

## **NRR-PMDAPEm Resource**

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**From:** Feintuch, Karl  
**Sent:** Tuesday, May 22, 2012 9:53 AM  
**To:** NRR-PMDA-ECapture Resource  
**Subject:** ME8460 RAI's - clarification call - continuation  
**Attachments:** ME8460 RAI's - clarification call - continuation.pdf

The attached item is publically available and non-sensitive.

Please profile the case number as: "TAC ME8460"

**Hearing Identifier:** NRR\_PMDA  
**Email Number:** 382

**Mail Envelope Properties** (26E42474DB238C408C94990815A02F097B32B81C84)

**Subject:** ME8460 RAI's - clarification call - continuation  
**Sent Date:** 5/22/2012 9:52:41 AM  
**Received Date:** 5/22/2012 9:52:42 AM  
**From:** Feintuch, Karl

**Created By:** Karl.Feintuch@nrc.gov

**Recipients:**  
"NRR-PMDA-ECapture Resource" <NRR-PMDA-ECapture.Resource@nrc.gov>  
Tracking Status: None

**Post Office:** HQCLSTR01.nrc.gov

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	119	5/22/2012 9:52:42 AM
ME8460 RAI's - clarification call - continuation.pdf		28073

**Options**  
**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**

**From:** [Feintuch, Karl](#)  
**To:** [Parks, Benjamin](#); [Paige, Jason](#); "[Craig D Sly](#)"  
**Subject:** ME8460 RAI"s - clarification call - continuation

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===== update 2012-05-21-1730 ET =====

The meeting started on time with the following participation:

For NRC: Karl Feintuch (DORL PM), Ben Parks (SRXB Reviewer), Jason Paige (DORL PM; to discuss item 9, covered first)

For Dominion / Kewaunee:

Craig Sly – Licensing Engineer, Dominion Resources Services;

Dana Knee – Supervisor, Nuclear Safety Analysis Group;

Kurt Flaig – Consulting Engineer, Nuclear Safety Analysis Group

The items identified under the original message were verified with the result that items Parks-001 and Parks-004 were deleted; Paige-009 was revised; Parks-005 and Parks-006 were edited. The active RAI items (RAII) were confirmed for submittal on June 8, 2012 (2012-06-08, in the RAI tracking number). The updated items follow:

----- Begin RAI Items -----

(ME8460-RAII-SRXB-Parks-001-2012-05-23) This item is deleted.

2. (ME8460-RAII-SRXB-Parks-002-2012-06-08) Justify the evaluation of reduced peaking factors at beginning-of-life conditions to obtain analytic margin to offset the TCD effect. Show that peaking factor reductions affect PCT in a manner that is substantially independent of fuel burnup.

3. (ME8460-RAII-SRXB-Parks-003-2012-06-08) Fully explain all peaking factor adjustments and provide the rationale for each adjustment.

4. (ME8460-RAII-SRXB-Parks-004-2012-05-23) This item is deleted.

5. (ME8460-RAII-SRXB-Parks-005-2012-06-08) Your submittal referenced a March 7, 2012 letter sent by Westinghouse Electric Company to the NRC.

The final paragraph on Page 2 of 9 refers to small differences in fuel characteristics that were claimed to be compared. The paragraph also discusses confirmatory evaluations concluding that other operating characteristics were acceptable. Provide the results of this comparison for Kewaunee, including the relevant conclusions and the technical basis supporting those conclusions. For any conclusion that differences in a particular fuel or operating characteristic are offset by other conservatisms, list those conservatisms and provide a quantitative estimate of each conservatism, as well as a brief description of the rigor associated with that estimate."

Please provide the values for the coefficients used in the PAD 4.0+TCD UO<sub>2</sub> thermal conductivity equation.

Please explain any error corrections, code improvements, and miscellaneous code cleanup between the WCOBRA/TRAC and HOTSPOT code versions used in the TCD evaluations and those used in the plant's AOR.

What is the thermal conductivity model impact of code version changes in HOTSPOT?

Explain the differences between the HOTSPOT and PAD thermal conductivity models and the impact of those differences. Provide graphs or other quantified descriptions that aid in explanation.

6. (ME8460-RAII-SRXB-Parks-006-2012-06-08) Please provide additional details concerning the steady-state ASTRUM/CQD initialization process. In particular, please explain what fuel characteristics are adjusted within the ASTRUM/CQD models to obtain convergence and agreement among HOTSPOT, WCOBRA/TRAC, and PAD4.0TCD.

7. (ME8460-RAII-SRXB-Parks-007-2012-06-08) Please explain how the changed design values will be verified during operation of the plant, i.e. TS limits, Surveillances, etc. Also, explain what compensatory actions will be taken if a value is found to be outside of the limits assumed in the analysis.

8. (ME8460-RAII-SRXB-Parks-008-2012-06-08) Page 3 of Attachment 2 to Serial 12-100 states that "Dominion and its vendor, Westinghouse Electric Company, LLC, utilize processes which ensure that LOCA analysis input values conservatively bound the as-operated plant values for those parameters." Please explain these processes.

9. (ME8460-RAII-DORL-Paige-009-2012-06-08) Based on the NRC's review of the March 15, 2012, submittal it appears that the licensee has revised inputs to a method of evaluation as described in the FSAR (as updated) used in establishing the design bases or in the safety analyses.

Revision 1 to NEI 96-07, "Guidelines for 10 CFR 50.59 Implementation," Section 3.8, "Input Parameters," provides clarifying information concerning whether an input parameter is considered to be an element of a methodology for the purposes of addressing the applicable requirements found at 10 CFR 50.59, "Changes, Tests, and Experiments." Address whether the methodology permits the licensee to establish how to select the value of an input parameter to yield adequately conservative results and whether the revised value is more conservative than that required by the selection method.

Address whether any of the changes (i.e., to the UO<sub>2</sub> thermal conductivity equation) constitutes a change in the calculational framework used for evaluating behavior or response of a system, structure or component. Explain whether and how 10 CFR 50.59(c)(4) might apply to such a change.

----- end RAI Items -----

===== update 2012-05-15-1810 ET =====

Both Parks and Paige have accepted.

Craig Sly is invited to represent Dominion / Kewaunee participation. The agenda is as described below. The objective of the discussion is to produce a finalized set of RAI items that the licensee can incorporate into its RAI response letter.

===== original message =====

Ben is out of the office for the 5/16/2012 opportunity. I want to confirm the next available date / time, Currently 5/21/2012; 2PM-3PM ET.

Until Ben confirms I will warn Craig that this appointment is still tentative.

Both, please confirm as soon as practical.

Karl

----- emailed request from Craig Sly -----

From: Craig D Sly HYPERLINK "mailto:[mailto:craig.d.sly@dom.com]" [mailto:craig.d.sly@dom.com]

Sent: Tuesday, May 15, 2012 11:16 AM

To: Feintuch, Karl

Subject: ME8460 RAI's

Karl,

I think we need to have one more clarification phone call regarding the RAI's associated with the fuel thermal conductivity issue. Attached below is a list of the original questions that have been marked-up over the past several weeks. Items 1 and 4 were deleted by the NRC staff sometime around 4/26. Then during a phone call on April 30, a couple of minor changes were made to questions 5 and 6. Hopefully, the staff will not have any problem with those changes.

The thing we will want to discuss in detail is Question 9. I did not participate in the April 30 NRC/DEK phone call on this topic, but I understand that the final wording for Question 9 was left open pending the NRC staff discussing it with other licensees.

The marked up questions are provided below for information.

So the purpose of the phone call would be to 1) come to final agreement on wording of all of the questions, and 2) allow you to issue a final set of questions to the docket for us to answer. Please understand that we are actively working on answering these questions and plan to issue a response sometime around June 1.

We would only have Dana Knee and myself on the call. Dates and times that would work for us include:

May 16: 12 - 3 pm  
May 21: 12 - 3 pm [The current invitation is in this opportunity – kdf]  
May 22: 9 am - 3 pm  
May 23: 10am - 1pm

We can use my ReadyTalk Number below:

ReadyTalk 866-740-1260  
Access Code 2732784

10. (ME8460-RAII-SRXB-Parks-001-2012-05-23) Please explain how the 10 CFR 50.46(a)(3) error report enclosed in your response to the NRC's Information Request pursuant to 10 CFR 50.54(f) remains adherent to the WCAP-14449-P-A methodology, which includes a supplement describing the method for fulfilling 10 CFR 50.46(a)(3) re-analysis requirements.

11. (ME8460-RAII-SRXB-Parks-002-2012-05-23) Justify the evaluation of reduced peaking factors at beginning-of-life conditions to obtain analytic margin to offset the TCD effect. Show that peaking factor reductions affect PCT in a manner that is substantially independent of fuel burnup.

12. (ME8460-RAII-SRXB-Parks-003-2012-05-23) Fully explain all peaking factor adjustments and provide the rationale for each adjustment.

13. (ME8460-RAII-SRXB-Parks-004-2012-05-23) Compare the results of the TCD and offset sensitivity studies to the fuel rod parameter sensitivity studies discussed in the Code Qualification Document. Please explain any significant discrepancies in the results.

14. (ME8460-RAII-SRXB-Parks-005-2012-05-23) Your submittal referenced a March 7, 2012 letter sent by Westinghouse Electric Company to the NRC.

f) The final paragraph on Page 2 of 9 refers to small differences in fuel characteristics that were claimed to be compared. The paragraph also discusses confirmatory evaluations concluding that other operating characteristics were acceptable. Provide the results of this comparison for Kewaunee, including the relevant conclusions and the technical basis supporting those conclusions. For any conclusion that differences in a particular fuel or operating characteristic are offset by other conservatisms, list those conservatisms and provide a quantitative estimate of each conservatism, as well as a brief description of the rigor associated with that estimate."

- g) Please provide the values for the coefficients used in the PAD 4.0+TCD UO<sub>2</sub> thermal conductivity equation.
- h) Please explain any error corrections, code improvements, and miscellaneous code cleanup between the WCOBRA/TRAC and HOTSPOT code versions used in the TCD evaluations and those used in the plant's AOR.
- i) What is the thermal conductivity model impact of code version changes in HOTSPOT?
- j) Explain the differences between the HOTSPOT and PAD thermal conductivity models and the impact of those differences. Provide graphs or other quantified descriptions that aid in explanation.

15. (ME8460-RAII-SRXB-Parks-006-2012-05-23) Please provide additional details concerning the steady-state ASTRUM/CQD initialization process. In particular, please explain what fuel characteristics are adjusted within the ASTRUM/CQD models to obtain convergence and agreement between HOTSPOT and PAD4.0TCD.

16. (ME8460-RAII-SRXB-Parks-007-2012-05-23) Please explain how the changed design values will be verified during operation of the plant, i.e. TS limits, Surveillances, etc. Also, explain what compensatory actions will be taken if a value is found to be outside of the limits assumed in the analysis.

17. (ME8460-RAII-SRXB-Parks-008-2012-05-23) Page 3 of Attachment 2 to Serial 12-100 states that "Dominion and its vendor, Westinghouse Electric Company, LLC, utilize processes which ensure that LOCA analysis input values conservatively bound the as-operated plant values for those parameters." Please explain these processes.

18. (ME8460-RAII-DORL-Paige-009-2012-05-23) Based on the NRC's review of the March 15, 2012, submittal it appears that the licensee has revised inputs to a method of evaluation as described in the FSAR (as updated) used in establishing the design bases or in the safety analyses.

Address whether the methodology permits the licensee to establish how to select the value of an input parameter to yield adequately conservative results and whether the revised value is more conservative than that required by the selection method. Further, address whether any of the changes (i.e., to the UO<sub>2</sub> thermal conductivity equation) constitute a change in the calculational framework used for evaluating behavior or response of a system, structure or component.

Craig Sly  
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