

September 17, 2002

Dr. George M. Hornberger, Chairman
Advisory Committee on Nuclear Waste
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: RESPONSE TO THE ADVISORY COMMITTEE ON NUCLEAR WASTE
LETTER DATED AUGUST 5, 2002, ON THE HIGH-LEVEL WASTE PROGRAM
PERFORMANCE OF WASTE PACKAGES AT THE PROPOSED YUCCA
MOUNTAIN REPOSITORY

Dear Dr. Hornberger:

I am responding to your letter, dated August 5, 2002, that provided the Advisory Committee on Nuclear Waste's (ACNW's) views on the U.S. Nuclear Regulatory Commission (NRC) staff's High-Level Waste Program Performance of Waste Packages at the Proposed Yucca Mountain Repository. In the letter, the ACNW provided three recommendations to the NRC staff. The staff's response to each of the ACNW's recommendations is provided in the following paragraphs.

Recommendation 1:

The staff should prioritize the various Container Life and Source Term (CLST) agreements with the U.S. Department of Energy (DOE) on the basis of importance to risk. CLST agreements that are most important to protecting health and safety should receive the most attention. Agreements that require additional information, but are not essential to License Application (LA) review (in light of the risk), should be given a lower priority compared to agreements that provide information essential for DOE to substantiate its safety case.

NRC Staff Response 1:

The NRC staff agrees with the ACNW that the CLST agreements most important to protecting health and safety should receive the most attention. Similarly, NRC staff agrees that the information needed for CLST agreements that are essential to provide an adequate LA should take precedence over those that could be viewed as less than essential. The staff believes that it is important to understand the risk significance of the technical issues that underlie the CLST agreements, as well as the agreements associated with the other Key Technical Issues (KTIs). Risk significance should be evaluated based on the impact an issue may have on the performance and safety of the repository system, through quantitative risk assessments.

The staff is currently focusing on further development and integration of quantitative risk insights pertaining to the performance and safety of the repository system to determine the risk significance of technical issues. The quantitative insights will include information generated through current and future NRC and DOE performance assessment and issue/agreement resolution activities, and the findings and conclusions drawn from the information. The integrated risk information will provide a common reference point for the quantitative component of a risk-informed regulatory program; will help focus our regulatory activities; and will support risk-informed project management and decision-making during issue resolution activities and license application review.

Understanding the risk significance of the technical issues will help assess the relative importance of associated agreements, and will thus support a risk-informed approach to completing the agreements.

Recommendation 2:

The staff should extend to other KTIs the risk-based evaluation of data, information, and analyses that it is carrying out for CLST. In this process, staff should prioritize all the KTI agreements on the basis of risk. These analyses must evaluate repository systems collectively as well as individually. This is especially important since DOE is “rebaselining” some KTI agreements, which may not be “closed” by the time of an LA submittal as originally contemplated. The staff needs to have clear bases for determining whether DOE’s proposed treatment of agreements will provide sufficient information for the staff to review the LA in terms of all the performance objectives in the Yucca Mountain Regulation (10 CFR Part 63).

NRC Staff Response 2:

The NRC staff agrees with the ACNW that sharing the risk-based evaluations of data, information, and analyses that staff is carrying out for CLST with other KTIs is important. Staff currently shares information at the general Yucca Mountain team meeting, in addition to one-on-one interactions with staff. In addition, the staff’s work (referenced in Staff Response 1) addresses not only CLST agreements but all the KTI agreements. The staff plans to prioritize all agreements according to their risk significance.

Recommendation 3:

The staff should continue to push for more realism based on evidence in DOE’s modeling. The ACNW recommends using simplified models wherever practical to check the results of the Total System Performance Assessment (TSPA) and Total-System Performance Assessment (TPA) computer codes. Development of the NRC’s TPA code, especially as it provides better insights into the effects of coupled processes, should be continued.

NRC Staff Response 3:

The staff agrees with the ACNW that simplified models help to provide a basis under which the results of TSPA and TPA computer codes can be probed.

Dr. G. M. Hornberger

-3-

This was done as a first step to the TPA code, and the staff agrees that as the complexity of these codes increases staff should take the time to continue to use simple models to check the results of the performance assessment codes. Staff currently conducts simplified modeling with the use of software programs such as GoldSim and Excel. The staff also plans to build more realism into the TPA code as supported by the available information and further develop the code as appropriate.

The NRC staff appreciates ACNW's continued interest in, and input to, the CLST KTI. We look forward to your continued involvement in our future activities.

Sincerely,

/RA by Carl J. Paperiello Action For/

William D. Travers
Executive Director
for Operations

cc: Chairman Meserve
Commissioner Dicus
Commissioner Diaz
Commissioner McGaffigan
Commissioner Merrifield
SECY

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