DUKE ENERGY®

William R. Gideon
Vice President
Brunswick Nuclear Plant
P.O. Box 10429
Southport, NC 28461

o: 910.457.3698

November 5, 2015

Serial: BSEP 15-0090

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

Subject: Brunswick Steam Electric Plant, Unit Nos. 1 and 2
Renewed Facility Operating License Nos. DPR-71 and DPR-62
Docket Nos. 50-325 and 50-324
Response to Request for Additional Information Regarding License Amendment Request to Adopt Topical Report ANP-10298P-A, Revision 1

References:

1. Letter from William R. Gideon (Duke Energy) to U.S. Nuclear Regulatory Commission, *Request for License Amendments - Adoption of Topical Report ANP-10298P-A, Revision 1*, dated February 19, 2015, ADAMS Accession Number ML15075A021.

2. NRC E-mail Capture, *Brunswick Steam Electric Plant, Units 1 and 2 - Request for Additional Information Related to License Amendment Request - Adoption of Topical Report ANP-10298P-A, Revision 1 (TAC Nos. MF5851 and MF5852)*, dated September 22, 2015, ADAMS Accession Number ML15266A530

Ladies and Gentlemen:

By letter dated February 19, 2015 (i.e., Reference 1), Duke Energy Progress, Inc., submitted a license amendment request (LAR) to revise the Technical Specification (TS) 5.5.6.b for the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2, by replacing AREVA Topical Report ANP-10298P-A, *ACE/ATRIUM 10XM Critical Power Correlation*, Revision 0, March 2010, with AREVA Topical Report ANP-10298P-A, *ACE/ATRIUM 10 XM Critical Power Correlation*, Revision 1, March 2014, in the list of analytical methods that have been revised and approved by the NRC for determining core operating limits. On September 22, 2015, by electronic mail (i.e., Reference 2), the NRC provided a request for additional information (RAI) regarding the LAR. Duke Energy's response to the RAI is provided in the enclosure of this letter.

No new regulatory commitments are contained in this letter.

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

A001
NRR

I declare, under penalty of perjury, that the foregoing is true and correct. Executed on November 5, 2015.

Sincerely,

William R. Gideon

WRM/wrm

Enclosure: Response to Request for Additional Information

cc (with enclosure):

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

U.S. Nuclear Regulatory Commission
ATTN: Mr. Andrew Hon (Mail Stop OWFN 8G9A) **(Electronic Copy Only)**
11555 Rockville Pike
Rockville, MD 20852-2738

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

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

Mr. W. Lee Cox, III, Section Chief **(Electronic Copy Only)**
Radiation Protection Section
North Carolina Department of Health and Human Services
1645 Mail Service Center
Raleigh, NC 27699-1645
lee.cox@dhhs.nc.gov

Response to Request for Additional information

By letter dated February 19, 2015 (i.e., Reference 1 to this enclosure), Duke Energy Progress, Inc., submitted a license amendment request (LAR) to revise the Technical Specification (TS) 5.5.6.b for the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2, by replacing AREVA Topical Report ANP-10298P-A, *ACE/ATRIUM 10XM Critical Power Correlation*, Revision 0, March 2010, with AREVA Topical Report ANP-10298P-A, *ACE/ATRIUM 10 XM Critical Power Correlation*, Revision 1, March 2014, in the list of analytical methods that have been revised and approved by the NRC for determining core operating limits.

On September 22, 2015, by electronic mail (i.e., Reference 2 to this enclosure), the NRC provided a request for additional information (RAI) regarding the LAR. Duke Energy's response to the RAI is provided below.

NRC Request for Additional Information:

In the submitted LAR, the licensee is requesting approval of the use of the NRC-approved CPR correlation (AREVA Topical Report ANP-10298P-A, ACE/ATRIUM 10XM Critical Power Correlation, Revision 1, March 2014) in the upcoming core design safety analysis. However, the supporting plant-specific analysis with the CPR, Revision 1 correlation was not included. Please provide analyses of the limiting anticipated operational occurrences (such as FWCF, LRNBP, PRFDS, TTNBP, etc. at 2923 MWth) including determination of limiting ΔCPR using the CPR, Revision 1 correlation together with a comparison to the ΔCPR Revision 0 results for the same transients.

Response:

AREVA has performed analyses of CPR limiting Brunswick Anticipated Operational Occurrences using both Revision 0 and Revision 1 of the ACE/ATRIUM 10XM critical power correlation. The analyses were performed for the Brunswick Unit 1 Cycle 21 core consisting entirely of ATRIUM 10XM fuel. The scope of the analysis included evaluating the Critical Power Ratio (CPR) limiting fast transient events (i.e., Load Reject No Bypass (LRNBP) and Turbine Trip No Bypass (TTNBP)) at the end of full power (EOFP) cycle exposure and rated power (i.e., 2,923 MWth), which have been shown to be clearly limiting in past Brunswick licensing analyses. The CPR limiting control rod withdrawal error (CRWE) case at rated power was also analyzed with Revision 0 and Revision 1 of the correlation. The resulting ΔCPRs and the difference between the two forms of the correlation from these analyses are provided in the following table.

Comparison of ΔCPRs between Revision 0 and Revision 1 of the ACE/ATRIUM 10XM Critical Power Correlation

Event	ΔCPR, ACE Revision 0	ΔCPR, ACE Revision 1	Delta
Load Reject No Bypass (LRNBP) at 100% Rated Power	0.297	0.288	-0.009
Turbine Trip No Bypass (TTNBP) at 100% Rated Power	0.302	0.290	-0.012
Control Rod Withdrawal Error (CRWE) at 100% Rated Power	0.271	0.262	-0.009

References:

1. Letter from William R. Gideon (Duke Energy) to U.S. Nuclear Regulatory Commission, *Request for License Amendments - Adoption of Topical Report ANP-10298P-A, Revision 1*, dated February 19, 2015, ADAMS Accession Number ML15075A021.

2. NRC E-mail Capture, *Brunswick Steam Electric Plant, Units 1 and 2 - Request for Additional Information Related to License Amendment Request - Adoption of Topical Report ANP-10298P-A, Revision 1 (TAC Nos. MF5851 and MF5852)*, dated September 22, 2015, ADAMS Accession Number ML15266A530.