

February 14, 1989

Docket No. 50-483

DISTRIBUTION:

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Vice President - Nuclear  
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Dear Mr. Schnell:

SUBJECT: AMENDMENT NO. 41 TO FACILITY OPERATING LICENSE NO. NPF-30  
(TAC NO. 71457)

The Commission has issued the enclosed Amendment No. 41 to Facility Operating License No. NPF-30 for the Callaway Plant, Unit 1. This amendment revises the Technical Specifications in response to your application dated December 16, 1988.

The amendment revises Technical Specification 5.3.2, "Control Rod Assemblies," to allow the use of hafnium and/or silver-indium-cadmium as the absorber material in the rod cluster control assemblies.

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

Sincerely,

/s/

Thomas W. Alexion, 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. 41 to License No. NPF-30
2. Safety Evaluation

cc w/enclosures:  
See next page

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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. 41  
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 December 16, 1988, 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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P FDC

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 41, 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

*for* *Thomas V. Wambach*  
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 14, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 41

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 contains marginal lines indicating the area of change. The corresponding overleaf page is provided to maintain document completeness.

REMOVE

5-6

INSERT

5-6

## DESIGN FEATURES

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### 5.3 REACTOR CORE

#### FUEL ASSEMBLIES

5.3.1 The core shall contain 193 fuel assemblies with each fuel assembly normally containing 264 fuel rods clad with Zircaloy-4, except that limited substitution of fuel rods by filler rods consisting of Zircaloy-4 or stainless steel or by vacancies may be made if justified by a cycle-specific reload analysis. Each fuel rod shall have a nominal active fuel length of 144 inches and contain a maximum total weight of 1766 grams uranium. Reload fuel shall be similar in physical design to the initial core loading and shall have a maximum enrichment of 4.25 weight percent U-235.

#### CONTROL ROD ASSEMBLIES

5.3.2 The core shall contain 53 full-length and no part-length control rod assemblies. The full-length control rod assemblies shall contain a nominal 142 inches of absorber material. All control rods shall be hafnium, silver-indium-cadmium, or a mixture of both types. All control rods shall be clad with stainless steel tubing.

### 5.4 REACTOR COOLANT SYSTEM

#### DESIGN PRESSURE AND TEMPERATURE

5.4.1 The Reactor Coolant System is designed and shall be maintained:

- a. In accordance with the Code requirements specified in Section 5.2 of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements,
- b. For a pressure of 2485 psig, and
- c. For a temperature of 650°F, except for the pressurizer which is 680°F.

#### VOLUME

5.4.2 The total volume of the Reactor Coolant System, including pressurizer and surge line, is 12,135 ± 100 cubic feet at a nominal  $T_{avg}$  of 557°F.

### 5.5 METEOROLOGICAL TOWER LOCATION

5.5.1 The meteorological tower shall be located as shown on Figure 5.1-1.

## DESIGN FEATURES

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### 5.6 FUEL STORAGE

#### CRITICALITY

5.6.1.1 The spent fuel storage racks are designed and shall be maintained with:

- a. A  $k_{eff}$  equivalent to less than or equal to 0.95 when flooded with unborated water, which includes a conservative allowance of 2.6%  $\Delta k/k$  for uncertainties as described in Section 4.3 of the FSAR. This is based on new fuel with an enrichment of 4.25 weight percent U-235 in Region 1 and on spent fuel with combination of initial enrichment and discharge exposures, shown in Figure 3.9-1, in Region 2, and
- b. A nominal 9.24 inch center-to-center distance between fuel assemblies placed in the storage racks.

5.6.1.2 The  $k_{eff}$  for new fuel for the first core loading stored dry in the spent fuel storage racks shall not exceed 0.98 when aqueous foam moderation is assumed.

#### DRAINAGE

5.6.2 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 2040 feet.

#### CAPACITY

5.6.3 The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1344 fuel assemblies.

### 5.7 COMPONENT CYCLIC OR TRANSIENT LIMIT

5.7.1 The components identified in Table 5.7-1 are designed and shall be maintained within the cyclic or transient limits of Table 5.7-1.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 41 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 December 16, 1988, Union Electric Company submitted a request for changes to the Technical Specifications to revise Technical Specification 5.3.2, "Control Rod Assemblies," to allow the use of hafnium or silver-indium-cadmium (Ag-In-Cd) as the absorber material in the rod cluster control assemblies (RCCA). This specification would permit the use of all hafnium RCCA's, as at the present, all Ag-In-Cd RCCAs, or a mixture of both.

2.0 DISCUSSION

Callaway currently uses hafnium as the absorber material in RCCA's. Hafnium was approved for use in the operating license issued for Callaway in 1984. Prior to use of hafnium, Ag-In-Cd was the material most widely used in RCCA's for Westinghouse plants. Ag-In-Cd has continued to be and is currently used in many plants. As such, a large amount of operating experience has been gained with Ag-In-Cd used as an absorber material. Ag-In-Cd has proven to be an effective absorber material and RCCA's with Ag-In-Cd have shown very good operating results.

3.0 EVALUATION

Hafnium and Ag-In-Cd RCCA's are interchangeable. The physical dimensions of the RCCA's are identical as are the materials of the spider assembly and the rodlet cladding. The rod drop times and the rod worths for the two absorber types are equivalent. As additional assurance, both the rod drop times and rod worths are verified by testing during startup tests following each refueling outage. The use of Ag-In-Cd absorber material in RCCA's is consistent with all assumptions of the transient and accident analyses of record for Callaway since the RCCA's will meet the same mechanical, nuclear and thermal hydraulic limits as the original RCCA's. Since they are equivalent, a mixture of absorber types is permitted with no adverse impact on plant safety.

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#### 4.0 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 has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. 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.

#### 5.0 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: TAlexion, PDIII-3

Dated: February 14, 1989