ACNWS-0131

August 19, 2002

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

SUBJECT: SUMMARY REPORT — 136TH MEETING OF THE ADVISORY COMMITTEE ON NUCLEAR WASTE, JULY 23–25, 2002, AND OTHER RELATED COMMITTEE ACTIVITIES

Dear Chairman Meserve:

The Advisory Committee on Nuclear Waste (ACNW or the Committee) held its 136th meeting on July 23–25, 2002, at Two White Flint North, 11545 Rockville Pike, Rockville, Maryland. During that meeting, the Committee discussed several matters and approved the following reports.

REPORTS

The following reports were issued to Chairman Meserve, U.S. Nuclear Regulatory Commission (NRC), from George M. Hornberger, Chairman, ACNW:

- Igneous Activity Issues at the Proposed Yucca Mountain Repository, dated August 1, 2002
- Yucca Mountain Review Plan, Revision 2, dated August 2, 2002
- Performance of Waste Packages at the Proposed Yucca Mountain Repository, dated August 5, 2002
- High-Level Waste Performance Assessment Sensitivity Studies, dated August 7, 2002

HIGHLIGHTS OF KEY ISSUES CONSIDERED BY THE COMMITTEE

1. Yucca Mountain Review Plan, Revision 2

The Committee heard a presentation from representatives of the Nuclear Energy Institute concerning their near-final comments on the draft Yucca Mountain Review Plan (YMRP). The Committee then deliberated on and approved a report to the Commission on Revision 2 to the YMRP.

Committee Action

The ACNW issued its report concerning Revision 2 to the YMRP on August 2, 2002. The Committee will hear a summary of the public comments on the draft YMRP from the NRC staff during its 137th meeting in September 2002.

2. Source Control—A State Perspective

Dr. Raymond G. Wymer introduced the source control topic, noting that there were two speakers for the session. The first speaker was Mr. Joe Klinger, Chief, Division of Radioactive Materials, Illinois Department of Nuclear Safety (IDNS), and Chair, Conference of Radiation Control Program Directors, Inc. (CRCPD) E-34 Committee on Unwanted Radioactive Materials.

Mr. Klinger began his presentation by discussing both the control of radioactive sources in Illinois and the CRCPD National Orphan Radioactive Material Disposition Program. He stated that there are approximately 167,000 byproduct materials licenses in the United States, of which approximately 22,000 are specific licenses and the remainder are general licenses. These licenses govern approximately 2,000,000 radioactive devices that have been distributed. Mr. Klinger further noted that 25 percent of these devices are currently unwanted and in storage. He also noted that 77 percent of the materials licenses are in Agreement States, and it is expected that 35 Agreement States will regulate about 80 percent of the materials licensees by 2003. After presenting an overview of both IDNS and CRCPD E-34 activities, Mr. Klinger responded to multiple Committee questions.

The second speaker to address the source control topic was Mr. Robert Free, Deputy Director, Texas Emergency Response and Investigation Program, and a member of the CRCPD E-34 Committee. Mr. Free's specific focus was "Radioactive Source Security-Border State Issues."

To place the complexity of the border state situation in Texas in perspective, Mr. Free stated that the United States shares about 2,000 miles of border with Mexico, of which about 1,000 miles in Texas are along the Rio Grande River. With 32 inspectors in 11 regional offices, Texas has approximately 140 licensees along the U.S.-Mexico border (all of which are overseen by 3 regional offices). Mr. Free noted that Texas experiences about 250 radioactive events per year statewide, and 12 events have occurred along the border over the past 5 years.

Mr. Free also discussed some of the border state's concerns, such as the need for advance notice of potential threats and the ability to coordinate effectively with Federal responders (i.e., the Federal Bureau of Investigations, U.S. Department of Energy, U.S. Customs, U.S. Environmental Protection Agency, and NRC). He then responded to multiple Committee questions, closing with the observation that one of the most desirable improvements for the border states would be the establishment of more effective communications with the relevant Mexican authorities.

Committee Action

The Committee thanked Mr. Klinger and Mr. Free for their presentations and indicated its intent to continue to closely follow the issue of adequate source controls.

3. Source Control—NRC Activities

Mr. Doug Broaddus, Division of Industrial and Medical Nuclear Safety, NRC, discussed "NRC Activities to Enhance Control of Sources." Mr. Broaddus discussed both the uses and users of radioactive sources in the United States. Mr. Broaddus noted that of the lost or stolen sources, approximately 40 percent involve portable gauges; only a few high-risk sources have been lost or stolen, and most of those have been recovered.

Mr. Broaddus discussed the causes underlying loss of control, noting "loss of accountability" as the principal factor. Other causes include failure to follow regulations or procedures, theft, or abandonment. Mr. Broaddus then discussed the control of generally licensed, specifically licensed, and "orphan" sources from a historical perspective, as well as the perspective of the new (that have been imposed since February 16, 2001) requirements for general licenses and enforcement policy modifications.

Mr. Broaddus closed his presentation with a discussion of NRC and the CRCPD "orphan" source programs, related international activities, and the agency's response to the terrorist attacks on September 11, 2001.

After responding to Committee questions concerning the tracking of radioactive materials, Mr. Broaddus gave his perception as to how the various states are functioning insofar as source tracking, dose calculations associated with lost sources, and landfill use of source detection technology.

Conclusions/Action Items

The Committee reiterated its position that it considers the orphan and lost source issue important, and that it will continue to follow the staff's efforts. A classified briefing on this issue is scheduled in the near future. The Committee also indicated that it would consider preparing a letter report on this issue.

4. Agreement State Programs

Mr. Paul Lohaus, Director, Office of State and Tribal Programs, discussed the current Agreement State Program. He noted that the program is based upon Section 274 of the Atomic Energy Act, which was enacted in 1959. The Act reserves certain areas for the NRC to regulate, but also provides a mechanism for transferring certain NRC authority to the Agreement States.

Presently, the NRC regulates about 5,000 materials licenses, while the 32 Agreement States regulate about 16,000 licensees. Wisconsin, Minnesota, and Pennsylvania are currently pursuing Agreement State status. Mr. Lohaus noted that the NRC does not

provide seed money to establish Agreement State programs, nor is it authorized to provide operating funds. The agency can, however, provide direct technical assistance on a fee-reimbursable basis. Mr. Lohaus also discussed the standard agreement, as well as the categories of agreements (uranium mill, low-level waste, and full agreement), the actions necessary to become an Agreement State, and typical post-agreement relationships.

Next, Mr. Lohaus discussed the Integrated Materials Performance Evaluation Program (IMPEP). In particular, he detailed the process, the five common performance indicators, and the non-common performance indicators (which are applied as applicable to the particular State agreement in force). Mr. Lohaus also noted that the IMPEP review results in a determination as to the adequacy and compatibility of the Agreement State program. (Although the NRC has relinquished regulatory control of programs to the Agreement State, it must be assured that public health and safety is protected.)

The Committee thanked Mr. Lohaus for his presentation, particularly as it related to the presentations earlier in the meeting regarding control of radioactive sources.

Conclusions/Action Items

The Committee indicated that it is interested in the Agreement State program and would appreciate periodic updates, particularly in the event of any unfavorable IMPEP findings that impact upon the program.

5. Materials Waste Issues Related to Advanced Reactors

The Committee heard presentations by and held discussions with representatives of the NRC's Office of Nuclear Regulatory Research (RES) regarding a draft advanced reactor research plan. RES is developing a research plan that investigates the nuclear analysis tools, data, and knowledge bases that the NRC staff will need to conduct "out-of-reactor" material safety evaluations throughout the fuel cycles of the respective advanced reactor designs.

Anticipated material and waste safety issues include transportation and disposal of spent fuels, as well as the out-of-reactor criticality safety analyses, which will be needed at the front end of the respective fuel cycles for the Pebble Bed Modular Reactor (PBMR), Gas Turbine-Modular Helium Reactor (GT-MHR), and International Reactor Innovative and Secure (IRIS) designs. Enrichment plants, fuel fabrication facilities, and transportation packages for low enriched uranium (LEU) commercial light-water reactor fuel materials and fuel assemblies are not presently licensed to handle uranium enrichments significantly above 5 weight percent. Criticality validation issues are also expected to arise for gas-cooled reactors because of the shortage of evaluated critical benchmark experiments involving neutron moderation by graphite.

The proposed advanced reactor research plan originates from a technology-neutral perspective. However, the plan does not delineate the research that the NRC will

conduct. Rather, the plan identifies information gaps that exist within the NRC in terms of analytical tools and data.

Committee Action

This was an information briefing, and the Committee will continue its related followup activities and interaction with the NRC staff.

PROPOSED SCHEDULE FOR THE 137th ACNW MEETING

The Committee agreed to consider the following issues at its 137th meeting on September 24–26, 2002, in Las Vegas, Nevada:

- Representatives of the Department of Energy (DOE) will discuss their scientific update for selected activities of the geologic repository program at Yucca Mountain.
- Representatives of the NRC staff will give an overview of the well drilling patterns in the Amargosa Desert area for past 100 years.
- Representatives of the the NRC staff will brief the Committee on the status of DOE-NRC issue resolution.
- Representatives of the NRC staff will discuss the Integrated Issue Resolution Status Report.
- Representatives of the NRC staff will brief the Committee on its review of public comments received on the Yucca Mountain Review Plan.

Sincerely,

/RA/

George M. Hornberger
Chairman