Ameren MISSOURI

Callaway Plant

June 1, 2017

ULNRC-06376

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

10 CFR 50.55a

Ladies and Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
RENEWED FACILITY OPERATING LICENSE NPF-30
10 CFR 50.55a(z)(1) REQUEST FOR RELIEF FROM
ASME OM CODE PUMP AND VALVE TESTING REQUIREMENTS
FOR FOURTH 120-MONTH INSERVICE TESTING INTERVAL (RELIEF REQUEST PR-07)

Pursuant to 10 CFR 50.55a(z)(1), Union Electric Company (Ameren Missouri) requests NRC approval of the attached relief request for the fourth 10-year inservice testing interval at Callaway. The Code Edition and Addenda applicable to Callaway for its fourth inservice testing interval, which began December 20, 2014, are ASME OM Code 2004 Edition through 2006 Addenda.

The relief request, identified as PR-07, proposes an alternative to the method for establishment of vibration reference values as specified in ASME OM Code ISTB-3300, for selected "smooth-running pumps." To avoid unnecessary corrective action being taken as a result of minor statistical variations in periodic vibration measurements, it is proposed that a minimum vibration reference value of 0.05 inches per second (ips) be established for each of the applicable pumps (identified in the attached relief request) in lieu of establishing the value based on initial test results. The proposed alternative to the requirements of ISTB-3300 provides an acceptable level of quality and safety.

This letter does/does not contain new commitments.

If there are any questions, please contact Terry Becker at (573) 659-6068.

Sincerely,

PIN 6581

R. C. Wink
Manager, Regulatory Affairs

JPK/

Attachment: Relief Request PR-07

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Attachment to

ULNRC-06376

RELIEF REQUEST PR-07

4 Pages

RELIEF REQUEST PR-07

Proposed Alternative
In Accordance with 10 CFR 50.55a(z)(1)

Alternative Provides Acceptable Level of Quality and Safety

1. ASME Code Components Affected

Pumps listed in Table 1.

2. Applicable Code Edition and Addenda

ASME OM Code 2004 Edition through 2006 Addenda

3. Applicable Code Requirements

ISTB-3300, "Reference Values"

> ISTB-3300(a) requires that initial reference values shall be determined from the results of testing meeting the requirements of ISTB-3100, "Preservice Testing," or from the results of the first inservice test.
>
> ISTB-3300(d) requires that reference values shall be established at a point(s) of operation (reference point) readily duplicated during subsequent tests.
>
> ISTB-3300(f) requires that all subsequent test results shall be compared to these initial reference values or to new reference values established in accordance with ISTB-3310, ISTB-3320, or ISTB-6200(c).

ISTB-5120, "Inservice Testing" (Centrifugal Pumps, Except Vertical Line Shaft Centrifugal Pumps)

ISTB-5121(e) and ISTB-5123(e), "Group A Test Procedure and Comprehensive Test Procedure," require that all deviations from the reference values shall be compared with the ranges of Table ISTB-5121-1 and corrective action taken as specified in ISTB-6200.

ISTB-5220, "Inservice Testing" (Vertical Line Shaft Centrifugal Pumps)

ISTB-5221(e) and ISTB-5223(e), "Group A Test Procedure and Comprehensive Test Procedure," require that all deviations from the reference values shall be compared with the ranges of Table ISTB-5221-1 and corrective action taken as specified in ISTB-6200.

4. Reason for Request

Relief is being requested for establishing the vibration reference value (Vr) solely on the basis of the data collected during preservice or inservice testing for those vibration points that have unusually low levels of vibration. This request applies only to values for Vr associated with vibration testing. Small values for Vr result in small acceptable ranges for pump operation. The acceptable range defined in Table ISTB-5121-1 and Table ISTB-5221-1 is less than or equal to 2.5Vr. Based on such a small acceptable range, a smooth running pump (i.e., one that has a very low vibration reference value of $\leq$ 0.05 inches per second (ips)) could be subject to unnecessary corrective action caused by numerically small changes in vibration levels.

5. Proposed Alternative and Basis for Use

For very small reference values, hydraulic noise and instrument error can be a significant portion of the vibration reading and could affect the repeatability of subsequent measurements. To avoid unnecessary corrective action, a minimum Vr of 0.05 ips is being established for velocity measurements. Pumps with a measured Vr less than or equal to 0.05 inches per second (ips) for a particular vibration measurement location shall have subsequent test results for that location compared to an acceptable range based on 0.05 ips.

When new reference values are established, the measured parameters will be evaluated for each location to determine if the provisions of this relief request still apply. If the measured Vr is greater than 0.05 ips, the requirements of ISTB-3300 will be applied even if the pump is identified in Table 1. Conversely, if the measured Vr is less than or equal to 0.05 ips, a minimum value of 0.05 ips will be used in determining the acceptable, alert, and required action ranges.

In addition to the requirements of ISTB, the pumps in the ASME Inservice Testing Program are included in the Callaway Predictive Maintenance Program. The Callaway Predictive Maintenance Program currently employs predictive monitoring techniques such as:

- vibration monitoring and analysis beyond that required by ISTB,
- oil sampling and analysis where applicable (e.g., for pumps with sufficiently large oil reservoirs).

If the measured parameters are outside the normal operating range or are determined by analysis to be trending toward an unacceptable degraded state, appropriate actions are taken that may include:

- increased monitoring to establish the rate of change,
- review of component and associated system specific information to identify the cause, and
- removal of the pump from service to perform maintenance.

It should be noted that all of the pumps in the IST Program will remain in the Callaway Predictive Maintenance Program even if certain pumps have very low vibration readings and are considered to be smooth running pumps. This alternative to the requirements of ISTB-3300, ISTB-5120 and ISTB-5220, and Table ISTB-5121-1 and Table ISTB-5221-1 provides an acceptable level of quality and safety.

6. Duration of Proposed Alternative

The proposed alternative will be utilized for the entire fourth 120-month Interval ending December 19, 2024.

7. Precedent

A similar relief request (RP-04) was approved for Sequoyah Nuclear Plant Units 1 and 2, Fourth IST 10-year interval, in NRC Safety Evaluation dated May 12, 2016 (ADAMS Accession No. ML16123A131).

A similar relief request (P-1) was approved for Surry Power Station Units 1 and 2, Fifth IST 10-year interval, in NRC Safety Evaluation dated May 9, 2014 (ADAMS Accession No. ML14125A471).

A similar relief request (IST-RR-1) was approved for Watts Bar Nuclear Plant Unit 2, First IST 10-year interval, in NRC Safety Evaluation dated October 21, 2014 (ADAMS Accession No. ML16123A131).

8. References

NUREG 1482, Rev 2, Guidelines for Inservice Testing at Nuclear Power Plants, Section 5.12, "Smooth Running Pumps."

Table 1
Callaway Plant Inservice Testing Program Pump Table

Pump Number	Description	Pump Type	Code Class	OM Code Category
PAL01A/B	MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS	Centrifugal	3	Group A
PBG02A/B	CVCS BORIC ACID TRANSFER PUMPS	Centrifugal	3	Group A
PEF01A/B	ESSENTIAL SERVICE WATER PUMPS	Vertical Line Shaft	3	Group A
PEG01A/B/C/D	COMPONENT COOLING WATER PUMPS	Centrifugal	3	Group A
PEJ01A/B	RESIDUAL HEAT REMOVAL PUMPS	Centrifugal	2	Group A
PAL02	TURBINE DRIVEN AUXILIARY FEEDWATER PUMP	Centrifugal	3	Group B
PBG05A/B	CENTRIFUGAL CHARGING PUMPS	Centrifugal	2	Group B
PEM01A/B	SAFETY INJECTION PUMPS	Centrifugal	2	Group B
PEN01A/B	CONTAINMENT SPRAY PUMPS	Centrifugal	2	Group B