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

February 20, 2013

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

SUBJECT: CALLAWAY PLANT, UNIT 1 – REVIEW OF THE 2011 STEAM GENERATOR TUBE INSPECTION REPORT (TAC NO. ME9087)

Dear Mr. Heflin:

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated May 17, 2012, as supplemented by letter dated November 15, 2012, and clarifying email dated December 20, 2012, Union Electric Company (the licensee) submitted its inspection report for the 2011 during the 18th refueling outage (Refueling Outage 18) for the steam generator tube inspections at Callaway Plant, Unit 1. Your report was submitted in accordance with Technical Specification (TS) 5.6.10, "Steam Generator Tube Inspection Report."

Based on its review, the NRC staff concludes that the licensee has provided the information required by TS 5.6.10. In addition, the NRC staff concludes that there are no technical issues that warrant follow-up action at this time, since the inspections appear to be consistent with the objective of detecting potential tube degradation and the inspection results appear to be consistent with industry operating experience at similarly designed and operated units. A summary of the NRC staff's review is enclosed. If you have any questions, please contact me at 301-415-2296 or via e-mail at Fred.Lyon@nrc.gov.

Sincerely,

CFLyon

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

Docket No. 50-483

Enclosure:
As stated

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SUMMARY OF THE REVIEW OF THE 2011 REFUELING OUTAGE 18

STEAM GENERATOR TUBE INSERVICE INSPECTION REPORT

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

By letters dated May 17, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12139A275), and November 15, 2012 (ADAMS Accession No. ML12325A171), Union Electric Company/Ameren Missouri (the licensee) submitted information to the U.S. Nuclear Regulatory Commission (NRC) summarizing the results of the 2011 steam generator (SG) tube inspections performed at Callaway Plant, Unit 1, during the 18th refueling outage (RFO 18). On December 20, 2012, the licensee provided additional clarifying information (ADAMS Accession No. ML13002A441) regarding the 2011 SG tube inspections.

Callaway Plant, Unit 1, has four Framatone-designed 73/19T SGs, installed at the plant in 2005. Each SG has 5,872 thermally treated Alloy 690 tubes, which have an outside diameter of 0.75 inches and a wall thickness of 0.043 inches. The tubes are hydraulically expanded throughout the entirety of the tubesheet. The U-bend region of the tubes in rows 1 through 18 was stress relieved after bending. The tubes are supported by eight Type 410 stainless steel tube support plates (TSPs) with trefoil holes and anti-vibration bars (AVBs).

The licensee provided the scope, extent, methods, and results of its SG tube inspections in the documents referenced above. In addition, the licensee described corrective actions (i.e., tube plugging) taken in response to the inspection findings.

Based on its review of the reports submitted, the NRC staff has the following observations and comments:

The four SGs contain 33 tubes that have been identified as having non-nominal tubesheet drill hole diameters. All these tubes were inspected during the pre-service inspection. Both +Point™ and Array coils were used to perform a 20 percent random sample during RFO 18.

The only degradation observed during the outage was tube wear at the TSPs and AVBs. There was a significant increase in the number of tube wear indications at the TSPs and AVBs. The licensee indicated this was expected since the first inservice inspection was performed after one cycle of operation and the second inservice inspection (in 2011) was performed after four cycles of operation. The growth rate of the tube wear indications at the AVBs has decreased since the first inservice inspection. All of the tube wear indications at the TSPs were new.

Enclosure

The licensee plugged 26 tubes with wear greater than or equal to the plugging limit (28 percent through wall) and elected to plug three additional tubes that were below the plugging limit because they had four sequential AVBs engaged with high wear.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by its technical specifications. In addition, the staff concludes that there are no technical issues that warrant follow-up action at this time, since the inspections appear to be consistent with the objective of detecting potential tube degradation and the inspection results appear to be consistent with industry operating experience at similarly designed and operated units.

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Based on its review, the NRC staff concludes that the licensee has provided the information required by TS 5.6.10. In addition, the NRC staff concludes that there are no technical issues that warrant follow-up action at this time, since the inspections appear to be consistent with the objective of detecting potential tube degradation and the inspection results appear to be consistent with industry operating experience at similarly designed and operated units. A summary of the NRC staff's review is enclosed. If you have any questions, please contact me at 301-415-2296 or via e-mail at Fred.Lyon@nrc.gov.

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/RA/

Carl F. Lyon, Project Manager
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