

November 17, 2005

Mr. Charles D. Naslund
Senior Vice President and Chief Nuclear Officer
Union Electric Company
Post Office Box 620
Fulton, MO 65251

SUBJECT: CALLAWAY PLANT, UNIT 1 - ISSUANCE OF AMENDMENT RE: MAIN
FEEDWATER ISOLATION VALVES CLOSURE TIME IN TECHNICAL
SPECIFICATION 3.7.3 (TAC NO. MC8284)

Dear Mr. Naslund:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 170 to Facility Operating License No. NPF-30 for the Callaway Plant, Unit 1. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated September 9, 2005 (ULNRC-05206), as supplemented by the letters dated October 24 (ULNRC-05224) and November 3 (ULNRC-05226), 2005.

The amendment revises Surveillance Requirements (SRs) 3.7.3.1 and 3.7.3.2, and adds SR 3.7.3.3 in TS 3.7.3, "Main Feedwater Isolation Valves (MFIVs) and Main Feedwater Regulating Valves (MFRVs) and Main Feedwater Regulating Valve Bypass Valves (MFRVBVs)." The amendment also adds a Figure 3.7.3-1 to the TSs to specify the acceptable MFIV stroke, or closure, time with respect to steam generator pressure.

A copy of the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

/RA

Jack Donohew, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-483

Enclosures: 1. Amendment No. 170 to NPF-30
2. Safety Evaluation

cc w/encl: See next page

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UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 170
License No. NPF-30

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Union Electric Company (UE, the licensee) dated September 9, 2005, as supplemented by letters dated October 24 and November 3, 2005, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. NPF-30 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 170 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This amendment is effective as of its date of issuance, and shall be implemented no later than entry into Mode 3 during the startup from Refueling Outage 15, which is scheduled for the spring of 2007. The baseline testing of the main feedwater isolation valves, which is described in the licensee's letters dated September 9 and October 24, 2005, and in Section 4.1.4 of the Safety Evaluation for this amendment, shall be completed as part of the implementation of this amendment.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA

David Terao, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: November 17, 2005

ATTACHMENT TO LICENSE AMENDMENT NO. 170

RENEWED FACILITY OPERATING LICENSE NO. NPF-30

DOCKET NO. 50-483

Replace the following page of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3
3.7-8 to 3.7-40

INSERT

3
3.7-8 to 3.7-40
3.7-41

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 170 TO FACILITY OPERATING LICENSE NO. NPF-30

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

1.0 INTRODUCTION

By application dated September 9, 2005 (Agencywide Documents Access Management System (ADAMS) Accession No. ML052690190), as supplemented by the letter dated October 24 and November 3, 2005 (ADAMS Accession Nos. ML053050434 and ML053200450, respectively), Union Electric Company (the licensee) requested changes to Facility Operating License No. NPF-30 for the Callaway Plant, Unit 1 (Callaway). The licensee is proposing to revise Surveillance Requirements (SRs) 3.7.3.1 and 3.7.3.2 and add SR 3.7.3.3 in Technical Specification (TS) 3.7.3, "Main Feedwater Isolation Valves (MFIVs) and Main Feedwater Regulating Valves (MFRVs) and Main Feedwater Regulating Valve Bypass Valves (MFRVBVs)." The amendment would add a Figure 3.7.3-1 to the TSs to specify the acceptable MFIV closure time with respect to the steam generator (SG) pressure.

The supplemental letters dated October 24 and November 3, 2005, provided additional information that clarified the application, and did not expand the scope of the application as originally noticed. The supplemental letter did, in a minor way, revise the proposed changes to the TSs; however, it did not change the Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination published in the *Federal Register* on September 16, 2005 (70 FR 54776) for the remaining proposed changes to the TSs.

2.0 BACKGROUND

The main feedwater system is addressed in Section 10.4.7 of the Callaway Final Safety Analysis Report (FSAR) and in the Bases for TS 3.7.3. Each of the four SG feedwater lines contains an MFIV. The MFIVs function to isolate main feedwater flow to the secondary side of the SGs following a high energy line break. The MFIVs would terminate flow from the affected SGs from feedwater line breaks that occur upstream of the MFIVs.

In its application, the licensee stated that the MFIV actuators were replaced during Refueling Outage 13 (spring 2004) with new actuators that use the pressure of the process fluid at the MFIVs to close the valves. A feature of this type of actuator design is that the MFIV closure time is a function of the fluid pressure and, thus, the MFIVs will close slower at lower fluid pressures. The licensee explained that, because there is no pressure indication at the MFIVs, the curves for closure time use SG pressure. The curves have, therefore, been modified to

conservatively account for the pressure differential between the SG pressure indication and the pressure at the MFIVs.

Although each MFIV has two actuator trains, the licensee also stated that the valve closure time is based on using only one actuator train because the single-failure criterion would have one train fail in an accident and the TS 3.7.3 Bases states that the MFIV closure times are verified from "each actuator train."

The licensee also stated that Attachment 6 to its application provided a figure showing the MFIV performance curve and gives the operational capabilities of the MFIVs (i.e., the closure time as a function of SG pressure). This figure reflects results obtained from dual actuator train shop tests and several single actuator train shop tests. The licensee also performed post-installation stroke time tests using both dual trains (Mode 3) and a single train (Modes 3 and 4). The licensee stated that these tests supported the development of the curves provided in the figure in Attachment 6.

3.0 REGULATORY EVALUATION

Section 50.36 of Title 10 of the *Code of Federal Regulations* (10 CFR 50.36), "Technical specifications," sets forth the regulatory requirements related to the content of TSs. Pursuant to 10 CFR 50.36, TSs must include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCO); (3) surveillance requirements (SRs); (4) design features; and (5) administrative controls. The rule does not specify the particular requirements to be included in a plant's TSs. As stated in 10 CFR 50.36(c)(2)(i), the "Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications..." By convention, the LCOs and related SRs are contained in Sections 3.1 through 3.10 of the TSs. Standard Technical Specification Section 3.0, on "LCO and SR Applicability," provides details or ground rules for complying with the LCOs and related SRs. LCO 3.0.4 and SR 3.0.4 address requirements for LCO compliance when transitioning between modes of operation.

For the MFIVs, General Design Criterion (GDC) 34, "Residual heat removal," of Appendix A to 10 CFR Part 50, requires that the safety functions of the main feedwater system can be performed assuming a single active component failure.

4.0 TECHNICAL EVALUATION

In its application, the licensee proposed the following changes to TS 3.7.3:

1. Delete the reference to MFIV from the requirements in SR 3.7.3.1 to verify the closure time of each MFIV, MFRV, and MFRVBV is less than or equal to 15 seconds;
2. Add the phrase "For the MFRVs and MFRVBVs" to the Note stating "Only required to be performed in Modes 1 and 2" for SR 3.7.3.2 to verify that each MFIV, MFRV, and MFRVBV actuates to the isolation position on an actual or simulated actuation signal;
3. Add the new SR 3.7.3.3 to require that the closure time for each MFIV is verified to be

within acceptable limits shown in Figure 3.7.3-1, "MFIV Stroke Time Limit vs. Steam Generator Pressure," at the surveillance test interval (STI) of "In accordance with the Inservice Testing Program"; and

4. Add Figure 3.7.3-1 that specifies the acceptable MFIV closure, or stroke, time as a function of the SG pressure.

The above proposed changes to the TSs are addressed in the following sections of this safety evaluation (SE) in the order they are listed above. The proposed amendment will be evaluated in the following order: (1) the proposed new MFIV closure times in Figure 3.7.3-1, (2) the proposed new SR 3.7.3.3 for MFIVs, and (3) the revisions to the existing SRs 3.7.3.1 and 3.7.3.2.

4.1 MFIV Closure Time Limits in Figure 3.7.3-1

Figure 3.7.3-1 provides the acceptable MFIV closure times as a function of SG pressure. The curve as a function of SG pressure is based on shop tests and post-installation stroke time tests for single train and dual train actuation, which are discussed in Section 2.0 of this SE. The licensee stated that the vendor-supplied single train performance curve was adjusted upwards to provide test acceptance criteria that would be well within the safety analysis values (the maximum MFIV closure times) and this pressure-based performance curve was then correlated to SG pressure by conservatively reducing the MFIV pressure at each corresponding stroke time by 19.1 psig. This figure represents the difference in head elevation between the SG water level at 100 percent (narrow range) and the elevation of the MFIVs. This established the curve as a function of SG pressure that is in Figure 3.7.3-1. Based on its review, the NRC staff concludes that this curve is acceptable to relate the MFIV closure time to the SG pressure because it is conservative. The figure is conservative because the SG pressure and the 19.1 psig overestimates the pressure at the MFIV and, therefore, the acceptable MFIV closure time would be lower than the closure time for the actual process fluid pressure at the valve.

The safety function of the MFIVs is to close and isolate non-safety portions of the feedwater and condensate systems from the safety-related portions. The portion of the feedwater system from the MFIVs to the SGs is safety-related and required to function in a design-basis accident (DBA). In the event of a secondary side pipe rupture inside containment, the MFIVs are to close within an acceptable valve closure time to limit the quantity of high energy fluid that enters containment through the pipe break and provide a pressure boundary for the addition of auxiliary feedwater (AFW) through the AFW pumps to the intact SGs. The acceptable MFIV closure time must be within the limits assumed in the DBA safety analyses that take credit for MFIV closure.

The licensee addressed the MFIV closure time assumed in the safety analyses for different DBAs. It stated that for the secondary system pressures (i.e., SG pressures) that correspond to operating conditions at or below the reference P-11 permissive, 90 seconds was assumed for the maximum MFIV closure time. For operating conditions above the permissive P-11, the licensee stated that the maximum MFIV closure time will remain 15 seconds. This step function is shown in the figure in Attachment 6 to the application at the SG pressure of 600 psig, the SG pressure at the P-11 permissive, which is explained in the licensee's supplemental letter dated October 24, 2005.

The proposed Figure 3.7.3-1 provides MFIV closure time as a function of SG pressures. The closure time is less than the assumed maximum MFIV closure times discussed in the previous paragraph. Therefore, the verification that the MFIV closure time is within the acceptable area of the figure (i.e., below the curve shown in the figure), as required by proposed SR 3.7.3.3, provides assurance that the MFIVs will act to close in a time less than that assumed in the accident analyses.

4.1.1 Operating Conditions at or Below P-11 Permissive

The licensee determined that an MFIV closure time of 90 seconds was bounding for those SG pressures that correspond to operating conditions at or below the P-11 permissive. This permissive allows manual block of safety injection actuation on a low pressurizer pressure signal and is also known as the safety injection unblock pressure. The licensee stated that the SG pressure that corresponds to the operating conditions at the reference permissive P-11 is 600 psig.

The licensee stated that it addressed the impact of the 90-second MFIV closure time on the accident analyses that credit main feedwater isolation. The identified accidents are the (1) hot zero power (HZP) steamline break (SLB) with respect to the core response, (2) main feedwater malfunction, (3) loss of normal feedwater (LONF) and loss of non-emergency alternating current (AC) power to the station auxiliaries (LOAC), (4) main feedline break (MFLB), (5) SG tube rupture (SGTR) accident, and (6) the mass and energy releases from the main steamline break (MSLB) accident. The following is a summary of the licensee's evaluations of these accidents with respect to an increased MFIV closure time of 90 seconds:

HZP SLB (Core Response)

The licensee stated that the HZP SLB event is a limiting and sufficiently conservative licensing basis to demonstrate compliance with the applicable criteria for SLB transients and the associated reactor core response to such transients. The licensee stated that this is documented in Westinghouse topical report WCAP-9226-P-A, which was approved by NRC in its letter dated January 31, 1989. The licensee explained that, although the HZP SLB event is also analyzed at full-power for Callaway, this case is not adversely affected by the proposed change because feedwater isolation occurs after departure from nucleate boiling ratio (DNBR) is reached. For this reason, the licensee stated that the main feedwater isolation is not explicitly modeled for this event and the long-term consequences of the cooldown from the full-power SLB are bounded by the HZP SLB case.

For SLB events that are initiated from conditions below P-11, procedures require the plant to be borated to Mode 5 conditions when the safety injection system is isolated (i.e., below the P-11 permissive). The licensee stated that this requirement was implemented specifically to prevent a return to power following an SLB with no safety injection. Because of this and because the addition of main feedwater to the SGs at or below the P-11 permissive would be significantly less than that assumed in the current Callaway Final Safety Analysis Report (FSAR) accident analysis, the licensee concluded that an SLB event initiated at or below the P-11 permissive would not challenge the applicable DNBR limits regardless of the MFIV stroke time assumed. Based on this, the licensee stated in its application that the increase in MFIV stroke time below the P-11 pressure was acceptable for the SLB event.

Main Feedwater Malfunction

The licensee stated that events of this type have been explicitly analyzed at hot full-power conditions, which is the limiting plant condition with respect to DNBR for the core, and the hot full-power cases analyzed cover possible system malfunctions that could result in either increased main feedwater flow or decreased main feedwater temperature. The licensee explained that main feedwater malfunctions from conditions where the MFIV closure time is assumed to be in excess of 15 seconds (i.e., at or below the P-11 permissive) would not be severe enough to challenge the safety analysis DNBR limits and concluded that the proposed changes to the MFIV closure time are acceptable with respect to main feedwater malfunction events.

LONF and LOAC

The licensee stated that these events are discussed together in regards to the impact of the MFIV closure time limit on these events because both events are loss of heat sink events characterized by a complete loss of normal main feedwater with the reactor at full power and can be addressed together.

The licensee stated that the main feedwater check valves at Callaway are located downstream (inside containment) of the AFW injection point. This configuration does not permit the filling of the feedline by the AFW system until after the MFIVs are fully closed. The MFIVs and main feedwater control valves would close in response to a low-low SG water level signal which initiates AFW flow (as shown in TS Table 3.3.2-1). Therefore, although main feedwater isolation is not explicitly modeled as such in the LONF/LOAC analyses, the time sequence must include consideration of an assumed AFW purge volume that implies the occurrence of main feedwater isolation. This AFW purge volume is the total volume of piping between the MFIV and the SG inlet. When main feedwater is lost, this purge volume will be filled with residual main feedwater at a high temperature and because this water must be displaced before the colder AFW water can reach the SGs, the time to displace the purge volume represents an additional delay (beyond the 60-second AFW actuation delay for the AFW pumps to reach full speed) before cold AFW flow may be assumed to reach the SGs. Therefore, in the current LONF/LOAC analyses, main feedwater isolation is assumed to occur before the AFW pumps reach full speed (i.e., MFIV closure is less than the 60-second AFW delay time).

The licensee stated that they re-analyzed the two events for an assumed MFIV valve closure time of 90 seconds following the low-low SG water level signal and the results obtained confirmed that all applicable acceptance criteria for these events continue to be met for the 90-second MFIV closure time.

Main Feedline Break

The licensee stated that although feedwater isolation is not explicitly modeled in the feedline break analysis, the assumed AFW actuation delay implies feedwater isolation and, thus, closure of the MFIVs. For the feedline break, the AFW actuation delay and main feedwater isolation are the same as discussed above for the LONF/LOAC. The current analysis for the feedline break also assumed the MFIVs will be closed before AFW is initiated.

The licensee stated that it re-analyzed the main feedline break for an assumed MFIV valve closure time of 90 seconds following the low-low SG water level signal and the results obtained confirmed that all applicable acceptance criteria for this event continue to be met for the 90-second MFIV closure time.

SGTR Accident

The licensee stated that the MFIV closure time did not affect the SGTR analysis.

Mass and Energy Releases from the MSLB Accident

In addressing the effect of the increase in MFIV closure time on containment, the licensee addressed the mass and energy releases inside containment from the MSLB accident. The licensee stated that the analyses of the mass and energy releases from the MSLB assumed the MFIVs isolated main feedwater from the faulted SG; however, the current analysis of the steam releases for dose consequences do not credit the MFIVs as part of the analysis.

For the analysis of the MSLB at or below the P-11 permissive, the licensee explained that the MSLB will not result in a significant addition of main feedwater to the faulted SG and the main feedwater addition due to the increased steam flow through the break is bounded by the feedwater assumptions made for the MSLB analyses in Modes 1 and 2. Therefore, the licensee concluded that the assumption of an increased MFIV closure time at or below the P-11 permissive is bounded by the licensing-basis analyses of the MSLB.

Conclusion

Based on its review of the above accidents, the NRC staff agrees with the licensee's conclusion with respect to the MFIV closure time.

4.1.2 MFIV Control Timer Change

In discussing the MFIV control timer change in its application, the licensee stated that (1) its application dated June 27, 2003, for the NRC-approved Amendment No. 159 issued March 11, 2004, provided a description of the MFIV actuators and the solenoid valves, MV5 and MV6, in the actuator system; and (2) its letter dated December 12, 2003, provided the statement that in order to ensure the MFIVs close during a feedwater line break with no system pressure available, solenoid valves MV5 and MV6 will not go to an energized state (i.e., the closed, or pressurized, position) until after a 60-second time delay, which was greater than the 15-second valve closure time that was also proposed in the licensee's application. Amendment No. 159 approved the current MFIV actuator design that opens and closes the MFIVs, and the 15-second MFIV closure time.

The licensee explained that the MFIV control timer is set to re-energize these two solenoid valves after MFIV closure to eliminate the high differential pressure across the MFIV actuator piston and stem rings and, therefore, to minimize the erosion of these rings and protect the MFIV actuators. The licensee explained that, for Amendment No. 159, in response to concerns over MFIV closure during a feedwater line break with no system pressure available and based upon the hot functional testing of the MFIV actuators, the control timer time delay was increased from 30 seconds to 60 seconds so that the two solenoid valves would be energized

well after the maximum MFIV closure time of 15 seconds that was approved in Amendment No. 159. Now for the proposed maximum MFIV time of 90 seconds at or below the P-11 permissive, the timer will be changed from 60 seconds to 120 seconds (i.e., the 120 seconds is greater than the 90 seconds).

The licensee addressed what would happen if both the solenoid valves for an MFIV were re-energized before closure of the MFIV. The licensee stated that this could increase the MFIV closure time. However, the licensee stated that this double failure is not credible since the time delays for these solenoid valves are parameters within separate main steam and feedwater isolation signal (MSFIS) actuation train logic. To ensure that MSFIS logic time delays are modified correctly, a post-modification test is performed and normal operational evolutions demonstrate the functionality of the time delays. Also, since the time delays are numerical constants within the MSFIS logic, the value cannot be changed without an approved plant modification. Based on this, the licensee stated that there is no need to have a TS surveillance for these time delays. The licensee concluded its discussion on the MFIV control timer with the statement that the control timer time delay does not affect the MFIV closure time and has no effect on evaluation results for the affected accident scenarios. Based on its review, the NRC staff agrees with the licensee's conclusion that the MFIV control timer change has no effect on the MFIV closure time.

4.1.3 Conclusion

Based on the above evaluation of the proposed Figure 3.7.3-1, the NRC staff concludes that the figure shows acceptable MFIV closure times as a function of SG pressure that are consistent with the safety analyses, and, therefore, the figure is acceptable as a means to determine if the MFIVs are operable and meet LCO 3.7.3. Based on this, the NRC staff further concludes that the proposed Figure 3.7.3-1 is acceptable.

4.1.4 Implementation of Testing Required by Proposed SR 3.7.3.3

The licensee explained that implementation of this amendment will make Figure 3.7.3-1 the acceptance criterion for the verification of the MFIV closure to meet LCO 3.7.3. This is the reason for the surveillance of the MFIV closure time in SR 3.7.3.3. The figure is to be a bounding curve with respect to the performance of the MFIVs. In other words, the MFIV closure time in Figure 3.7.3-1 is greater than the actual performance of the MFIVs but less than the maximum MFIV valve closure of 90 seconds at or below the P-11 permissive and the 15 seconds above the P-11 permissive in the safety analyses.

In its supplemental letter (in response to Question 11), the licensee stated that it will perform the following testing of the MFIVs during implementation of the proposed amendment:

Callaway intends to test the MFIVs while each steam generator is being supplied from the main feedwater system, at five different steam generator steam pressures starting at high Mode 4 conditions (approximately 100 psig steam generator steam pressure) and ending at Mode 3 NOP/NOT [normal operating pressure/normal operating temperature] (approximately 1080 psig steam generator steam pressure). Each of these five different steam generator conditions will include a separate test of each actuation train. Callaway plans to perform this testing when plant conditions allow it (such as during restart from Refueling Outage 14), even if the license amendment request has not been approved.

All testing will be performed in accordance with the applicable Technical Specifications. Once the requested amendment is implemented, Callaway intends to perform an MFIV stroke time test via each actuation train (for each MFIV) prior to Mode 3 entry.

Although the licensee fully expects Figure 3.7.3-1 to be confirmed in this testing, it addressed the situation where the curve determined from this testing shows that Figure 3.7.3-1 is not conservative and stated the following:

Further, the shape of the curve in proposed TS Figure 3.7.3-1 is fully expected to be confirmed by the baseline testing to be performed (as described above). In the highly unlikely event that the curve would be determined to be non-conservative, action would be taken in accordance with the guidance of NRC Administrative Letter 98-10[, "Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety," dated December 29, 1998,] (for a non-conservative TS) and Callaway's corrective action program. For an isolated instance in which a single actuation train for an MFIV did not effect closure of the valve within the stroke time requirement of the proposed stroke time curve, the associated solenoid valve MV1 or MV2 would be checked for leak-by and replaced with a spare(s), if necessary.

The NRC staff agrees with the licensee that the basis on how Figure 3.7.3-1 was determined indicates that the testing should confirm the figure. Further, the NRC staff concludes that the licensee has acceptably addressed what it should do if the testing does not confirm the figure. The proposed Figure 3.7.3-1 is significantly conservative with respect to the maximum allowed MFIV closure times for the safety analyses.

The NRC staff also concludes that, if the MFIVs would test to have closure times that are above the curve in Figure 3.7.3-1 (i.e., in the designated "not acceptable" area), the valves would still be operable, if the closure times were less than the 90 seconds at or below the P-11 permissive pressure or the 15 seconds above the P-11 permissive pressure, the MFIV is operable in accordance with the plant safety analyses. Based on this, the curve in Figure 3.7.3-1 would be non-conservative, but the plant would be safe and the non-conservatism would be addressed by NRC Administrative Letter 98-10 and a TS change would be submitted in a timely manner. If an MFIV would test to have a closure time greater than the 90 seconds at or below the P-11 permissive pressure or the 15 seconds above the P-11 permissive pressure, the MFIV would be inoperable in accordance with the plant safety analyses and the licensee would act accordingly as specified in the TSs.

Based on the above, the NRC staff concludes that conducting the test during the implementation of the amendment to confirm the figure is acceptable.

4.2 Add SR 3.7.3.3

The licensee has proposed to add a new surveillance requiring that the closure time of each MFIV is verified to be within acceptable limits in accordance with the inservice testing (IST) program for Callaway. This new surveillance would replace the existing requirement in the existing SR 3.7.3.1 to verify the MFIV closure time is within limits. SR 3.7.3.1 and the new SR 3.7.3.3 have the same requirement to verify the MFIV closure time within limits at the same

STI. Based on this, the NRC staff concludes that the proposed addition of the new SR 3.7.3.3 to verify the closure time for each MFIV is within acceptable limits in accordance with the IST program is maintaining the existing surveillance on the MFIVs to determine if the MFIVs meet the LCO and, therefore, the new SR 3.7.3.3 meets 10 CFR 50.36. Based on this, the NRC staff further concludes that proposed addition of SR 3.7.3.3 is acceptable.

Although the note stating "Only required to be performed in Modes 1 and 2" is in SR 3.7.3.1 and the licensee stated that it proposed to delete the note from SR 3.7.3.1 because the MFIVs were being removed from SR 3.7.3.1, which is addressed in Section 3.1 of this safety evaluation (SE), the licensee did not propose to include the note in the new SR 3.7.3.3. The licensee stated in Section 2.0 of Attachment 1 to its application that the acceptance curve of SR 3.7.3.3 can be verified prior to entry into Mode 3, and the note is no longer needed.

The licensee also stated in its supplemental letter dated November 3, 2005, that the MFIVs are tested under the IST program and valves tested under this program are governed by the testing requirements of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code). The ASME OM Code requires that stroke time test results shall be compared to the initial reference values or new reference values established for subject valves, and these ASME OM Code test requirements will not change because of this amendment.

Based on the above, the proposed SR 3.7.3.3 provides the surveillance required to determine if the MFIVs are operable in terms of the valve closure time. Therefore, the proposed SR 3.7.3.3 will determine if LCO 3.7.3 is being met. Based on this, the NRC staff concludes that proposed SR 3.7.3.3 meets 10 CFR 50.36 and, therefore, is acceptable.

4.3 Revise SR 3.7.3.1

The requirements on the MFRVs and MFRVBVs and the surveillance test interval (STI) of "In accordance with the Inservice Testing Program" in SR 3.7.3.1 are not being changed by this amendment.

The proposed revision to SR 3.7.3.1 (to delete the reference to MFIVs) removes the MFIVs from the requirement in SR 3.7.3.1 for verifying the closure time is less than or equal to 15 seconds. MFIV closure time will, pursuant to the licensee's application, be specified in the proposed new SR 3.7.3.3 to the TSs, which will specify the required closure time for the MFIVs meet the requirement in LCO 3.7.3 that four MFIVs shall be operable in the applicable reactor modes. The number of operable MFIVs and the applicable reactor modes are not being changed in this amendment. Because the licensee is proposing a new surveillance requirement to verify the MFIV closure to show that LCO 3.7.3 is being met for the MFIVs and the revised SR 3.7.3.1 will not be used for this purpose, the proposed deletion of MFIVs from SR 3.7.3.1 meets 10 CFR 50.36 and is, therefore, acceptable.

4.4 Revise SR 3.7.3.2

Although the licensee has not proposed to remove MFIVs from SR 3.7.3.2, it has proposed to revise the note stating "Only required to be performed in Modes 1 and 2" in SR 3.7.3.2. The revised note would state "For the MFRVs and MFRVBVs, only required to be performed in Modes 1 and 2." This is the only proposed change to SR 3.7.3.2 so that the requirement to

verify that each MFIV, MFRV, and MFRVBV actuates to the isolation position on an actual or simulated actuation signal at an STI of 18 months will not be changed.

The licensee stated that the note in SR 3.7.3.2 allowed entry into and operation in Mode 3 prior to performing SR 3.7.3.2 for the MFIVs, MFRVs, and MFRVBVs. Because of the proposed change to the note, the note will be no longer be applicable for the MFIVs. The licensee states that the MFIVs can be tested in Mode 4 prior to entry into Mode 3 and, therefore, the note is not needed for the MFIVs. The proposed revision of the note will require verification that the MFIVs actuate to the isolation position on an actual or simulated actuation signal in Mode 4 prior to entry into Mode 3 when the MFIVs must be operable by LCO 3.7.3. Because the MFIVs can be tested in Mode 4, the NRC staff concludes that actuation of the MFIVs can be verified before the valves are required to be operable. Because SR 3.7.3.2 requires verification that the MFIVs are operable in accordance with LCO 3.7.3, and verification occurs prior to when the valves are required to be operable, the NRC staff concludes that the proposed change to SR 3.7.3.2 meets 10 CFR 50.36 and is, therefore, acceptable.

4.5 Conclusion for the Proposed Amendment

The licensee has proposed to increase the maximum MFIV closure time to 90 seconds for SG pressures at or below the P-11 permissive. The maximum MFIV closure time for SG pressures above the P-11 permissive would remain at 15 seconds. In proposing this increase, the licensee has proposed to (1) revise SR 3.7.3.1 to remove the requirement to verify closure time of each MFIV is within 15 seconds and (2) add SR 3.7.3.3 to state the requirement to verify closure time of each MFIV is within the limits specified in Figure 3.7.3-1. In doing this, the licensee also revised the note in SR 3.7.3.2 to require the MFIVs be tested prior to entry into Mode 3. The frequency for performing the verification of the MFIV closure time in accordance with the inservice testing program is not being changed.

The licensee has shown that the maximum allowed MFIV closure of 90 seconds at or below the P-11 permissive is acceptable based on the applicable safety analyses, which are addressed in Section 4.1.1 of this SE. The proposed Figure 3.7.3-1 is within the maximum allowed MFIV closure times above and below the P-11 permissive and is based on the calculated single actuator stroke time in the figure provided in Attachment 6 to the licensee's application. The licensee stated that it will perform testing of the MFIVs with only one actuator train working during the implementation of the amendment to verify that Figure 3.7.3-1 bounds the actual performance of the MFIVs. The NRC staff believes that this testing is necessary to confirm Figure 3.7.3-1, which is based on shop tests, and it is acceptable for this testing to be done after approval of the amendment because the licensee will have to follow the guidance of NRC Administrative Letter 98-10 for a non-conservative TS if the testing shows that Figure 3.7.3-1 is non-conservative. Proposed Figure 3.7.3-1 will prevent the licensee from operating the plant with MFIVs that cannot close within the time required by the plant safety analyses.

Based on this, the NRC staff concludes that the proposed SR 3.7.3.3 and Figure 3.7.3-1 provide surveillance requirements that demonstrate LCO 3.7.3 is being met with respect to the valve closure time and the note in SR 3.7.3.2 does not need to apply to the MFIVs, and, therefore, the proposed amendment meets 10 CFR 50.36. Based on this, the NRC staff further concludes that the proposed amendment is acceptable.

In proposing the new Figure 3.7.3-1, the licensee is adding a new page to the TSs. To add the new page, the licensee is revising the TS page numbers for TSs 3.7.4 through 3.7.18, and these new pages are being issued in this amendment. Because only the page numbers are changing, TSs 3.7.4 through 3.7.18 are not being changed by this amendment. Page 3 of the TS Table of Contents is also being changed to reflect the new page numbers for TSs 3.7.4 through 3.7.18.

5.0 REGULATORY COMMITMENTS

The licensee provided the following three regulatory commitments in Attachment 5 to its application:

1. The amendment will be implemented no later than entry into Mode 3 during the startup from Refueling Outage 15.
2. The associated revisions to the TS Bases (identified in Attachment 4 to the application) and the FSAR will be incorporated in the next regulatory update, after the amendment is issued, of these documents.
3. The licensee will perform closure-time "baseline" testing of the MFIVs at several pressure values over the test pressure range prior to implementation of the amendment.

The first commitment is a requirement in that the amendment must be implemented prior to entry into Mode 3 during the startup from Refueling Outage 15 (i.e., before the MFIVs are required to be operable). This testing would be done during a refueling outage when the plant is shut down. Therefore, if the licensee does not complete this testing during the current Refueling Outage 14 (fall of 2005), it will be done in Refueling Outage 15 (spring of 2007). This testing must be completed, as the licensee has committed to do, as part of the implementation of this amendment.

The licensee stated that any deviation from or change to the other two regulatory commitments is subject to licensee management approval and subject to the procedural controls established at the plant for commitment management that are in accordance with Nuclear Energy Institute (NEI) 99-04, "Guidelines for Managing NRC Commitment Changes," which include notification of the NRC.

The NRC staff finds that reasonable controls for the licensee's implementation and subsequent evaluation of any changes to the above regulatory commitments are provided by the licensee's administrative processes, including its commitment management program. The NRC staff has determined that the commitments do not warrant the creation of regulatory requirements which would require prior NRC approval of subsequent changes. The NRC staff has agreed that NEI 99-04, Revision 0, provides reasonable guidance for the control of regulatory commitments made to the NRC staff (See Regulatory Issue Summary 2000-17, "Managing Regulatory Commitments Made by Power Reactor Licensees to the NRC Staff," dated September 21, 2000). The commitments will be controlled in accordance with the licensee's commitment management program in accordance with NEI 99-04. The NRC staff also may choose to verify the implementation and maintenance of these commitments in a future inspection or audit. Based on this, the NRC staff concludes that the second and third regulatory commitments listed above are acceptable.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Missouri State official was notified of the proposed issuance of the amendment. The State official had no comments.

7.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (70 FR 54776; published September 16, 2005). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

8.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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