

November 12, 2003

Dr. B. John Garrick, Chairman  
Advisory Committee on Nuclear Waste  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

SUBJECT: WORKING GROUP SESSION ON PERFORMANCE CONFIRMATION FOR  
YUCCA MOUNTAIN

Dear Dr. Garrick:

In your letter of October 1, 2003, to the Chairman, regarding the "Working Group Session on Performance Confirmation for Yucca Mountain," the Advisory Committee commented that the U.S. Nuclear Regulatory Commission (NRC) has not treated performance confirmation (PC) proactively. Your letter also recommended that staff focus on four specific areas in future pre-licensing communications with the U.S. Department of Energy (DOE), including: (1) ways to develop the PC program that are based primarily on risk insights and testing assumptions about key performance factors; (2) how performance assessments can or should be updated using PC data; (3) how PC should be used in making decisions; and (4) how to resolve any differences in NRC and DOE approaches to PC. This response addresses those recommendations.

#### Pre-licensing PC Interaction with DOE

PC, in our view, is an appropriate area for pre-licensing interaction with DOE. We believe we have treated performance confirmation (PC) proactively. DOE's comments on regulatory aspects of PC in the draft high-level waste regulations published in 10 CFR Part 63, were responded to by the staff in connection with the final rule published on November 2, 2001. Similarly, DOE comments on the scope and content of the PC plan in relation to the section of the draft Yucca Mountain Review Plan (YMRP) were responded to by the staff in connection with issuance of the final YMRP published in July of this year. On February 26<sup>th</sup> of this year, NRC and DOE staffs had a technical exchange to allow DOE to introduce its high-level strategy for developing its PC plan. There have been other public meetings with PC as the focus, such as the Electric Power Research Institute open workshop on "The Role of Long-Term Research and Development and Performance Confirmation Activities Related to Decision-Making for the Proposed Yucca Mountain HLW Repository," held in November of 2001, as well as the Committee's own recent working group session on PC. Thus, the staff has held, and will continue to hold, pre-licensing interactions with DOE regarding development of its PC plan.

Although DOE is required to include a PC plan with the license application, the staff wishes to emphasize that testing activities identified in DOE's PC plan are not intended to provide the information needed to make a decision concerning construction authorization. DOE's PC plan represents a post-construction authorization program. The staff also wishes to emphasize that requirements for PC provided in Part 63 were developed specifically to be less prescriptive and to place the burden of developing specific PC activities on DOE. The staff expects DOE's PC

plan (Revision 2), currently being revised as a result of internal DOE review, to be available soon. The staff intends to interact with DOE subsequent to a staff review of this PC plan. The staff also expects DOE to receive a contractor draft of a further revision of its PC plan in the spring of 2004 (Revision 3). Revision 3 of DOE's PC plan will include additional technical detail related to testing activities, as well as provisions for program management and control. The staff will continue to interact with DOE as its PC plan evolves and matures.

#### Recommended Focus of PC-Related Communications with DOE

The Committee's four focus areas for future PC-related communications with DOE are, in the staff's view, appropriate.

1. Ways to develop the PC program that are based primarily on risk insights and testing assumptions about key performance factors.

The primary focus of PC is on natural and engineered systems and components that are designed or assumed to operate as barriers after permanent closure. Within this context, the staff has used the performance assessment to identify specific parameters, processes, or events that are significant to the performance of the barriers. The results of the staff risk-insights initiative will serve as important input to the review of DOE's PC plan. During the next fiscal year (FY) (FY 2004), staff will continue to use information from the risk-insights initiative to identify potential PC activities, based on parameters, processes, or events associated with natural and engineered barriers, and their significance to post-closure repository safety. This is intended to provide the staff with a technical foundation to evaluate the adequacy of DOE's proposed PC program.

2. How performance assessments can or should be updated using PC data.

Current regulations require DOE to update its application in a timely manner so as to permit the Commission to review results of research programs carried out to confirm the adequacy of estimates of performance of the repository before issuance of a license (10 CFR 63.24, "Updating of application and environmental impact statement"). The regulations also require DOE to update its application before permanent closure, including an update of the performance assessment, considering any PC data collected and pertinent to compliance with the post-closure performance standards (10 CFR 63.51, "License amendment for permanent closure"). Because of the long operational period before permanent closure, the staff anticipates DOE will periodically update its performance assessment, considering new information obtained from the PC program. The staff expects this will be done as one aspect of a general safety analysis maintenance program. DOE's maintenance of its performance assessment, with consideration of any relevant PC information, will be subject to staff review and inspection as part of NRC's oversight responsibilities. Also, the staff anticipates DOE's PC program will evolve over the long operational period. Current regulations address changes to the PC testing program (10 CFR 63.44, "Changes, tests, and experiments"). The staff anticipates these aspects of the PC program to be addressed in a future revision (Revision 3) of DOE's PC plan. A contractor draft of Revision 3 of the PC plan is scheduled to be provided to DOE, for internal review and comment, during April of 2004.

3. How performance confirmation should be used in making decisions.

Information obtained from DOE's PC program could result in a DOE decision to change the design or construction of the geologic repository. The staff expects the significance of information obtained from DOE's PC program to be determined by evaluating the effect on the post-closure performance of the geologic repository. The staff considers the performance assessment a primary tool to evaluate the significance of any new information, obtained from DOE's PC program, and pertinent to compliance with the post-closure performance standards. Hypothetically, DOE could identify a deficiency in the characteristics of the Yucca Mountain site, and design, and construction of the geologic repository operations area based on a performance assessment updated with new information. Current regulations address actions required of DOE should such a deficiency be identified (10 CFR 63.73, "Reports of deficiencies"). Also, DOE could decide to initiate a change to a design or operating procedure, whether significant or not, based on a performance assessment updated with new information. Current regulations address actions required of DOE if it chooses to make a significant change to a design or operating procedure (10 CFR 63.46, "Particular activities requiring license amendment"). Criteria for determining when DOE may initiate changes without an amendment of construction authorization or a license amendment are provided at 10 CFR 63.44 ("Changes, tests, and experiments").

4. How to resolve any differences in NRC and DOE approaches to PC.

Potentially differing NRC and DOE regulatory views about PC were addressed during the rulemaking process for Part 63. Also, potentially differing NRC and DOE views about the scope and content of the PC plan were addressed during development of the YMRP. Currently, there do not appear to be any fundamental NRC/DOE differing views about PC. It is possible that differing viewpoints may arise during NRC review of Revision 2 of DOE's PC plan. Differing viewpoints related to specific risk-insights, for example, could lead the staff to conclude additional confirmatory testing activities may be necessary, in addition to those activities identified in DOE's PC plan. Should differing viewpoints arise during the pre-license application phase, the staff will address any PC-related issues or concerns, using the same pre-licensing interaction process used to address, for example, the Key Technical Issues.

Sincerely,

*/RA/*

William D. Travers  
Executive Director  
for Operations

cc: Chairman Diaz  
Commissioner McGaffigan  
Commissioner Merrifield  
SECY

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Sincerely,  
**/RA/**  
 William D. Travers  
 Executive Director  
 for Operations

cc: Chairman Diaz  
 Commissioner McGaffigan  
 Commissioner Merrifield  
 SECY

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