

NRR-PMDAPem Resource

From: Hon, Andrew
Sent: Thursday, March 09, 2017 1:25 PM
To: Murray, William R. (Bill) (Bill.Murray@duke-energy.com) (Bill.Murray@duke-energy.com)
Subject: Brunswick Unit 1 and Unit 2 Request for Additional Information related Containment Accident Pressure in the MELLA+ LAR (CACs MF8864 and MF8865)

In a letter dated November 18, 2015, (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML16343A521), Duke Energy Progress (the licensee) requested the subject amendment to Operating Licenses OLs DPR-71 and DPR-62.

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing your submittal and has determined that additional information is required to complete the review. The specific information requested is addressed below. The proposed questions were discussed by telephone with your staff on March 8, 2017. Your staff confirmed that request for additional information (RAI) was understood and did not include proprietary or security-related information, and agreed to provide a response in 30 days of this request.

The NRC staff considers that timely responses to RAIs help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources. Please note that if you do not respond to this request by the agreed-upon date or provide an acceptable alternate date, we may deny your application for amendment under the provisions of Title 10 of the *Code of Federal Regulations*, Section 2.108. If circumstances result in the need to revise the agreed upon response date, please contact me.

Andy Hon, PE

*Project Manager (Brunswick Nuclear Plant 1 & 2, Sequoyah Nuclear Plant 1 & 2)
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation
301-415-8480
OWFN O8H19
Mail Stop O8G-9a
andrew.hon@nrc.gov*

The requests for additional information are provided below:

SRXB-C-RAI-1

Regulatory Basis

10 CFR 50 Appendix A, Criterion 38, "Containment heat removal"

Background

Reference 2 states that the Brunswick Steam Electric Plant (BSEP) Units 1 and 2 depend on the Containment Accident Pressure (CAP) developed during postulated accidents for assuring a positive Net Positive Suction Head (NPSH) margin for the Emergency Core Cooling System (ECCS) and the containment heat removal system pumps. In a letter dated May 31, 2002, the Nuclear Regulatory Commission (NRC) staff Safety Evaluation Report (SER) for the Extended Power Uprate (EPU) for BSEP, Units 1 and 2 (i.e., Amendment No.

222 to Facility Operating License No. DPR-71 and Amendment No. 247 to Facility Operating License No. DPR-62) approved use of CAP of up to 5.0 psig for NPSH requirements from the available post-LOCA containment pressure of 11.3 psig at EPU conditions. Subsequent to issuance of the SER for EPU, the NRC staff issued SECY-11-0014 (Reference 7) for addressing the Advisory Committee for Reactor Safeguards (ACRS) concerns for the use of CAP. Enclosure 1, (Reference 8) of SECY-11-0014, Section 6.0 provides staff guidance on the use of CAP in determining the NPSH margins of ECCS and containment heat removal system pumps.

Requested additional information:

Since the BSEP Units 1 and 2 use CAP for assuring positive NPSH margins for the ECCS and the containment heat removal system pumps, the guidance in SECY-11-0014 is applicable for quantifying NPSH margins and supersedes the previously approved use of CAP in which the margins were not quantified. Sections 6.6.3 and Section 6.6.9 of Enclosure 1 (Reference 8) of SECY-11-0014 states:

A 95/95 lower tolerance limit should be used to calculate the containment accident pressure used to determine the NPSHa [NPSH available].

A realistic calculation of NPSHa should be performed to compare with the NPSHa determined from the Monte Carlo 95/95 calculation.

The licensee has not addressed Section 6.6.3 and 6.6.9 of Enclosure 1 (Reference 8) of SECY-11-0014. Specifically, the statistical analysis proposed by the Boiling Water Reactor Owners' Group (BWROG) described in References 3 and 4, approved by NRC in Reference 5 and 6, has not been performed by the licensee to demonstrate and quantify NPSH margin for the postulated design basis Loss of Coolant Accident (LOCA) in the Analysis of Record (AOR). Please provide the statistical analysis as described in Reference 4 to satisfactorily address the criteria in Sections 6.6.3 and 6.6.9 in Reference 8.

The licensee may note the Monticello EPU and Maximum Extended Load Line Limit Analysis Plus (MELLLA+) CAP document (Reference 9) as a precedent which addressed all criteria of Section 6.6 of Reference 8 including performing the statistical analysis described in Sections 6.6.3 and 6.6.9.

REFERENCES

1. Letter from Duke Energy to NRC dated September 6, 2016, "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 Request for License Amendment Regarding Core Flow Operating Range Expansion," (ADAMS Accession Number ML16257A410)
2. Enclosure 11 to Reference 1, "SECY-11-0014 Discussion - Use of Containment Accident Pressure (CAP) in Analyzing ECCS and Containment Heat Removal System Pump Performance," (ADAMS Accession Number ML16257A411)
3. BWROG letter to NRC dated November 21, 2014, "Submittal of Revised BWROG Topical Reports NEDC-33347P Revision 1 (Proprietary Version) and NEDO-33347 Revision 1 (Non-Proprietary Version), "Containment Overpressure Credit for Net Positive Suction Head (NPSH)," (ADAMS Accession number ML14325A626)
4. Attachment 1 to Reference 1, "NEDC-33347P Revision 1 Proprietary Version Containment Overpressure Credit for Net Positive Suction Head (NPSH)," (ADAMS Accession Number ML14325A625)
5. Letter from NRC to BWROG dated December 21, 2016, "Final Safety Evaluation for Boiling Water Reactor Owners' Group Topical Report NEDC-33347P/NEDO-33347, Revision 1, "Containment Overpressure Credit for Net Positive Suction Head (NPSH)" (CAC No. Mf6708)," (ADAMS Accession Number ML16351A176)

6. Enclosure to Reference 5, "U.S. Nuclear Regulatory Commission Final Safety Evaluation for Topical Report NEDC-33347P/NEDO-33347, Revision 1, "Containment Overpressure Credit For Net Positive Suction Head (NPSH)" CAC NO. MF6708," (ADAMS Accession Number ML16351A179)
7. SECY 11-0014, "Use of Containment Accident Pressure in Analyzing Emergency Core Cooling System and Containment Heat Removal System Pump Performance in Postulated Accidents," (ADAMS Accession Number ML1025901961)
8. Enclosure 1 to SECY-11-0014, "The Use of Containment Accident Pressure in Reactor Safety Analysis ADAMS ML102110167," (ADAMS Accession Number ML102110167)
9. Letter from Northern States Power Company to NRC dated September 28, 2012, "Monticello Extended Power Uprate and Maximum Extended Load Line Limit Analysis Plus License Amendment Requests: Supplement to Address SECY 11-0014 Use of Containment Accident Pressure (TAC Nos. MD9990 and ME3145),"(ADAMS Accession Number ML12276A057)

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Created By: Andrew.Hon@nrc.gov

Recipients:
"Murray, William R. (Bill) (Bill.Murray@duke-energy.com) (Bill.Murray@duke-energy.com)"
<Bill.Murray@duke-energy.com>
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