

Garcia Santos, Norma

From: Li, Zhian
Sent: Tuesday, July 11, 2017 1:05 PM
To: Garcia Santos, Norma
Subject: RE: RE: RE: Documentation--
Attachments: TN-B1_Public_Meeting_AREVA(ZL edit).docx

Norma,

I do not have a problem with the proposed revision for the comments on RAI 6-2.

I agreed with the applicant on RAI 6-4 with additional clarification as you can see in the edit. There is no technical issue with their comment on the discussion of RAI 6-4.

Thanks,

Zhian

From: TUPPER Larry (AREVA) [mailto:Larry.Tupper@areva.com]
Sent: Tuesday, July 11, 2017 11:32 AM
To: Garcia Santos, Norma <Norma.GarciaSantos@nrc.gov>
Cc: GUZZARDO Michelle (AREVA) <Michelle.Guzzardo@areva.com>
Subject: [External_Sender] RE: RE: Documentation--

Dear Norma,

We have reviewed the document you sent us. The contents of this document are non-proprietary.

We would also respectfully suggest two minor revisions to the document. A proposed revision is attached. The changes are:

- For RAI6-2, we don't recall that more information was needed, rather that we provide a way for the reviewer to quickly find the needed information. We believe that what was as for, and we agreed to, is to provide in the RAI and/or SAR an ability to cross reference the density discussion, table, and sample input file with each other.
- For RAI6-4 – added short discussion about applicability of NUREG CR-7224.

Sincerely



Larry Tupper
Manager Special Projects

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From: Garcia Santos, Norma [<mailto:Norma.GarciaSantos@nrc.gov>]
Sent: Thursday, July 06, 2017 2:02 PM
To: TUPPER Larry (FL)
Subject: RE: RE: Documentation--

Good afternoon,

Please let me know if you can open this document. The 11 or 12 would work (since you are out this week), if you need additional time.

Thanks,
Norma

From: TUPPER Larry (AREVA) [<mailto:Larry.Tupper@areva.com>]
Sent: Thursday, July 06, 2017 3:56 PM
To: Garcia Santos, Norma <Norma.GarciaSantos@nrc.gov>
Subject: [External_Sender] RE: Documentation--

Norma – I have the file by the password you sent doesn't work. It is "MeetSummary2017" correct?

Sincerely

Larry

Larry Tupper
Manager Special Projects
Larry.tupper@areva.com
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From: Garcia Santos, Norma [<mailto:Norma.GarciaSantos@nrc.gov>]

Sent: Wednesday, July 05, 2017 6:59 AM

To: TUPPER Larry (FL)

Subject: Documentation--

PW: MeetSummary2017

RAI**Summary of Discussion**

- explain the changes made to section 4 of the application in order to answer the question as part of the RAI response;
- identify the limiting case for the leak test (normal conditions of transport versus accident conditions); and
- revise Section 4 to ensure that units are consistent and clear (e.g., volume versus rate per week).

The staff also asked the applicant to remove the parentheses in some text for clarity. In Section 4.1.1, the staff asked the applicant to revise the following:

- The "definition" of Model No. TN-B1's containment boundary, which reads as follows:

"The primary containment boundary for the TN-B1 package is the fuel cladding."

Note that the applicant indicated that the containment boundary includes the end plugs and welds. The staff stated that the applicant of the RAJ-II package agreed to clarify the definition of the containment boundary for its package as well. The staff also mentioned that the word "primary" should be removed from this containment boundary definition since the applicant only considers one containment boundary (i.e., there is no secondary containment boundary) in the application.

- The last sentence to clarify that the fuel is leak tested after fabrication to demonstrate that it meets the leak-tight criterion (1×10^{-7} cubic centimeters-atmosphere per second ($\text{cm}^3\text{-atm/s}$)), since the ATRIUM-11 fuel would not meet the leak-tight criteria under HAC based on the information in the application.

4-2

The applicant indicated that it would provide its proposed text for Table 4 of the CoC, which includes the minimum cladding thickness. The staff pointed out that the applicant needs to verify that the minimum cladding thickness is consistent throughout the application and clearly distinguish between assumptions versus the actual package parameters related to this licensing action request. The staff also indicated that the applicant should include the proposed values for Table 4 of the CoC in Section 4 of the application, since the CoC is based on the information submitted in the application.

Criticality Safety

6-1

The staff found the proposed response acceptable. The staff recommended deleting the second paragraph of the proposed RAI response.

6-2

The staff asked the applicant to add the following information to the proposed RAI response *allowing cross referencing of:*

RAI

Summary of Discussion

- a discussion of the relationship between the input file and the calculation for the material density of the poisoned fuel in the application,
- the input files related to this analysis, and
- an explanation of the calculation of the materials' densities of the fuel rods.

6-3 The applicant explained that it used the same lattice model as the one previously used and that NRC had previously determined that it was conservative. The staff pointed out that the applicant needs to provide a discussion about the conservatisms related to this licensing action and justification for such conservatisms. For example, it could provide a discussion about the possibility of modeling a water region outside of the cladding to better simulate the melt foam and possible fuel configuration for the package under hypothetical accident conditions.

6-4 The staff indicated that the applicant needs to select scenarios such as maximum k_{eff} , various enrichments in the vanished zone (i.e., the part of the fuel assembly that contains no fuel length) and demonstrate that these are bounding conditions for this licensing action. The applicant replied that it used the maximum enrichment values. In response, the staff pointed out the following:

- The staff needs to understand whether the ATRIUM-11 fuel would have axial and horizontal variation of enrichment (the application does not provide this information). NUREG\CR-7224 includes discussions about BWR fuel and may provide some information about the vanished zones.
- Assuming the highest enrichment may not yield the maximum k_{eff} due to the axial and horizontal variations of enrichment related to BWR fuel.
- Adding gadolinium yields a lower, not a maximum, k_{eff} .
- The applicant needs to explain the analysis that it performed, including assumptions and corresponding justification as well as the analysis with the partial length zone.

• AREVA indicated that they did not believe NUREG\CR-7224 was applicable to fresh fuel shipping containers, but did agree to reviewingreview it further in light of these discussions. The staff agreed with the applicant the applicability of NUREG/CR-7224 to the TN-B1 application. The staff pointed out that it was using the complexity of the BWR fuel designs for the applicant to consider in identifying the most reactive fuel assembly design to demonstrate compliance with 10 CFR 71.55(b).

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At the end of the meeting, the staff indicated that the applicant should perform the following actions:

- State in the application, when applicable, whether previous analysis are bounding.
- Ensure that changes related to the ATRIUM-11 fuel are made throughout the application and show in the application that the ATRIUM-11 fuel is analyzed and/or bounded by the