HLWYM HEmails

From: Tae Ahn
Sent: Monday, July 02, 2007 8:30 AM
To: Bret Leslie
Cc: David Pickett; Osvaldo Pensado
Subject: Fwd: RE: Answers to EBSREL chapter comments

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Bret, fyi - The dissolution rate and the flow rate are connected in series. The slower controls the release of Tc and I. For most data from drip, immersion, and flow-through tests, the dissolution rate controls the observed rate, except one on very low drip rate test. This very low drip test results were incorporated in our model 2 as a contributing element. The use of dissolution rate is, therefore, conservative. We will confirm the wet surface area with Osvaldo today.

>>> Tae Ahn 07/02/2007 4:37 AM >>>
Sorry, Dave. I got up early today as I had fallen asleep early last night.

Yes, the question is from the table. The data base I worked in the references of all my previous work include immersion, drip and flow-through data all together. There is only one set of drip tests, and all other available data are from immersion and flow-through tests.
If necessary, I would suggest to add a sentence that "the data base is from all three types of tests."

Related model that needs to be discussed with Osvaldo is the wet surface area (equation including arc cosine etc). This model was quoted with modification from TPA4 adopting immersion, although I did not do.
If we use immersion as a reference in TPA5, all questions are gone as discussed in the last meeting.
Currently, there are several other wetting parameters from water entry modes (e.g., mechanical, corrosion etc). All are average 0.5. Therefore, it is conservative regardless of wetting modes. My question again is what we use as the reference - immersion or drip? It should be stated clearly, including where the
TPA4 wetting and new wetting modes are used. They seem to be
overlapped, although 0.5 is still the same.

You can modify all other Bret's comments (on my part) as suggested - all are editorial and references. I would like to go over all with you if necessary. I made all necessary notes.

>>> David Pickett <dpickett@cnwra.swri.edu> 7/1/2007 10:43 PM >>>
Tae,

I assume you are responding to Bret's two comments on the Table 10-1 entry for
Preexponential_SFDissolutionModel2. Correct?

David

> -----Original Message-----
> From: Tae Ahn [mailto:TMA@nrc.gov]
> Sent: Sunday, July 01, 2007 8:45 PM
> To: David Pickett
> Cc: Osvaldo Pensado; Bret Leslie; Sheena Whaley
> Subject: RE: Answers to EBSREL chapter comments
>
>
> Dave, I left my notes on my revision at work on Saturday. We can
> finish all on Monday. The two questions are

>
>
> (1) to Bret, the reference for spent fuel dissolution - I don't know
> the scientific notebook numbers Bret quoted. The reference ML number
> will do it, along with two other papers.
> I'll ask Bret what those scientific note book numbers are.
>
> (2) The base case equation for spent fuel dissolution is OK, because
> it is per unit surface area of spent fuel, regardless of immersion or
> drip. In fact, DOE's model (model 1) is from flow through tests in
> carbonate solution. The difference between immersion and drip is the
> wet surface area. For the solubility control, the current wet area
> model is OK.
> Question is about Tc and I - we assume average 0.5 wet, by sampling 0
> to 1 assuming immersion. If you change to immersion from drip as the
> reference as discussed in the last meeting, the current surface area
> model is OK. If we still use drip as the reference, the wet surface
> area for Tc and I appears to be lower than 0.5. Therefore, the
> current model seems to be conservative. The ANL tests showed the
> wetting in localized area, although not quantified. The ANL drip
> rates are still very high compared with the repository drip rates
> (conservative).
> However, for hydration case, it should be 1. Nevertheless, Osvaldo
> mentioned that we use mass balance for in flow and out flow from WP.
> Therefore, I think that all details of mass released are captured in
> the actual calculation. I would like to know what flow modes we are
> taking after our last meeting.
>
> Let's talk about it on 7/2. I have a few other dues on 7/2, but I can
> manage to work with you. I also will mention a few things about your
> writeup on my review comments. Let's try to call each other. Thanx,
> Tae
>
>
> >>> David Pickett <dpickett@cnwra.swri.edu> 7/1/2007 7:43 PM >>>
> Tae,
>
> I want to try and wrap up the revisions on Monday (7/2).
>
> David
>
> > -----Original Message-----
> > From: Tae Ahn [mailto:TMA@nrc.gov]
> > Sent: Saturday, June 30, 2007 9:18 AM
> > To: David Pickett
> > Subject: Re: Answers to EBSREL chapter comments
> >
> >
> > Thank you, Dave. Actually, I have worked on my part (mainly
> > Leslie comments). I would like to discuss them with you
> > about how to change.
> > All are straight forward, except a couple of questions to
> > Osvaldo and Bret.
> >
> > One general comment, perhaps for your sensitivity studies or
> > others, regarding multi-layer sorption and nonequilibrium

> > steady-state. I worked pretty comprehensively on these
> > issues and published in
> >
> > NUREG-1564, 1996, Long-term Kinetic Effects and Colloid
> > Formation in the Dissolution of LWR Spent-fuel, by T. Ahn
> >
> > If you have time, you may take a look at it.
> >
> > Thanx, Tae
> >
> ---
>

> <Dave reply>
>

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"David Pickett" <dpickett@cnwra.swri.edu>
Tracking Status: None
"Osvaldo Pensado" <opensado@cnwra.swri.edu>
Tracking Status: None
"Bret Leslie" <Bret.Leslie@nrc.gov>
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