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Vice President  
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February 20, 2012

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington DC 20555-0001

Subject: Duke Energy Carolinas, LLC  
Oconee Nuclear Station (ONS), Units 1, 2, and 3  
Docket Numbers 50-269, 50-270, and 50-287  
License Renewal Commitment to Submit a Time Limiting Aging Analysis for the  
Reactor Vessel Internals to the NRC for Review

By letter to the NRC dated December 17, 1999, Duke Energy Carolinas, LLC (Duke Energy) committed to perform a plant-specific analysis and develop data to demonstrate that the reactor vessel internals will meet the deformation limits at expiration of the renewal license. The Enclosure provides the required information. This commitment is described in NUREG-1723, Safety Evaluation Report Related to the License Renewal of Oconee Nuclear Station, Units 1, 2, and 3, March 2000 (refer to page 4-24 of Section 4.2.5.3) as follows:

"The TLAA described as 'reduction in fracture toughness' is related to the acceptability of the reactor vessel internals under LOCA and seismic loading. BAW-2248 states that Appendix E to BAW-10008, Part 1, Revision 1, 'Reactor Internals Stress & Deflection Due to LOCA & Max Hypothetical Earthquake,' concludes 'that at the end of 40 years, the internals will have adequate ductility to absorb local strain at the regions of maximum stress intensity, and that irradiation will not adversely affect deformation limits.' BAW also states that this TLAA will be resolved on a plant-specific basis per 10 CFR 54.21 (c)(1)(iii) based on results and conclusions of the planned B&WOG RVIAMP. Duke has stated that appropriate action will be taken in a timely manner to ensure continued validity of the design of the ONS reactor vessel internals. Plant-specific analysis is required to demonstrate that, under LOCA and seismic loading and irradiation accumulated at the expiration of the period of extended operation, the internals have adequate ductility to absorb local strain at the region of maximum stress intensity and will meet the deformation limits. The applicant must provide a plan to develop data to demonstrate that the internals will meet the deformation limits through the period of extended operation. This was identified as Open Item 4.2.5.3-1 in the June 16, 1999, SER. Subsequently, in a letter dated December 17, 1999, Duke committed to perform the plant-specific analysis and develop data to demonstrate that the internals will meet the deformation limits at the expiration of the renewal license. The Staff has determined this program will adequately manage the irradiation aging effects in accordance with 10 CFR 54.21 (c)(1)(iii). Thus, Open Item 4.2.5.3-1 is closed."

As part of Oconee Nuclear Stations' participation as a beta plant for MRP-227, Electric Power Research Institute (EPRI) contracted AREVA to update BAW-10008, Part 1, Revision 1

The enclosure to this letter contains proprietary information.  
Withhold From Public Disclosure Under 10 CFR 2.390.  
Upon removal of the enclosures, this letter is uncontrolled.

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NRC

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generically for B&W designed internals for 60 years. EPRI submitted the non-proprietary version of the update to BAW-10008, Part 1, Revision 1, as part of an RAI response to MRP-227. AREVA submitted the proprietary version to the NRC by letter dated October 29, 2010. However, the NRC declined to review the updated version citing site-specific reviews as an alternative. AREVA Document No. 51-9038244-002 titled "Update of Irradiation Embrittlement in BAW-10008 Part 1 Rev. 1" was the Proprietary version AREVA sent to the NRC. AREVA Document No. 47-9048125-002 is the non-proprietary version. The proprietary and non-proprietary versions, along with the AREVA letter to the NRC that accompanied the proprietary version, are contained in enclosed Duke Energy Calculation OSC-10237. This calculation provides the plant-specific analysis and data to demonstrate that the internals will meet the deformation limits at the expiration of the renewal license and fulfills the commitment made in Duke Energy letter to the NRC dated December 17, 1999 and restated in the ONS Safety Evaluation Report for License Renewal.

AREVA Document No. 51-9038244-002 is classified by AREVA NP as proprietary. The appropriate affidavit from AREVA NP was provided in the AREVA letter to the NRC dated October 29, 2010, in accordance with the provisions of 10 CFR 2.390. As such, Duke Energy considers the enclosed calculation, which contains the AREVA document, proprietary and requests it be withheld from public disclosure.

There are no additional regulatory commitments associated with this submittal. Inquiries on this submittal should be directed to Boyd Shingleton, Oconee Regulatory Compliance Group, (864) 873-4716.

Sincerely,

*TP GILLESPIE*  
T. Preston Gillespie, Jr.  
Vice President  
Oconee Nuclear Station

Enclosure: ONS Calculation OSC-10237

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cc w/ enclosure:

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

Mr. John Stang, Project Manager  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Mail Stop O-8 G9A  
Washington, DC 20555

Mr. Andy Sabisch  
Senior Resident Inspector  
Oconee Nuclear Site

Ms. Susan E. Jenkins, Manager  
Radioactive & Infectious Waste Management  
Division of Waste Management  
South Carolina Department of Health and Environmental Control  
2600 Bull St.  
Columbia, SC 29201

## Supporting Document

AREVA Letter dated October 29, 2010  
providing NRC with Document Number 5-9038244-002  
entitled "Update of Irradiation Embrittlement in  
BAW-1008 Part I Rev. 1" to NRC for information.



October 29, 2010  
NRC:10:099

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

**Information In Support of the EPRI Materials Reliability Program (MRP): Pressurized Water Reactor Internals Inspection and Evaluation Guidelines (MPR-227-Rev. 0) Review**

AREVA NP Inc. (AREVA) is hereby providing the enclosed Engineering Information Record, Document Number 51-9038244-002, entitled "Update of Irradiation Embrittlement in BAW-10008 Part 1 Rev. 1" to the NRC for information. This document is provided to the NRC in support of the EPRI Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines (MPR-227-Rev. 0) review. This document demonstrates that for the irradiation levels at the end of 60-year lifetime, there will be adequate ductility at operating temperature to absorb local strains at the regions of maximum stress intensity, and that irradiation will not adversely affect deformation limits.

This document is being submitted for information only. No safety evaluation (SE) is expected and therefore, no review fees should be incurred.

The non-proprietary report, AREVA Document Number 47-9048125-002, is being provided under a separate submittal through the EPRI MRP.

AREVA considers some of the material contained in the enclosed document 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.

If you have any questions related to this submittal, please contact Ms. Gayle Elliott, Product Licensing Manager. She may be reached by telephone at 434-832-3347, or by e-mail at [gayle.elliott@areva.com](mailto:gayle.elliott@areva.com).

Sincerely,

A handwritten signature in cursive script that reads "Ronnie L. Gardner".

Ronnie L. Gardner, Manager  
Corporate Regulatory Affairs  
AREVA NP Inc.

Enclosure

cc: H. D. Cruz  
Project 728

**AREVA NP INC.**

An AREVA and Siemens company

3315 Old Forest Road, P.O. Box 10935, Lynchburg, VA 24508-0935  
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bcc: NRC:10:089

M. J. Burzynski

M. J. DeVan *mg*

G. F. Elliott

S. Fyitch *[Signature]*

R. L. Gardner

A. B. Meglins

G. L. Pannell

M. A. Rinckel

S. M. Sloan

H. Xu



AFFIDAVIT

COMMONWEALTH OF VIRGINIA )  
    ) ss.  
 CITY OF LYNCHBURG )

1. My name is Gayle F. Elliott. 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 Engineering Information Record, Document Number 51-9038244, Revision 002, entitled "Update of Irradiation Embrittlement in BAW-10008 Part 1 Rev. 1," dated October 2010 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 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 27<sup>th</sup>  
day of October 2010:



Kathleen Ann Bennett  
NOTARY PUBLIC, COMMONWEALTH OF VIRGINIA  
MY COMMISSION EXPIRES: 8/31/11  
Reg. # 110864

