

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

December 7, 2012

Mr. Adam C. Heflin Senior Vice President and Chief Nuclear Officer Union Electric Company P.O. Box 620 Fulton, MO 65251

SUBJECT: CALLAWAY PLANT, UNIT 1 - ISSUANCE OF AMENDMENT RE: CHANGES TO TECHNICAL SPECIFICATION 3.3.6, "CONTAINMENT PURGE ISOLATION INSTRUMENTATION" (TAC NO. ME7205)

Dear Mr. Heflin:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 205 to Facility Operating License No. NPF-30 for the Callaway Plant, Unit 1. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated September 22, 2011, as supplemented by letter dated August 6, 2012.

The amendment revises Required Action B.1 of TS 3.3.6, "Containment Purge Isolation Instrumentation," such that a Note is added to the Required Action to conditionally allow containment mini-purge supply and exhaust valves that have been closed in accordance with the Action to be opened under administrative controls as required for certain operational needs. The proposed change is similar to allowances already in place in TS 3.6.3, "Containment Isolation Valves," and TS 3.9.4, "Containment Penetrations."

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

Sincerely,

Carl F. Lyon, Project Manager Plant Licensing Branch IV Division of Operating Reactor Licensing Office of Nuclear Reactor Regulation

Docket No. 50-483

Enclosures:

- 1. Amendment No. 205 to NPF-30
- 2. Safety Evaluation

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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. 205 License No. NPF-30

- 1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Union Electric Company (UE. the licensee), dated September 22, 2011, as supplemented by letter dated August 6, 2012, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's 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. 205 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This amendment is effective as of its date of issuance, and shall be implemented within 90 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

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Michael T. Markley, Chief Plant Licensing Branch IV Division of Operating Reactor Licensing Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility Operating License No. NPF-30 and Technical Specifications

Date of Issuance: December 7, 2012

ATTACHMENT TO LICENSE AMENDMENT NO. 205

FACILITY OPERATING LICENSE NO. NPF-30

DOCKET NO. 50-483

Replace the following pages of the Facility Operating License No. NPF-30 and Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Facility Operating License

REMOVE		INSERT
-3-		-3-
	Technical Specifications	
REMOVE		INSERT
3.3-62		3.3-62

- (4) UE, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required any byproduct, source of special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) UE, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
 - (1) Maximum Power Level

UE is authorized to operate the facility at reactor core power levels not in excess of 3565 megawatts thermal (100% power) in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan*

The Technical Specifications contained in Appendix A, as revised through Amendment No. 205 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Environmental Qualification (Section 3.11, SSER #3)**

Deleted per Amendment No. 169.

^{*} Amendments 133, 134, & 135 were effective as of April 30, 2000 however these amendments were implemented on April 1, 2000.

^{**} The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report and/or its supplements wherein the license condition is discussed.

Containment Purge Isolation Instrumentation 3.3.6

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
В.	 NOTE	 NOTE	Immediately (continued)
			(conunued)



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 205 TO

FACILITY OPERATING LICENSE NO. NPF-30

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

1.0 INTRODUCTION

By application dated September 22, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML112660095), as supplemented by letter dated August 6, 2012 (ADAMS Accession No. ML12219A336), Union Electric Company (the licensee) requested changes to Facility Operating License No. NPF-30 for the Callaway Plant, Unit 1 (Callaway).

The proposed amendment would revise Required Action B.1 of Technical Specification (TS) 3.3.6, "Containment Purge Isolation Instrumentation," such that a Note would be added to the Required Action to conditionally allow containment mini-purge supply and exhaust valves that have been closed in accordance with the Action to be opened under administrative controls as required for certain operational needs. The proposed change is similar to allowances already in place in TS 3.6.3, "Containment Isolation Valves," and TS 3.9.4, "Containment Penetrations."

The supplemental letter dated August 6, 2012, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on June 26, 2012 (77 FR 38097).

2.0 REGULATORY EVALUATION

The licensee addressed the regulatory requirements applicable to the proposed amendment in Section 4.1 of Attachment 1 to the application dated September 22, 2011. The NRC staff considered the following General Design Criteria (GDC) in Appendix A to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "General Design Criteria for Nuclear Power Plants," in its review of the proposed amendment.

• Criterion 16, "Containment design": Reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the

Enclosure 2

containment design conditions important to safety are not exceeded for as long as the postulated accident conditions require.

- Criterion 54, "Piping systems penetrating containment": Piping systems penetrating primary reactor containment shall be provided with leak detection, isolation and containment capabilities having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these piping systems. Such piping systems shall be designed with a capability to test periodically the operability of the isolation valves and associated apparatus and to determine if valve leakage is within acceptable limits.
- Criterion 56, "Primary containment isolation": Each line that connects directly to the containment atmosphere and which penetrate primary reactor containment shall be provided with containment isolation valves...unless it can be demonstrated that the containment isolation provisions for a specific class of lines...are acceptable on some other defined basis....
- Criterion 64 "Monitoring radioactivity releases": Means shall be provided for monitoring the reactor containment atmosphere, spaces containing components for recirculation of loss-of-coolant accident fluids, effluent discharge paths, and the plant environs for radioactivity that may be released from normal operations, including anticipated operational occurrences, and from postulated accidents.

Section 182a of the Atomic Energy Act requires applicants for nuclear power plant operating licenses to include TSs as part of the license. The NRC's regulatory requirements related to the content of the TSs are contained in 10 CFR 50.36, "Technical specifications." The TS requirements in 10 CFR 50.36 include the following categories: (1) safety limits, limiting safety systems settings and control settings, (2) limiting conditions for operation (LCOs), (3) surveillance requirements (SRs), (4) design features, and (5) administrative controls.

As additional background, NUREG-1431, Revision 4, Volume 1, "Standard Technical Specifications – Westinghouse Plants" (Westinghouse STS) (ADAMS Accession No. ML12100A222), allows the opening of the mini-purge system supply and exhaust valves, similar to the licensee's proposed request.

3.0 TECHNICAL EVALUATION

3.1 Proposed TS Change

In its letter dated August 6, 2012, the licensee proposed adding a new note to TS 3.3.6 Required Action B.1, which would state:

Containment mini-purge supply and exhaust valves closed to satisfy Required Action B.1 may be opened intermittently under administrative controls, provided Table 3.3.6-1 Functions 2 and 4 are OPERABLE.

3.2 NRC Staff Evaluation

3.2.1 Containment Purge System in Technical Specifications

The containment purge system at Callaway consists of two subsystems, a shutdown purge system and a mini-purge system. The shutdown purge system is a high-volume capacity system, used only during shutdown conditions and, as such, the supply and exhaust isolation valves are isolated (closed) during MODES 1-4. The mini-purge system is used during reactor operation to equalize containment with external pressures and to facilitate personnel access to containment by reducing the concentration of noble gases within containment. The requirement to maintain containment pressure within a prescribed band is found in TS 3.6.4, "Containment Pressure."

The containment isolation values of the purge system are addressed in three (3) technical specifications; TS 3.3.6, "Containment Purge Isolation instrumentation," TS 3.6.3, "Containment Isolation Values," and TS 3.9.4, "Containment Penetrations." The licensees request pertains to the mini-purge isolation values in TS 3.3.6.

<u>TS 3.3.6</u>

TS 3.3.6 addresses the containment purge isolation signals generated by containment purge isolation instrumentation that cause the automatic closure of the containment isolation valves in both the shutdown purge system and the mini-purge system. The applicable containment purge isolation instrumentation functions are listed in TS Table 3.3.6-1, "Containment Purge Isolation Instrumentation."

- Function 1, "Manual Initiation": Allows containment purge isolation to be manually initiated from the control room on demand.
- Function 2, "Automatic Actuation Logic and Actuation Relays (BOP ESFAS)": ESFAS automatic Actuation logic and actuation relays associated with the containment purge isolation function.
- Function 3, "Containment Purge Exhaust Radiation Gaseous": This function initiates containment purge isolation on a high radiation signal from either of two containment purge exhaust gaseous radiation monitoring channels.
- Function 4, "Containment Isolation Phase A": This function requires containment purge isolation to initiate on an automatic or manual Safety Injection (SI) signal through the Containment Isolation – Phase A function, or by manual actuation of Phase A isolation.

For each of the above functions, the applicable modes are MODES 1, 2, 3, and 4. In addition, applicable modes for Function 1, "Manual Initiation," also include CORE ALTERATIONS and movement of irradiated fuel assemblies within containment. With one radiation monitoring channel (Function 3) inoperable, Required Action A.1 requires the restoration of the channel to operable status within 4 hours. If the completion time is not met or if both radiation monitoring channels are inoperable (Function 3), or if one or more Table 3.3.6-1 Functions with one or

more manual channels (Function 1) or automatic actuation trains (Functions 2 and 4) is inoperable, Required Action B.1 requires the containment purge supply and exhaust valves must be immediately placed and closed and maintained in a closed position. Condition C addresses the inoperability of one or more manual channels (Function 1) during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment. Required Actions for Condition C provide the option of immediately placing and maintaining the containment purge supply exhaust valves in a closed position or immediately entering Required Actions of LCO 3.9.4.

<u>TS 3.6.3</u>

TS 3.6.3 is applicable in MODES 1, 2, 3, and 4. Per the requirements of the TS, inoperability of one or more containment isolation valves in a containment penetration flow path requires the containment penetration to be isolated with the applicable Required Actions A or B. However, the Required Action(s) are modified by Note 1, which states "Penetration flow path(s) except for containment shutdown purge valve flow paths may be unisolated intermittently under administrative controls." The licensee stated that the shutdown purge flow path excepted by the note is the high-volume purge line, not the mini-purge line. Surveillance Requirement (SR) 3.6.3.2 addresses the verification of the closure of containment mini-purge valves during MODES 1, 2, 3, and 4. The SR makes reference to the possibility that during the verification process, the mini-purge valves could be found to be actually open for pressure control, for As Low As Reasonably Achievable (ALARA) considerations, or for air quality considerations for personnel entry, which confirms that the mini-purge penetration is the intended flow path that can be unisolated intermittently under administrative controls as allowed by Note 1. As stated earlier, the licensee is not requesting any changes to TS 3.6.3, and this discussion is included in this safety evaluation for information ornly.

<u>TS 3.9.4</u>

TS 3.9.4 is applicable during refueling operations, including CORE ALTERATIONS and movement of irradiated fuel assemblies within containment. The containment purge isolation valves (both shutdown purge and mini-purge) fall under Limiting Condition for Operation (LCO) 3.9.4, which requires

The containment penetrations shall be in the following status:

- c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere either:
 - 1. closed by a manual or automatic isolation valve, blind flange, or equivalent, or
 - 2. capable of being closed by an OPERABLE Containment Purge Isolation valve.

However, a note provided with LCO 3.9.4.c states that, "Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls."

Inoperability of a containment purge isolation valve during CORE ALTERATIONS and movement of irradiated fuel assemblies within containment as a result of inoperable purge isolation instrumentation is addressed by Condition C of TS 3.3.6. The Required Action for failure to meet Condition C is

- C.1 Place and maintain containment purge supply and exhaust valves in closed position.
- OR
- C.2 Enter the applicable Conditions and Required Actions of [LCO 3.9.4] for containment purge supply and exhaust valves made inoperable by isolation instrumentation.

A purge isolation valve closed during CORE ALTERATIONS and movement of irradiated fuel assemblies would fall under the provisions of part c.1 of LCO 3.9.4.c.1. Therefore, the provisions of the note, which allows the opening of the containment purge isolation valve under administrative controls, can be applied, and the licensee is not requesting any changes to TS 3.9.4.

Based on the preceding discussion, there are currently provisions in TS 3.6.3 during MODES 1, 2, 3, and 4 and in TS 3.9.4 during CORE ALTERATIONS or movement of irradiated fuel assemblies within containment that allow the opening of the mini-purge valves under administrative controls if the valves are found to be inoperable. However, there are no such provisions in TS 3.3.6 that allow the opening of the mini-purge valves during MODES 1, 2, 3, and 4, if the containment purge isolation instrumentation is inoperable.

The licensee provided a brief history of the applicable TS changes, which indicates that provisions to allow the opening of the mini-purge valves under administrative controls once existed in TS 3.3.6. The licensee further stated that the allowance was removed in 1999, as it was not recognized at that time that such removal would unduly limit the use of administrative controls to open the mini-purge valves, particularly impacting the ability to vent containment to maintain containment pressure within the limits of TS 3.6.4, "Containment Pressure." In a request for additional information (RAI) dated July 6, 2012 (ADAMS Accession No. ML121880609), the NRC staff asked the licensee to discuss the impact of this limitation on the ability to vent containment, since the plant has operated within the constraints of this limitation since 1999. Specifically, the licensee was requested to provide information on the venting frequency, how often the need to vent containment actually coincides with the Action entries related to the radiation monitoring instrumentation in TS 3.3.6, and the number of plant shutdowns since 1999 that could be directly attributed to this limitation. In its response dated August 6, 2012, the licensee stated that containment is typically vented every 3 or 4 days and a typical venting takes approximately 1 hour. In the last 12 years (i.e., since 1999), the plant has never been required to be shut down per TS 3.6.4, nor has it entered a shutdown sequence due to the operational limitation of TS 3.6.4. The licensee also provided a list of out-of-service occurrences between the two containment mini-purge radiation monitors in the past 5 years. The list indicated 13 occurrences with out-of-service durations between 6 and 83 hours. Based on the number of occurrences and given that containment is required to be vented every 3 or 4 days, the licensee stated that there is more than a negligible probability that a need for

containment venting will occur around the time a purge radiation monitor is out of service. The licensee further stated that the requested change provides flexibility if the out-of-service time for periodic testing or for repair of the purge monitor(s) exceeds the 4-hour Completion Time of Required Action A.1 in TS 3.3.6.

3.2.2 Technical Specification Changes

TS 3.3.6, Required Action B.1 states "Place and maintain containment purge supply and exhaust valves in closed position." The proposed change maintains Required Action B.1 unchanged; however, it adds a new note to the Required Action that reads as follows:

Containment mini-purge supply and exhaust valves closed to satisfy Required Action B.1 may be opened intermittently under administrative controls, provided Table 3.3.6-1 Functions 2 and 4 are OPERABLE.

The proposed new Note in the licensee's letter dated September 22, 2011, did not contain the word "intermittently." The NRC staff noted in its RAI that the proposed note was inconsistent with a corresponding note in TS 3.6.3, "Containment Isolation Valves," that is intended to be used in similar situations (e.g., equalize containment internal and external pressures). In its letter dated August 6, 2012, the licensee modified the note by including the word "intermittently."

In response to the RAI, the licensee stated that TS Bases define "Administrative Controls" as having the capability for a "designated control room operator to rapidly close the valves when a need for a system isolation is indicated." and therefore by definition, this requires manual isolation capability from the control room. The licensee stated that closure of the mini-purge valves could be accomplished from the control room without the operability of TS Table 3.3.6-1 Function 1 and/or Function 3. A containment isolation signal is automatically generated either by engineered safety features actuation system (ESFAS) actuation from Phase A containment isolation signal (TS Table 3.3.6-1 Functions 2 and 4) or by the containment purge radiation monitoring instrumentation (Function 3). The requirement for OPERABILITY of Functions 2 and 4, when invoking the proposed note to open the mini-purge supply and exhaust valves, ensure that the valves will automatically close within the response time assumed in the accident analysis. The licensee stated in its response to the RAI that as a backup to the automatic isolation function, manual isolation function is maintained by the dedicated operator in the control room when operating under the proposed note. The proposed note is more restrictive than the Westinghouse STS. The Westinghouse STS allows intermittent opening of the minipurge valves with no restrictions on the OPERABILITY of Functions 1, 2, 3, and 4. In this regard, the licensee's proposed note exceeds the requirements of the Westinghouse STS.

The proposed change does not impact the containment isolation design and containment capability of the mini-purge supply and exhaust penetrations, or the current frequency or the acceptance criteria for leak testing the mini-purge valves. The licensee further stated, in response to the RAI, that there are no dose calculations or accident evaluations that rely on the functioning of the instrumentation in Table 3.3.6-1 of TS 3.3.6, and that the affected radiation monitors have no credited or required automatic response time limits. Based on the above, the NRC staff concludes that the proposed change has no impact on the Callaway conformance to GDCs 16, 54, 56, and 64 and is, therefore, acceptable.

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.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes 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. The NRC 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 the amendment involves no significant hazards consideration and there has been no public comment on such finding published in *Federal Register* on June 26, 2012 (77 FR 38097). Accordingly, the 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.

6.0 CONCLUSION

The Commission 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) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: N. Karipineni, NRR/DSS/SCVB

Date: December 7, 2012

Mr. Adam C. Heflin Senior Vice President and Chief Nuclear Officer Union Electric Company P.O. Box 620 Fulton, MO 65251

SUBJECT: CALLAWAY PLANT, UNIT 1 - ISSUANCE OF AMENDMENT RE: CHANGES TO TECHNICAL SPECIFICATION 3.3.6, "CONTAINMENT PURGE ISOLATION INSTRUMENTATION" (TAC NO. ME7205)

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Sincerely,

/RA/

Carl F. Lyon, Project Manager Plant Licensing Branch IV Division of Operating Reactor Licensing Office of Nuclear Reactor Regulation

Docket No. 50-483

Enclosures:

1. Amendment No. 205 to NPF-30

2. Safety Evaluation

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ADAMS Accession No. ML12318A209			*email dated **Previously concurred						
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