Ameren MISSOURI

Callaway Plant

June 7, 2018

ULNRC-06438

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

10 CFR 50.59
10 CFR 72.48

Ladies and Gentlemen:

DOCKET NUMBERS 50-483 AND 72-1045
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
RENEWED FACILITY OPERATING LICENSE NPF-30
10 CFR 50.59 AND 10 CFR 72.48 SUMMARY REPORT

In accordance with 10 CFR 50.59(d)(2) and 10 CFR 72.48(d)(2), this letter transmits a report that summarizes the 10 CFR 50.59 and 10 CFR 72.48 evaluations for changes, tests, and experiments approved and implemented for activities at Callaway Plant. This enclosed report covers all evaluations that were implemented from May 22, 2016 to December 19, 2017.

This letter does not contain new commitments.

If there are any questions, please contact Mr. Tom Elwood at (314) 225-1905.

Sincerely,

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CALLAWAY PLANT

DOCKET NOS. 50-483 AND 72-1045

10 CFR 50.59 and 10 CFR 72.48 SUMMARY REPORT

Report Period: May 22, 2016 to December 19, 2017.

EXECUTIVE SUMMARY

In accordance with 10 CFR 50.59(d)(2) and 10 CFR 72.48(d)(2), a summary report has been prepared which provides summaries of the 10 CFR 50.59 and 10 CFR 72.48 evaluations of changes, tests, and experiments approved and implemented for activities at Callaway Plant.

This report covers all 10 CFR 50.59 evaluations for changes that were implemented from May 22, 2016 to December 19, 2017. During this period there were four changes implemented that each required a 10 CFR 50.59 evaluation. For these changes, it was determined per 10 CFR 50.59(c)(1) that NRC approval was not required, and therefore, a summary of the 10 CFR 50.59 evaluations is hereby provided.

Additionally, this report covers all 10 CFR 72.48 evaluations for changes that were implemented from May 22, 2016 to December 19, 2017. During this period there was one change implemented that required a 10 CFR 72.48 evaluation. For this change, it was determined per 10 CFR 72.48(c)(1) that NRC approval was not required, and therefore, a summary of this 10 CFR 72.48 evaluation is hereby provided.

10 CFR 50.59 EVALUATIONS:

Evaluation Number:	Activity:
16-01	RFR 201601534 - FSAR Change for Class 1E Room Temperature
16-07	LDCN 16-0011 - Transition to Upgraded Core Reload Design Codes
16-09	Revision to Procedure ODP-ZZ-00002, Equipment Status Control
17-02	LDCN 17-0003 - Change to the FSAR Description of the Forced Oxidation Process during RF Shutdown

10 CFR 72.48 EVALUATIONS:

Evaluation Number:	Activity:
16-01	MP 13-0009 (FCN 05) / Job 16004084 - Design and Install a Cathodic Protection System for the UMAX ISFSI Pad

MP = Modification Package
RFR = Request for Resolution
LDCN = Licensing Document Change Notice

10 CFR 50.59 Evaluation 16-01: Request for Resolution (RFR) 201601534 - FSAR Change for Class 1E Room Temperature

Activity Description:

This change involves an increase in the maximum design basis accident (DBA) temperature identified for the Class lE electrical equipment rooms in the Control Building from 90°F to 104°F. This increase in the allowed room temperature requires a change be made to the Callaway Plant FSAR, specifically FSAR Table 3.1 l (B)-2 and FSAR Section 9.4. This change is needed for margin purposes. An engineering evaluation was performed which shows that the higher ambient temperature limit (of 104°F) is consistent with the environmental qualification (EQ) originally performed for equipment in the affected rooms. Thus, there is sufficient design margin to accommodate this increase in the maximum DBA operating temperature.

Summary of Evaluation:

The 10 CFR 50.59 Evaluation demonstrated that this change can be implemented without prior NRC approval. The revised room temperatures remain within the qualification envelope for the equipment located in the affected rooms.

In the evaluation it is explained that the proposed change is only applicable to post-accident conditions in the affected equipment rooms such that there is no impact on accident initiation and no potential for any new accident to be introduced. It is also explained that since the increased maximum temperature assumed or allowed for post-accident conditions is consistent with the environmental qualification requirements/results for the affected equipment, there is no significant impact on equipment reliability. Consistent with that determination, no new failure modes are introduced and there is no change to the FSAR-described failure modes and effects.

10 CFR 50.59 Evaluation 16-07: LDCN 16-0011, Transition to Upgraded Core Reload Design Codes

Activity Description:

This change upgrades core reload design software codes for Callaway Plant. Specifically, the change facilitates or enables the transition to the NEXUS/ANC9 code system, the methodologies for which are described in three NRC-approved Westinghouse topical reports, i.e., WCAP-10965-P-A, Addendum 2-A (New Pin Power Recovery Methodology); WCAP-16045-P-A (PARAGON); and WCAP-16045-P-A, Addendum 1-A (NEXUS).

A portion of the licensing document changes involved includes a change to the method of calculation of fuel temperature for Doppler feedback reactivity, as required in connection with use of the NEXUS/ ANC9 and BEACON7 Code Systems. This methodology change is described in a WCAP provided for Callaway (i.e., WCAP-17627) which noted that this change was not addressed or included in the three above-noted WCAPs.

Summary of Evaluation:

Although each of the topical reports describing the transition to the NEXUS/ ANC9 code system was approved by the NRC, a change to an element of these methods of evaluation was made after NRC review and approval of the noted WCAPs. An evaluation provided by Westinghouse addresses whether the noted methodology change constitutes a departure from a method of evaluation. Consistent with the Westinghouse evaluation, it is concluded that the change does not constitute a departure from a method of evaluation on the basis of "an essentially the same results" conclusion. This 10 CFR 50.59 Evaluation demonstrated that the change can be implemented without prior NRC approval.

10 CFR 50.59 Evaluation 16-09: Revision to Procedure ODP-ZZ-00002, Equipment Status Control

Activity Description:

This change revises procedure ODP-ZZ-0002, "Equipment Status Control," to provide guidance to Operations personnel that during a specified portion of the year, the emergency diesel generator (EDG) room ventilation supply fans (CGM01A and CGM01B) are not necessary support SSCs for their respective Emergency Diesel Generator (NE01 or NE02). Specifically, the procedure will specify that during the months of November thru February, the EDG supply fans are not necessary support SSCs for their respective EDGs.

This proposed change was determined to require a 10 CFR 50.59 evaluation for two reasons:

1. Adverse effect on the FSAR-described design function of the EDG supply fans (and thus the EDGs)
2. Revision of FSAR-described evaluation methodology for selecting design values for outside air temperatures (FSAR Table 9.4-1)

Summary of Evaluation:

The proposed procedural change (to provide guidance that during the months of November through February, the EDG room ventilation supply fans are not necessary support SSCs for the respective EDGs) has been evaluated, and it has been determined that prior NRC approval is not required.

Ameren calculations GM-03, Rev. 3, and GM-03, Rev. 3, Add 1 provide a documented analysis of EDG room temperatures without crediting air flow from the EDG supply fans during the months of November through February. These calculations demonstrate that during the months of applicability, peak calculated temperatures in the EDG rooms remain within the 122°F value listed in FSAR Table 3.11(B)-2 during EDG operation. Since the FSAR peak temperature value continues to bound the calculated value, the EDGs and their supporting equipment will not be exposed to temperatures above their EQ limit. As a result, there is no change in the likelihood of failure of any of the SSCs supported by the EDG supply fans, including the EDGs themselves. It is therefore concluded that there is not more than a minimal increase in the likelihood of occurrence of malfunction of an SSC important to safety.

The outside air temperatures used in Ameren calculations GM-03, Rev. 3, and GM-03, Rev. 3, Add 1 were selected using a different methodology than what is described in the Callaway FSAR. The revised methodology has been evaluated to be conservative or essentially the same as the methodology described in the FSAR (with respect to the obtained results) and it was concluded that it did not represent a departure from an FSAR-described methodology.

The diesel generator building ventilation system will continue to be able to provide a source

of combustion air for EDG operation through the ventilation exhaust flowpath, following implementation of the proposed change. As described in FSAR section 9.4.7, this flowpath is provided with a damper which opens automatically upon diesel start to ensure a source of combustion air. Reduction from two means of providing airflow (the supply fans and the dampers) to one does not represent a reduction in redundancy credited in the FSAR. FSAR Table 9.4.1-15, "Single-Failure Analyses - Diesel Generator Building Ventilation System," does not credit the two air supply methods as redundant features for the EDGs. Therefore, this aspect of the proposed change involves a reduction in excess redundancy that was beyond the level credited in the FSAR.

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10 CFR 50.59 Evaluation 17-02: LDCN 17-0003 - Change to the FSAR Description of the Forced Oxidation Process during RF Shutdown

Activity Description:

FSAR Sections 9.1.4.2.3.1 and FSAR 9.3.4.2.1.2 are being revised to add descriptions of the forced oxidation process (adding hydrogen peroxide to the RCS) that is used to pro-actively initiate controlled solubilization and removal of activated corrosion products within the reactor coolant system, prior to reactor disassembly, in order to avoid their uncontrolled deposition in excore regions of the Reactor Coolant System (RCS). These FSAR changes will describe the provisions for adding hydrogen peroxide to the RCS for forced oxidation following chemical degasification, as described in procedure CTP-BB-06300.

These changes were determined to be adverse and are the subject of this 10 CFR 50.59 Evaluation. The forced oxidation process has the potential to create an explosive atmosphere in the Volume Control Tank (VCT).

Summary of Evaluation:

Forced oxidation of the RCS is accomplished by adding hydrogen peroxide to the RCS in order to increase the RCS dissolved oxygen content to greater than or equal to 2 parts per million (ppm). The forced oxidation process has the potential to result in elevated oxygen and hydrogen concentrations in the volume control tank (VCT), which would allow for the possibility of an explosive or flammable atmosphere.

Forced oxidation is performed in Mode 5 during the preparation for a plant outage. The only applicable FSAR Chapter 15 or Section 6.2 accident which is credible while the plant is in Mode 5 is the inadvertent boron dilution event discussed in FSAR Chapter 15.4.6.1. In Mode 5, the boron dilution mitigation system (BDMS) is used to detect and mitigate a boron dilution event. When a dilution event is detected, the mitigation system isolates known dilution paths to the reactor coolant system and realigns the reactor makeup water system to the refueling water storage tank (RWST) to initiate a re-boration. The RWST is the safety related water source credited to mitigate the accident/event. Therefore, the inadvertent boron dilution accident/event is not impacted by conditions that occur within the VCT. While the VCT may be used for emergency boration, the credited safety-related water source is the RWST. The ECCS charging pumps suction is aligned to the RWST for makeup/boration to the RCS during safety grade cold shutdown operations in accordance with FSAR Table 5.4A-3. Therefore, the VCT is not considered an SSC important to safety while the plant is in Mode 5. Additionally, sampling of the VCT is performed during forced oxidation in order to identify and mitigate hazardous gas concentrations such that the proposed activity does not create the possibility for an accident of a different type than any previously evaluated in the FSAR.

Based on the results of the evaluation of the proposed change with the 10 CFR50.59 evaluation criteria, it has been determined that the proposed change can be implemented without prior NRC approval.

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10 CFR 72.48 Evaluation 16-01: MP 13-0009 (FCN 05) / Job 16004084 - Design and Install a Cathodic Protection System for the UMAX ISFSI Pad

Activity Description:

A cathodic protection system was installed for the Independent Spent Fuel Storage Installation (ISFSI) pad to ensure adequate corrosion protection for the cavity enclosure container (CEC) portion of the vertical ventilated module (VVM). Since Callaway used an engineered fill subgrade consisting of controlled low-strength material (CLSM), this system is not required and is considered an enhancement to the ISFSI pad. This 10 CFR 72.48 evaluation is focused on the activity of cutting rebar in localized areas of the ISFSI top pad. The installation involved drilling 67 holes each (up to 4-inch diameter) through the ISFSI top pad and into the CLSM. Each hole is about 11 feet deep below the ISFSI top pad. The drilling for this change required cutting rebar in the ISFIS top pad. The support foundation pad (SFP) was unaffected by this change. Standard anodes were installed in each hole and the hole was filled with coke breeze. Localized cutting of the ISFSI top pad rebar decreases the strength of the ISFSI top pad.

Summary of Evaluation:

The 10 CFR 72.48 Evaluation concluded that the proposed activity to install a cathodic protection system (which includes localized cutting of rebar in the ISFSI top pad) will not reduce the structural capacity of the ISFSI top pad below acceptable limits, and does not present an unacceptably adverse impact on the overall thermal, criticality, and shielding performance of the HI-STORM UMAX System.

The localized cutting of rebar at the top of the ISFSI top pad was evaluated and determined to still meet the FSAR required structural design limits. The evaluation was performed using the original methodology. Therefore, the activity may be implemented without requesting a Certificate of Compliance amendment.