

OPENING STATEMENT ON PERFORMANCE ASSESSMENT JANUARY 12, 1994

Good morning and welcome to the second day of this meeting of the NWTRB. Today we will focus our attention on performance assessment. It may be useful to summarize some of the Board's recent activities in this area. Since its First Report, the Board has emphasized the need for the DOE to establish a strategy of iterative performance assessment, that would not only help determine compliance to standards and regulations, but would also assist the DOE in assessing progress and setting priorities in a very complex program. At the April 1992 Board meeting, we were briefed on Total Systems Performance Assessment (TSPA) studies by the Sandia National Laboratories and the Pacific Northwest Laboratory (PNL). I might add that when we talk about the total system in the context of performance assessment we mean the total disposal system, that may result from the Yucca Mountain Project if the repository is proposed and licensed. The Board has stressed the need for the DOE to look at the total waste system, that is storage, transportation and disposal.

In our Sixth Report we commended the DOE for starting the iterative TSPA process and we are happy that today we will be hearing about the second iteration in that process. With respect to the previous iteration, TSPA 1991, the Board raised questions regarding the assumed behavior of the waste container and cladding after an assumed failure, the exclusion of colloidal transport, the effects of high percolation rates and the treatment of fracture flow, in particular, the impact of the Ghost Dance Fault on the hydrologic regime. SNL used the so-called "WEEPS" model, which some have argued bounds the worst case scenario of fracture flow. Gaseous  $^{14}\text{C}$  emerged as the dominant radionuclide release, and in some cases exceeded

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the 40 CFR 191 standard, depending upon what one assumed about the permeability of Yucca Mountain to gases. According to these studies, volcanism did not result in a violation of the standard, even if it was assumed to occur. In addition, the PNL study looked at a tectonically-induced rises in the water table, but gave no insight as to what would happen if the repository was flooded.

We also suggested that increased outside review, more sensitivity tests and greater transparency would serve future efforts well. Greater transparency can turn what might appear to be a complicated exercise in mathematics and statistics into an understandable evaluation of the proposed repository's ability to contain and isolate waste.

Many of the questions and concerns raised are typical of those that might arise in early stages of a developing risk assessment. That does not mean that performance assessment must attain a level of sophistication before it can be used. On the contrary, the Board's main recommendation was that the DOE begin immediately to use the TSPA and other relevant studies to help assign priorities and identify critical data needs in the Yucca Mountain project.

In several of its past reports, the Board also touched upon the issue of expert judgment. In our Fourth Report we recommended that the DOE convene a workshop on expert judgment. The workshop was held in November 1992. We are looking forward to seeing to what extent the DOE makes use of the excellent recommendations coming out of that workshop.

In July 1993 the DOE briefed the Board on its plans for the latest TSPA. Today we anticipate seeing the results of new data, increased sophistication in modelling, and a wide range of sensitivity studies. Topics to be covered include the impact of different thermal loading scenarios, waste emplacement schemes, and corrosion models. We will also hear about the effect of shifting to an individual dose criterion, as is now being considered by a committee of the National Academy of Sciences, and of a longer performance period. We have emphasized to the DOE the need to concentrate, in their presentations, on key assumptions, important results and how the information is being and will be used. We are especially interested in the relationship of the performance assessment activities to the detained scientific studies and engineering efforts in the Yucca Mountain Project.

We have asked Scott Sinnock to provide us with some insights as to how the conclusions of performance assessment have changed over the years. In addition, Robin McGuire will describe the latest results from the EPRI performance assessment. The Board has always been impressed with the ability of the EPRI team to provide clear, understandable results. We will be hearing from Rip Anderson, with the goal of gaining insights from the performance assessments for the WIPP site that should prove helpful in the Yucca Mountain effort. Finally, we have asked John Garrick, an eminent risk analyst, to provide some comments from his perspective and wide experience. Biographies of the speakers are available from the NWTRB office.

We are looking forward to stimulating presentations and have allowed additional time for public comments and discussion at the end of the day. However, we are on a flight schedule. Dr. Garrick and several members of the board must leave for Dulles Airport at 4:30. To preserve time for the afternoon speakers and at least 1/2 hour for discussion at the end, I will be a strict timekeeper. I ask that each speaker have 10 minutes for questions, and will warn each speaker at 15, 10, and 5 minutes from the end of the allotted time. When ten minutes are left, I will ask the speaker to finish as quickly as possible. When 5 minutes are left, I insist that the speaker stop so that we have time for a few questions, first from the Board and staff and them from others only as time permits.

In the afternoon general discussion I will first invite questions and comments from the Board and its staff, and then I will invite comments, questions, or responses from the speakers. I hope to give at least fifteen minutes to questions or comments from the public. In order to give as many persons as possible the opportunity to speak, I ask that each question be limited to one minute, including one follow-up question. This means if you ask a long question (or make a speech), you do not get a follow-up.