PMSTPCOL PEmails

From: Joseph, Stacy
Sent: Thursday, October 28, 2010 2:13 PM
To: 'Tomkins, James'
Cc: STPCOL
Subject: FW: Comments: STP chemical effects RAIs and status

Jim,

Below are questions regarding the DRAFT RAIs 6.2.2-29 and 6.2.2-30. Please be prepared to discuss these questions next week.

Thank you,
Stacy Joseph

Comments on Draft RAIs

General
Dissolution and precipitation depend on temperature, pH, and the material, so assumption of a constant pH during a 30-day event is not necessarily conservative. To complete our review we will need to look at the applicant's calculations of dissolution and precipitation (e.g., the amounts of sodium aluminum silicate and zinc precipitates). Therefore, we need access to the pH and temperature transients, including the input assumptions and calculation methodology for pH vs. time. We will also need access to the calculations of the dissolution and precipitation. In addition, as part of our discussion on RAI 06.02.02-28, we requested clarification on the requirements that will be in place to ensure that any post-LOCA pH control actions assumed in your pH calculations will be performed.

RAI 06.02.02-29
- The second paragraph of the draft response refers to calculating corrosion for 30 days during the bounding post-LOCA temperature profile. Again, the corrosion rate is pH dependent. So we need to know that the applicant is looking at the pH profile as well.
- In addition to filling in the quantity of non-particulate zinc corrosion product, the applicant will need to identify what that corrosion product is, and the basis for selecting it. Both the amount of dissolved zinc and the amount of zinc corrosion product should be identified, since this is conversion is not performed in WCAP-16530-NP as it is for the aluminum-base precipitates.
- We will also need to see how the quantity of zinc corrosion product is converted to a quantity of AlOOH. This doesn't necessarily have to be included in this RAI response, but it will need to be identified in or easily traceable through the fuel assembly test plan.

RAI 06.02.02-30
- The draft response proposes to include the predicted amount of sodium aluminum silicate in the fuel assembly test plan, but it does not identify the amount of the precipitate. The staff will need to review that quantity and how it was determined. This RAI response does not necessarily need to identify the quantity, but it does need to explain how the quantity will be determined and where the calculation is documented.
- The applicant should confirm that the use of 4.5 ft^2 latent aluminum is bounding for the plant's temperature and pH transient. As stated above, a constant pH at low solubility is not necessarily conservative. In the

case of aluminum, a constant low pH may not be conservative if there is a possibility of the pH going from a higher value (higher corrosion rate) to a lower value (lower solubility). Keeping the pH low the whole time would allow more time to reach the solubility limit because of the lower corrosion rate. This does not need to be in the RAI response, but we want to emphasize this point because we don't yet have a good understanding of the predicted plant pH values vs. the stated limiting values.

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Recipients:
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