

Docket No.: 50-483

April 10, 1987

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

Dear Mr. Schnell:

Subject: Callaway Plant, Unit 1 - Amendment No. 20 to Facility Operating License NPF-30

The Commission has issued the enclosed Amendment No. 20 to Facility Operating License NPF-30 for the Callaway Plant, Unit 1. The amendment consists of a change to the Technical Specifications in response to your application dated December 30, 1986 and supplemented March 13, 1987.

The amendment changes the Technical Specifications to delete the trip functions of the containment atmosphere radiation monitors associated with containment purge isolation and control room ventilation. The amendment is effective as of its date of issuance.

A copy of the related Safety Evaluation is enclosed. Notice of issuance will be included in the Commission's next regular bi-weekly Federal Register Notice.

Sincerely,

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Paul W. O'Connor, Project Manager
PWR Project Directorate #4
Division of PWR Licensing-A

Enclosures:

- 1. Amendment No. 20 to License No. NPF-30
- 2. Safety Evaluation Report

cc w/enclosures
See next page

PWR#4/DPWR-A
TALexion/rad
04/9/87

PWR#4/DPWR-A
MDuncan
04/9/87

PSB/DPWR-A
TQuay
04/9/87

PWR#4/DPWR-A
BJYburgblood
04/9/87

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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. 20
License No. NPF-30

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Callaway Plant, Unit 1 (the facility) Facility Operating License No. NPF-30 filed by Union Electric Company (the licensee) dated December 30, 1986, and supplemented March 13, 1987, 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:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 20, and the Environmental Protection Plan

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contained in Appendix B, both of which are attached hereto, are hereby incorporated into the license. Union Electric 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

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Paul O'Connor, Project Manager
PWR Project Directorate #4
Division of PWR Licensing-A

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 10, 1987

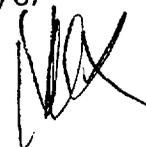
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PWR#4/DPWR-A
TAlexion
04/9/87

PSB/DPWR-A
TQuay
04/9/87

OGC-Bethesda
M. Kalman
04/10/87

PWR#4/DPWR-A
BJYoungblood
04/9/87



ATTACHMENT TO LICENSE AMENDMENT NO.20

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.

<u>Amended Page</u>	<u>Overleaf Page</u>
3/4 3-39	
3/4 3-40	
3/4 3-69	3/4 3-70
3/4 3-71	3/4 3-72
3/4 9-4	3/4 9-3
B 3/4 9-1	B3/4 9-2

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS

<u>FUNCTIONAL UNIT</u>	<u>CHANNELS TO TRIP/ALARM</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ALARM/TRIP SETPOINT</u>	<u>ACTION</u>
1. Containment					
a. Gaseous Radioactivity-RCS Leakage Detection (GT-RE-31 & 32)	N.A.	1	1, 2, 3, 4	N.A.	29
b. Particulate Radioactivity-RCS Leakage Detection (GT-RE-31 & 32)	N.A.	1	1, 2, 3, 4	N.A.	29
2. Fuel Building					
a. Fuel Building Exhaust-Gaseous Radioactivity-High (GG-RE-27 & 28)	1	2	**	##	30
b. Criticality-High Radiation Level					
1) Spent Fuel Pool (SD-RE-37 or 38)	1	1	*	≤ 15 mR/h	28
2) New Fuel Pool (SD-RE-35 or 36)	1	1	*	≤ 15 mR/h	28
3. Control Room					
Air Intake-Gaseous Radioactivity-High (GK-RE-04 & 05)	1	2	All	#	27

CALLAWAY - UNIT 1

3/4 3-39

Amendment No. 20

TABLE 3.3-6 (Continued)

TABLE NOTATIONS

- *With fuel in the respective fuel storage pool.
- **With irradiated fuel in the fuel storage areas or fuel building.
- #Trip Setpoint concentration value ($\mu\text{Ci}/\text{cm}^3$) is to be established such that the actual submersion dose rate would not exceed 2 mR/h in the control room.
- ##Trip Setpoint concentration value ($\mu\text{Ci}/\text{cm}^3$) is to be established such that the actual submersion dose rate would not exceed 4 mR/h in the fuel building.

ACTION STATEMENTS

- ACTION 26 - Deleted.
- ACTION 27 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, within 1 hour isolate the Control Room Emergency Ventilation System and initiate operation of the Control Room Emergency Ventilation System in the recirculation mode.
- ACTION 28 - With less than the Minimum Channels OPERABLE requirement, operation may continue for up to 30 days provided an appropriate portable continuous monitor with the same Alarm Setpoint is provided in the fuel area. Restore the inoperable monitors to OPERABLE status within 30 days or suspend all operations involving fuel movement in the fuel building.
- ACTION 29 - Must satisfy the ACTION requirement for Specification 3.4.6.1.
- ACTION 30 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, within 1 hour isolate the Fuel Building Ventilation System and initiate operation of the Emergency Exhaust System to maintain the fuel building at a negative pressure.

TABLE 3.3-13

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

	<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABILITY</u>	<u>ACTION</u>
1.	WASTE GAS HOLDUP SYSTEM Explosive Gas Monitoring System			
a.	Hydrogen Monitors	1/recombiner	**	44
b.	Oxygen Monitor	2/recombiner	**	42
2.	Unit Vent System			
a.	Noble Gas Activity Monitor- Providing Alarm (GT-RE-21)	1	*	40
b.	Iodine Sampler	1	*	43
c.	Particulate Sampler	1	*	43
d.	Flow Rate	1	*	45
e.	Sampler Flow Rate Monitor	1	*	39
3.	Containment Purge System			
a.	Noble Gas Activity Monitor - Providing Alarm and Automatic Termination of Release (GT-RE-22, GT-RE-33)	2	*	41
b.	Iodine Sampler	1	*	43
c.	Particulate Sampler	1	*	43
d.	Flow Rate	N.A.	*	45
e.	Sampler Flow Rate Monitor	1	*	39

TABLE 3.3-13 (Continued)

TABLE NOTATIONS

* At all times.

** During WASTE GAS HOLD UP SYSTEM operation.

ACTION STATEMENTS

- ACTION 38 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, the contents of the tank(s) may be released to the environment for up to 14 days provided that prior to initiating the release:
- a. At least two independent samples of the tank's contents are analyzed, and
 - b. At least two technically qualified members of the facility staff independently verify the release rate calculations and discharge valve lineup.
- Otherwise, suspend release of radioactive effluents via this pathway.
- ACTION 39 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated based on fan status and operating curves or actual measurements at least once per 4 hours.
- ACTION 40 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided grab samples are taken at least once per 12 hours and these samples are analyzed for radioactivity within 24 hours.
- ACTION 41 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, PURGING of radioactive effluents via this pathway may continue for 24 hours. With both channels inoperable, immediately suspend PURGING of radioactive effluents via this pathway.
- ACTION 42 - With the Outlet Oxygen Monitor channel inoperable, operation of the system may continue provided grab samples are taken and analyzed at least once per 24 hours. With both oxygen channels or both the inlet oxygen and inlet hydrogen monitors inoperable, suspend oxygen supply to the recombiner. Addition of waste gas to the system may continue provided grab samples are taken and analyzed at least once per 4 hours during degassing operations and at least once per 24 hours during other operations.
- ACTION 43 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via the affected pathway may continue for up to 30 days provided samples are continuously collected with auxiliary sampling equipment as required in Table 4.11-2.
- ACTION 44 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, suspend oxygen supply to the recombiner.
- ACTION 45 - Flow rate for this system shall be based on fan status and operating curves or actual measurements.

REFUELING OPERATIONS

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

3.9.4 The containment building penetrations shall be in the following status:

- a. The equipment door closed and held in place by a minimum of four bolts,
- b. A minimum of one door in each airlock is closed, and
- c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be either:
 - 1) Closed by an isolation valve, blind flange, or manual valve, or
 - 2) Be capable of being closed by an OPERABLE automatic containment purge isolation valve.

APPLICABILITY: During CORE ALTERATIONS or movement of irradiated fuel within the containment.

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel in the containment building.

SURVEILLANCE REQUIREMENTS

4.9.4.1 Each of the above required containment building penetrations shall be determined to be either in its closed/isolated condition or capable of being closed by an OPERABLE automatic containment purge isolation valve within 100 hours prior to the start of and at least once per 7 days during CORE ALTERATIONS or movement of irradiated fuel in the containment building by:

- a. Verifying the penetrations are in their closed/isolated condition, or
- b. Testing the containment purge isolation valves per the applicable portions of Specification 4.6.3.2.

4.9.4.2 Verify the trip setpoint concentration value for Containment Purge Monitors (GT-RE-22, GT-RE-33) is set at less than or equal to $5E-3$ $\mu\text{Ci/cc}$ during CORE ALTERATIONS or movement of irradiated fuel within the containment.

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 safety 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 $5E-3$ $\mu\text{Ci/cc}$ 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.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 20 TO OPERATING LICENSE NO. NPF-30

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

INTRODUCTION

In a letter dated December 30, 1986, Union Electric Company requested changes in the Callaway technical specifications relating to containment atmosphere monitoring because these monitors were causing spurious trips and also to provide flexibility for monitor maintenance. Union Electric in a letter dated March 13, 1987, proposed a revised technical specification based on staff concerns with the original proposal.

The specific technical specification changes would:

1. Delete from Table 3.3-6, "Radiation Monitoring Instrumentation for Plant Operations," the requirement to isolate the containment on high activity (alarm/trip specified at 9 mR/hr.) as detected by any of one out of two containment atmosphere monitors in all modes of operation.
2. Retain a minimum of one functional containment atmosphere monitor for reactor coolant leakage detection.
3. Make a change in Table 3.3-13, "Radiation Effluent Monitoring and Instrumentation," to reflect that two containment purge monitors instead of one should be functional during containment purging and modify the associated action statement to allow purging operations for up to 24 hours should one of the two monitors be out of service.
4. Add an additional surveillance requirement to the containment purge monitors during refueling operations to adjust the containment purge/containment isolation trip setpoint concentration (the submersion dose inside containment) to a value of 150 mR/hr submersion dose inside containment.

Evaluation

Standard Review Plan (SRP) Section 6.2.4 requires automatic isolation of the containment purge on high airborne activity inside containment. High containment activity could occur 1) during refueling operations if a spent fuel assembly were to be damaged causing release of contained gaseous fission products or 2) as a result of leakage of high activity reactor coolant into containment. The containment atmosphere monitor setpoint/trip was set at 9 mR/hr to cause containment isolation in the event of a fuel handling accident

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inside containment. This trip setpoint has caused spurious trips of the purge system because the activity levels inside containment can reach 9 mR/hr during normal operation. Protection against fuel handling accident can be achieved by using the containment purge monitors. The present technical specifications for the containment purge monitors require that only one monitor be operable when purging occurs. To satisfy the above referenced SRP requirement, however, both monitors should be operable. The licensee has proposed to make such a change in his technical specifications. The proposed technical specifications would 1) delete the 9 mR/hr trip function of the containment atmosphere monitors, 2) would require that both containment purge monitors be operable when purging occurs and 3) would lower the current setpoint of the containment purge monitors to 150 mR/hr during refueling operations.

The containment atmosphere monitors affected by this change are located at a point inside containment well above the location of the purge system suction. Although these monitors are set at a fairly low setpoint (which is the cause of the spurious actuation signals) their location in such that other monitors such as the containment purge monitors located in the purge lines which draw containment atmosphere from much lower points in the containment, although set at higher setpoints, provide similar detection capability. The containment atmosphere monitors will remain to detect radiation in the event of RCS leakage but the containment isolation function will be carried out by the containment purge monitors.

For LOCA events inside the containment, the containment atmosphere monitors provide an isolation signal diverse from the primary isolation signals of high containment pressure or low RCS pressure. The change from the containment atmosphere monitors to the purge monitors still provides an isolation signal in the event of high radiation inside containment. For events other than LOCA, the purge monitors also provide the necessary high radiation generated isolation signal.

Releases from the containment through the purge system are controlled during normal operation by the purge monitors. Therefore, removal of the isolation function of the containment atmosphere monitors in no way affects routine releases.

Use of the purge monitor setpoint of 150 mR/hr for the fuel handling accident satisfies the SRP 15.7.4 criterion for offsite consequences. For that matter, during normal operation, the setpoint of the containment purge monitors has been set by Offsite Dose Calculation Manual (ODCM) methodology and can typically be about 400 mR/hr. The ODCM methodology is to ensure that the site boundary doses do not exceed 10 CFR Part 20 limits, which are considerable more restrictive than the "well within" 10 CFR Part 100 criterion that is applied for the fuel handling accident. The licensee states that the 150 mR/hr setpoint selected for the refueling mode is based on the release of 3% of the Kr-85 and 1% of the remaining noble gases from a damaged assembly. The location of the purge system intakes ensures that in the event of a fuel handling accident the fission products will enter the monitors and be detected in sufficient time for containment isolation. This setpoint is such that containment isolation for

the fuel handling accident occurs in less than 25 seconds from the time the airborne activity reaches the inlet of the containment purge exhaust. This setpoint provides an equivalent level of protection as the 9 mR/hr setpoint on the containment atmospheric monitors since the containment purge monitors are closer to the radioactive source.

In reviewing the licensee's proposed change, the staff reviewed its current licensing criteria as specified in SRP Sections 6.2.4 and 11.5. In addition, the proposed setpoint for refueling operations (150 mR/hr) is consistent with the staff's evaluation of the fuel handling accident which assumes that containment isolation occurs within 25 seconds.

The staff concludes that the proposed change is acceptable based on:

1. a finding that no degradation in radioactive effluent control is likely;
2. that previous staff conclusion that General Design Criterion (GDC) 60, "Release of Radioactive Materials to the Environment," GDC 61, "Fuel Storage and Handling and Radioactive Control," and GDC 64, "Monitoring Radioactivity Releases" remains unchanged; and
3. a finding that during refueling operations, administrative controls will be in place per technical specifications. The containment purge safety isolation trip setpoint will be set for a low level consistent with potential accidental releases of radioactive noble gases. Accordingly, the containment will be isolated in a timely manner less than 25 seconds from the time the airborne activity reaches the containment purge exhaust inlet from a fuel drop accident.

ENVIRONMENTAL CONSIDERATION

This amendment involves changes in the use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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 published a proposed finding that the 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 the amendment.

CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (52 FR 2894) on August 27, 1986, and consulted with the state of Missouri. No public comments were received, and the state of Missouri did not have any comments.

We have 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 Contributors: T. Alexion, PWR#4/DPWR-A
R. Fell, PSB/PWR-A

Date: April 10, 1987

April 10, 1987

AMENDMENT NO. 20 TO FACILITY OPERATING LICENSE NPF-30 - CALLAWAY PLANT, UNIT 1

DISTRIBUTION:

Docket File 50-483

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