



May 9, 2016
NRC:16:013

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

Response to a Draft Request for Additional Information Regarding Report BAW-10247PA, Revision 0, Supplement 1P, Revision 0, "Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors Supplement 1: Qualification of RODEX4 for Recrystallized Zircaloy-2 Cladding"

AREVA Inc. (AREVA) requested the NRC review and approve Topical Report (TR) BAW-10247PA, Revision 0, Supplement 1P, Revision 0, "Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors Supplement 1: Qualification of RODEX4 for Recrystallized Zircaloy-2 Cladding" in Reference 1. Supplemental information for the submittal was transmitted to the NRC in Reference 2. The NRC provided a Request for Additional Information (RAI) regarding this TR in Reference 3. The responses to Questions 2 through 12 of this request were submitted to the NRC in Reference 4. The Response to Question 1 of the RAI was submitted to the NRC in Reference 5. The Response to Question 13 and a correction to the Question 1 response are included in this letter as Enclosure 3.

The correction to Question 1 addresses a typographical error in the equation for HPUF on Page 15 of BAW-10247PA, Revision 0, Supplement 1Q2P, Revision 0, "Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors Supplement 1: Qualification of RODEX4 for Recrystallized Zircaloy-2 Cladding Responses to NRC Request for Additional Information" as enclosed in Reference 5. The correction is made by revising this document and adding the response to Question 13 in the revision (BAW-10247PA, Revision 0, Supplement 1Q2P, Revision 1). To prevent erroneous information from appearing in the Approved TR, AREVA requests that the NRC acknowledge in the Safety Evaluation (SE) for this TR that only Revision 1 of the Supplement 1Q2P document will be included in the NRC Correspondence Section of the approved TR.

Additionally, a few other changes to correct minor errors and improve clarity, as listed in Enclosure 1, were identified during the NRC review of the RAI responses contained in BAW-10247PA, Revision 0, Supplement 1Q1P, Revision 0, as enclosed in Reference 4. AREVA believes it would be advantageous to revise BAW-10247PA, Supplement 1Q1P, Revision 0 to Revision 1 to incorporate these changes and include only Revision 1 in the NRC Correspondence Section of the Approved TR. AREVA requests the SE for this TR acknowledge that only Revision 1 of the Supplement 1Q1P document, containing these changes, will be included in the NRC Correspondence Section of the approved TR.

Note that in Reference 2, AREVA identified information which should be replaced in the base Supplement, BAW-10247PA, Revision 0, Supplement 1P, Revision 0, before the Approved TR is issued. The response to RAI Question 2a in Reference 4 also makes a commitment to change additional items in the base Supplement before issuing the approved TR. In order to incorporate the noted changes, AREVA

AREVA INC.

3315 Old Forest Road, Lynchburg, VA 24501
Tel.: 434 832 3000 - www.aveva.com

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will revise the base Supplement to "BAW-10247P-A, Revision 0, Supplement 1P, Revision 1" prior to including it in the Approved TR instead of Revision 0. Consequently, the approved TR will also be Revision 1 (BAW-10247P-A, Revision 0, Supplement 1P-A, Revision 1). AREVA requests that the NRC acknowledge this in the SE for this TR.

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

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@areva.com.

Sincerely,



Gary Peters, Director
Licensing & Regulatory Affairs
AREVA Inc.

cc: J. G. Rowley
Project 728

References:

- Ref. 1: Letter, Ronnie L. Gardner (AREVA Inc.) to DCD (NRC), "Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors Supplement 1: Qualification of RODEX4 for Recrystallized Zircaloy-2 Cladding," NRC:09:133, December 22, 2009.
- Ref. 2: Letter, Ronnie L. Gardner (AREVA Inc.) to DCD (NRC), "Transmittal of Revised Information for Review of Topical Report BAW-10247PA, Revision 0, Supplement 1P, Revision 0," NRC:10:093, October 22, 2010.
- Ref. 3: Letter, Jonathan Rowley (NRC) to Gary Peters (AREVA Inc.), "Request for Additional Information RE: AREVA NP, Inc. Topical Report BAW-10247PA, Revision 0, Supplement 1P, Revision 0, 'Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors Supplement 1: Qualification of RODEX4 for Recrystallized Zircaloy-2 Cladding' (TAC NO. MF5421)," March 25, 2016.
- Ref. 4: Letter, Pedro Salas (AREVA Inc.) to DCD (NRC), "Response to a Draft Request for Additional Information Regarding Report BAW-10247PA, Revision 0, Supplement 1P, Revision 0, 'Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors Supplement 1: Qualification of RODEX4 for Recrystallized Zircaloy-2 Cladding'," NRC:13:016, April 19, 2013.
- Ref. 5: Letter, Pedro Salas (AREVA Inc.) to DCD (NRC), "Response to a Draft Request for Additional Information Regarding Report BAW-10247PA, Revision 0, Supplement 1P, Revision 0, 'Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors Supplement 1: Qualification of RODEX4 for Recrystallized Zircaloy-2 Cladding'," NRC:13:084, November 20, 2013.

Enclosures:

1. Updates to BAW-10247PA, Revision 0, Supplement 1Q1P, Revision 0
2. Affidavit for Withholding of Proprietary Information.
3. A Proprietary copy of the Topical Report BAW-10247P-A, Revision 0, Supplement 1Q2P, Revision 1, "Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors Supplement 1: Qualification of RODEX4 for Recrystallized Zircaloy-2 Cladding Response to NRC Request for Additional Information".
4. A Non-Proprietary copy of the Topical Report BAW-10247NP-A, Revision 0, Supplement 1Q2NP, Revision 1, "Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors Supplement 1: Qualification of RODEX4 for Recrystallized Zircaloy-2 Cladding Response to NRC Request for Additional Information".

Enclosure 1

Updates to BAW-10247PA, Revision 0, Supplement 1Q1P, Revision 0

Update 1: Revise the captions for Figures 5-2 and 5-3 as follows:

Figure 5-2: (Predicted-measurement) hoop strain vs. fast fluence with the creep model and measurement uncertainties biased at their lower bounds

Figure 5-3: (Predicted-measurement) hoop strain vs. fast fluence with the creep model and measurement uncertainties biased at their upper bounds

Update 2: Page 27, 8th line from the top: insert "x 1.E+21" before n/cm2, as follows:

Ψ : fast fluence (> 1 MeV) x 1.E+21 n/cm2

AFFIDAVIT

STATE OF WASHINGTON)
) ss.
COUNTY OF BENTON)

1. My name is Alan B. Meginnis. I am Manager, Product Licensing, for AREVA Inc. and as such I am authorized to execute this Affidavit.

2. I am familiar with the criteria applied by AREVA to determine whether certain AREVA information is proprietary. I am familiar with the policies established by AREVA to ensure the proper application of these criteria.

3. I am familiar with the AREVA information contained in the report BAW-10247P-A, Revision 0, Supplement 1Q2P, Revision 1 "Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors Supplement 1: Qualification of RODEX4 for Recrystallized Zircaloy-2 Cladding Response to NRC Request for Additional Information," dated May 2016 and referred to herein as "Document." Information contained in this Document has been classified by AREVA as proprietary in accordance with the policies established by AREVA 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 AREVA 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 AREVA to determine whether information should be classified as proprietary:

- (a) The information reveals details of AREVA'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 AREVA.
- (d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for AREVA in product optimization or marketability.
- (e) The information is vital to a competitive advantage held by AREVA, would be helpful to competitors to AREVA, and would likely cause substantial harm to the competitive position of AREVA.

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

7. In accordance with AREVA'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 AREVA only as required and under suitable agreement providing for nondisclosure and limited use of the information.

8. AREVA 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. Meg

SUBSCRIBED before me this 4th
day of May, 2016.

Susan K McCoy

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

