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**Subject:** Request for Additional Information Associated with Fort Calhoun High Energy Line Break License Amendment Request (MF2869)  
**Date:** Wednesday, October 09, 2013 3:35:14 PM

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Mr. Hansher,

By letter dated October 6, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13280A089) Omaha Public Power District (the licensee) submitted for Nuclear Regulatory Commission (NRC) approval a license amendment request that would revise the Fort Calhoun Station Updated Safety Analysis Report for pipe break criteria for high energy piping outside of containment. The proposed amendment would allow the use of U.S. Nuclear Regulatory Commission guidance provided in Branch Technical Position Mechanical Engineering Branch 3-1 Revision 2, which allows for the exemption of specific piping sections from postulated failures if certain criteria are met.

Based on a review of the submittal, the NRC staff has determined that the following additional information (RAIs) are required in order to complete its review. The request for additional information was discussed with you on October 9, 2013. It was agreed that a response to these RAIs would be provided by October 15, 2013. Should the NRC determine that these RAIs are no longer necessary prior to the scheduled date, the request will be withdrawn. If circumstances result in the need to revise the requested response date, please contact me at (301) 415-1132 or via e-mail at [joseph.sebrosky@nrc.gov](mailto:joseph.sebrosky@nrc.gov). The NRC staff has determined that no security-related or proprietary information is contained herein.

Sincerely,

Joe Sebrosky  
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**Request for additional information (RAI) for Fort Calhoun's Station (FCS) Exigent License Amendment Request (LAR) To Revise Current Licensing Basis of Pipe Break Criteria for High Energy Piping Outside of Containment**

Mechanical and Civil Engineering Branch (EMCB)-RAI-1

To exclude postulating high energy (HE) piping breaks (HELBs) and cracks (HELCs) in piping other than class 1 piping outside containment that are required in the stations

current licensing basis (CLB), the proposed LAR requests approval to incorporate, in the station's current LB, criteria from selected sections of SRP MEB 3-1, Rev 2 for selected sections of piping systems. According to the proposed LAR, pipe stress analysis required to support MEB 3-1, Rev 2 HELB and HELC stress threshold evaluations will be performed in accordance with the criteria of ASME Section III 1986 edition, which is the code of reference in MEB 3-1, Rev 2. FCS's CLB for HELB and HELC is based on the Atomic Energy Commission (AEC) letter from A. Giambusso to applicants and licensees dated in December, 1972.

The licensee is requested to confirm that when using the stress criteria of the 1986 ASME Section III, the analyses will utilize the material allowable values from the original code of construction for subject piping.

#### EMCB-RAI-2

Verify that stresses developed in the pipe pressure boundary wall due to integral welded attachments (IWA) shall be added to the code stress equations. In addition, describe the methodology to address IWAs and whether this methodology is included in the station's current design basis (CDB).

#### EMCB-RAI-3

Verify that pipe stress analysis loadings includes seismic loads and safety relief valve loads along with any other applicable loads from the station's CDB for normal and upset (level A and level B) operating conditions.

#### EMCB-RAI-4

MEB 3-1, Rev 2 provides a definition for a terminal end. Neither the Giambusso letter nor the FCS's licensing basis provide a specific definition for terminal end. MEB 3-1, Rev 2, defines that for piping which is maintained pressurized during normal plant conditions for only a portion of the run up to a closed valve, a terminal end is the piping connection to the closed valve and, therefore, a break postulation is required at that location. The SRP is specific on this item, see MEB 3-1 Rev 2 last sentence in footnote 3. To exclude a break in such a location, described above, the proposed LAR on page seven proposes that this location is not a terminal end based on the terminal end definition of ANSI/ANS-58.2-1988, which has been withdrawn by ANS. The staff has reviewed the ANSI/ANS-58.2-1988 terminal end definition and has determined that it does not provide a definition for a terminal end for the situation of partial pipe run pressurization described above by MEB 3-1 Rev 2. The proposed LAR requests to utilize the MEB 3-1 to exclude breaks required by the CLB. The staff requests that the licensee properly implement MEB 3-1 and postulate a terminal end HELB for this type of situation as described above.

#### EMCB-RAI-5

The licensee is requested to consider including MEB 3-1, Rev 2 footnote 3 in the proposed LAR. This will provide a clear definition of a terminal end and, thus, avoid complications in determining terminal ends.

#### EMCB-RAI-6

The proposed LAR requests to add to the CLB MEB 3-1, Rev 2 Section B.1.c(3), which states:

Breaks in seismically analyzed non-ASME Class piping are postulated according to the same criteria as for ASME Class 2 and 3 piping above.

The licensee is requested to incorporate the intent of Footnote 4 which is part of Section B.1.c(3) or provide a justification and basis for omitting it.

#### EMCB-RAI-7

The proposed LAR requests to add to the CLB MEB 3-1, Rev 2 Section B.3.c(1) to eliminate HELCs in piping equal to or less than 1 inch. The licensee is requested to include all parts of Section B.3.c or to provide justifications and bases for omitting the remainder parts of Section B.3.c.

#### EMCB-RAI-8

The proposed LAR requests to add to the CLB MEB 3-1, Rev 2 Section B.1.e(2) to determine HELCs based on stress threshold. The licensee is requested to add Section B.1.e(3) which provides the HELC requirements for nonsafety related non-analyzed piping or for piping that does not include seismic loads in its analysis.

#### EMCB-RAI-9

The proposed LAR requests to add to the CLB MEB 3-1, Rev 2 Section B.1.c(2) (b)(ii) to determine HELBs based on stress threshold. The licensee is requested to add Section B.1.c(2) in its entirety or provide justifications and bases for omitted parts of Section B.1.c(2).

#### EMCB-RAI-10

The proposed LAR requests to add to the CLB MEB 3-1, Rev 2 Section B.1.c(2) (b)(ii) and Section B.1.c(3). The licensee is requested to add Section B.1.c(4) which is applicable to B.1.c(2) and B.1.c(3).

#### EMCB-RAI-11

The licensee is requested to consider adding to the proposed LAR MEB 3-1, Rev 2 Section B.1.c(5) which is related to the environmental qualification of mechanical and electrical equipment or provide a justification and the basis for omitting this section.

#### EMCB-RAI-12

Enclosure page 6 section 3, 3rd paragraph, states "The application of Generic Letter 87-11 and the identified sections of BTP MEB 3-1 Revision 2 for specific piping systems..." Clarify what are the "specific piping systems" to which this sentence applies.

#### Balance of Plant Branch (SBPB) RAI 1

To ensure clarity in the revised USAR Appendix M the ellipses used in quoted sections of MEB 3-1 should be removed, and the full paragraph should be included.

#### SBPB RAI 2

The license amendment request identifies high energy lines as having temperature equal to or greater than 200°F or pressure greater than 275 psig. However, USAR Appendix M states that high energy lines have design temperature exceeding 200°F or design pressure exceeding 275 psig. No revisions to the criteria for determining high energy lines were indicated in the USAR Appendix M markup included in the license amendment request. Does the license amendment request modify the criteria used to identify high energy lines at the Fort Calhoun Station?

#### SBPB RAI 3

The license amendment identifies several modifications that were completed to address weaknesses in the station design with respect to high energy line breaks. In particular, modifications EC61599 and EC53866 ensure the station can mitigate a high energy line break in Rooms 13 and 19. Provide a discussion of the methods used to analyze the temperature and pressure transients in Rooms 13 and 19, how the environmental qualification of equipment in these rooms and communicating spaces is addressed, and the leakage detection capabilities credited in mitigating a high energy line break in these rooms.

#### SBPB RAI 4

It is not clear if the license amendment applies to systems such as low pressure safety injection or shutdown cooling. Clarify whether these systems are within the scope of the high energy line break criteria and if they are not provide a basis for their exclusion.