From: Xihua He
Sent: Wednesday, August 01, 2007 2:30 PM
To: Bret Leslie
Cc: David Pickett; Paul Bertetti; Tae Ahn
Subject: RE:

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Bret,

I just discussed this with Tae. You raised a very good point. In our experimental design, what we assumed is that the waste package will be full of water. This may not be the case assumed in DOE model. I will look further into this.

Thanks,
Xihua

-----Original Message-----
From: Bret Leslie [mailto:BWL@nrc.gov]
Sent: Wednesday, August 01, 2007 12:33 PM
To: Xihua He
Cc: David Pickett; Paul Bertetti; Tae Ahn
Subject: Re:

Xihua,
Yes but if the DOE approach is to use a batch reaction approach where the **annual** flux of water is reacted with the materials present then the volume of water is limited to about 1.5 L/yr and not the volume of the void space which is about 2400 times larger. From a mass balance approach, and kinetics approach (rate of corrosion of carbon steel), I am not at all suprised that DOE calculates a low pH and the that your experiments have a high pH given the mass of steel (surface area) to volume of water that were used by DOE and Center.
Bret

Xihua He <xhe@cnwra.swri.edu> 08/01/2007 9:50 AM >>>
Bret,

Paul mentioned to me yesterday that you have some concern over the experimental setup we used to study the evolution of fluid chemistry inside a waste package. The following is the rationale for us to choose the ratio of the test water volume to the surface area of A516 carbon steel, which is included in the report NRC accepted last year.

To simulate an internal waste package environment, the ratio of the test water volume to the surface area of A516 carbon steel was 13.7 mL/cm2 [2.99 oz/in2], which is the ratio of the void volume inside the waste package {4,594 L [1,212 gal]} (Bechtel SAIC Company, LLC, 2001, Table 6-4) to the surface area of carbon steel {334,300 cm2 [51,817 in2]} (Bechtel SAIC Company, LLC, 2004b, Table 6-11) available in the waste package.

Bechtel SAIC Company, LLC. "Geochemistry Model Validation Report: Material Degradation and Release Model." Rev. 0. Las Vegas, Nevada: Bechtel SAIC Company, LLC. 2001.

Bechtel SAIC Company, LLC. "In-Package Chemistry Abstraction." ANL-EBS-MD-000037. Rev. 3. Las Vegas, Nevada: Bechtel SAIC Company, LLC. 2004b.

I can give you a call to discuss this at a time which is convenient to you.

Thanks,
Xihua

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From: Xihua He

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Recipients:
"David Pickett" <dpickett@cnwra.swri.edu>
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