



PROS 0728

April 30, 2018  
NRC:18:014

U.S. Nuclear Regulatory Commission  
Document Control Desk  
11555 Rockville Pike  
Rockville, MD 20852

**Response to Request for Additional Information Regarding Topical Report ANP-10332P, Revision 0, "AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Loss of Coolant Accident Scenarios"**

- Ref. 1: Letter P. Salas (AREVA Inc.) to Document Control Desk (NRC), "Request for Review and Approval of ANP-10332P, Revision 0, 'AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Loss of Coolant Accident Scenarios'," NRC:14:011, March 25, 2014.
- Ref. 2: Letter J. Rowley (NRC) to G. Peters (AREVA Inc.), "Request for Additional Information Regarding AREVA Inc. Topical Report ANP-10332P, Revision 0, 'AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Loss of Coolant Accident Scenarios' (TAC NO. MF3829)," October 24, 2017.
- Ref. 3: Letter J. Rowley (NRC) to G. Peters (Framatome Inc.), "Request for Additional Information Regarding AREVA Inc. Topical Report ANP-10332P, Revision 0, 'AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Loss of Coolant Accident Scenarios' (TAC NO. MF3829/EPID: L-2014-TOP-0004)," January 10, 2018.

Framatome Inc. (Framatome) requested the NRC's review and approval of Topical Report (TR) ANP-10332P, Revision 0, "AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Loss of Coolant Accident Scenarios" in Reference 1. The NRC provided Requests for Additional Information (RAIs) regarding this TR in References 2 and 3. The responses to these RAIs are included in this letter as Enclosure 2 (ANP-10332Q1P, Revision 0).

As a result of the issues summarized in Table 1 of Enclosure 1, information needs to be updated in the base TR to ensure the final methodology is sufficiently captured by the approved version of the TR. To facilitate the updating of the TR, Framatome will revise the TR to Revision 1 of ANP-10332P such that the approved TR will be ANP-10332PA, Revision 1. Framatome requests that the NRC acknowledge this in the safety evaluation (SE) for this TR.

Framatome considers the material contained in Enclosure 2 to be proprietary. As required by 10 CFR 2.390(b), an affidavit is enclosed to support the withholding of the information from public disclosure. Proprietary and non-proprietary versions of the RAI responses are provided.

There are no commitments within this letter or its enclosures.

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If you have any questions related to this information, please contact Mr. Alan B. Meginnis by telephone at (509) 375-8266, or by e-mail at [Alan.Meginnis@framatome.com](mailto:Alan.Meginnis@framatome.com).

Sincerely,



Gary Peters, Director  
Licensing & Regulatory Affairs  
Framatome Inc.

cc: J. G. Rowley  
Project 728

Enclosures:

1. Listing of Required Topical Report Updates
2. Proprietary copy of ANP-10332Q1P, Revision 0, "AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Loss of Coolant Accident Scenarios Responses to NRC Request for Additional Information"
3. Non-Proprietary copy of ANP-10332Q1NP, Revision 0, "AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Loss of Coolant Accident Scenarios Responses to NRC Request for Additional Information"
4. Notarized Affidavit for Withholding of Proprietary Information

**Enclosure 1:  
 Required Topical Report Updates**

Item #	Description of Update
1	Table 5-1 – modification of multiple entries per RAI responses 47 and 73
2	Table 6-1 – modification of multiple entries per RAI responses 2 and 36
3	Page 6-37 – clarification of core region description based on RAI response 33c
4	Section 6.3.8 – clarification of pre-event oxidation practice based on RAI response 42
5	Section 6.4.5 – clarification of the relocation model based on RAI response 10
6	Section 6.4.17 – removal of the CFD reference based on RAI response 21
7	Section 7.3.5 – correction of pressure range in Christensen Tests based on RAI response 103b
8	Page 7-175 – removal of extraneous sentence consistent with RAI response 121
9	Section 7.6.2.3 – removal of referenced material consistent with RAI response 98b
10	Section 7.7.1.2 – clarification on the impact of higher subcooling in the upper plenum consistent with RAI response 79c
11	Figure 7-322 – replace with corrected figure per RAI response 122
12	Section 7.7.3.3 – update of ADS activation timing consistent with RAI response 85a
13	Table 7-26 – update multiple event timings consistent with RAI response 85b
14	Tables 7-37, 7-38, 7-39, 7-53, 7-54, 7-55 – denote low PCTs consistent with RAI response 55
15	Tables 7-40, 7-42, 7-44, 7-56, 7-58 (footnote) - clarification of pre-event oxidation practice based on RAI response 42
16	Table 7-47 – update to table entry consistent with RAI response 88
17	Table 7-55 – update table value consistent with RAI response 55
18	Section 8.2 – update the text regarding the implementation of relocation model in S-RELAP5 consistent with RAI response 10
19	Page 6-55 – update the heat transfer regime consistent with RAI response 110a
20	Page 6-68 – clarify discussion regarding Reference 43 consistent with RAI response 16b
21	Figure 6-6 – update lower plenum nodalization
22	Various typos throughout the document

## AFFIDAVIT

STATE OF WASHINGTON )  
                                  ) ss.  
COUNTY OF BENTON     )

1. My name is Alan B. Meginnis. I am Manager, Product Licensing, for Framatome Inc. and as such I am authorized to execute this Affidavit.
2. I am familiar with the criteria applied by Framatome to determine whether certain Framatome information is proprietary. I am familiar with the policies established by Framatome to ensure the proper application of these criteria.
3. I am familiar with the Framatome information contained in the report ANP-10332Q1P, Revision 0, "AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Loss of Coolant Accident Scenarios Response to NRC Request for Additional Information," dated April 2018 and referred to herein as "Document." Information contained in this Document has been classified by Framatome as proprietary in accordance with the policies established by Framatome for the control and protection of proprietary and confidential information.
4. This Document contains information of a proprietary and confidential nature and is of the type customarily held in confidence by Framatome and not made available to the public. Based on my experience, I am aware that other companies regard information of the kind contained in this Document as proprietary and confidential.
5. This Document has been made available to the U.S. Nuclear Regulatory Commission in confidence with the request that the information contained in this Document be withheld from public disclosure. The request for withholding of proprietary information is made

in accordance with 10 CFR 2.390. The information for which withholding from disclosure is requested qualifies under 10 CFR 2.390(a)(4) "Trade secrets and commercial or financial information."

6. The following criteria are customarily applied by Framatome to determine whether information should be classified as proprietary:

- (a) The information reveals details of Framatome's research and development plans and programs or their results.
- (b) Use of the information by a competitor would permit the competitor to significantly reduce its expenditures, in time or resources, to design, produce, or market a similar product or service.
- (c) The information includes test data or analytical techniques concerning a process, methodology, or component, the application of which results in a competitive advantage for Framatome.
- (d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for Framatome in product optimization or marketability.
- (e) The information is vital to a competitive advantage held by Framatome, would be helpful to competitors to Framatome, and would likely cause substantial harm to the competitive position of Framatome.

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The information in the Document is considered proprietary for the reasons set forth in paragraphs 6(a), 6(b), 6(c), 6(d) and 6(e) above.

7. In accordance with Framatome's policies governing the protection and control of information, proprietary information contained in this Document have been made available, on a limited basis, to others outside Framatome only as required and under suitable agreement providing for nondisclosure and limited use of the information.

8. Framatome policy requires that proprietary information be kept in a secured file or area and distributed on a need-to-know basis.

9. The foregoing statements are true and correct to the best of my knowledge, information, and belief.

Alan B. Metz

SUBSCRIBED before me this 27<sup>th</sup>  
day of April, 2018.

Susan K. McCoy

Susan K. McCoy  
NOTARY PUBLIC, STATE OF WASHINGTON  
MY COMMISSION EXPIRES: 1/14/2020

SUSAN K MCCOY  
NOTARY PUBLIC - WASHINGTON  
MY COMMISSION EXPIRES 01-14-2020