the Decommissioning of Nuclear Facilities and the Safe Termination of Nuclear Activities held in December 2006 in Athens, Greece. He described the organization of the conference into seven sessions and noted the contributions of NRC representatives as well as other U.S. participants. He summarized the eight most important lessons learned about decommissioning based on the report of the president of the conference. These lessons learned addressed (1) decommissioning strategies, (2) knowledge management, (3) regulatory lessons, (4) the importance of decommissioning funding, (5) transition from operations to decommissioning, (6) clearance of materials from decommissioning, (7) technology used for decommissioning, and (8) decommissioning of smaller facilities. The Committee can obtain a copy of the conference proceedings after they are published, in about 2 months.

Mr. Chris McKenney of FSME described the major principles of the International Atomic Energy Agency (IAEA) Draft Safety Guide DS-390, "Classification of Radioactive Waste," which he reviewed in fall 2006. DS-390 is an update to an IAEA safety guide containing an older classification scheme. He explained that the new scheme attempts to classify waste based on disposal technology rather than waste origins. Mr. McKenney stated that he was satisfied with the resolution of the majority of the staff's comments about DS-390 that were submitted and analyzed at the working group meeting in Vienna, Austria, in fall 2006. Mr. McKenney and Mr. Giorgio Gnugnoli of FSME explained the next likely steps for DS-390 as it proceeds to publication, noting that one of the options available to IAEA is returning the draft to member states for an additional round of comments.

### Committee Action

The Committee agreed not to write a letter to the Commission at the conclusion of the meeting to report the results of the international conferences. However, if IAEA issues DS-390 again for comment by member states, the Committee would like to participate in the review of the draft.

#### 4. Possible Rulemaking for Moderator Exclusion for Spent Fuel Transportation Packages

Mrs. Nancy Osgood from the Division of Spent Fuel Storage and Transportation (SFST) of the Office of Nuclear Material Safety and Safeguards provided an informational briefing on moderator exclusion to obtain the Committee's opinion on whether SFST should begin background preparation for a rulemaking on moderator exclusion. In addition, SFST solicited input from the Committee on a SECY paper the staff is developing that addresses options for moderator exclusion. Ms. Osgood furnished background information on NRC and IAEA regulations used for fissile material packages and discussed the staff's current practice for

addressing moderator exclusion. To date, the NRC has not approved any spent nuclear fuel transportation package designs or shipments that rely on moderator exclusion for criticality safety. A brief discussion addressed alternatives to moderator exclusion and a staff guidance document on moderator exclusion. Ms. Osgood observed that if the staff were directed to pursue rulemaking, the SFST goal would be to develop a risk-informed regulation and only allow moderator exclusion for certain packages under certain conditions.

#### Committee Action

Rather than write a letter to the Commission about whether SFST should pursue a rulemaking on moderator exclusion, the Committee requested a briefing from industry representatives on their views and perspectives concerning moderator exclusion together with a followup meeting with the staff.

#### **RECONCILIATION OF ACNW COMMENTS AND RECOMMENDATIONS/EXECUTIVE DIRECTOR FOR OPERATIONS COMMITMENTS**

The Committee considered the following responses from the NRC Executive Director for Operations (EDO) during its planning and procedures meeting on February 13, 2007:

- Regarding the EDO response of December 28, 2006, to comments and recommendations included in the October 17, 2006, ACNW letter, "Probabilistic Risk Assessment of Dry Cask Storage of Spent Nuclear Fuel," the Committee decided that it was satisfied with the EDO response.
- Regarding the EDO response of January 4, 2007, to comments and recommendations included in the November 28, 2006, ACNW letter, "Spent Fuel Transportation Package Response to the Baltimore Tunnel Fire Scenario," the Committee decided that it was satisfied with the EDO response.
- Regarding the EDO response of January 17, 2007, to comments and recommendations included in the December 1, 2006, ACNW letter, "Standard Review Plan for Activities Related to U.S. Department of Energy Waste Determinations," the Committee decided that it was satisfied with the EDO response.
- Regarding the EDO response of January 25, 2007, to comments and recommendations included in the October 12, 2006, ACNW letter, "Working Group Meeting on Evaluating the Long-Term Performance of Cement Barriers for Near-Surface Waste Disposal," the Committee decided that it was satisfied with the EDO response.

## **PROPOSED SCHEDULE FOR THE 177<sup>TH</sup> ACNW MEETING**

The Committee agreed to consider the following topics during its 177<sup>th</sup> meeting, to be held March 20–22, 2007:

- Savannah River National Laboratory (SRNL) Workshop on Cementitious Materials Used in Waste Determination Activities
- Stakeholder Views on Moderator Exclusion
- Idaho National Laboratory (INL)/U.S. Department of Energy (DOE) Views on Moderator Exclusion
- Round Table Discussion on Moderator Exclusion
- ACNW Meeting With NRC Commission Gregory B. Jaczko
- Update by the U.S. Department of Energy on the Proposed Yucca Mountain Repository Design
- ACNW Action Plan for Fiscal Years 2007 and 2008
- Briefing on the Shieldalloy, New Jersey, Site Decommissioning Plan
- Updated Electric Power Research Institute Response on Potential Igneous Event at Yucca Mountain
- ACNW White Paper on Volcanism

Sincerely,

**/RA/**

Michael T. Ryan  
Chairman

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