



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555

August 21, 1992

*See correction letter  
of 9/18/92*

Docket No. 50-483

Mr. Donald F. Schnell  
Senior Vice President - Nuclear  
Union Electric Company  
Post Office Box 149  
St. Louis, Missouri 63166

Dear Mr. Schnell:

SUBJECT: EMERGENCY AMENDMENT NO. 73 TO FACILITY OPERATING LICENSE NO.  
NPF-30 (TAC NO. M84230)

The Commission has issued the enclosed Amendment No. 73 to Facility Operating License No. NPF-30 for the Callaway Plant, Unit 1. This amendment revises the Technical Specifications (TS) in response to your application dated August 11, 1992.

The amendment grants a one-time only extension to the surveillance interval specified for Technical Specification (TS) Surveillance 4.3.1.1, Table 4.3-1, Functional Unit 1 (Manual Trip) by adding a footnote to Note 16 which states that "complete verification of OPERABILITY of the manual reactor trip switch circuitry shall be performed prior to startup from the first shutdown to Mode 3 occurring after August 7, 1992." This amendment was required due to the discovery that the existing surveillance procedure does not adequately verify the operability of the shunt trip contacts associated with the manual reactor trip function.

Your letter dated August 11, 1992, requested that this amendment be treated as an emergency because this surveillance can not be fully completed with the plant in Mode 1 or 2 without added risk and insufficient time exists for the Commission's usual 30-day notice without the Callaway unit being required to shut down.

A Temporary Waiver of Compliance was granted to cover the period from the discovery of this discrepancy on August 7, 1992, until this emergency TS amendment could be reviewed and issued.

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Mr. Donald F. Schnell

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August 21, 1992

A copy of the related Safety Evaluation is also enclosed. The notice of issuance and final determination of no significant hazards consideration and opportunity for hearing will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

Original signed by C. E. Carpenter, Jr  
for

L. Raynard Wharton, Project Manager  
Project Directorate III-3  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

Enclosure:

1. Amendment No.73 to License No. NPF-30
2. Safety Evaluation

cc: See next page

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Mr. Donald F. Schnell

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August 21, 1992

A copy of the related Safety Evaluation is also enclosed. The notice of issuance and final determination of no significant hazards consideration and opportunity for hearing will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

A handwritten signature in black ink, appearing to read "L. Wharton", with the word "for" written in a smaller, simpler font to the right of the signature.

L. Raynard Wharton, Project Manager  
Project Directorate III-3  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

Enclosure:

1. Amendment No.73 to  
License No. NPF-30
2. Safety Evaluation

cc: See next page

Mr. D. F. Schnell  
Union Electric Company

Callaway Plant  
Unit No. 1

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 73  
License No. NPF-30

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment filed by Union Electric Company (UE, the licensee) dated August 11, 1992, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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:

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(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 73, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into the license. UE shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



John N. Hannon, Director  
Project Directorate III-3  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of issuance: August 21, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 73

OPERATING LICENSE NO. NPF-30

DOCKET NO. 50-483

Revise Appendix A Technical Specifications by removing the page identified below and inserting the enclosed page. The revised page is identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE

3/4 3-12a

INSERT

3/4 3-12a

TABLE 4.3-1 (Continued)

TABLE NOTATIONS

- (10) Setpoint verification is not required.
- (11) Following maintenance or adjustment of the Reactor trip breakers, the TRIP ACTUATING DEVICE OPERATION TEST shall include independent verification of the Undervoltage and Shunt trips.
- (12) At least once per 18 months during shutdown, verify that on a simulated Boron Dilution Doubling test signal the normal CVCS discharge valves will close and the centrifugal charging pumps suction valves from the RWST will open within 30 seconds.
- (13) Deleted
- (14) Deleted
- (15) The surveillance MODES specified for these channels in Table 4.3-2 are more restrictive and, therefore, applicable.
- (16) The TRIP ACTUATING DEVICE OPERATION TEST shall independently verify the OPERABILITY<sup>1</sup> of the Undervoltage and Shunt Trip circuits for the Manual Reactor Trip function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit.
- (17) Local manual shunt trip prior to placing breaker in service.
- (18) Automatic Undervoltage Trip.

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<sup>1</sup> Complete verification of OPERABILITY of the manual reactor trip switch circuitry shall be performed prior to startup from the first shutdown to Mode 3 occurring after August 7, 1992.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 73 TO FACILITY OPERATING LICENSE NO. NPF-30

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

1.0 INTRODUCTION

In a letter dated August 11, 1992, the Union Electric Company (the licensee) requested changes to the Technical Specifications (TS) to Facility Operating License No. NPF-30 for the Callaway Plant, Unit 1. The proposed change would grant a one-time only extension to the surveillance interval specified for Technical Specification (TS) Surveillance 4.3.1.1, Table 4.3-1, Functional Unit 1 (Manual Trip) by adding a footnote to Note 16 which states that "complete verification of OPERABILITY of the manual reactor trip switch circuitry shall be performed prior to startup from the first shutdown to Mode 3 occurring after August 7, 1992." This change was required due to the discovery that the existing surveillance procedure does not adequately verify the operability of the shunt trip contacts associated with the manual reactor trip function. However, since the surveillance procedure entails increased risk of performing the surveillance in Mode 1 or 2, it was requested that the amendment allow continued operation of the unit until the next planned or unplanned shutdown.

2.0 EVALUATION

The Reactor Trip System (RTS) maintains reactor operation within a safe region by automatically tripping the reactor whenever the limits of the region are approached. The RTS automatically initiates a reactor trip:

- a. whenever necessary to prevent fuel damage for an anticipated operational transient;
- b. to limit core damage for infrequent faults; and,
- c. so that energy generated in the core is compatible with the design provisions to protect the reactor coolant pressure boundary for limiting fault conditions.

The reactor trip circuits automatically open the reactor trip breakers whenever a condition monitored by the RTS reaches a preset level. To ensure a reliable system, high quality is factored into the design, components, manufacturing, quality control and testing. In addition to redundant channels and trains, the design approach provides an RTS that monitors numerous system variables, thereby providing protection systems functional diversity. The

extent of this diversity has been evaluated for a wide variety of postulated accidents. Callaway Final Safety Analysis Report (FSAR) Section 7.2 describes the RTS detail, including each of the automatic trip functions and the protection provided by each trip.

A manual trip function is provided as part of the RTS. The manual trip function consists of two switches with two outputs on each switch. One output is used to actuate the Train A reactor trip breaker (RTB) and the other output actuates the Train B RTB. Operating a manual trip switch removes the voltage from the undervoltage trip attachment (UVTA) coil, de-energizing the shunt trip relay as well (as is the case for automatic reactor trips). The manual trip switch also directly energizes the shunt trip attachment (STA) coil. The manual reactor trip function serves as a backup to the automatic trip functions. Only automatic trip functions are assumed in the analysis of the FSAR Chapter 15 accidents.

Red and green position lights are included on the Main Control Board for breaker position. These lights are powered from the same fused 125 VDC supply used for closing and shunt-tripping the circuit breakers. Illumination of the green light indicates the breaker is open and power is available for closing and tripping the breaker. The red light indicates that the breaker is closed. Since the red light is connected in series with the shunt trip coil, the light indicates that power is available to the shunt trip device and that there is circuit continuity in the shunt coil. This provides an indication that the shunt trip coil is ready to perform its function when required.

The shunt trip coils in the reactor trip breakers are powered from the 125 VDC Class 1E station batteries. Normally, the shunt trip coils are in a de-energized condition. When the trip breakers are closed, the red lamp current (approximately 50 mA) flows through the trip coil to monitor the circuit continuity. This current is not large enough to actuate the trip coil armature. The reactor trip signal applies a nominal voltage of 125 VDC to each shunt trip coil in the redundant trains. As the breaker trips, its auxiliary switch opens to de-energize the shunt trip coil.

The Callaway Technical Specifications define the surveillance testing requirements for the RTS. All surveillances associated with the automatic reactor trip functions are current and the automatic trip function is OPERABLE. Technical Specification Table 4.3-1 Functional Unit 19 (Reactor Trip Breaker) and its associated Note 7 requires that each train be tested on a 62-day Staggered Test Basis and that TADOT independently verifies the OPERABILITY of the undervoltage and shunt trip attachments. This surveillance requirement has been met for each RTB and demonstrates the operability of the diverse tripping mechanisms for the RTBs.

The current surveillance procedure used for the manual trip function independently tests the shunt trip and undervoltage trip functions at the breakers, but does not test the wiring and control room switch contacts for each function, the STA and UVTA, independently.

The Callaway RTB design included both the undervoltage and shunt trip coils since the plant was licensed in 1984. The preoperational test procedure

verified that the undervoltage and shunt trip attachments were independently activated from the manual trip switches. The undervoltage portion of the manual trip function was properly tested in accordance with Technical Specifications through Refuel 2 in the fall of 1987. The shunt trip test specified by the current surveillance procedure has subsequently been determined to be inadequate. Prior to Refuel 3, the requirements for testing the UV and shunt trip portion of the handswitch circuitry were deleted for unknown reasons. The manual trip function has been utilized to trip the reactor during refueling outages at least once every 18 months since initial startup. This has verified that the manual reactor trip function provide a reactor trip through at least one path and most likely both the undervoltage and shunt trip attachments.

The proposed TS change would allow continued operation of Callaway Unit 1 until a revised surveillance procedure is performed during the next planned or unplanned shutdown. The revised procedure would individually verify the operability of the manual trip function trip contacts for both the trip and bypass breakers. Generic Letter 85-09 describes the precautions which are applicable to testing of the manual shunt trip contacts and which will be incorporated into the licensee's revised procedure.

The Callaway reactor protection system is highly reliable and it is unlikely that a manual trip would be required to mitigate an anticipated or design basis event. In addition, although the surveillance procedure has been incomplete, there is no reason to believe that any element of the manual trip function is inoperable. The manual shunt trip circuitry tested satisfactorily during preoperational testing. Additional confidence is provided by the fact that the manual trip functions have performed as expected when utilized on several occasions during operation. The redundancy of the reactor trip system also ensures that a failure of any single manual shunt trip contact would not prevent a successful manual trip resulting from the undervoltage relays or manual shunt trip. Based on the testing history for the manual trip function, the design of the switch, and the periodic use of manual trip switch for plant shutdowns and surveillance tests, there is a high degree of confidence that the manual trip circuitry is fully functional.

Based upon its review, the staff finds the proposed change to the surveillance requirements for testing of the manual shunt trip circuitry does not have a significant safety impact and is therefore acceptable.

### 3.0 EMERGENCY CIRCUMSTANCES

In the letter dated August 11, 1992, the licensee requested that this proposed amendment be treated as an emergency since, unless approved, the Technical Specifications would require a shutdown of the unit. A Temporary Waiver of Compliance was granted to allow for continued operation from the period of discovery of this discrepancy on August 7, 1992, until this emergency Technical Specification amendment could be reviewed and issued.

Regarding the timeliness of the licensee's submittal, the discrepancy between the Technical Specification surveillance requirements and the existing surveillance procedure was determined to render the manual trip function inoperable on August 7, 1992. Upon determining that the surveillance procedure was inadequate to satisfy the Technical Specifications, the licensee requested and received a Temporary Waiver of Compliance on August 7, 1992, and requested a Technical Specification change on an emergency basis by letter dated August 11, 1992.

Accordingly, pursuant to 10 CFR 50.91(a)(5), the Commission has determined that there are emergency circumstances warranting prompt approval of the proposed change.

#### 4.0 FINAL NO SIGNIFICANT HAZARDS DETERMINATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards considerations if operation of that facility in accordance with the amendment would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated; or
2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or
3. Involve a significant reduction in a margin of safety.

This amendment has been evaluated against the standards in 10 CFR 50.92. It does not involve a significant hazards consideration because:

1. The change would not involve a significant increase in the probability or consequences of an accident previously evaluated.

The manual reactor trip function Trip Actuating Device Operational Test (TADOT) was correctly performed during preoperational testing. Since that time, due to procedural inadequacy, the manual trip surveillance did not verify the operation of control room switch contacts or the wiring from the control board to the reactor trip switchgear. This portion of the circuitry was exercised during shutdowns; however, this routine use was not part of a surveillance test nor did it confirm independent operation of the undervoltage trip attachment (UVTA) and shunt trip attachment (STA). Although the surveillance testing did not adequately test this portion of the manual reactor trip function, there is no reason to believe that any element of the manual trip function is not functional. If, for some reason, manual actuation of the shunt and UV trip failed to operate, the diversity and redundancy of the Reactor Protection System would still enable it to perform its design function. The accidents evaluated in Chapter 15 of the Callaway Final Safety Analysis Report (FSAR)

rely on the automatic trip functions of the Reactor Protection System. No credit is assumed for the manual trip function. Further, all surveillances performed on the automatic trip functions, with the independent verification of UVTA coil de-energization and STA energization via the closing of the shunt trip relay contact, have been performed correctly. Therefore, since the response of the plant to an accident is unchanged, there is no significant increase in the probability or consequences of an accident previously evaluated as a result of this proposed change.

2. The change would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed change does not involve any design changes or hardware modifications nor will there be any changes to the intended manner of plant operation or in the method by which any safety-related plant system performs its safety function. No new accident initiators, transient precursors, failure mechanisms, or limiting single failures are introduced as a result of this change.

3. The change would not involve a significant reduction in a margin of safety.

The proposed change does not alter the manner in which safety limits or limiting safety system settings are determined. The proposed change will have no effect on those plant systems necessary to assure the accomplishment of protection functions and meet the accident analysis acceptance criteria in FSAR Chapter 15. There will be no impact on DNBR limits,  $F_o$ , F-delta-H, Loss of Coolant Accident - Peak Clad Temperature, or any other defined safety margin.

The Bases of Technical Specification 3/4.3.1 are not changed since the ability of the Reactor Protection System, with its attendant diversity to ensure the subcriticality function, is not compromised. While some minor uncertainty could be postulated to apply to the manual reactor trip switch contacts and control room wiring to the reactor trip switchgear, this is insignificant when one considers the impact of this portion of the circuitry on the overall reactor protection system reliability.

## 5.0 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.

## 6.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to 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 or a change to a surveillance requirement. The 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 made a final no significant hazards consideration finding with respect to this amendment. Accordingly, this 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 this amendment.

## 7.0 CONCLUSION

The staff 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 this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: C. E. Carpenter, Jr.

Date: August 21, 1992