



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 1, 2014

Mr. Fadi Diya
Senior Vice President and
Chief Nuclear Officer
Union Electric Company
P.O. Box 620
Fulton, MO 65251

SUBJECT: CALLAWAY PLANT, UNIT 1 – REQUEST FOR ADDITIONAL INFORMATION
RE: REVISION TO FINAL SAFETY ANALYSIS REPORT STANDARD PLANT
SECTION 3.6 FOR HIGH DENSITY POLYETHYLENE CRACK EXCLUSION
(TAC NO. MF3202)

Dear Mr. Diya:

By application dated December 6, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13340A775), to the U.S. Nuclear Regulatory Commission (NRC), Union Electric Company (dba Ameren Missouri, the licensee) submitted a license amendment request to revise the Final Safety Analysis Report-Standard Plant (FSAR-SP) Section 3.6.2.1.2.4, "ASME [American Society of Mechanical Engineers] Section III and Non-Nuclear Piping – Moderate-Energy," to include a new pipe crack exclusion allowance at Callaway Plant, Unit 1.

The NRC staff has determined that additional information, as requested in the enclosure, is needed to complete its review. These questions were provided to Mr. T. Elwood of your staff on June 27, 2014. Please provide a response to the questions within 30 days of the date of this letter. If circumstances result in the need to revise the requested response date, please contact me at 301-415-2296 or via e-mail at Fred.Lyon@nrc.gov.

Sincerely,

A handwritten signature in black ink that reads "CF Lyon".

Carl F. Lyon, Project Manager
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-483

Enclosure:
Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

LICENSE AMENDMENT REQUEST TO REVISE FSAR-SP 3.6

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

By application dated December 6, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13340A775), to the U.S. Nuclear Regulatory Commission (NRC), Union Electric Company (dba Ameren Missouri, the licensee) submitted a license amendment request (LAR) to revise the Final Safety Analysis Report-Standard Plant (FSAR-SP) Section 3.6.2.1.2.4, "ASME [American Society of Mechanical Engineers] Section III and Non-Nuclear Piping – Moderate-Energy," to include a new pipe crack exclusion allowance at Callaway Plant, Unit 1.

The NRC staff has determined that the additional information requested below is needed to complete its review.

1. In Section 2.2, subsection on 'Need for License Amendment' (Enclosure page 4 of 11) of the LAR, the licensee referred to the supply and return headers for the Essential Service Water (ESW) system. Please provide the following additional information:
 - (a) A simple layout sketch of the supply and return pipelines in the yard as well as in the control building penetration room, Ultimate Heat Sink (UHS) Cooling Tower penetration room, and yard vault. Please indicate on the sketch the line numbers, supply or return, train A or B, safety classification, yard portions, vault portions, and penetration room portions of piping along with the corresponding stress analysis calculation number. Also, indicate on the sketch the interface between the steel pipe and High Density Polyethylene (HDPE) pipe.
 - (b) A copy of the FSAR site addendum Figure 3.8-4.
2. In Section 2.2, subsection on 'Need for License Amendment' (Enclosure, page 4 of 11) of the LAR, the licensee stated that evaluations performed in support of modification package (MP) 07-0066 failed to include an internal flooding analysis for the HDPE piping installed in the basement of control building room 3101, UHS cooling tower penetration rooms, and the ESW supply line yard vaults. Please provide the following additional information:
 - (a) Please explain if the internal flooding analysis is required to be performed if moderate energy HDPE piping is exempted from crack postulation based on stress levels. If yes, please clarify if the analysis was

Enclosure

subsequently performed. If the flooding analysis was subsequently performed, provide a simple summary of the results.

- (b) A summary list of safety-related components in the basement of control building room 3101, UHS cooling tower penetration rooms and the ESW supply line yard vaults.
3. In Section 2.2, subsection on 'Need for License Amendment' (Enclosure page 5 of 11) of the LAR, the licensee stated that a review for consequences of pipe crack in the ESW supply line yard vaults was performed. Please provide a summary of the review results.
 4. The licensee indicated in page 4, Section 5.0, Attachment # 4 of the LAR, that initial design, analyzed in calculation 2007-16760, was revised to eliminate the anchors, which were never installed. The revised design without anchors was not reanalyzed but justified in section B2.4 of newly added Appendix-B which was not included in the LAR. Please provide the following additional information:
 - (a) A copy of the newly added Appendix-B.
 - (b) The number of anchors in the original design which were deleted or not installed.
 - (c) A sketch showing the location of these anchors that were not installed.
 - (d) Since the anchors were not installed, please clarify if the termination boundaries of the stress analysis of the piping models on either side of these deleted anchors are extended to include additional piping beyond the deleted anchors. Provide a description or sketches for the revised analysis boundaries for calculations 2007-18080; 2007-18081, 2007-18082, 2007-18083, 2007-16601, and 2007-16760.
 5. The licensee indicated in page 4, Section 5.0, Attachment # 4 of the LAR, that Section B2.4 of Appendix-B uses the peak axial forces and resultant moments from interfacing calculations (2007-18080; 2007-18081, 2007-18082, 2007-18083, 2007-16601) from metallic piping side. These axial forces and moments were subsequently used for moderate energy crack postulation. Please explain and confirm that the axial forces and moments from the other (HDPE piping) side in calculation 2007-16760 (when the anchors were deleted) are smaller than those from the metallic piping side (when the anchors were deleted).

6. The licensee indicated in page 4, Section 5.0, Attachment # 4 of the LAR, that check valves were installed on the service water supply piping near the tie-ins to ESW. It was also mentioned that calculations EF-119, and EF-120 were created to reanalyze the ESW and service water supply piping, which were previously analyzed in calculations 2007-18080 and 2007-18081. Please provide the following additional information:
 - (a) A sketch showing the location of the added check valves in the piping models for EF-119 and EF-120. Please clarify if the added check valves are located close to the deleted anchor locations.
 - (b) Please clarify if the calculations EF-119, and EF-120 replace the calculations 2007-18080, and 2007-18081, and account for the effects of deleted anchors as well as added check valves.
 - (c) Please explain if the calculation 2007-16760 is affected by the addition of check valves.
 - (d) Please explain why the peak axial forces and moments used in Appendix-B, and subsequently used to compute the stress levels (to demonstrate whether moderate energy crack needs to be postulated or not), were from calculations 2007-18080 and 2007-18081, but not from EF-119 and EF-120.
7. For the moderate energy crack postulations discussed in page 5, Section 5.0, Attachment # 4 of the LAR, of the two axial force numbers being added, please identify the contributions to the axial force from Operating Basis Earthquake (OBE), and seismic anchor motion (SAM) for the supply piping in control building room 3101. Also identify the breakdown of the contribution from X, Y, and Z SAM cases.
8. Please provide a summary table pertaining to moderate energy crack postulation with the following information, referred in pages 14 and 15, Section 5.0, Attachment # 4 of the LAR.

Please include line number, description (e.g., supply, return), location (e.g., control building room 3101, yard vault, UHS cooling tower penetration room) design pressure, design temperature, maximum pressure, thermal modes analyzed (e.g., temperatures), computed stress (sum of equations 9 and 10 stresses), crack postulation threshold stress limit, margin, and conclusion about moderate energy crack postulation.

July 1, 2014

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Chief Nuclear Officer
Union Electric Company
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Sincerely,
/RA/
Carl F. Lyon, Project Manager
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-483

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Request for Additional Information

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*email dated June 20, 2014

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