HLWYM HEmails

From: Roberto Pabalan
Sent: Wednesday, October 10, 2007 5:39 PM
To: Tae Ahn
Cc: Osvaldo Pensado; Pavan Shukla; David Pickett
Subject: RE: ACNW

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Tae,

The following writeup by Osvaldo addresses #1:

--Bobby

Experimental basis for compositions of aqueous solutions in contact with the WP:

The compositions of waters in contact with the waste package in the "direct seepage water contact scenario" were derived considering initial water compositions based on Yucca Mountain unsaturated zone pore water compositions reported by the U.S. Geological Survey. Final solution compositions after evaporation were calculated using thermodynamic
software developed by OLI Systems, Inc. The software has been heavily
tested by users and there is confidence in its predictions. However, there is uncertainty in the initial water compositions used as input for the thermodynamic calculations. NRC/CNWRA considered a range of initial pore water compositions and derived distribution functions for feasible compositions of waters in contact with the waste package to account for uncertainty. There is flexibility in the TPA code to consider a range of solution compositions over various timeframes.

The main uncertainty in the temperature estimates is the thermal conductivity of the rock. In the TPA code, a range of thermal conductivities are considered consistent with the site rock data, and the scale of the model. A representative temperature is computed to represent various kilometers of drifts. The relative humidity in a region close to the waste package is a function of the waste package and drift wall temperatures. Spatial variations of the relative humidity along a drift will arise due to temperature variations. The relative humidity is computed as a function of the representative waste package and drift wall temperatures. The main uncertainty in estimating the relative humidity in the TPA code arises from uncertainties in temperature estimates.

There is significant uncertainty in the composition of in-package waters. In the TPA code a range of waste form dissolution rates, solubilities, concentration of colloids, and affinity sites in the colloids are considered which account for uncertainty in the in-package water composition. Retardation in corrosion products in the in-package is ignored in the TPA code. Limited experimental studies at CNWRA have been completed to study the effect of oxidation of in-package components in the water chemistry.

-----Original Message-----
From: Tae Ahn [mailto:TMA@nrc.gov]
Sent: Wednesday, October 10, 2007 6:33 AM
To: Osvaldo Pensado; Pavan Shukla; Roberto Pabalan
Subject: ACNW

From the meeting yesterday, you may want to write a few sentences on

(1) experimental data base for Temp, RH and Chemistry (Bobby and
Osvaldo)

(2) surface tension (or energy) of water in dust - likely to be a LLNL paper/report (Pavan)

Thanx, Tae

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From: Roberto Pabalan

Created By: rpabalan@cnwra.swri.edu

Recipients:
"Osvaldo Pensado" <opensado@cnwra.swri.edu>
Tracking Status: None
"Pavan Shukla" <pshukla@cnwra.swri.edu>
Tracking Status: None
"David Pickett" <dpickett@cnwra.swri.edu>
Tracking Status: None
"Tae Ahn" <Tae.Ahn@nrc.gov>
Tracking Status: None

Post Office: cnwra.swri.edu

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