

February 22, 1990

Docket No. 50-483

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

Dear Mr. Schnell:

SUBJECT: AMENDMENT NO. 51 TO FACILITY OPERATING LICENSE NO. NPF-30  
(TAC NO. 74192)

The Commission has issued the enclosed Amendment No. 51 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 2, 1989 as supplemented by letter dated December 28, 1989.

The amendment revises section 3/4.1.3 of the TS and associated bases to allow continued operation for 72 hours for diagnosis and repair, with one or more control rod assemblies inoperable due to a rod control urgent failure alarm or other electrical problem in the rod control system provided all affected control rods remain trippable.

Copies of the Safety Evaluation and of the notice of issuance are also enclosed. The notice of issuance has been forwarded to the Office of the Federal Register for publication.

Sincerely,

/s/

S. V. Athavale, Project Manager  
Project Directorate III-3  
Division of Reactor Projects - III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 51 to License No. NPF-30
2. Safety Evaluation
3. Notice of Issuance

cc w/enclosures:  
See next page

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Date: 2/6/90

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TAlaxion SVAthavale/tg  
2/6/90 2/7/90

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*Handwritten notes:*  
AFO  
1/11  
my annotated revision checked and issued

*Handwritten note:*  
CP-1

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. STN 50-483

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 51  
License No. NPF-30

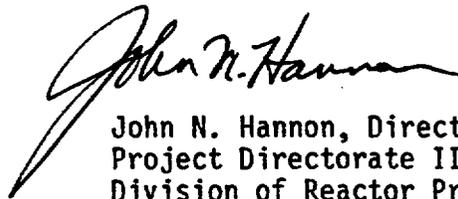
1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment filed by Union Electric Company (UE, the licensee) dated August 2, 1989 as supplemented December 28, 1989 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (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:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 51, 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 the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: February 22, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 51

OPERATING LICENSE NO. NPF-30

DOCKET NO. 50-483

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Corresponding overleaf pages are provided to maintain document completeness.

REMOVE

3/4 1-14  
3/4 1-15  
B 3/4 1-4

INSERT

3/4 1-14  
3/4 1-15  
B 3/4 1-4

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS

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4.1.2.6 Each required borated water source shall be demonstrated OPERABLE:

- a. At least once per 7 days by:
  - 1) Verifying the boron concentration in the water,
  - 2) Verifying the contained borated water volume of the water source, and
  - 3) Verifying the Boric Acid Storage System solution temperature when it is the source of borated water.
- b. At least once per 24 hours by verifying the RWST temperature when the outside air temperature is either less than 37°F or greater than 100°F.

REACTIVITY CONTROL SYSTEMS

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

GROUP HEIGHT

LIMITING CONDITION FOR OPERATION

3.1.3.1 All full-length shutdown and control rods shall be OPERABLE and positioned within  $\pm 12$  steps (indicated position) of their group step counter demand position.

APPLICABILITY: MODES 1\* and 2\*.

ACTION:

The ACTION to be taken is based on the cause of inoperability of control rods as follows:

Any immovability of a control rod initially invokes ACTION Statement 3.1.3.1.a. Subsequently, ACTION Statement 3.1.3.1.a may be exited and ACTION Statement 3.1.3.1.d invoked if either the rod control urgent failure alarm is illuminated or an electrical problem is detected in the rod control system.

<u>CAUSE OF INOPERABILITY</u>	<u>ACTION</u>	
	<u>One Rod</u>	<u>More Than One Rod</u>
1. Immovable as a result of excessive friction or mechanical interference or known to be untrippable.	(a)	(a)
2. Misaligned by more than $\pm 12$ steps (indicated position) from its group step counter demand height or from any other rod in its group.	(c)	(b)
3. Inoperable due to a rod control urgent failure alarm or other electrical problem in the rod control system, but trippable.	(d)	(d)

ACTION a - Determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied within 1 hour and be in HOT STANDBY within 6 hours.

ACTION b - Be in HOT STANDBY within 6 hours.

ACTION c - POWER OPERATION may continue provided that within 1 hour:

1. The rod is restored to OPERABLE status within the above alignment requirements, or

\*See Special Test Exceptions Specifications 3.10.2 and 3.10.3.

## REACTIVITY CONTROL SYSTEMS

### LIMITING CONDITION FOR OPERATION

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#### ACTION (Continued)

2. The rod is declared inoperable and the remainder of the rods in the group with the inoperable rod are aligned to within  $\pm 12$  steps of the inoperable rod while maintaining the rod sequence and insertion limits of Figures 3.1-1 and 3.1-2. The THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation, or
3. The rod is declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. POWER OPERATION may then continue provided that:
  - a) A reevaluation of each accident analysis of Table 3.1-1 is performed within 5 days; this reevaluation shall confirm that the previously analyzed results of these accidents remain valid for the duration of operation under these conditions;
  - b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours;
  - c) A power distribution map is obtained from the movable incore detectors and  $F_Q(Z)$  and  $F_{\Delta H}^N$  are verified to be within their limits within 72 hours; and
  - d) The THERMAL POWER level is reduced to less than or equal to 75% of RATED THERMAL POWER within the next hour and within the following 4 hours the High Neutron Flux Trip Setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER.

ACTION d - Restore the inoperable rods to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours.

#### SURVEILLANCE REQUIREMENTS

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4.1.3.1.1 The position of each full-length rod shall be determined to be within the group demand limit by verifying the individual rod positions at least once per 12 hours except during time intervals when the rod position deviation monitor is inoperable, then verify the group positions at least once per 4 hours.

4.1.3.1.2 Each full-length rod not fully inserted in the core shall be determined to be OPERABLE by movement of at least 10 steps in any one direction at least once per 31 days.

TABLE 3.1-1

ACCIDENT ANALYSES REQUIRING REEVALUATION  
IN THE EVENT OF AN INOPERABLE  
FULL-LENGTH ROD

Rod Cluster Control Assembly Insertion Characteristics

Rod Cluster Control Assembly Misalignment

Loss of Reactor Coolant from Small Ruptured Pipes or from Cracks in Large Pipes Which Actuates the Emergency Core Cooling System

Single Rod Cluster Control Assembly Withdrawal at Full Power

Major Reactor Coolant System Pipe Ruptures (Loss of Coolant Accident)

Major Secondary Coolant System Pipe Rupture

Rupture of a Control Rod Drive Mechanism Housing (Rod Cluster Control Assembly Ejection)

## REACTIVITY CONTROL SYSTEMS

### BASIS

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#### BORATION SYSTEMS (Continued)

With the RCS temperature below 200°F, one Boration System is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity changes in the event the single Boron Injection System becomes inoperable.

The limitation for a maximum of one centrifugal charging pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps except the required OPERABLE pump to be inoperable in MODES 4, 5, and 6 provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV or an RHR suction relief valve.

The boron capability required below 200°F is sufficient to provide a SHUTDOWN MARGIN of 1%  $\Delta k/k$  after xenon decay and cooldown from 200°F to 140°F. This condition requires either 2968 gallons of 7000 ppm borated water from the boric acid storage tanks or 14,076 gallons of 2350 ppm borated water from the RWST.

The contained water volume limits include allowance for water not available because of discharge line location and other physical characteristics.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 8.5 and 11.0 for the solution recirculated within Containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

The OPERABILITY of one Boration System during REFUELING ensures that this system is available for reactivity control while in MODE 6.

#### 3/4.1.3 MOVABLE CONTROL ASSEMBLIES

The specifications of this section ensure that: (1) acceptable power distribution limits are maintained, (2) the minimum SHUTDOWN MARGIN is maintained, and (3) the potential effects of rod misalignment on associated accident analyses are limited. OPERABILITY of the control rod position indicators is required to determine control rod positions and thereby ensure compliance with the control rod alignment and insertion limits. Verification that the Digital Rod Position Indicator agrees with the demanded position within + 12 steps at 24, 48, 120 and 228 steps withdrawn for the Control Banks and 18, 210 and 228 steps withdrawn for the Shutdown Banks provides assurance that the Digital Rod Position Indicator is operating correctly over the full range of indication. Since the Digital Rod Position System does not indicate the actual shutdown rod position between 18 steps and 210 steps, only points in the indicated ranges are picked for verification of agreement with demanded position. Shutdown and control rods are positioned at 225 steps or higher for fully withdrawn.

## REACTIVITY CONTROL SYSTEMS

### BASES

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#### MOVABLE CONTROL ASSEMBLIES (Continued)

For purposes of determining compliance with Specification 3.1.3.1, any immovability of a control rod initially invokes ACTION statement 3.1.3.1.a. Subsequently, ACTION statement 3.1.3.1.a may be exited and ACTION statement 3.1.3.1.d invoked if either the rod control urgent failure alarm is illuminated or an electrical problem is detected in the rod control system. The rod is considered trippable if the rod was demonstrated OPERABLE during the last performance of Surveillance Requirement 4.1.3.1.2 and met the rod drop time criteria of Specification 3.1.3.4 during the last performance of Surveillance Requirement 4.1.3.4.

The ACTION statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original design criteria are met. Misalignment of a rod requires measurement of peaking factors and a restriction in THERMAL POWER. These restrictions provide assurance of fuel rod integrity during continued operation. In addition, those safety analyses affected by a misaligned rod are reevaluated to confirm that the results remain valid during future operation.

The maximum rod drop time restriction is consistent with the assumed rod drop time used in the safety analyses. Measurement with  $T_{avg}$  greater than or equal to 551°F and with all reactor coolant pumps operating ensures that the measured drop times will be representative of insertion times experienced during a Reactor trip at operating conditions.

Control rod positions and OPERABILITY of the rod position indicators are required to be verified on a nominal basis of once per 12 hours with more frequent verifications required if an automatic monitoring channel is inoperable. These verification frequencies are adequate for assuring that the applicable LCOs are satisfied.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 51 TO FACILITY OPERATING LICENSE NO. NPF-30

UNION ELECTRIC COMPANY  
CALLAWAY PLANT, UNIT 1  
DOCKET NO. STN 50-483

1.0 INTRODUCTION

By letter dated August 2, 1989, Union Electric Company (the licensee) requested changes to Technical Specification 3/4.1.3 for the Callaway Plant. The proposed changes include minor word changes and a slight format change as well as the major technical change which is a new action 3.1.3.1.d regarding electrical operability. The licensee provided additional justification as well as a clarified version of the proposed revisions by letter dated December 28, 1989. This submittal did not alter the action noticed, or affect our initial determination published in the Federal Register on September 18, 1990.

2.0 EVALUATION

The proposed change will allow continued operation for 72 hours for diagnosis and repairs with one or more control rod assemblies inoperable because of an electrical problem in the rod control system, provided all affected control rods remain trippable. The existing Technical Specification requires the plant to be in hot standby in 6 hours. A rod that is inoperable due to being untrippable is a more significant failure than a rod that cannot be moved due to an electric failure but is still trippable. The change in the action statements distinguishes between these failures and requires the existing restrictive action for the former while allowing more time for repair for the rod(s) that cannot be moved because of an electrical failure, but are still capable of tripping.

The Callaway Plant has entered this action statement on six different occasions in the past, and the plant was forced to shut down on three of these occasions. Extending the diagnosis/repair time would accomplish several things. It would allow sufficient time to evaluate the failure, and to develop a systematic work plan without the distraction of making shutdown preparations at the same time. It would also allow time for the most experienced people to travel to the plant (on weekends or nights) and allow time to obtain a part from another plant if necessary. Additionally, it would reduce the potential for requiring the plant to go through an unnecessary transient because of electronic failure in rod control that does not affect the trip capability.

The staff has previously reviewed and approved similar action statements for other plants and find this request essentially the same. Since the extension of the allowable outage time only applies to rods which remain trippable, assurance of the rod's primary safety function is maintained.

Therefore, the staff finds the Technical Specification proposed changes to be acceptable. In addition, the format and minor word changes clarify the meaning of the TSs and are acceptable.

### 3.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32, and 51.35, an environmental assessment and finding of no significant impact has been prepared and published in the Federal Register (55 FR 6135, February 21, 1990). Accordingly, based upon the environmental assessment, the Commission has determined that the issuance of this amendment will not have a significant effect on the quality of the human environment.

### 4.0 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; and (2) such activities will be conducted in compliance with the Commission's regulations and 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: M. Chatterton, SRXB

Dated: February 22, 1990

U. S. NUCLEAR REGULATORY COMMISSION  
UNION ELECTRIC COMPANY  
NOTICE OF ISSUANCE OF AMENDMENT TO  
FACILITY OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 51 to Facility Operating License No. NPF-30, issued to Union Electric Company (the licensee) which revised the Technical Specifications for operation of the Callaway Plant, Unit 1, located in Callaway County, Missouri. The amendment was effective as of the date of its issuance.

The amendment revised the technical specifications to allow continued operation for 72 hours for diagnosis and repair, with one or more control rod assemblies inoperable due to a rod control urgent failure alarm or other electrical problem in the rod control system provided all affected control rods remain trippable.

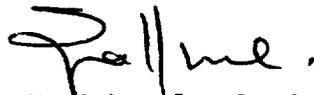
The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter 1, which are set forth in the license amendment.

Notice of Consideration of Issuance of Amendment and Opportunity for Prior Hearing in connection with this action was published in the FEDERAL REGISTER on September 18, 1989 (54 FR 38469). No request for a hearing or petition for leave to intervene was filed following this notice.

For further details with respect to this action, see (1) the application for amendment dated August 2, 1989, as supplemented by letter dated December 28, 1989, (2) Amendment No.51 to Facility Operating License No. NPF-30; (3) the Commission's related Safety Evaluation dated February 22, 1990; and (4) the Environment Assessment dated February 9, 1990. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C., and at the Callaway County Public Library, 710 Court Street, Fulton, Missouri 65251 and the John M. Olin Library, Washington University, Skinker and Lindell Boulevards, St. Louis, Missouri 63130. A copy of items (2), (3) and (4) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Reactor Projects.

Dated at Rockville, Maryland this 22nd day of February 1990.

FOR THE NUCLEAR REGULATORY COMMISSION



S. V. Athavale, Project Manager  
Project Directorate III-3  
Division of Reactor Projects - III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation