



Callaway Plant

May 18, 2016

ULNRC-06306

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

Ladies and Gentlemen:

**DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
FACILITY OPERATING LICENSE NPF-30
SPECIAL REPORT 2016-02
INOPERABILITY OF LOOSE PARTS MONITORING INSTRUMENT
FOR GREATER THAN 30 DAYS**

Enclosed is a special report addressing the inoperability of a loose parts monitoring instrument at Callaway Plant.

No new commitments are identified in this correspondence, and none of the material in this report is considered proprietary by Union Electric Company (Ameren Missouri).

If you have any questions or require additional information, please contact Mr. Thomas Elwood, Supervising Engineer, Regulatory Affairs and Licensing at 314-225-1905.

Sincerely,

A handwritten signature in blue ink, appearing to read "Barry L. Cox", written over a blue circular stamp.

Barry L. Cox
Senior Director Nuclear Operations

DRB/tlw

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Special Report 2016-02

Requirement

Callaway Plant's Final Safety Analysis Report (FSAR) Section 16.3.3.5 contains requirements for reactor coolant system (RCS) loose-part detection instrumentation. The Limiting Condition for Operation (LCO) specified per FSAR 16.3.3.5 requires the loose-part detection system to be Operable in MODES 1 and 2. With a required channel inoperable for more than 30 days, Action A applies. It states, "With one or more Loose-Part Detection System channels inoperable for more than 30 days, prepare and submit a Special Report to the Commission within the next 10 days outlining the cause of the malfunction and the plans for restoring the channel(s) to OPERABLE status."

Cause of the Loose-Part Detection Instrument Inoperability

Channels 3 and 4 of the Loose-Part Monitoring System (both channels are for the Upper Reactor Vessel) were declared inoperable and removed from service on 05/01/2016. Initial investigation has concluded that channel 3 degradation is likely associated with the accelerometer and hard-line cable located inside the bio-shield of the containment building. In addition, field inputs for channels 3 and 4 appear to have been swapped. During troubleshooting, the sensor for channel 4 was tapped by hand, and all hits were recorded on channel 3. With the plant entering power operation, no further work will be performed on these components at this time.

The capability to detect loose metallic parts in the RCS will be retained with the remaining 10 operable channels. This instrumentation ensures that sufficient capability is available to detect loose metallic parts in the RCS and avoid or mitigate damage to RCS components.

Plans for Restoring the Instrument to OPERABLE status

Replacement of the accelerometer and/or hard-line cable, as well as post-maintenance testing, will be pursued during the next refueling outage (currently scheduled for October, 2017).

The potential for performing an online replacement was considered, but due to limited accessibility and high radiation dose rates required for this job, it was determined that replacement during the next refueling outage is more appropriate.

16.3.3.5 LOOSE-PART DETECTION SYSTEM LIMITING CONDITION FOR OPERATION

The Loose-Part Detection System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

- a. With one or more Loose-Part Detection System channels inoperable for more than 30 days, prepare and submit a Special Report to the Commission within the next 10 days outlining the cause of the malfunction and the plans for restoring the channel(s) to OPERABLE status.
- b. The provisions of **Sections 16.0.1.3** and **16.0.1.4** are not applicable.

16.3.3.5.1 SURVEILLANCE REQUIREMENTS

Each channel of the Loose-Part Detection System shall be demonstrated OPERABLE by performance of:

- a. A CHANNEL CHECK at least once per 24 hours,
- b. An CHANNEL OPERATIONAL TEST except for verification of Setpoint at least once per 31 days, and
- c. A CHANNEL CALIBRATION at least once per 18 months.

16.3.3.5.2 BASES

The OPERABILITY of the loose-part detection instrumentation ensures that sufficient capability is available to detect loose metallic parts in the Reactor Coolant System and avoid or mitigate damage to Reactor Coolant System components. Data acquisition equipment including a recording device capable of recording four channels simultaneously is required to maintain OPERABILITY of the Loose-Part Detection System. The allowable out-of-service times and Surveillance Requirements were developed to be consistent with the recommendations of Regulatory Guide 1.133, "Loose-Part Detection Program for the Primary System of Light-Water-Cooled Reactors," May 1981. Callaway has adopted a modified methodology for performing the 18-month channel calibration recommended in Regulatory Position C.3.a.(3). Channel components are tested initially with a mechanical input as described in C.3.a.(3). Subsequent testing entails on-line performance monitoring and trending of channel components located in high dose areas in lieu of testing with a mechanical input. Injecting a test signal downstream of these components, and verifying setpoint and alarm circuit functions, tests the remainder of the channel. Review and evaluation of historical

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surveillance data has determined that this is an acceptable means of verifying continued OPERABILITY.