ArevaEPRDCPEm Resource

From:	WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]
Sent:	Wednesday, July 06, 2011 10:33 AM
То:	Tesfaye, Getachew
Cc:	BENNETT Kathy (AREVA); DELANO Karen (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA): WELLS Russell (AREVA)
Subject:	Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3, Supplement 5
Attachments:	RAI 458 Supplement 5 Response US EPR DC_PUBLIC.pdf; nrc-11-066.pdf

Getachew,

Getachew, the last e-mail I sent this morning did not list Proprietary in the subject line of the e-mail, even though I did resend the proprietary response. Please delete and use this e-mail as I am just sending the letter and affidavit and the Non-Proprietary version as attachments in this e-mail since I already transmitted the Proprietary response last week. I neglected to send the non-proprietary version of the response with the transmittal last week.

Thanks,

Dennis Williford, P.E. U.S. EPR Design Certification Licensing Manager AREVA NP Inc. 7207 IBM Drive, Mail Code CLT 2B

Charlotte, NC 28262 Phone: 704-805-2223 Email: <u>Dennis.Williford@areva.com</u>

From: WILLIFORD Dennis (RS/NB) Sent: Thursday, June 30, 2011 4:20 PM To: 'Tesfaye, Getachew' Cc: BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); WELLS Russell (RS/NB) Subject: PROPRIETARY Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3, Supplement 5

Getachew,

Attached is AREVA NP Inc. letter NRC:11:066 with affidavit, and the proprietary version of the response to RAI 458 Supplement 5.

Sincerely,

Dennis Williford, P.E. U.S. EPR Design Certification Licensing Manager AREVA NP Inc. 7207 IBM Drive, Mail Code CLT 2B

Charlotte, NC 28262 Phone: 704-805-2223 Email: <u>Dennis.Williford@areva.com</u>

From: WILLIFORD Dennis (RS/NB) Sent: Thursday, June 30, 2011 4:12 PM To: 'Tesfaye, Getachew' Cc: BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); WELLS Russell

(RS/NB)

Subject: Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3, Supplement 5

Getachew,

AREVA NP Inc. letter NRC:11:066 dated June 30, 2011 provides a technically correct and complete final response to 2 of the 9 remaining questions in RAI 458. AREVA NP considers some of the material contained in the response to be proprietary information. As required by 10 CFR 2.390(b), an affidavit is provided to support the withholding of the proprietary information from public disclosure. Proprietary and non-proprietary versions of the enclosure to this letter are provided separately.

The following table indicates the respective pages in the enclosure that contain AREVA NP's final response to the subject questions.

Question #	Start Page	End Page
RAI 458 — 03.09.02-146	2	2
RAI 458 — 03.09.02-148	3	3

Appended to the enclosed response file are affected pages of ANP-10306P, "Comprehensive Vibration Assessment Program for U.S. EPR Reactor Internals Technical Report," Revision 0 in redline-strikeout format which support the response to RA 458 Question 03.09.02-148.

The schedule for a technically correct and complete response to the remaining 7 questions is unchanged as provided below.

Question #	Response Date
RAI 458 — 03.09.02-147	July 13, 2011
RAI 458 — 03.09.02-149	July 13, 2011
RAI 458 — 03.09.02-150	July 13, 2011
RAI 458 — 03.09.02-151	July 13, 2011
RAI 458 — 03.09.02-152	July 13, 2011
RAI 458 — 03.09.02-153	July 13, 2011
RAI 458 — 03.09.02-154	July 13, 2011

Sincerely,

Dennis Williford, P.E. U.S. EPR Design Certification Licensing Manager AREVA NP Inc.

7207 IBM Drive, Mail Code CLT 2B Charlotte, NC 28262 Phone: 704-805-2223 Email: Dennis.Williford@areva.com

From: WILLIFORD Dennis (RS/NB)
Sent: Tuesday, June 07, 2011 8:41 AM
To: 'Tesfaye, Getachew'
Cc: BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); HAMMOND Philip (RS/PT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3, Supplement 4

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 458 on December 6, 2010. The schedule for a technically correct and complete response to RAI No. 458 was revised in Supplement 1 and Supplement 2, submitted on March 21, 2011 and April 19, 2011, respectively, to allow additional time for AREVA NP to interact with the NRC. AREVA NP provided technically correct and complete FINAL responses to 3 of the 12 questions with Supplement 3 on May 26, 2011, as committed.

The schedule for a technically correct and complete response to the remaining 9 questions is being revised. The revised schedule is provided below.

Question #	Response Date
RAI 458 — 03.09.02-146	July 13, 2011
RAI 458 — 03.09.02-147	July 13, 2011
RAI 458 — 03.09.02-148	July 13, 2011
RAI 458 — 03.09.02-149	July 13, 2011
RAI 458 — 03.09.02-150	July 13, 2011
RAI 458 — 03.09.02-151	July 13, 2011
RAI 458 — 03.09.02-152	July 13, 2011
RAI 458 — 03.09.02-153	July 13, 2011
RAI 458 — 03.09.02-154	July 13, 2011

Sincerely,

Dennis Williford, P.E. U.S. EPR Design Certification Licensing Manager AREVA NP Inc.

7207 IBM Drive, Mail Code CLT 2B Charlotte, NC 28262 Phone: 704-805-2223 Email: Dennis.Williford@areva.com

From: WILLIFORD Dennis (RS/NB) Sent: Thursday, May 26, 2011 8:58 AM To: 'Tesfaye, Getachew' Cc: BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); HAMMOND Philip (RS/PT) Subject: Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3, Supplement 3

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 458 on December 6, 2010. The schedule for a technically correct and complete response to RAI No. 458 was revised in Supplement 1 and Supplement 2, submitted on March 21, 2011 and April 19, 2011 respectively, to allow additional time for AREVA NP to interact with the NRC.

The attached file, "RAI 458 Supplement 3 Response US EPR DC.pdf" provides a technically correct and complete FINAL response to 3 of the 12 questions, as committed. The following table indicates the respective pages in the response document, "RAI 458 Supplement 3 Response US EPR DC.pdf", which provide the responses to the 3 questions.

Question #	Start Page	End Page
RAI 458 — 03.09.01-13	2	6

RAI 458 — 03.09.01-14	7	10
RAI 458 — 03.09.01-15	11	17

The schedule for a technically correct and complete response to the remaining 9 questions is unchanged and is provided below.

Question #	Response Date
RAI 458 — 03.09.02-146	June 15, 2011
RAI 458 — 03.09.02-147	June 15, 2011
RAI 458 — 03.09.02-148	June 15, 2011
RAI 458 — 03.09.02-149	June 15, 2011
RAI 458 — 03.09.02-150	June 15, 2011
RAI 458 — 03.09.02-151	June 15, 2011
RAI 458 — 03.09.02-152	June 15, 2011
RAI 458 — 03.09.02-153	June 15, 2011
RAI 458 — 03.09.02-154	June 15, 2011

Sincerely,

Dennis Williford, P.E. U.S. EPR Design Certification Licensing Manager AREVA NP Inc. 7207 IBM Drive, Mail Code CLT 2B Charlotte, NC 28262 Phone: 704-805-2223

Email: Dennis.Williford@areva.com

From: WELLS Russell (RS/NB)
Sent: Tuesday, April 19, 2011 4:25 PM
To: 'Tesfaye, Getachew'
Cc: HAMMOND Philip (RS/PT); BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3, Supplement 2

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 458 on December 6, 2010. The schedule for a technically correct and complete response to RAI No. 458 was revised with Supplement 1 on March 21, 2011.

The schedule for a technically correct and complete response to RAI No. 458 is revised to allow additional time for AREVA NP to interact with the NRC and is provided below.

Question #	Response Date
RAI 458 — 03.09.01-13	June 15, 2011
RAI 458 — 03.09.01-14	June 15, 2011
RAI 458 — 03.09.01-15	June 15, 2011
RAI 458 — 03.09.02-146	June 15, 2011
RAI 458 — 03.09.02-147	June 15, 2011

RAI 458 — 03.09.02-148	June 15, 2011
RAI 458 — 03.09.02-149	June 15, 2011
RAI 458 — 03.09.02-150	June 15, 2011
RAI 458 — 03.09.02-151	June 15, 2011
RAI 458 — 03.09.02-152	June 15, 2011
RAI 458 — 03.09.02-153	June 15, 2011
RAI 458 — 03.09.02-154	June 15, 2011

Sincerely,

Russ Wells U.S. EPR Design Certification Licensing Manager **AREVA NP, Inc.** 3315 Old Forest Road, P.O. Box 10935 Mail Stop OF-57 Lynchburg, VA 24506-0935 Phone: 434-832-3884 (work) 434-942-6375 (cell) Fax: 434-382-3884 <u>Russell.Wells@Areva.com</u>

From: WELLS Russell (RS/NB)
Sent: Monday, March 21, 2011 10:14 AM
To: 'Tesfaye, Getachew'
Cc: HAMMOND Philip (RS/PT); BENNETT Kathy (RS/NB); DELANO Karen (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB)
Subject: Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3, Supplement 1

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 458 on December 6, 2010.

The schedule for a technically correct and complete response to RAI No. 458 is revised to allow additional time for AREVA NP to interact with the NRC and is provided below.

Question #	Response Date
RAI 458 — 03.09.01-13	May 5, 2011
RAI 458 — 03.09.01-14	May 5, 2011
RAI 458 — 03.09.01-15	May 5, 2011
RAI 458 — 03.09.02-146	May 5, 2011
RAI 458 — 03.09.02-147	May 5, 2011
RAI 458 — 03.09.02-148	May 5, 2011
RAI 458 — 03.09.02-149	May 5, 2011
RAI 458 — 03.09.02-150	May 5, 2011
RAI 458 — 03.09.02-151	May 5, 2011
RAI 458 — 03.09.02-152	May 5, 2011
RAI 458 — 03.09.02-153	May 5, 2011
RAI 458 — 03.09.02-154	May 5, 2011

Sincerely,

Russ Wells U.S. EPR Design Certification Licensing Manager **AREVA NP, Inc.** 3315 Old Forest Road, P.O. Box 10935 Mail Stop OF-57 Lynchburg, VA 24506-0935 Phone: 434-832-3884 (work) 434-942-6375 (cell) Fax: 434-382-3884 <u>Russell.Wells@Areva.com</u>

From: BRYAN Martin (External RS/NB)
Sent: Monday, December 06, 2010 4:54 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); HAMMOND Philip (RS/PT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 458 Response US EPR DC.pdf," provides a schedule since a technically correct and complete response to the RAI 458 questions is not provided.

The following table indicates the respective pages in the response document, "RAI 458 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 458 — 03.09.01-13	2	2
RAI 458 — 03.09.01-14	3	3
RAI 458 — 03.09.01-15	4	4
RAI 458 — 03.09.02-146	5	5
RAI 458 — 03.09.02-147	6	6
RAI 458 — 03.09.02-148	7	7
RAI 458 — 03.09.02-149	8	8
RAI 458 — 03.09.02-150	9	9
RAI 458 — 03.09.02-151	10	10
RAI 458 — 03.09.02-152	11	11
RAI 458 — 03.09.02-153	12	12
RAI 458 — 03.09.02-154	13	13

A complete answer is not provided for 12 of the 12 questions. The schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 458 — 03.09.01-13	March 30, 2011
RAI 458 — 03.09.01-14	March 30, 2011
RAI 458 — 03.09.01-15	March 30, 2011
RAI 458 — 03.09.02-146	March 30, 2011
RAI 458 — 03.09.02-147	March 30, 2011

RAI 458 — 03.09.02-148	March 30, 2011
RAI 458 — 03.09.02-149	March 30, 2011
RAI 458 — 03.09.02-150	March 30, 2011
RAI 458 — 03.09.02-151	March 30, 2011
RAI 458 — 03.09.02-152	March 30, 2011
RAI 458 — 03.09.02-153	March 30, 2011
RAI 458 — 03.09.02-154	March 30, 2011

Sincerely,

Martin (Marty) C. Bryan U.S. EPR Design Certification Licensing Manager AREVA NP Inc. Tel: (434) 832-3016 702 561-3528 cell Martin.Bryan.ext@areva.com

From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Friday, November 05, 2010 8:40 AM
To: ZZ-DL-A-USEPR-DL
Cc: Wu, Cheng-Ih; Wong, Yuken; Dixon-Herrity, Jennifer; Miernicki, Michael; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 458 (5149,5152),FSAR Ch. 3

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on October 29, 2010, and on November 3, 2010, you informed us that the RAI is clear and no further clarification is needed. As a result, no change is made to the draft RAI. The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs. For any RAIs that cannot be answered within 30 days, it is expected that a date for receipt of this information will be provided to the staff within the 30 day period so that the staff can assess how this information will impact the published schedule.

Thanks, Getachew Tesfaye Sr. Project Manager NRO/DNRL/NARP (301) 415-3361 Hearing Identifier:AREVA_EPR_DC_RAIsEmail Number:3193

Mail Envelope Properties (2FBE1051AEB2E748A0F98DF9EEE5A5D47AF6DE)

Subject: 3, Supplement 5	Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch.
Sent Date:	7/6/2011 10:32:40 AM
Received Date:	7/6/2011 10:33:15 AM
From:	WILLIFORD Dennis (AREVA)

Created By: Dennis.Williford@areva.com

Recipients:

Ontiona

"BENNETT Kathy (AREVA)" <Kathy.Bennett@areva.com> Tracking Status: None "DELANO Karen (AREVA)" <Karen.Delano@areva.com> Tracking Status: None "ROMINE Judy (AREVA)" <Judy.Romine@areva.com> Tracking Status: None "RYAN Tom (AREVA)" <Tom.Ryan@areva.com> Tracking Status: None "WELLS Russell (AREVA)" <Russell.Wells@areva.com> Tracking Status: None "Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov> Tracking Status: None

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Priority:	Standard
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Reply Requested:	No
Sensitivity:	Normal
Expiration Date:	
Recipients Received:	

Response to

Request for Additional Information No. 458(5149, 5152), Revision 0, Supplement 5

11/05/2010

U.S. EPR Standard Design Certification AREVA NP Inc. Docket No. 52-020 SRP Section: 03.09.01 - Special Topics for Mechanical Components SRP Section: 03.09.02 - Dynamic Testing and Analysis of Systems Structures and Components Application Section: 3.9

QUESTIONS for Engineering Mechanics Branch 1 (AP1000/EPR Projects) (EMB1) QUESTIONS for Engineering Mechanics Branch 2 (ESBWR/ABWR Projects) (EMB2)

Question 03.09.02-146:

Provide the total damping for the flow distribution device (FDD), and clarify if the value associated with structural damping (composed of damping from bolted connections and material damping such as hysteresis) is greater than 1 percent. If greater than 1 percent, AREVA is further requested to strongly support these higher values of structural damping with measurements per the recommendations of RG 1.20. Revise Technical Report ANP-10306P (CVAP), Section 4.3.2.1 to include the requested information.

Response to Question 03.09.02-146:

As stated in Technical Report ANP-10306P, Section 4.3.2.1, the total damping applied to the flow distribution device (FDD) is equal to **[**] percent viscous (or **[**] percent structural). This damping magnitude is consistent with the damping inherent to the material or the hysteresis damping. The damping magnitude is conservative based on the other active damping mechanisms identified in Technical Report ANP-10306P, Section 4.3.2.1.

FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.

Technical Report Impact:

ANP-10306P, "Comprehensive Vibration Assessment Program for U.S. EPR Reactor Internals Technical Report," Revision 0 will not be changed as a result of this question.

Question 03.09.02-148:

Provide a discussion of the measurement methodology and the measurements which support the high damping values tabulated in CVAP Table 4-27 for the HR tie rod. Include the requested discussion in CVAP Section 4.7.2.

Response to Question 03.09.02-148:

The damping coefficient of the heavy reflector (HR) tie rods in water reported in Technical Report ANP-10306P, Table 4-27 range from **[**] percent to **[**] percent, depending on the mode and axial preload in the tie rod. These high damping ratios indicate the hydrodynamic damping prevalent in the annulus of the HR where the tie rods are centered.

The damping ratio measurements were determined using the following expression:

$$\zeta = \frac{1}{2\pi n} \log_e \left(\frac{y_i}{y_{i+n}} \right)$$

This methodology will be incorporated into Section 4.7.2 of the Technical Report ANP-10306P.

Tie rod excitation was produced with an electro-dynamic exciter. The decay of the initial amplitude of the vibration was measured with the six accelerometers located along the length of the tie rod as shown in Technical Report ANP-10306P, Figure 4-40.

FSAR Impact:

The U.S. EPR FSAR will not be changed as a result of this question.

Technical Report Impact:

ANP-10306P, "Comprehensive Vibration Assessment Program for U.S. EPR Reactor Internals Technical Report," Revision 0 will be revised as described in the response and indicated on the enclosed markup.

Comprehensive Vibration Assessment Program for the U.S. EPR™ Reactor Internals Technical Report Markups coincident, increasing the coherence of the forcing function. Under these flow conditions, the vibration amplitudes of the tie rod reach a peak. For higher flow rates, it is possible that fluid-structure coupling may occur, leading to axial flow instability of the tie rod.

4.7.2 Test Results for the Tie Rods

The modal frequencies of the tie rod under various preloads are summarized in Table 4-26 and the mode shapes are shown in Figure 4-41 and Figure 4-42. The mode shapes and frequencies of the tie rods are consistent with calculations based on beam theory. Although not presented, the mode shapes are also consistent with the theoretical predictions. The damping ratio is 03.09.02-148 reported in Table 4-27 for values of preload and shows that the damping ratio increases with decreasing preload for both of the environments tested. The measurements for the damping ratio were determined using the following expression:

$$\zeta = \frac{1}{2\pi n} \log_e \left(\frac{y_i}{y_{i+n}} \right)$$

The purpose of the flow tests is to determine if fluid-structure coupling occurs between the tie rod and the flow conditions in the annulus of the HR. Such phenomena are more susceptible at low level of preload as this leads to lower natural frequencies of the tie rod. For the target preload value of **[**] lbs, the tie rod does not show any evidence of random turbulence induced by parallel flow excitation or any evidence of fluid structure coupling. After decreasing the preload directly to the most penalizing preload value of **[**] lbs, neither random vibration nor fluid structure coupling is observed at the maximum flow rate and the interaction between the tie-rod and fluid flow is limited.

The maximum flow rate for the test is approximately twice the design. At the design flow rate (nominal velocity = $\begin{bmatrix} \\ \\ \\ \end{bmatrix}$ ft /sec), the tie rod is not susceptible to significant turbulent excitation due to parallel flows, even at the lower values of preload. This flow rate is below the critical velocity that would lead to fluid-structure coupling or axial fluid instability of the tie rod.

4.7.3 Conclusions

The tests conclude that:

- The registered natural frequencies are consistent with the theoretical approach.
- High damping ratios exist, particularly in water.

No tie rod vibration is detected even for the worst case test conditions of a lower preload value and the maximum test flow rate (or twice the design flow rate). The risk of fluid-structure coupling phenomena does not exist.



June 30, 2011 NRC:11:066

Document Control Desk U.S. Nuclear Regulatory Commission Washington, D.C. 20555-0001

Response to U.S. EPR Design Certification Application RAI No. 458, Supplement 5

In Reference 1, the NRC provided a request for additional information (RAI) regarding the U.S. EPR design certification application. References 2, 3, and 4 provided a schedule for technically correct and complete responses to RAI No. 458. Reference 5 provided a technically correct and complete response to 3 of the 12 questions (Questions 03.09.01-13, 03.09.01-14, and 03.09.01-15). Reference 6 provided a revised schedule for a technically correct and complete response to the remaining 9 questions.

Enclosed is a technically correct and complete final response to 2 of the 9 remaining questions of RAI 458. AREVA NP considers some of the material contained in the enclosure 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 enclosure to this letter are provided.

The following table indicates the respective pages in the enclosed response that contain AREVA NP's final response to the subject questions.

Question #	Start Page	End Page
RAI 458 — 03.09.02-146	2	2
RAI 458 — 03.09.02-148	3	3

Also enclosed are affected pages of ANP-10306P, "Comprehensive Vibration Assessment Program for U.S. EPR Reactor Internals Technical Report," Revision 0 in redline-strikeout format which support the response to RAI 458 Question 03.09.02-148.

The schedule for a technically correct and complete response to the remaining 7 questions is unchanged and is provided below.

Question #	Response Date
RAI 458 — 03.09.02-147	July 13, 2011
RAI 458 — 03.09.02-149	July 13, 2011
RAI 458 — 03.09.02-150	July 13, 2011
RAI 458 — 03.09.02-151	July 13, 2011
RAI 458 — 03.09.02-152	July 13, 2011
RAI 458 — 03.09.02-153	July 13, 2011
RAI 458 — 03.09.02-154	July 13, 2011

If you have any questions related to this submittal, please contact me by telephone at 434-832-2369 or by e-mail to <u>sandra.sloan@areva.com</u>.

Sincerely,

Sandra M. Aloan

Sandra M. Sloan, Manager New Plants Regulatory Affairs AREVA NP Inc.

Enclosures

cc: G. Tesfaye Docket No. 52-020

<u>References</u>

- Ref. 1: E-mail, Getachew Tesfaye (NRC) to Martin C. Bryan (AREVA NP Inc.), "U.S. EPR Design Certification Application RAI No. 458 (5149,5152), FSAR Ch. 3," November 5, 2010.
- Ref. 2: E-mail, Martin C. Bryan (AREVA NP Inc.) to Getachew Tesfaye (NRC), "Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3," December 6, 2010.
- Ref. 3: E-mail, Russell Wells (AREVA NP Inc.) to Getachew Tesfaye (NRC), "Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3, Supplement 1," March 21, 2011.
- Ref. 4: E-mail, Russell Wells (AREVA NP Inc.) to Getachew Tesfaye (NRC), "Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3, Supplement 2," April 19, 2011.
- Ref. 5: E-mail, Dennis Williford (AREVA NP Inc.) to Getachew Tesfaye (NRC), "Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3, Supplement 3," May 26, 2011.
- Ref. 6: E-mail, Dennis Williford (AREVA NP Inc.) to Getachew Tesfaye (NRC), "Response to U.S. EPR Design Certification Application RAI No. 458, FSAR Ch. 3, Supplement 4," June 7, 2011.

AFFIDAVIT

COMMONWEALTH OF VIRGINIA)) ss. COUNTY OF CAMPBELL)

1. My name is Sandra M. Sloan. I am Manager, Regulatory Affairs for New Plants, 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, "Response to U.S. EPR Design Certification Application RAI No. 458, Supplement 5," 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) and 6(c) above.

7. In accordance with AREVA NP's policies governing the protection and control of information, proprietary information contained in this Document has 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.

Sandra M. Aloan

SUBSCRIBED before me this $30^{\pm 10}$ <u>une</u>, 2011. day of <u>//</u>

Kathleen A. Bennett NOTARY PUBLIC, COMMONWEALTH OF VIRGINIA MY COMMISSION EXPIRES: 8/31/2011 Reg. #110864

