



Callaway Plant

September 16, 2014

ULNRC-06142

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 2014-02 – PAM REPORT  
INOPERABILITY OF A POST ACCIDENT  
MONITORING (PAM) INSTRUMENT**

Reference: ULNRC-06139 dated September 2, 2014, "Special Report 2014-01 – PAM Report Inoperability of a Post Accident Monitoring (PAM) Instrument"

Enclosed Special Report 2014-02 (PAM Report) addresses inoperability of the Reactor Vessel Level Indicating System (RVLIS). Since the period of inoperability for the Reactor Vessel Level Indicating System (RVLIS) has exceeded the Completion Times specified within Technical Specification (TS) 3.3.3 Condition C and is projected to exceed the Completion Time of Condition A, TS 3.3.3 Conditions B and F (of TS 3.3.3) require submittal of a report in accordance with TS 5.6.8, "PAM Report."

No new commitments are identified in this correspondence. None of the material in this report is considered proprietary by Union Electric.

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,

D. Matt Hall  
Director, Nuclear Operations

CSP  
Enclosure

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## **Special Report 2014-02**

### **PAM Report**

#### **Requirement**

Callaway Plant Unit 1 Technical Specification (TS) 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," contains requirements for the Reactor Vessel Level Indicating System (RVLIS) instrumentation. TS 3.3.3 Limiting Condition For Operation (LCO) requires two channels of RVLIS instrumentation to be Operable while in MODES 1, 2, and 3. With one of the required RVLIS instruments inoperable for more than 30 days, Required Action B.1 specifies, "Initiate action in accordance with Specification 5.6.8." With two of the required RVLIS instruments inoperable for more than 7 days, Required Action F.1 also specifies, "Initiate action in accordance with Specification 5.6.8."

TS 5.6.8, "PAM Report," states, "When a report is required by Condition B or F of LCO 3.3.3, 'Post Accident Monitoring (PAM) Instrumentation,' a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status."

#### **Background:**

The Reactor Vessel Level Indicating System (RVLIS) provides an indication of reactor vessel level from the bottom of the reactor vessel to the top of the reactor under natural (narrow range) and forced (wide range) circulation conditions. In addition to the two differential pressure transmitters that support this function, resistance temperature detectors (RTDs) are provided on the sensing lines to these transmitters to allow for density compensation of the fluid within the sensing lines. This system solely supports the Post Accident Monitoring functions required by Technical Specification 3.3.3 Function 5.

#### **Summary of the PAM Instrument Inoperability**

On August 7, 2014, B Train RVLIS was declared inoperable due to intermittent spiking within the narrow range (static) level indication. This loop was restored to service on August 18, 2014 following replacement of the power supply card for this instrument loop.

On August 19, 2014, A Train RVLIS was declared inoperable due to a failed RTD input to the narrow range (static) and wide range (dynamic) level indications. From a review of the plant computer archives, evidence exists that this input had been experiencing performance concerns back to July 3, 2014.

On August 26, 2014, B Train RVLIS was again declared inoperable due to intermittent spiking within the narrow range level indication. Additional reviews of the plant computer archives determined that intermittent spiking concerns in this instrument loop appear to have been present dating back to April 2014.

The above was previously reported in accordance with Technical Specification 3.3.3 Conditions B and F since firm evidence of these operational concerns existed prior to the date of discovery. (Refer to Callaway Special Report 2014-01 submitted under Ameren letter ULNRC-06139 dated September 2, 2014.)

On September 2, 2014, the seven-day Completion Time of Technical Specification 3.3.3 Condition C was exceeded when neither RVLIS train was returned to service following entry into this condition on August 26, 2014.

On September 10, 2014, A Train RVLIS was returned to service following the rework of an electrical splice in the affected RTD circuit. However, this loop was declared inoperable on September 11, 2014, following a recurrence of the operational concerns with this RTD.

Neither of these trains will be returned to service prior to September 18, 2014. As a result, this report also addresses the following:

1. Exceeding the 30-day Completion Time for Technical Specification 3.3.3 Condition A since both trains of RVLIS will not be restored prior to this date, and
2. Exceeding the 7-day Completion Time for Technical Specification 3.3.3 Condition C since neither of the RVLIS trains will be restored prior to this date.

#### **Preplanned Alternate Method of Monitoring**

An alternate means of monitoring, as described in TS Bases 3.3.3 Required Action F.1, is monitoring the core exit thermocouples, pressurizer level indication, and Reactor Coolant System subcooling monitor indication. These three parameters provide diverse information for verifying adequate core cooling.

#### **Cause of the Inoperability**

As noted above, the reported concerns within both RVLIS trains have been intermittent in nature.

The first attempt to restore the B Train RVLIS cabinet on August 18, 2014 was based upon addressing one of the two potential causes that could contribute to intermittent spiking within the loop (loop power supply card). Following recurrence of this concern on August 26, 2014, temporary recording equipment was capable of capturing a subsequent transient within this loop. The data revealed the corresponding level transmitter as the source of the concern.

The first attempt to restore the A Train RVLIS cabinet on September 10, 2014 was based upon reworking an inner containment penetration splice. This rework was pursued due to a correlation that was observed between the failed A Train RVLIS RTD and variations in containment temperatures. This rework activity did reveal a loose termination within a spliced connection, which provided reasonable assurance that the source of this concern had been identified. Following recurrence of this concern on September 11, 2014, additional troubleshooting was performed while the loop was failed which revealed the RTD or its corresponding leads as the source of this concern.

#### **Plans and Schedule for Restoring the Instrumentation Channel to OPERABLE status**

Replacement of the A Train RTD and its corresponding leads will be pursued during the upcoming fall 2014 refueling outage (currently scheduled to begin on October 11, 2014).

The potential for performing an online replacement of the B Train transmitter is currently under evaluation. Replacement of this transmitter will be pursued no later than the forthcoming fall 2014 refueling outage.