



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

March 6, 1998

The Honorable Shirley Ann Jackson  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington D.C. 20555-0001

Dear Chairman Jackson:

SUBJECT: NRC HIGH-LEVEL WASTE ISSUE-RESOLUTION PROCESS AND ISSUE  
RESOLUTION STATUS REPORTS

This letter communicates the views and comments of the Advisory Committee on Nuclear Waste (ACNW) concerning the status of the NRC staff's high-level waste (HLW) issue-resolution process and Issue Resolution Status Reports (IRSRs). During its 97th meeting, December 16-18, 1997, the ACNW heard and discussed a presentation by the NRC staff on the status of and plans for the production of IRSRs. The Committee plans to examine the reports in detail in the near future.

We understand that the aim of the issue resolution process is to resolve technical issues with the Department of Energy (DOE). In practice, the issue-resolution process is one that resolves the *method* by which the NRC expects DOE to deal with technical issues but does not always resolve the technical issues themselves. We infer that the process has two main roles. The first is to provide DOE with timely guidance from NRC on expectations for analyses and products that will be required for licensing. The second is to develop the framework for license evaluation by the NRC staff, in that the IRSRs will evolve into the Standard Review Plan. In the meantime, IRSRs will serve as guidance for the staff's review of the Viability Assessment. Several other important benefits should stem from the issue-resolution process. For example, preparation of the IRSRs necessitate technical exchanges between DOE and NRC that can lead to the definition of critical cross-linkages among key technical issues (KTIs). Also, the analyses required to produce IRSRs will naturally yield information on priorities for redirecting work, including technical assistance and research, toward important open questions.

The Committee is impressed by the way in which the issue-resolution process is being carried out and by progress in the program to date. The staff appears to be integrating and analyzing technical information into the IRSRs effectively. We are encouraged by ongoing sensitivity analyses being conducted to assess the relative significance of the KTIs and various subissues and urge the staff to use these results to reexamine, as appropriate, the KTIs and subissues. Finally, we encourage the staff to include in the issue-resolution process three-way dialogues among the NRC, the DOE, and the Environmental Protection Agency (EPA) and to establish an expanded role for the public.

### Background

In Fiscal Year 1996, the NRC restructured its HLW prelicensing program to focus on only those issues believed to be critical to the performance of the proposed Yucca Mountain HLW repository. These issues are referred to as KTIs, of which there are currently ten.

NRC's refocused approach is designed to foster resolution of the ten KTIs at the staff level. Consistent with 10 CFR Part 60 requirements and a 1992 agreement with DOE, resolution at the staff level is achieved during the prelicensing period when "the NRC staff has no further questions or comments regarding how DOE is addressing the issue." Resolution of an issue at the staff level does not preclude raising and considering the issue during the licensing process. The issue-resolution process is focused on acknowledging the appropriate bounding of less significant effects and focusing interactions with DOE on real or perceived differences possessing the greatest significance to repository performance.

### Comments on the Issue-Resolution Process

1. An IRSR represents the "end product" of much detailed analysis and review of DOE work accomplished and the plans for future work. IRSRs are based, in part, on results of detailed information exchanges at NRC/DOE Technical Exchange meetings and at Appendix 7 meetings.<sup>1</sup> The staff appears to be accomplishing the task of integrating information from such exchanges into IRSRs, including identifying critical

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<sup>1</sup>Appendix 7 of the 1993 Revised Procedural and Project-Specific Agreements allows for interactions between the NRC onsite representative (OR) and NRC personnel assigned to the OR, and the DOE and its contractors. Although public notification is not required for these informal meetings, typically the public is invited to attend.

information that may be weak or lacking. The Committee believes that, in addition to providing detailed technical information, the IRSR activity provides a great opportunity to implement initiatives for increasing public participation in the prelicensing process. We urge the NRC staff to take advantage of the opportunity to encourage participation of stakeholders and the public in the issue-resolution process in ways that might make resolution more transparent and, perhaps, more robust to challenge.

2. One of the keys to successful issue resolution is appropriate analysis of information and models at the process level to determine how these processes translate to issues at the more abstract level of a performance assessment. In the staff presentation at our 97th meeting, we were impressed that such analyses are being performed effectively by staffs at the NRC and the Center for Nuclear Waste Regulatory Analyses. Many technical issues have been addressed in the five IRSRs issued to date. There are a number of very difficult issues on the horizon, as noted in previous letters. Examples include the potential impact of temperature and hydrology on near-field chemistry processes (Ref.1) or the need for a site-scale chemistry model to account for effects of man-made materials on the chemical environment (Ref.2). We look forward to following how issue resolution proceeds for these topics.
3. We were very encouraged to learn that the TPA-3 code is now being used to conduct sensitivity analyses within each KTI and for the total system. The ACNW has expressed in the past the need to ensure that the selection of KTIs is based on performance assessment and other information, and the need to remain flexible in the selection of KTIs based on new information. The use of the TPA-3 code in the production of IRSRs offers an excellent opportunity to examine the importance of the KTIs in the context of a PA and to reprioritize or even restructure the KTIs.
4. An issue-resolution process is a *sine qua non* for the successful solution of the problem of disposing of radioactive waste. In its report "Rethinking High-Level Radioactive Waste Disposal," the National Academy of Sciences (NAS) included in its recommendations the need for DOE and NRC to negotiate prelicensing agreements publicly in order to make progress in developing a repository for HLW. That NAS Committee also recommended involvement of the EPA because it will set the standard for Yucca Mountain. One of NRC's prelicensing objectives is to cooperate with the EPA in developing reasonable and implementable

standards<sup>2</sup>. Communication between the NRC and EPA is essential during this period. The ACNW believes that, as the standards and the implementation plan are developed, the NRC staff should seek to engage the DOE and the EPA in three-way exchanges in the spirit of the issue-resolution process.

5. In addition to marking progress toward the evaluation of Yucca Mountain as a repository site, the issue-resolution process is important for NRC staff in other ways. Through the work to produce IRSRs, the staff is gaining valuable experience in using and testing the tools that are needed for evaluation of a license application. That is, the activity is unique in providing direct "practice" for licensing. It also has the important benefit of keeping NRC staff involved in and aware of scientific-technical issues as they emerge, providing the stimulation and challenging environment that is essential to the retention of a high-quality technical team.

### Summary

The ACNW applauds the staff for their work on developing the IRSRs that have been published to date. We encourage the staff to be aggressive in continuing and expanding their efforts. In particular, we urge the staff to make extensive use of PA in the analysis of the current KTIs and subissues of the KTIs and to explore ways to encourage participation of stakeholders and the public in the issue-resolution process.

Sincerely,



B. John Garrick  
Chairman

### References:

1. Report dated November 8, 1996, from Paul W. Pomeroy, Chairman, ACNW, to Shirley A. Jackson, Chairman, NRC, Subject: Comments on Coupled

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<sup>2</sup>The staff identified in "NRC High-Level Radioactive Waste Program Annual Progress Report for Fiscal Year 1996," NUREG/CR-6513, eight revised precicensing objectives, the first of which includes, "Cooperate with EPA to ensure development of reasonable and implementable HLW standards. Implement these standards through a simplified, risk-informed, performance-based regulation specific to Yucca Mountain."

- Processes in the NRC High-Level Waste Prelicensing Program.
2. Report dated February 13, 1997, from Paul W. Pomeroy, Chairman, ACNW, to Shirley A. Jackson, Chairman, NRC. Subject: Comments on Flow and Radionuclide Transport at Yucca Mountain.

