~~Letter Enclosures Contain Proprietary Information~~
~~Withhold in Accordance with 10 CFR 2.390~~

Michael J. Annacone
Vice President
Brunswick Nuclear Plant
P.O. Box 10429
Southport, NC 28461

910-457-3698

10 CFR 50.4

August 29, 2012
Serial: BSEP 12-0098

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Brunswick Steam Electric Plant, Unit Nos. 1 and 2
Docket Nos. 50-325, 50-324
Response to Request for Additional Information Regarding License Amendment Request for Addition of Analytical Methodology Topical Report to Technical Specification 5.6.5, "CORE OPERATING LIMITS REPORT (COLR)," and Revision to Technical Specification 2.1.1.2 Minimum Critical Power Ratio Safety Limit

References:

1. Letter from Michael J. Annacone to the U.S. Nuclear Regulatory Commission (Serial: BSEP 12-0031), "Request for License Amendments – Addition of Analytical Methodology Topical Report to Technical Specification 5.6.5, 'CORE OPERATING LIMITS REPORT (COLR),' and Revision to Technical Specification 2.1.1.2 Minimum Critical Power Ratio Safety Limit," dated March 6, 2012, ADAMS Accession Number ML12076A062

By letter dated March 6, 2012 (i.e., Reference 1), Carolina Power & Light Company (CP&L) requested license amendments to revise the Technical Specifications (TS) for the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2. The proposed license amendments: (1) revise TS 5.6.5.b by replacing AREVA Topical Report ANF-524(P)(A), *ANF Critical Power Methodology for Boiling Water Reactors,* with AREVA Topical Report ANP-10307PA, Revision 0, *AREVA MCPR Safety Limit Methodology for Boiling Water Reactors,* June 2011, in the list of analytical methods that have been reviewed and approved by the NRC for determining core operating limits, (2) revise TS 2.1.1, *Reactor Core SLs*, by incorporating revised Safety Limit Minimum Critical Power Ratio (SLMCPR) values, and (3) revise the license condition in Appendix B, "Additional Conditions," of the operating licenses regarding an alternate method for evaluating SLMCPR values.

On July 30, 2012, by electronic mail, the NRC provided a request for additional information concerning the referenced license amendment requests. The response to this NRC request for additional information is enclosed.

Following submittal of the license amendment requests, minor discrepancies were identified in AREVA reports included as part of the submittal. First, a transcription error was found in AREVA Report No. 51-9175814-000, *Brunswick Unit 1 Cycle 19 SLMCPR Analysis With SAFLIM3D Methodology (Proprietary Version)* (i.e., Enclosure 6 of the CP&L letter dated March 6, 2012). This transcription error does not affect the results or conclusions of the report. Table 4 in the report summarizes results for single loop operation (SLO) and two loop operation

ADD1
NRR

(TLO) SLMCPR values using the current analysis methodology for comparison to results using the new SAFLIM3D methodology. The SLO SLMCPR input description value in Table 4 is incorrectly listed as 1.13; the SLO SLMCPR value should be listed as 1.12. A copy of the revised report, along with an affidavit supporting withholding the revised report and a non-proprietary version (i.e., AREVA Report No. 51-9177317-001), are provided in Enclosures 4, 5, and 6, respectively.

Second, the radial power distribution shown in Figure 3 of AREVA Report No. 51-9176407-000, *Brunswick Unit 1 Cycle 19 SLMCPR Analysis With SAFLIM3D Methodology – Operability Assessment (Proprietary Version)* (i.e., Enclosure 9 of CP&L's March 6, 2012, letter), is not correct. A copy of the revised report, along with an affidavit supporting withholding the revised report and a non-proprietary version (i.e., AREVA Report No. 51-9177315-001), are provided in Enclosures 7, 8, and 9, respectively.

As part of CP&L's letter dated March 6, 2012, an AREVA report was provided which summarized methodology, inputs, and results supporting BSEP Unit 2 Cycle 20 (i.e., the current Unit 2 operating cycle). Since the submittal date of the license amendment request, analysis work supporting BSEP Unit 2 Cycle 21 (i.e., the Unit 2 operating cycle which will begin Spring 2013) has continued and an AREVA report summarizing methodology, inputs, and results supporting BSEP Unit 2 Cycle 21 is now available. A copy of AREVA Report No. 51-9186363-000, *Brunswick Unit 2 Cycle 21 SLMCPR Analysis With SAFLIM3D Methodology (Proprietary Version)*, is provided in Enclosure 10. The report contains information considered to be proprietary to AREVA; therefore, an affidavit supporting withholding the report from public disclosure is provided in Enclosure 11. A non-proprietary version of the report (i.e., AREVA Report No. 51-9189033-000) is provided in Enclosure 12.

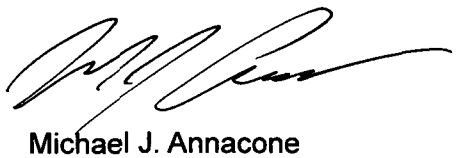
As indicated in the letter dated March 6, 2012, the methods described in AREVA Operability Assessment CR 2011-2274, Revision 1, to assess SLMCPR values determined using the ANF-524(P)(A) methodology, may not always remain appropriate to assess SLMCPR values determined using the ANP-10307PA methodology. An evaluation for BSEP Unit 2 Cycle 21 has been performed consistent with the methods described in ANP-3086(P), Revision 0, and is documented in AREVA Report No. 51-9186367-000, *Brunswick Unit 2 Cycle 21 SLMCPR Analysis With SAFLIM3D Methodology – Operability Assessment (Proprietary Version)*. A copy of AREVA Report No. 51-9186367-000 is provided in Enclosure 13. The report contains information considered to be proprietary to AREVA; therefore, an affidavit supporting withholding the report from public disclosure is provided in Enclosure 14. A non-proprietary version of the document (i.e., AREVA Report No. 51-9189034-000) is provided in Enclosure 15.

This letter contains no regulatory commitments.

Please refer any questions regarding this submittal to Mr. Lee Grzeck, Acting Supervisor – Licensing/Regulatory Affairs, at (910) 457-2487.

I declare, under penalty of perjury, that the foregoing is true and correct. Executed on August 29, 2012.

Sincerely,



Michael J. Annacone

WRM/wrm

Enclosure:

1. Response to Request for Additional Information **(Proprietary Information – Withhold from Public Disclosure in Accordance With 10 CFR 2.390)**
2. AREVA Affidavit Regarding Withholding Information from Public Disclosure
3. Response to Request for Additional Information (Nonproprietary Version)
4. AREVA Report No. 51-9175814-001, *Brunswick Unit 1 Cycle 19 SLMCPR Analysis With SAFLIM3D Methodology (Proprietary Version)* **(Proprietary Information – Withhold from Public Disclosure in Accordance With 10 CFR 2.390)**
5. AREVA Affidavit Regarding Withholding AREVA Report No. 51-9175814-001 from Public Disclosure
6. AREVA Report No. 51-9177317-001, *Brunswick Unit 1 Cycle 19 SLMCPR Analysis With SAFLIM3D Methodology (Nonproprietary Version)*
7. AREVA Report No. 51-9176407-001, *Brunswick Unit 1 Cycle 19 SLMCPR Analysis With SAFLIM3D Methodology – Operability Assessment (Proprietary Version)* **(Proprietary Information – Withhold from Public Disclosure in Accordance With 10 CFR 2.390)**
8. AREVA Affidavit Regarding Withholding AREVA Report No. 51-9176407-001 from Public Disclosure
9. AREVA Report No. 51-9177315-001, *Brunswick Unit 1 Cycle 19 SLMCPR Analysis With SAFLIM3D Methodology – Operability Assessment (Nonproprietary Version)*
10. AREVA Report No. 51-9186363-000, *Brunswick Unit 2 Cycle 21 SLMCPR Analysis With SAFLIM3D Methodology (Proprietary Version)* **(Proprietary Information – Withhold from Public Disclosure in Accordance With 10 CFR 2.390)**
11. AREVA Affidavit Regarding Withholding AREVA Report No. 51-9186363-000 from Public Disclosure
12. AREVA Report No. 51-9189033-000, *Brunswick Unit 2 Cycle 21 SLMCPR Analysis With SAFLIM3D Methodology (Nonproprietary Version)*
13. AREVA Report No. 51-9186367-000, *Brunswick Unit 2 Cycle 21 SLMCPR Analysis With SAFLIM3D Methodology – Operability Assessment (Proprietary Version)* **(Proprietary Information – Withhold from Public Disclosure in Accordance With 10 CFR 2.390)**
14. AREVA Affidavit Regarding Withholding AREVA Report No. 51-9186367-000 from Public Disclosure
15. AREVA Report No. 51-9189034-000, *Brunswick Unit 2 Cycle 21 SLMCPR Analysis With SAFLIM3D Methodology – Operability Assessment (Nonproprietary Version)*

cc (with all enclosures):

U. S. Nuclear Regulatory Commission, Region II
ATTN: Mr. Victor M. McCree, Regional Administrator
245 Peachtree Center Ave, NE, Suite 1200
Atlanta, GA 30303-1257

U. S. Nuclear Regulatory Commission
ATTN: Ms. Michelle P. Catts, NRC Senior Resident Inspector
8470 River Road
Southport, NC 28461-8869

U. S. Nuclear Regulatory Commission **(Electronic Copy Only)**
ATTN: Mrs. Farideh E. Saba (Mail Stop OWFN 8G9A)
11555 Rockville Pike
Rockville, MD 20852-2738

cc (with Enclosure 3 only):

Chair - North Carolina Utilities Commission
P.O. Box 29510
Raleigh, NC 27626-0510

Mr. W. Lee Cox, III, Section Chief
Radiation Protection Section
North Carolina Department of Environment and Natural Resources
1645 Mail Service Center
Raleigh, NC 27699-1645

AREVA Affidavit
Regarding Withholding Information
from Public Disclosure

AFFIDAVIT

STATE OF WASHINGTON)
) ss.
COUNTY OF BENTON)

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

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

3. I am familiar with the AREVA NP information contained in the Enclosure 1 to Duke Energy (Carolina Power & Light Company) letter BSEP 12-0098, from Michael J. Annacone to the Nuclear Regulatory Commission, "Response to Request for Additional Information Regarding License Amendment Request for Addition of Analytical Methodology Topical Report to Technical Specification 5.6.5, "CORE OPERATING LIMITS REPORT (COLR)," and Revision to Technical Specification 2.1.1.2, Minimum Critical Power Ratio Safety Limit," and referred to herein as "Document." Information contained in this Document has been classified by AREVA NP as proprietary in accordance with the policies established by AREVA NP 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 NP 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 NP to determine whether information should be classified as proprietary:

(a) The information reveals details of AREVA NP'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 NP.

(d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for AREVA NP in product optimization or marketability.

(e) The information is vital to a competitive advantage held by AREVA NP, would be helpful to competitors to AREVA NP, and would likely cause substantial harm to the competitive position of AREVA NP.

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

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

8. AREVA NP 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.

SUBSCRIBED before me this 28th day of August, 2012.

Susan K. McCoy
NOTARY PUBLIC, STATE OF WASHINGTON
MY COMMISSION EXPIRES: 1/14/2016

Response to Request for Additional Information (Nonproprietary Version)

By letter dated March 6, 2012 (i.e., BSEP 12-0031), Carolina Power & Light Company (CP&L) requested license amendments to revise the Technical Specifications (TS) for the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2. The proposed license amendments (1) revise TS 5.6.5.b by replacing AREVA Topical Report ANF-524(P)(A), *ANF Critical Power Methodology for Boiling Water Reactors,* with AREVA Topical Report ANP-10307PA, Revision 0, *AREVA MCPR Safety Limit Methodology for Boiling Water Reactors*, June 2011, in the list of analytical methods that have been reviewed and approved by the NRC for determining core operating limits, (2) revise TS 2.1.1, *Reactor Core SLs*, by incorporating revised Safety Limit Minimum Critical Power Ratio (SLMCPR) values, and (3) revise the license condition in Appendix B, "Additional Conditions," of the operating licenses regarding an alternate method for evaluating SLMCPR values. On July 30, 2012, by electronic mail, the NRC provided a request for additional information concerning the license amendment requests. Responses to the NRC questions are provided below.

NRC Question 1-1
Explain the changes that occurred such that single loop operation of Units 1 and 2 now have the same SLMCPR where the previous values were different. (Enclosure 1, page 2, Proposed Change 2, Last Paragraph)

Unit	Current Two-Loop Operation SLMCPR	Proposed Two-Loop Operation SLMCPR	Current Single-Loop Operation SLMCPR	Proposed Single-Loop Operation SLMCPR
1	1.11	1.08	1.12	1.11
2	1.11	1.08	1.13	1.11

Response to NRC Question 1-1

The key differences in system configuration between BSEP Unit 1 and BSEP Unit 2 are in the core inlet region and the turbine bypass system. The orifice diameter in Unit 2 is smaller than Unit 1 and the turbine bypass system for Unit 2 has ten valves whereas Unit 1 has only four valves. These differences have negligible impact on the Safety Limit Minimum Critical Power Ratio (SLMCPR). For the same reload core design and SLCMPR calculation methodology, the two loop operation (TLO) SLMCPR calculated for Unit 1 is expected to be essentially the same as the TLO SLMCPR calculated for Unit 2. The single loop operation (SLO) SLMCPR value is higher than the TLO SLMCPR, because it is calculated using higher unit-independent uncertainties; however, for the same reload core design and SLMCPR calculation methodology, the SLO SLMCPR calculated for Unit 1 is also expected to be essentially the same as the SLO SLMCPR calculated for Unit 2.

Typical reload core designs for each BSEP operating cycle are similar, but not the same due to variations in operating requirements and design optimization from cycle-to-cycle. Small cycle-to-cycle variations in SLMCPR about values common to both BSEP units are expected for this reason. The SLMCPR results determined using the ANP-10307PA methodology and provided in Enclosures 6 and 12 of CP&L's letter dated March 6, 2012 (i.e., Serial: BSEP 12-0031), and in Enclosure 10 of this letter (i.e., Serial: BSEP 12-0098) are summarized in Table 1-1 below.

BSEP Unit-Cycle	ANP-10307PA TLO SLMCPR	ANP-10307PA SLO SLMCPR
1 - 19	1.07	1.09
2 - 20	1.06	1.08
2 - 21	1.07	1.09

Table 1-1 ANP-10307PA SLMCPR Results for BSEP Cycles

These results support the requested TS SLMCPR for BSEP, Units 1 and 2 of 1.08 for TLO and 1.11 for SLO. More conservative values than supported by the cycle specific results were requested to accommodate small cycle-to-cycle variations. The same values were requested for Unit 1 and Unit 2, because small cycle-to-cycle variations in SLMCPR about values common to both BSEP units are expected.

This approach to request the same SLMCPR values for both BSEP Unit 1 and Unit 2 is a change relative to the different SLMCPR values for each unit in current TS. The SLMCPR values in the current BSEP TSs are based on unit-specific and cycle-specific values calculated by Global Nuclear Fuel that were requested when past cycle-to-cycle variations required an increase in SLMCPR. CP&L's past preference, to not request license amendments when subsequent cycle-to-cycle variations supported only a small decrease in SLMCPR, established TS SLMCPR values consistent with current SLMCPR methodology that accommodate different cycle-to-cycle variations on each BSEP unit. The amendments requested in CP&L's March 6, 2012, letter will introduce a new SLMCPR methodology. CP&L has requested more conservative SLMCPR values than supported by the new methodology so that the TS SLMCPR values will continue to accommodate small cycle-to-cycle variations in SLMCPR values determined using the new methodology. The same SLMCPR values are requested for each BSEP unit so that both units accommodate an equivalent level of cycle-to-cycle variation.

NRC Question 1-2

Regarding the operability assessment SLMCPR described in Enclosure 1, Section 3, Technical Evaluation, please provide the following additional information:

a. Identify NRC-approved precedents following the same or similar approach as that described in ANP-3086P.
b. Justify the use of the ANP-3086P methodology in light of the fact that the current license condition requires adherence instead to ANP-10298PA.

Response to NRC Question 1-2a

There are no NRC-approved precedents following the same or similar approach as that described in the BSEP specific ANP-3086(P) Revision 0, February 2012 methodology. The approach used in ANP-3086(P) is the same as the SLMCPR analysis process described in ANP-10298PA, Revision 0, Supplement 1P Revision 0, *Improved K-factor Model for ACE/ATRIUM™ 10XM Critical Power Correlation*, December 2011.

By letter dated December 21, 2011 (i.e., ADAMS Accession Number ML11363A121), AREVA requested the NRC's review and approval of ANP-10298PA, Revision 0, Supplement 1P, Revision 0, for referencing in licensing action. ANP-3086(P) was submitted instead of

ANP-10298PA, Revision 0, Supplement 1P, because the NRC has not completed review and approval of ANP-10298PA, Revision 0, Supplement 1P. ANP-3086(P) is a plant specific SLMCPR operability assessment critical power correlation methodology that is not linked to NRC review and approval of ANP-10298PA, Revision 0, Supplement 1P. In a pre-submittal telephone conference with the NRC, CP&L, and AREVA on February 7, 2012, the NRC encouraged this approach instead of CP&L submitting ANP-10298PA, Revision 0, Supplement 1P as an operability assessment methodology and requesting an exemption from the LIC-109, *Acceptance Review Procedures*, linked submittal acceptance review requirements.

Response to NRC Question 1-2b

While the BSEP TS require core operating limits be determined using ANP-10298PA, *ACE/ATRIUM 10XM Critical Power Correlation* (i.e., TS 5.6.5.b.21), the current license condition does not require the use of ANP-10298PA in the operability assessment for the K-factor calculation issue described in AREVA Operability Assessment CR 2011-2274, Revision 1. The current BSEP license condition requires SLMCPR values determined using the ANP-10298PA methodology be evaluated with the methods described in AREVA Operability Assessment CR 2011-2274, Revision 1, to verify the values determined using the NRC-approved method remain applicable and the core operating limits include margin sufficient to bound the effects of the K-factor calculation issue.

The methods described in AREVA Operability Assessment CR 2011-2274, Revision 1 require use of a [ ] to calculate CPR margin on a fuel assembly basis. This method is specified for setpoint and operating limit evaluation, but it is not the method used in the SLMCPR operability assessment evaluation.

SLMCPR calculations count the number of individual fuel rods expected to experience boiling transition. This requires the K-factor and CPR calculation be associated with individual fuel rods. [

]

CP&L's letter dated March 6, 2012, requests a license amendment to replace the ANF-524(P)(A) SAFLIM2 methodology with the ANP-10307PA SAFLIM3D methodology. SAFLIM2 [ ]. As a result, the [ ] SLMCPR evaluation methodology specified by AREVA Operability Assessment CR 2011-2274, Revision 1 is applicable to SAFLIM2 analyses. SAFLIM3D [

]

A [ ] methodology to evaluate the impact of the ACE K-factor issue on SLMCPR has been developed since the AREVA Operability Assessment CR 2011-2274, Revision 1 methodology was specified. This new methodology is described in ANP-3086(P). The

ANP-3086(P) methodology is applicable to SAFLIM3D analyses [ ]. Therefore, the license condition change requested by CP&L's letter dated March 6, 2012, [ ] AREVA Operability Assessment CR 2011-2274, Revision 1 SLMCPR evaluation method with the [ ] SLMCPR evaluation methodology described in the proposed license condition is justified.

NRC Question 1-3

Provide information to demonstrate that the channel bow database is specifically applicable to Brunswick measurements. (Enclosure 1, page 5, last paragraph)

Response to NRC Question 1-3

This question was clarified during a telephone conference with the NRC, CP&L, and AREVA on August 9, 2012, as follows:

> Demonstrate that the AREVA measured channel bow database is applicable to calculated Brunswick channel conditions.

The channel bow model employed in SAFLIM3D was initially developed and approved by the NRC in BAW-10247PA, *Realistic Thermal-Mechanical Fuel Rod Methodology for Boiling Water Reactors*, Revision 0, April 2008, and subsequently approved by the NRC for application to BSEP in April 2011 (i.e., ADAMS Accession Number ML11101A043). The model is based on a stress-free irradiation growth model, which depends on the accumulated fast fluence. Any differential fast fluence between any of the two pairs of a channel's opposing sides creates a differential of axial growth, which leads to bending of the channel in the plane perpendicular to the respective pair of opposing sides. The bow is the maximum bending deflection, which occurs at the middle of the channel length and is calculated by a simplified elastic bending model.

Therefore, the calculated bow depends on the fast fluence gradient between the two pairs of sides, namely, North-South (N-S) and West-East (W-E), where the N and W sides face the control blade. The model has been validated against the AREVA channel bow database, as described in BAW-10247Q3(P). Also, this benchmarking was used to derive a model uncertainty, which conservatively includes the measurement uncertainty. The channel bow data of the AREVA database were measured in two power reactors, one of C-lattice type and the other one of D-lattice type. The channels selected for these two measurement campaigns were chosen to cover the range of possible fast fluence gradients, to the largest extent possible.

In order to demonstrate that the AREVA measured channel bow database is applicable to calculated BSEP channel conditions, the range of fast fluence gradients achieved during operation of BSEP reactors was calculated for BSEP Unit 1 Cycle 19, BSEP Unit 2 Cycle 21, and a BSEP ATRIUM 10XM equilibrium cycle. Gradients for all channels in the core were calculated for the first two cycles, while the equilibrium cycle calculations include only one quarter of the channels, because the equilibrium cycle is quarter core symmetric.

The results of the calculations are displayed in Figures 3-1 and 3-2. Figure 3-1 is a scatter plot, with the x-axis being a channel index (i.e., the channels are listed in no particular order), while the y-values represent the fast fluence gradients in the two directions, N-S and W-E, at the end

of each cycle. These values were verified to bound any fast fluence gradient achieved during the cycles. The two lines indicate the calculated bounds of fast fluence gradient for the channels in the AREVA measurement database. [

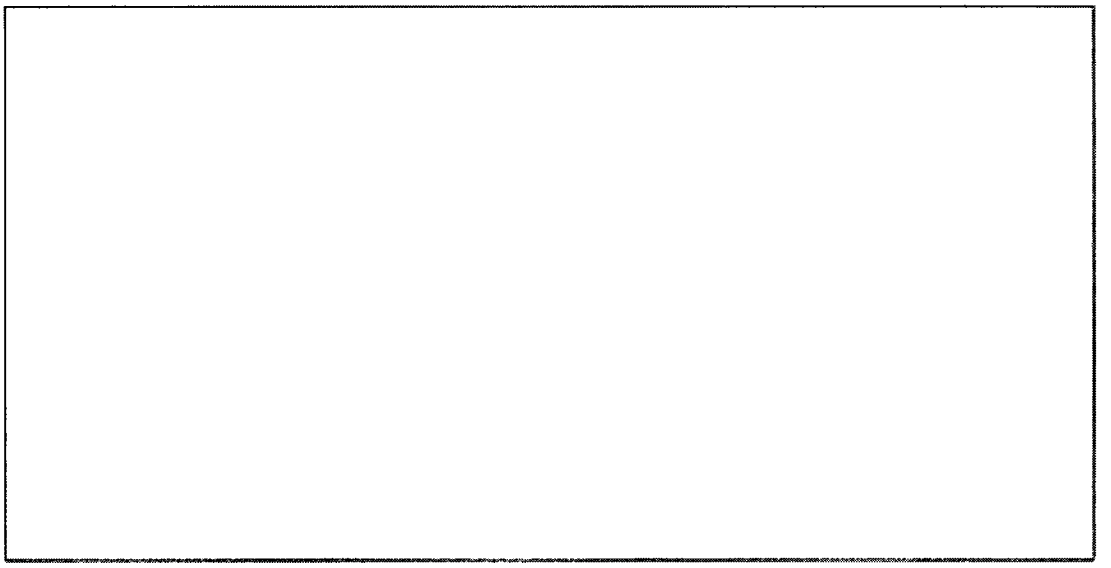
]

Figure 3-2 displays the histogram of the fast fluence gradients for the three cycles to further demonstrate BSEP channel operation is within the database range, [

]

In conclusion, the fast fluence gradient domain of the AREVA channel bow measurement database is fully representative of D-lattice or C-lattice type power reactor operating conditions, because it effectively bounds the range of fast fluence gradients that are encountered in operation, as demonstrated above in the particular case of the BSEP reactors.

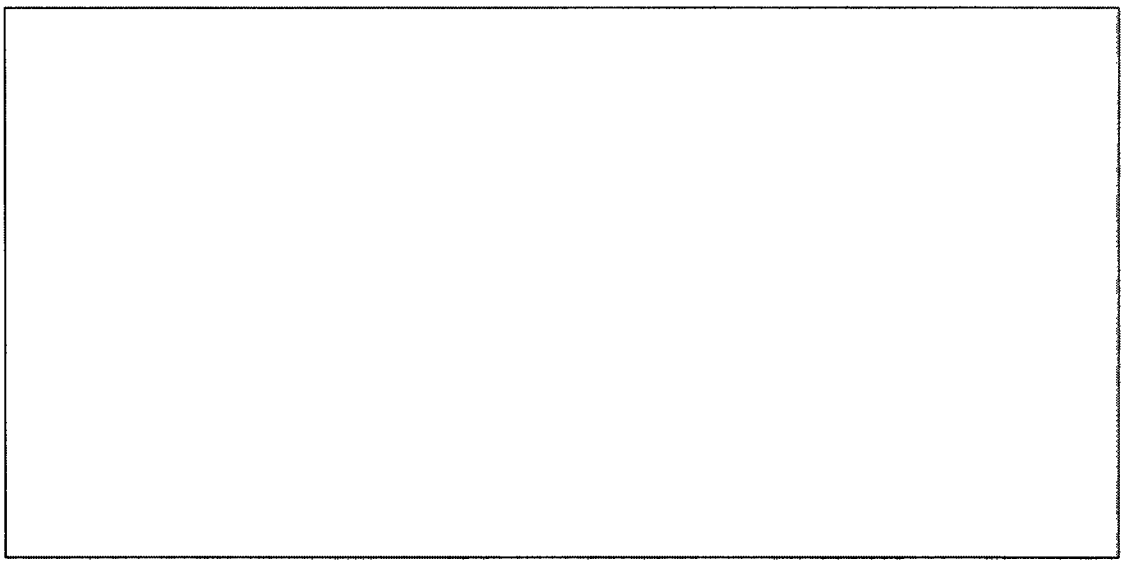
[



]

Figure 3-1 Calculated BSEP Fast Fluence Gradient Scatter Plot

[



]

Figure 3-2 Calculated BSEP Fast Fluence Gradient Histogram

NRC Question 1-4

Provide data to demonstrate that design basis power distribution is conservative and explain how the assumed limiting initial conditions will bound the as-operated core design. (Enclosure 1, page 5, second paragraph)

Response to NRC Question 1-4

The SLMCPR is defined as the minimum value of the critical power ratio which ensures that at least 99.9% of the fuel rods in the core are expected to avoid boiling transition during normal operation or an anticipated operational occurrence (AOO). In order for the core to reach the SLMCPR during an AOO, it would need to be operating at the operating limit MCPR (OLMCPR) at the initiation of the transient. [

]

[

]

[

]

Figure 4-1 [ ]

AREVA Affidavit Regarding Withholding
AREVA Report No. 51-9175814-001
from Public Disclosure

AFFIDAVIT

STATE OF WASHINGTON)
) ss.
COUNTY OF BENTON)

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

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

3. I am familiar with the AREVA NP information contained in the report 51-9175814-001, "Brunswick Unit 1 Cycle 19 SLMCPR Analysis With SAFLIM3D Methodology (Proprietary Version)," dated July 2012 and referred to herein as "Document." Information contained in this Document has been classified by AREVA NP as proprietary in accordance with the policies established by AREVA NP 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 NP 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 NP to determine whether information should be classified as proprietary:

(a) The information reveals details of AREVA NP'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 NP.

(d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for AREVA NP in product optimization or marketability.

(e) The information is vital to a competitive advantage held by AREVA NP, would be helpful to competitors to AREVA NP, and would likely cause substantial harm to the competitive position of AREVA NP.

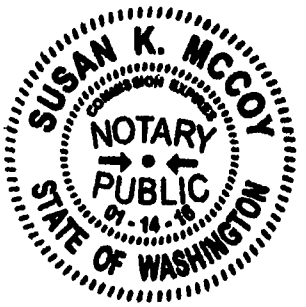
The information in the Document is considered proprietary for the reasons set forth in paragraphs 6(b), 6(d) and 6(e) above.

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

8. AREVA NP 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.

SUBSCRIBED before me this 1st day of August, 2012.



Susan K. McCoy
NOTARY PUBLIC, STATE OF WASHINGTON
MY COMMISSION EXPIRES: 1/14/2016

AFFIDAVIT

STATE OF WASHINGTON)
) ss.
COUNTY OF BENTON)

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

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

3. I am familiar with the AREVA NP information contained in the report 51-9176407-001, "Brunswick Unit 1 Cycle 19 SLMCPR Analysis With SAFLIM3D Methodology – Operability Assessment (Proprietary Version)," dated July 2012 and referred to herein as "Document." Information contained in this Document has been classified by AREVA NP as proprietary in accordance with the policies established by AREVA NP 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 NP 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 NP to determine whether information should be classified as proprietary:

(a) The information reveals details of AREVA NP'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 NP.

(d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for AREVA NP in product optimization or marketability.

(e) The information is vital to a competitive advantage held by AREVA NP, would be helpful to competitors to AREVA NP, and would likely cause substantial harm to the competitive position of AREVA NP.

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

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

8. AREVA NP 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.

SUBSCRIBED before me this 1st day of August, 2012.

Susan K. McCoy
NOTARY PUBLIC, STATE OF WASHINGTON
MY COMMISSION EXPIRES: 1/14/2016

AFFIDAVIT

STATE OF WASHINGTON)
) ss.
COUNTY OF BENTON)

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

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

3. I am familiar with the AREVA NP information contained in the report 51-9186363-000, "Brunswick Unit 2 Cycle 21 SLMCPR Analysis With SAFLIM3D Methodology (Proprietary Version)," dated August 2012 and referred to herein as "Document." Information contained in this Document has been classified by AREVA NP as proprietary in accordance with the policies established by AREVA NP 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 NP 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 NP to determine whether information should be classified as proprietary:

(a) The information reveals details of AREVA NP'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 NP.

(d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for AREVA NP in product optimization or marketability.

(e) The information is vital to a competitive advantage held by AREVA NP, would be helpful to competitors to AREVA NP, and would likely cause substantial harm to the competitive position of AREVA NP.

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

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

8. AREVA NP 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.

SUBSCRIBED before me this 22nd day of August, 2012.

Susan K. McCoy
NOTARY PUBLIC, STATE OF WASHINGTON
MY COMMISSION EXPIRES: 1/14/2016

AFFIDAVIT

STATE OF WASHINGTON)
) ss.
COUNTY OF BENTON)

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

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

3. I am familiar with the AREVA NP information contained in the report 51-9186367-000, "Brunswick Unit 2 Cycle 21 SLMCPR Analysis With SAFLIM3D Methodology – Operability Assessment (Proprietary Version)," dated August 2012 and referred to herein as "Document." Information contained in this Document has been classified by AREVA NP as proprietary in accordance with the policies established by AREVA NP 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 NP 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 NP to determine whether information should be classified as proprietary:

(a) The information reveals details of AREVA NP'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 NP.

(d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for AREVA NP in product optimization or marketability.

(e) The information is vital to a competitive advantage held by AREVA NP, would be helpful to competitors to AREVA NP, and would likely cause substantial harm to the competitive position of AREVA NP.

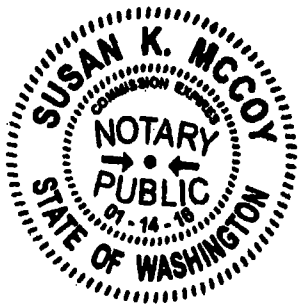
The information in the Document is considered proprietary for the reasons set forth in paragraphs 6(b), 6(d) and 6(e) above.

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

8. AREVA NP 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.

SUBSCRIBED before me this 22nd day of August, 2012.



Susan K. McCoy
NOTARY PUBLIC, STATE OF WASHINGTON
MY COMMISSION EXPIRES: 1/14/2016