

Letter Enclosure Contains Proprietary Information
Withhold From Public Disclosure Under 10 CFR 2.390



Christopher L. Burton
Vice President
Harris Nuclear Plant
Progress Energy Carolinas, Inc.

February 23, 2012
Serial: HNP-12-023

10 CFR 50.90

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

Shearon Harris Nuclear Power Plant, Unit No. 1
Docket No. 50-400 / Renewed License No. NPF-63

Subject: License Amendment Request for Revision to Technical Specification Core Operating Limits Report References for Realistic Large Break LOCA Analysis Response to Request for Additional Information (TAC NO. ME6999)

Reference: Letter from K. Holbrook to the U.S. NRC, "License Amendment Request for Revision to Technical Specification Core Operating Limits Report," Serial HNP-11-067, dated August 22, 2011, ADAMS Accession No. ML11238A077

Ladies and Gentlemen:

By letter dated August 22, 2011, Carolina Power & Light Company (CP&L), doing business as Progress Energy Carolinas, Inc., requested approval from the U.S. Nuclear Regulatory Commission (NRC) of a license amendment request (LAR). The proposed request would revise TS 6.9.1.6, "Core Operating Limits Report," to add a plant-specific methodology that implements AREVA's NRC-approved topical report EMF-2103(P)(A), "Realistic Large Break LOCA Methodology for Pressurized Water Reactors," Rev.0 and also EMF-2103(P)(A), "Realistic Large Break LOCA Methodology for Pressurized Water Reactors," Revision 2 or higher upon approval of the specific revision by the NRC.

Discussion questions were provided during several conference calls and meetings between CP&L and the staff which are being treated as a Request for Additional Information (RAI). Responses to those questions are included in the enclosure to this letter.

Two technical aspects of the methodology are highly complex, which, when coupled with limitations on availability of NRC staff resources, challenge final resolution of the issues on a timeline supporting CP&L's need date for the amendment. Therefore, CP&L revises the request to include an adder to the peak cladding temperatures calculated using the methodology to limit the impact of the unresolved questions. The discussion supporting the adder is included in Enclosure 1.

Independent of the activities associated with the LAR, AREVA has identified an error in the S-RELAP5 coding of the Sleicher-Rouse correlation that impacts the calculated peak cladding

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temperatures. A description of the error and its impact on the calculation results are presented in Section 2.12 of Enclosure 2.

Enclosure 2 contains proprietary information. CP&L, on behalf of AREVA NP Inc., requests that the NRC withhold the information in accordance with 10 CFR 2.390 per the affidavit for withholding proprietary information (Enclosure 3). Upon removal of Enclosure 2, the balance of this letter and enclosures are decontrolled.

CP&L has concluded that the information provided in this supplement meets the intent of the original submittal and does not impact the conclusions of the Technical Analysis, No Significant Hazards Consideration, or Environmental Consideration as provided in the original submittal.

In accordance with 10 CFR 50.91(b), CP&L is providing the state of North Carolina with a copy of this response including Enclosures 1, 3, and 4.

This document contains one new Regulatory Commitment:

CP&L commits to apply a 138 degree Fahrenheit conservative adder to peak cladding temperatures calculated using the plant-specific methodology that implements AREVA's NRC-approved topical report EMF-2103(P)(A), "Realistic Large Break LOCA Methodology for Pressurized Water Reactors," Rev.0. The 138 degree Fahrenheit conservative adder will be reflected in reports of peak cladding temperature submitted in accordance with 10 CFR 50.46 (a)(3).

Please refer any questions regarding this submittal to Mr. David Corlett, Supervisor – HNP Licensing/Regulatory Programs, at (919) 362-3137.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on [**FEB 23 2012**].

Sincerely,



CLB/jrc

Enclosures (4): Response to Request for Additional Information

cc: Mr. J. D. Austin, NRC Sr. Resident Inspector, HNP
Mr. W. L. Cox, III, Section Chief N.C. DENR
Ms. A. T. Billoch Colón, NRC Project Manager, HNP
Mr. V. M. McCree, NRC Regional Administrator, Region II

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License Amendment Request for Revision to Technical
Specification Core Operating Limits Report References for
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(TAC NO. ME6999)

Response to Request for Additional Information

Enclosure 1

Discussion of Proposed Commitment Regarding Open Technical Questions

By letter dated August 22, 2011, Carolina Power & Light Company (CP&L), doing business as Progress Energy Carolinas, Inc., requested approval from the U.S. Nuclear Regulatory Commission (NRC) of a license amendment request (ADAMS Accession No. ML11238A077). The proposed request would revise TS 6.9.1.6, "Core Operating Limits Report," to add a plant-specific methodology that implements AREVA's NRC-approved topical report EMF-2103(P)(A), "Realistic Large Break LOCA Methodology for Pressurized Water Reactors," Rev.0 and also EMF-2103(P)(A), "Realistic Large Break LOCA Methodology for Pressurized Water Reactors," Revision 2 or higher upon approval of the specific revision by the NRC.

During several conference calls and meetings between CP&L and the staff, discussion questions were provided, which are being treated as a Request for Additional Information (RAI). Some of the questions raised by and discussed with the staff were related to fuel cladding swell, rupture, and pellet fragment relocation, specifically the range of packing factors that could exist subsequent to rupture of a fuel rod. This issue was mentioned in an NRC memorandum from B. Sheron to E. Leeds on December 29, 2011, "Update to Research Information on Cladding Embrittlement Criteria in 10 CFR 50.46." As discussed in that memorandum, additional research findings have been developed in the areas of axial fuel relocation and the loss of fuel particles through a rupture opening, and further research is planned by the staff to understand the sensitivities of these phenomena and their potential significance. Mr. Sheron commented that the staff does not currently have a sufficient technical basis for concluding whether, and in what manner, these phenomena must be addressed.

An additional reviewer concern is related to the heat transfer affects of droplet geometry as impacted by the obstruction in the channel due to fuel rod swell and rupture. The reviewers indicated that although sufficient information may be available to justify the methodology submitted for review, the complexity of the issue and the reviewer time available would challenge the required schedule for approval.

Sensitivity studies were performed to address reviewers' concerns. Results of those studies are included in the enclosed responses to the RAI. Those studies document that conservative selection of a packing factor of 0.8, with no credit for droplet shattering, could raise the calculated PCT by up to 138° F.

The two technical aspects of the methodology are highly complex, which, when coupled with limitations on availability of NRC staff resources, challenge final resolution of the issues on a timeline supporting CP&L's need date for the amendment. Therefore, CP&L revises the request to include an adder to the peak cladding temperatures calculated using the methodology to limit the impact of the unresolved questions as follows:

CP&L commits to apply a 138 degree Fahrenheit conservative adder to peak cladding temperatures calculated using the plant-specific methodology that implements AREVA's NRC-approved topical report EMF-2103(P)(A), "Realistic Large Break LOCA Methodology for Pressurized Water Reactors," Rev.0. The 138 degree Fahrenheit conservative adder will be reflected in reports of peak cladding temperature submitted in accordance with 10 CFR 50.46 (a)(3).

The commitment only applies when using the plant-specific methodology that implements AREVA's NRC-approved topical report EMF-2103(P)(A), "Realistic Large Break LOCA Methodology for Pressurized Water Reactors," Rev.0. Per the LAR, upon NRC approval of EMF-2103, Revision 2, the plant-specific methodology of ANP-3011(P) may be replaced, at the discretion of CP&L, by the use of EMF-2103(P)(A), Revision 2 or higher. Notification to the NRC of such a change will be via updates to the COLR required by TS 6.9.1.6.4 and would no longer require the 138 degree Fahrenheit conservative adder to peak cladding temperatures.

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Response to Request for Additional Information

Enclosure 3
Affidavit Supporting Withholding of Proprietary Information

requested qualifies under 10 CFR 2.390(a)(4) "Trade secret and commercial or financial information."

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

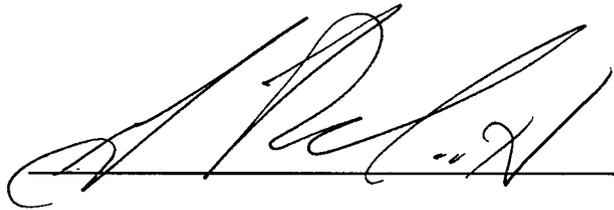
- (a) The information reveals details of AREVA NP's research and development plans and programs or their results.
- (b) Use of the information by a competitor would permit the competitor to significantly reduce its expenditures, in time or resources, to design, produce, or market a similar product or 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.

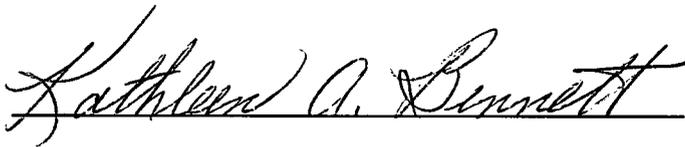
7. In accordance with AREVA NP's policies governing the protection and control of information, proprietary information contained in this Document have been made available, on a limited basis, to others outside AREVA NP only as required and under suitable agreement providing for nondisclosure and limited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

A handwritten signature in black ink, appearing to be 'A. P. N.', written over a horizontal line.

SUBSCRIBED before me this 16th
day of February 2012.

A handwritten signature in black ink, reading 'Kathleen A. Bennett', written over a horizontal line.

Kathleen Ann Bennett
NOTARY PUBLIC, COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES: 8/31/15
Reg. # 110864

