Mr. Garry L. Randolph
Vice President and Chief Nuclear Officer
Union Electric Company
Post Office Box 620
Fulton, MO 65251

September 3, 2002

SUBJECT: CALLAWAY PLANT, UNIT 1 - ISSUANCE OF AMENDMENT RE: REACTOR TRIP SYSTEM INSTRUMENTATION (TAC NO. MB5421)

Dear Mr. Randolph:

The Commission has issued the enclosed Amendment No. 151 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 June 17, 2002 (ULNRC-04684).

The amendment revises TS 3.3.1, "Reactor Trip System (RTS) Instrumentation," by adding Surveillance Requirement (SR) 3.3.1.16 to Function 3 of TS Table 3.3.1-1. SR 3.3.1.16 verifies that the reactor trip system response times are within limits every 18 months on a staggered test basis.

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/**

Donald Naujock, Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-483

Enclosures: 1. Amendment No. 151 to NPF-30
2. Safety Evaluation

cc w/encls: 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. 151
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 June 17, 2002, 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. 151 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 within 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

***/RA by J. Donohew for/***

Stephen Dembek, Chief, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: September 3, 2002

ATTACHMENT TO LICENSE AMENDMENT NO. 151

FACILITY OPERATING LICENSE NO. NPF-30

DOCKET NO. 50-483

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains vertical lines indicating the areas of change.

| REMOVE | INSERT |
|---|---|
| 3.3-17 | 3.3-17 |

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 151 TO FACILITY OPERATING LICENSE NO. NPF-30

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

## 1.0 INTRODUCTION

By application dated June 17, 2002, Union Electric Company (the licensee) requested changes to the Technical Specifications (TSs, Appendix A to Facility Operating License No. NPF-30) for the Callaway Plant, Unit 1 (Callaway). The proposed amendment would add Surveillance Requirement (SR) 3.3.1.16 to Function 3 of TS Table 3.3.1-1 to verify that the reactor trip system (RTS) response times are within limits every 18 months on a staggered test basis.

## 2.0 BACKGROUND

Most operating nuclear power plants' TSs require licensees to periodically perform response time testing (RTT) for selected instrument channels in the RTS and the engineered safety features actuation system (ESFAS). The intent of these tests is to ensure that changes in the response time of instrumentation beyond the limits assumed in safety analyses are detected and combined with instrument calibrations, to ensure that the instrumentation is operating correctly. The changes proposed by the licensee would afford operational flexibility by eliminating the periodic requirement for RTT of certain components and systems.

The requirement for periodic testing of RTSs is established in Section 50.55a, "Codes and Standards," of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50. Section 50.55a(h)(2) states that: "For nuclear power plants with construction permits issued after January 1, 1971, but before May 13, 1999, protection systems must meet the requirements stated in either IEEE [Institute of Electrical and Electronics Engineers] Std. 279, "Criteria for Protection Systems for Nuclear Power Generating Stations," or in IEEE Std. 603-1991, 'Criteria for Safety Systems for Nuclear Power Generating Stations," and the correction sheet dated January 30, 1995." In addition, 10 CFR 50.36(c)(2)(ii)(A) requires a TS limiting condition for operation (LCO) for "installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary." Section 50.36(c)(3), "Surveillance Requirements," also states that: "Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within the safety limits, and that the limiting conditions for operation will be met." In 1975, the NRC implemented a program that made RTT a requirement of the TSs.

The basis for eliminating RTT is contained in IEEE Standard 338, Section 6.3.4, paragraph 3 which states: "Response time testing of all safety-related equipment is not required if, in lieu of response time testing, the response time of the safety equipment is verified by functional testing, calibration checks or other tests or both. This is acceptable if it can be demonstrated that changes in response time beyond acceptable limits are accompanied by changes in performance characteristics which are detectable during routine periodic tests." This IEEE standard was endorsed by Regulatory Guide 1.118, "Periodic Testing of Electric Power and Protection Systems."

In 1991, the Electric Power Research Institute (EPRI) issued a report NP-7243, "Investigation of Response Time Testing Requirements." That report included a failure mode and effects analysis (FMEA) of certain sensors as well as an evaluation of response time test data. The report determined that for these sensors, any failure that will affect the response time characteristic of the sensors will also affect the calibration and other routine surveillance, and therefore, a separate response time test is not required to demonstrate response time assumptions used in the plant's Final Safety Analysis Report.

In September 1995, the NRC staff approved Westinghouse Owners Group (WOG) Topical Report WCAP-13632-P, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements." The staff accepted WCAP-13632-P, Revision 2, for reference in license amendment applications for all Westinghouse pressurized water reactors (PWRs), such as Callaway, with specified conditions, in a safety evaluation report (SER) dated September 5, 1995. In January 1996, Westinghouse issued WCAP-13632-P-A, Revision 2, which included the NRC staff's SER.

In October 1998, the NRC staff approved WOG Topical Report WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests." The staff accepted WCAP-14036-P, Revision 1, for reference in license amendment applications for all Westinghouse PWRs, with specified conditions, in an SER dated October 5, 1998, and a correction stated in a letter to the WOG dated November 3, 1998. Westinghouse subsequently issued WCAP-14036-P-A, Revision 1, which included the NRC staff's SER.

By letter dated December 3, 1999, and with supplemental information provided in letters dated January 19 and February 24, 2000, the licensee requested elimination of selected RTT requirements. This request was based on the staff's SER approving WCAP-14036-P, Revision 1. On March 3, 2000, the NRC issued an amendment to the Callaway license which approved the elimination of RTT for selected components of engineered safety features (ESF) and RTS instrumentation channels in lieu of measuring the response times of the channels. In the safety evaluation, the staff approved the TS changes required to use the instrument calibration procedure as a method of verifying the response times of the selected instruments.

At the time of the December 3, 1999, request, the licensee did not perform RTT on the power range neutron flux rate-high positive rate trip (PRNFR-HPRT) function, which is Function 3 of TS Table 3.1.1-1, and, therefore, the function was not on the list of systems and components for which elimination of the RTT requirement was requested. Callaway did not perform RTT on this function because they believed the function was not credited in any accident analysis. On April 3, 2002, the licensee was informed by Westinghouse that credit is taken for the positive neutron rate trip in the PRNFR-HPRT function to maintain reactor coolant system pressure

below the safety limit when Westinghouse analyzed the uncontrolled rod cluster control assembly (RCCA) bank withdrawal at power (BWAP) transient and to mitigate the consequences of certain partial power, low rod worth, RCCA ejection events.

In its letter of April 16, 2002, the licensee requested that the NRC approve elimination of RTT for the PRNFR-HPRT function. The licensee stated that they have verified that the function is part of the nuclear instrumentation system (NIS) as discussed in WCAP-14036-P-A, Revision 1, and that the components for which RTT elimination was requested, the detector current monitor circuits, summing and level amplifier, level trip bistables, and isolation amplifiers, were specifically addressed in the WCAP. The licensee also stated that a review of drawings and the materials database at Callaway verified that all installed and spare NIS components with an impact on response time are within the scope of the NIS FMEA discussed in Section 4.6 of the WCAP. One component within the function, the rate circuitry, was not evaluated in the NIS FMEA since that circuitry's time constant is required to be measured during the calibration on that circuitry, performed in accordance with SR 3.3.1.11. No RTT elimination was requested for the rate circuitry. The April 16, 2002, letter was limited to requesting approval to allocate a response time to the PRNFR function as listed in Table 8-1 of WCAP-14036-P-A, Revision 1, and as approved in the SER on that WCAP.

In its letter of May 21, 2002, the NRC staff concluded, as approved in the staff's SER on WCAP-14036-P, Revision 1, that the licensee may eliminate separate RTT for the PRNFR-HPRT function instrumentation channels, using verification in lieu of measuring the response times of the channels to ensure the instrumentation channels will respond within the time requirement assumed by the accident analysis.

## 3.0 EVALUATION

In its application, the licensee proposed to add SR 3.3.1.16 to the PRNFR-HPRT function No. 3 in TS Table 3.3.1-1 to verify that the RTS response times are within limits. The licensee has stated that this SR is needed for the function because the function is taken credit for in safety analyses. As stated in the previous section, the licensee was previously informed by Westinghouse that credit is taken for the positive neutron rate trip in the PRNFR-HPRT function in safety analyses to (1) maintain reactor coolant system pressure below the safety limit for the uncontrolled RCCA BWAP transient, and (2) mitigate the consequences of certain partial power, low rod worth, RCCA ejection events.

Because the response time of the PRNFR-HPRT function is part of the safety analyses, the NRC staff concludes that the proposed addition of SR 3.3.1.16 to the PRNFR-HPRT function is needed in TS Table 3.3.1-1 to ensure that the RTS response time of the function is within the limits assumed in the analyses. Based on this, the staff concludes that the proposed amendment is acceptable.

## 4.0 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 did not offer any comments.

## 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a surveillance requirement. 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 (67 FR 48222). 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.

## 5.0 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.

Principal Contributor: Donald Naujock

Date: September 3, 2002