

June 29, 1993

Docket No. 50-483

DISTRIBUTION

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

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Dear Mr. Schnell:

SUBJECT: AMENDMENT NO. 81 TO FACILITY OPERATING LICENSE NO. NPF-30
(TAC NO. M86002)

The Commission has issued the enclosed Amendment No. 81 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 November 10, 1992, as clarified by letter dated April 16, 1993.

The amendment revises Technical Specification 3.9.7 and associated Bases to allow the spent fuel pool transfer gates to travel over fuel assemblies in the spent fuel pool for refueling activities, fuel handling system maintenance, and transfer gate seal replacement.

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,

Original signed by L. Raynard Wharton

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

Enclosures:

1. Amendment No. 81 to License No. NPF-30
2. Safety Evaluation

cc w/enclosures:
See next page

LA:PDIII-3
MRushbrook
6/29/93

PM:PDIII-3
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6/29/93

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6/29/93

DOCUMENT NAME: g:\callaway\CAL86002.AMD

Handwritten signature and date: 6/30/93

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

June 29, 1993

Docket No. 50-483

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

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Sincerely,

A handwritten signature in cursive script that reads "L. Raynard Wharton".

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

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License No. NPF-30
2. Safety Evaluation

cc w/enclosures:
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. 20555-0001

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 81
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 November 10, 1992, and clarified April 16, 1993, 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. 81, 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. The Technical Specifications are to be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



L. Raynard Wharton, Project Manager
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: June 29, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 81

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 contains marginal lines indicating the area of change.

REMOVE

3/4 9-8

B3/4 9-2

B3/4 9-3

INSERT

3/4 9-8

B3/4 9-2

B3/4 9-3

REFUELLING OPERATIONS

SURVEILLANCE REQUIREMENTS (Continued)

to removal of the reactor vessel head by performing a load test of at least 125% of the secondary automatic overload cutoff and demonstrating an automatic load cutoff when the refueling machine load exceeds the Setpoints of Specification 3.9.6a.2) and by demonstrating an automatic load reduction trip when the load reduction exceeds the Setpoint of Specification 3.9.6a.3).

4.9.6.2 Each auxiliary hoist and associated load indicator used for movement of drive rods within the reactor vessel shall be demonstrated OPERABLE within 100 hours prior to removal of the reactor vessel head by performing a load test of at least 1250 pounds.

REFUELING OPERATIONS

3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE FACILITY
LIMITING CONDITION FOR OPERATION

3.9.7 Loads in excess of 2250 pounds shall be prohibited from travel over fuel assemblies in the spent fuel storage facility, except for the spent fuel pool transfer gates which may be moved over fuel assemblies in the spent fuel pool for refueling activities, fuel handling system maintenance, and transfer gate seal replacement.

APPLICABILITY: With fuel assemblies in the spent fuel storage facility.

ACTION:

- a. With the requirements of the above specification not satisfied, place the crane load in a safe condition.
- b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.7 Crane interlocks and physical stops which prevent crane travel with loads in excess of 2250 pounds over fuel assemblies shall be demonstrated OPERABLE within 7 days prior to crane use and at least once per 7 days thereafter during crane operation.

3/4.9 REFUELING OPERATIONS

BASES

3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that: (1) the reactor will remain subcritical during CORE ALTERATIONS, and (2) a uniform boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. The limitation on K_{eff} of no greater than 0.95 is sufficient to prevent reactor criticality during refueling operations. The locking closed of the required valves during refueling operations precludes the possibility of uncontrolled boron dilution of the filled portions of the Reactor Coolant System. This action prevents flow to the RCS of unborated water by closing flow paths from sources of unborated water. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the safety analyses.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the Source Range Neutron Flux Monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

3/4.9.3 DECAY TIME

The minimum requirement for reactor subcriticality prior to movement of irradiated fuel assemblies in the reactor vessel ensures that sufficient time has elapsed to allow the radioactive decay of the short-lived fission products. This decay time is consistent with the assumptions used in the fuel handling accident radiological consequence and spent fuel pool thermal-hydraulic analyses.

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

The requirements on containment building penetration closure and OPERABILITY ensure that a release of radioactive material within containment will be restricted from leakage to the environment. The OPERABILITY and closure restrictions are sufficient to restrict radioactive material release from a fuel element rupture based upon the lack of containment pressurization potential while in the REFUELING MODE.

The OPERABILITY of this system ensures the containment purge penetrations will be automatically isolated upon detection of high radiation levels within containment. The OPERABILITY of this system is required to restrict the release of radioactive materials from the containment atmosphere to the environment.

The restriction on the setpoint for GT-RE-22 and GT-RE-33 is based on a fuel handling accident inside the Containment Building with resulting damage to one fuel rod and subsequent release of 0.1% of the noble gas gap activity, except for 0.3% of the Kr-85 gap activity. The setpoint concentration of 5E-3 uCi/cc is equivalent to approximately 150 mR/hr submersion dose rate.

3/4.9.5 COMMUNICATIONS

The requirement for communications capability ensures that refueling station personnel can be promptly informed of significant changes in the facility status or core reactivity conditions during CORE ALTERATIONS.

REFUELING OPERATIONS BASES

3/4.9.6 REFUELING MACHINE

The OPERABILITY requirements for the refueling machine and auxiliary hoist ensure that: (1) manipulator cranes will be used for movement of drive rods and fuel assemblies, (2) each crane has sufficient load capacity to lift a drive rod or fuel assembly, and (3) the core internals and reactor vessel are protected from excessive lifting force in the event they are inadvertently engaged during lifting operations.

3/4.9.7 CRANE TRAVEL - SPENT FUEL STORAGE FACILITY

The restriction on movement of loads in excess of the nominal weight of a fuel and control rod assembly and associated handling tool over other fuel assemblies in the storage pool areas ensures that in the event this load is dropped: (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the storage racks will not result in a critical array. This assumption is consistent with the activity release assumed in the safety analyses.

The spent fuel pool transfer gates are excluded from this restriction because with a limited gate lift height, the spent fuel pool racks will absorb the impact of a dropped gate without damage to fuel assemblies. In addition, redundant trolleys and supports are used when moving the gates to preclude dropping a gate on the spent fuel racks, the time and distance the gates are moved over fuel is minimized as much as practical, and gate travel over fuel assemblies containing RCCAs is prohibited. The spent fuel pool transfer gates are only moved for refueling activities, fuel handling system maintenance, and to change gate seals.

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

The requirement that at least one residual heat removal (RHR) loop be in operation ensures that: (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor vessel below 140F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the core to minimize the effect of a boron dilution incident and prevent boron stratification.

The requirement to maintain a 1000 gpm flowrate ensures that there is adequate flow to prevent boron stratification. The RHR flow to the RCS will provide adequate cooling to prevent exceeding 140F and to allow flowrates which provide additional margin against vortexing at the RHR pump suction while in partial drain operation.

The requirement to have two RHR loops OPERABLE when there is less than 23 feet of water above the reactor vessel flange ensures that a single failure of the operating RHR loop will not result in a complete loss of residual heat

REFUELING OPERATIONS
BASES

removal capability. With the reactor vessel head removed and at least 23 feet of water above the reactor vessel flange, a large heat sink is available for core cooling. Thus, in the event of a failure of the operating RHR loop, adequate time is provided to initiate emergency procedures to cool the core.

3/4.9.9 CONTAINMENT VENTILATION SYSTEM

The OPERABILITY of this system ensures that the containment purge penetrations will be automatically isolated upon detection of high radiation levels within the containment. The OPERABILITY of this system is required to restrict the release of radioactive material from the containment atmosphere to the environment.

3/4.9.10 and 3/4.9.11 WATER LEVEL - REACTOR VESSEL and STORAGE POOL

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gas activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the safety analysis.

3/4.9.12 SPENT FUEL ASSEMBLY STORAGE

The restrictions placed on spent fuel assemblies stored in Region 2 of the spent fuel pool ensure inadvertent criticality will not occur.

3/4.9.13 EMERGENCY EXHAUST SYSTEM

The limitations on the Emergency Exhaust System ensure that all radioactive materials released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal adsorber prior to discharge to the atmosphere. Operation of the system with the heaters operating to maintain low humidity using automatic control for at least 10 continuous hours in a 31-day period is sufficient to reduce the buildup of moisture on the adsorbers and HEPA filters. The OPERABILITY of this system and the resulting iodine removal capacity are consistent with the assumptions of the safety analyses. ANSI N510-1975 will be used as a procedural guide for surveillance testing.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 81 TO FACILITY OPERATING LICENSE NO. NPF-30

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

1.0 INTRODUCTION

By application for license amendment dated November 10, 1992, Union Electric Company (the licensee), requested changes to Technical Specifications (TS) 3/4.9.7, "Spent Fuel Storage Facility," for the Callaway Plant, Unit 1. The amendment would change TS 3.9.7 and its associated Bases to allow movement of the spent fuel pool transfer gates, weighing approximately 5200 lbs., over fuel assemblies in the spent fuel pool (SFP). At present, TS 3.9.7 prohibits the movement of loads in excess of 2250 lbs. over fuel assemblies in the SFP. The change would permit the licensee to move the gates for refueling activities, fuel handling system maintenance, and replacement of gate seals.

There are two transfer gates that must be moved during fuel handling operations, system maintenance, and seal replacement. One gate is provided to separate the fuel transfer canal from the SFP; this gate is actually between the fuel transfer tube and SFP. The other gate separates the SFP and cask loading pit. Use of these leaktight gates permits draining the fuel transfer canal, or draining of the cask loading pit in the event of such need.

The staff review of the proposed change is contained below in Section 2.0, "Evaluation," and Section 3.0, "Conclusion."

By letter dated April 16, 1993, the licensee provided clarifying information associated with TS 3.9.7 that did not change the initial proposed determination of no significant hazards consideration or affect the notice published May 12, 1993 (58 FR 28061).

2.0 EVALUATION

2.1 Heavy Loads

2.1.1 Spent Fuel Pool Bridge Crane

The licensee plans to use the 5-ton manual push-type trolley with manual chain hoist to move each SFP gate. The 5-ton trolley and hoist is part of the SFP bridge crane which has been designed to Crane Manufacturers Association of America, CMAA-70, Class 3 standards. The standards recommend using material design stresses 20% of the ultimate value, which would require a minimum load of 25 tons to cause trolley failure.

The licensee proposes to use two safety trolleys, one on each side of the main trolley. Each safety trolley has similar design characteristics, resulting in an approximate load bearing capability of 25 tons before failure for each of the three trolleys.

2.1.2 Other Lifting Devices

Prior to any lift movement, there will be two 5-ton nominal capacity slings attached to the gate. The slings will be supported from the 5-ton hoist. Two 5-ton safety slings, one from each safety trolley, will also be attached to the gate. These safety slings provide added protection prior to lifting the gate to a height of approximately one foot. Additional 5-ton safety slings, one from each safety trolley, will be attached to the gate to support transverse movement. The load will be carried by the main hoist slings. The first two safety slings are slack during the lift operation and serve only as protection in the event of a main hoist cable failure. Similarly, the latter two safety slings are slack and intended to prevent a gate drop, in the event of a hoist cable failure during transverse movement. Each sling has the capacity to lift 25 tons before it might fail.

2.1.3 Further Considerations

The licensee stated that the gate storage location for each transfer gate is approximately 6 feet from its installation location. Since the gate installation and storage locations are adjacent, the transit time the gates are suspended over spent fuel racks is expected to be extremely small.

The licensee has determined through testing and analyses that the fuel storage racks can absorb energy equivalent to a gate drop from a minimum of 15 inches above the racks without damage to fuel elements. Therefore, the licensee has established administrative controls that limit lift heights for gate movement to 12 inches above fuel racks. The licensee further stated that any items which may stick up above fuel storage racks, such as RCCA's, would be avoided.

3.0 CONCLUSION

The manual push-type trolley on the SFP bridge crane is not considered single-failure-proof. It does not have two independent parallel paths to hold the gate, in the event one of the paths fails. However, the use of additional trolleys with redundant slings serves to implement the single-failure-proof philosophy, because failure of all but one trolley or sling would still permit the load to be held.

In addition, the number of transfer gate movements is expected to be low under the circumstances envisioned by the licensee. Plant refueling activities, which occur every 1 1/2 - 2 years, would require gate movements. Seal repair and/or replacement would require gate movements every five to six years. Fuel handling system maintenance may also require some additional gate moves. The actual transit time for each gate movement should be low, in the order of no more than a few minutes during each normal evolution. In the unlikely event

of a drop on fuel storage racks, the licensee has determined through tests and analyses that a drop will not damage fuel. Therefore, the staff concludes that the proposed revision to Technical Specification 3/4.9.7 is acceptable.

3.0 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.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. 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 (58 FR 28061). 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, (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 Contributors: N. Wagner
L. R. Wharton

Date: June 29, 1993