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Dr. John Garrick, Chairman
Nuclear Waste Technical Review Board
2300 Clarendon Blvd, Suite 1300
Arlington, VA 22201

Dear John,

I am writing to follow up the brief discussion at the Board's May meeting on DOE's overwhelming reliance in its Yucca Mountain TSPA on the presence of the drip shields and the implications of that reliance. The most important implication is of course that using DOE simulation results as supplied in the License Application and the TSPA AMR one readily calculates that without the drip shield the mean dose at the specified 18 kilometer measuring point is about an order of magnitude above the EPA standard of 15 millirem per year, and so without the drip shield DOE cannot qualify for an NRC license. (The 15 millirem per year standard applies because all this would happen in the first millennium after repository closure.)

These circumstances force examination of the plausibility of the assumption underlying DOE's TSPA calculations—that the drip shields will in fact have been installed before closure. You are well aware, I know, that Nevada regards drip shield installation as so uncertain, in fact unlikely, that reliance on it is impermissible for licensing purposes. But note that even if the likelihood of drip shield installation were, say, 80 percent—a speculative but admittedly high figure for an event a hundred years in the future and one beset by all sorts of difficulties—the overall mean dose would still exceed the EPA standard and the application would fail.

We have expressed our thoughts on the subject in terms of a simple fault tree analysis. A diagram of the FTA is attached. It displays the primary events and circumstance we have included together with the probabilities we have attached to them. With the rather modest

failure probabilities we have chosen one still ends up with a high probability of non-installation of the drip shields. In particular, with the choices shown on the accompanying diagram the chance that the drip shield will not be installed is above 90 percent. This condition would render an application nonviable.

To facilitate an exchange on this vital point, the underlying FTA files are also attached so that you can assign your own probabilities for the individual events and perform your own calculations. To do this you will also need to have the OpenFTA software we have used. It can be readily downloaded from www.openfta.com.

I look forward to a serious discussion with the Board on this make or break issue.

Sincerely,



Robert R. Loux
Executive Director

Attachments

cc: NRC Commission
Jack Davis, NRC Staff
Bill Barnard, NWTRB