HLWYM HEmails

From: John Bradbury
Sent: Friday, November 30, 2007 5:48 PM
To: Hakan Basagaoglu
Cc: Jude Mcmurry; Jack Guttmann; James Rubenstone; Philip Justus; Randall Fedors
Subject: Review of SDS 3.01 AIN-2 Response

I have reviewed the DOE response to SDS 3.01 AIN-2 and have the following observations for your consideration:

DOE provided multiple arguments why a discrete fracture model was impractical, unsupportable, and unnecessary for modeling the fault test at Alcove 8 Niche 3. Although many of their arguments are weak, I see little benefit in challenging them point by point. DOE must support their LA however they decide. We recommended they use a fracture-informed approach. Our definition may not have explicitly stated that fracture-informed meant discrete fracture model, like FracMan. Instead, they reasonably provided examples of fracture information and characteristics that is factored into their system and model.

If there are features, events and processes that have been excluded by DOE's choice of a modeling approach, it is up to us to identify them and show their significance. This is obviously difficult given our limited access to the site. The saving grace, I think, is the sensitivity analysis DOE says it will perform, showing the effect of models on flow and transport in the UZ. If DOE shows that even with no retardation, the effects on dose are insignificant, a risk-informed evaluation would eliminate this part of the system from consideration.

The two potentially risk significant aspects of transport in a unsaturated fracture-network system are geometric causes of flow focussing which could affect the number of waste packages wetted and limit the fracture surface areas through which radionuclides could diffuse. The other aspect is the potential to store radionuclides in dead-end fractures, to be released quickly as a pulse under transient rainfall events or water table excursions. The proportion of the flow path from the repository to the receptor that constitutes the fractured welded tuff of the UZ is small. Consequently, I do not expect this part of the system to be a major barrier to radionuclide transport.

I recommend we acknowledge DOE's response, giving them credit for clarifying their views on "fracture-informed" characterization. We express our concerns that key aspects of the tests at Alcove 8 Niche 3 failed to provide support to the flow and transport models used in TSPA. We will delay further evaluation of the UZ tests until the LA.

John Bradbury

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