

March 4, 2010

ULNRC-05682

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop P1-137
Washington, DC 20555-0001

10 CFR 50.90

Ladies and Gentlemen:

**DOCKET NUMBER 50-483
CALLAWAY PLANT
UNION ELECTRIC CO.
APPLICATION FOR AMENDMENT TO
FACILITY OPERATING LICENSE NPF-30
(LDCN 09-0017 SUPPLEMENT)
REVISION OF TECHNICAL SPECIFICATION 3.3.9
TAC NO. ME1411**

- References:
1. AmerenUE Letter ULNRC-05633, "Application for Amendment of Facility Operating License NPF-30: LDCN 09-0017 – Revision of Technical Specification 3.3.9," dated June 1, 2009
 2. AmerenUE Letter ULNRC-05655, "Application for Amendment of Facility Operating License NPF-30: LDCN 09-0017 – Revision of Technical Specification 3.3.9," dated August 27, 2009, Response to NRC Request for Additional Information (RAI) dated July 30, 2009

AmerenUE submitted a license amendment request via Reference 1 that proposed changes to Technical Specification (TS) 3.3.9 as contained in Facility Operating License Number NPF-30 for the Callaway Plant. AmerenUE responded to an NRC request for additional information (RAI) in support of that amendment application via Reference 2. In the response to Question 1 in Reference 2, AmerenUE committed to revising the TS and Bases markups requested for TS 3.3.9. Attachments 1 through 3 hereto provide the Markup of Technical Specifications, Retyped Technical Specifications, and Proposed Technical Specification Bases Changes, respectively, to satisfy that commitment. Attachments 1 through 3 supersede Attachments 2 through 4 of Reference 1 in their entirety. Attachment 3 is provided for information only. Final Bases changes will be processed under our program for updates per TS 5.5.14, "Technical Specifications Bases Control Program," at the time this amendment is implemented.

The conclusions of the licensing evaluations submitted in Reference 1 (i.e., the no significant hazard consideration evaluation and the environmental consideration evaluation) remain valid and unchanged. In addition, it should be noted that, similar to the original amendment request, there are no commitments contained in this letter.

The Callaway Onsite Review Committee has reviewed and approved the submittal of the revised TS 3.3.9 and Bases markups.

AmerenUE requests approval of this license amendment request by May 1, 2010. AmerenUE further requests that the license amendment be made effective upon NRC issuance, to be implemented within 90 days from the date of issuance.

In accordance with 10 CFR 50.91, a copy of this letter is being provided to the designated Missouri State official.

If you have any questions on this amendment application, please contact me at (573) 676-8528, or Mr. Scott Maglio at (573) 676-8719.

I declare under penalty of perjury that the foregoing is true and correct.

Very truly yours,

Executed on:

3/4/10



Scott Sandbothe
Manager, Plant Support

GGY/nls

Attachments

- 1 - Markup of Technical Specifications
- 2 - Retyped Technical Specifications
- 3 - Proposed Technical Specification Bases Changes (for information only)

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cc:

U.S. Nuclear Regulatory Commission (Original and 1 copy)

Attn: Document Control Desk

Washington, DC 20555-0001

Mr. Elmo E. Collins, Jr.

Regional Administrator

U.S. Nuclear Regulatory Commission

Region IV

612 E. Lamar Blvd., Suite 400

Arlington, TX 76011-4125

Senior Resident Inspector

Callaway Resident Office

U.S. Nuclear Regulatory Commission

8201 NRC Road

Steedman, MO 65077

Mr. Mohan C. Thadani (2 copies)

Senior Project Manager, Callaway Plant

Office of Nuclear Reactor Regulation

U. S. Nuclear Regulatory Commission

Mail Stop O-8G14

Washington, DC 20555-2738

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Fort Worth, TX 76109

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A. C. Heflin

F. M. Diya

L. S. Sandbothe

C. O. Reasoner III

S. A. Maglio

S. L. Gallagher

T. L. Woodward (NSRB)

T. B. Elwood

G. G. Yates

Ms. Diane M. Hooper (WCNOC)

Mr. Dennis Buschbaum (Luminant Power)

Mr. Ron Barnes (APS)

Mr. Tom Baldwin (PG&E)

Mr. Wayne Harrison (STPNOC)

Mr. John O'Neill (Pillsbury, Winthrop, Shaw, Pittman LLP)

Missouri Public Service Commission

Mr. Floyd Gilzow (DNR)

ATTACHMENT 1

MARKUP OF TECHNICAL SPECIFICATIONS

3.3 INSTRUMENTATION

3.3.9 Boron Dilution Mitigation System (BDMS)

LCO 3.3.9 Two trains of the BDMS shall be OPERABLE and one RCS loop shall be in operation.

APPLICABILITY: MODES 2 (below P-6 (Intermediate Range Neutron Flux) interlock), 3, 4, and 5.

----- NOTE -----
 The boron dilution flux multiplication signal may be blocked in MODES 2 (below P-6 (Intermediate Range Neutron Flux) interlock) and 3 during reactor startup.

INSERT 1

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| A. One train inoperable. | A.1 Restore train to OPERABLE status. | 72 hours |
| B. Two trains inoperable. <u>OR</u> Required Action and associated Completion Time of Condition A not met. | B.1 ----- NOTE ----- Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. ----- Suspend operations involving positive reactivity additions. | Immediately |
| | <u>AND</u> | (continued) |

INSERT 1

-----NOTE-----

The boron dilution flux multiplication signal may be blocked:

1. During subcritical physics testing;
 2. During control bank movement in MODE 2 (below P-6 (Intermediate Range Neutron Flux) interlock);
 3. During control bank movement in MODE 3;
 4. During shutdown bank movement in MODE 3 .
-

ATTACHMENT 2

RETYPE TECHNICAL SPECIFICATIONS

3.3 INSTRUMENTATION

3.3.9 Boron Dilution Mitigation System (BDMS)

LCO 3.3.9 Two trains of the BDMS shall be OPERABLE and one RCS loop shall be in operation.

APPLICABILITY: MODES 2 (below P-6 (Intermediate Range Neutron Flux) interlock), 3, 4, and 5.

----- NOTE -----

The boron dilution flux multiplication signal may be blocked:

1. During subcritical physics testing;
 2. During control bank movement in MODE 2 (below P-6 (Intermediate Range Neutron Flux) interlock);
 3. During control bank movement in MODE 3;
 4. During shutdown bank movement in MODE 3.
-

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--------------------------|---------------------------------------|-----------------|
| A. One train inoperable. | A.1 Restore train to OPERABLE status. | 72 hours |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|--------------------|
| <p>B. Two trains inoperable.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition A not met.</p> | <p>B.1 ----- NOTE ----- Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM. -----</p> <p>Suspend operations involving positive reactivity additions.</p> | <p>Immediately</p> |
| | <p><u>AND</u></p> | |
| | <p>B.2 Perform SR 3.1.1.1.</p> | <p>1 hour</p> |
| | <p><u>AND</u></p> | |
| | <p>B.3.1 Close and secure unborated water source isolation valves.</p> | <p>4 hours</p> |
| <p><u>AND</u></p> | | |
| <p>B.3.2 Verify unborated water source isolation valves are closed and secured.</p> | <p>Once per 31 days</p> | |

(continued)

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|------------------------------|--|------------------|
| C. No RCS loop in operation. | C.1 Close and secure unborated water source isolation valves. | 4 hours |
| | <p><u>AND</u></p> C.2 Verify unborated water source isolation valves are closed and secured. | Once per 31 days |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|--|-----------|
| SR 3.3.9.1 | Perform CHANNEL CHECK. | 12 hours |
| SR 3.3.9.2 | <p>----- NOTE ----- Only required to be performed in MODE 5. -----</p> <p>Verify BGV0178 is secured in the closed position.</p> | 31 days |
| SR 3.3.9.3 | <p>----- NOTE ----- Not required to be performed until 4 hours after reducing power below P-6 interlock. -----</p> <p>Perform COT and verify nominal flux multiplication setpoint of 1.7.</p> | 184 days |
| SR 3.3.9.4 | <p>----- NOTE ----- Neutron detectors are excluded from CHANNEL CALIBRATION. -----</p> <p>Perform CHANNEL CALIBRATION.</p> | 18 months |
| SR 3.3.9.5 | Verify the centrifugal charging pump suction valves from the RWST open and the CVCS volume control tank discharge valves close in less than or equal to 30 seconds on a simulated or actual actuation signal. | 18 months |
| SR 3.3.9.6 | Verify one RCS loop is in operation. | 12 hours |

ATTACHMENT 3

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES
(for information only)

BASES

LCO (continued) (BNLCV0112D, E) and the VCT suction isolation valves (BGLCV0112B, C).

With insufficient RCS mixing volume, i.e. no RCS loop in operation, Condition C must be entered.

APPLICABILITY The BDMS must be OPERABLE in MODES 2 (below P-6 setpoint), 3, 4, and 5 because the safety analysis identifies this system as the primary means to mitigate an inadvertent boron dilution of the RCS in MODES 3, 4, and 5 and the P-6 setpoint establishes the point at which RTS protection is shifted to the intermediate range neutron flux channels.

The BDMS OPERABILITY requirements are not applicable in MODES 1 and 2 (above P-6 setpoint) because an inadvertent boron dilution would be terminated by Overtemperature ΔT or operator action. The Overtemperature ΔT trip Function is discussed in LCO 3.3.1, "RTS Instrumentation."

As discussed in Reference 1.

In MODE 6, an inadvertent dilution event is precluded by locked valves for unborated reactor makeup water (BGV0178 and BGV0601), CVCS resin vessels configured with resin for dilution during normal operation (BG8522A, BG8522B, BGV0039, BGV0043, BGV0051, and BGV0055), and the purge line used during flushing of CVCS letdown radiation monitor (SJV0703) that isolate the RCS from the potential sources of unborated water (according to LCO 3.9.2, "Unborated Water Source Isolation Valves").

~~The Applicability is modified by a Note that allows the boron dilution flux multiplication signal to be blocked during reactor startup in MODE 2 (below P-6 setpoint) and MODE 3. Blocking the flux multiplication signal is acceptable during startup provided the reactor trip breakers are closed with the intent to commence the withdrawal of control banks for startup. This Applicability Note can not be used to block BDMS prior to or during shutdown bank withdrawal. The P-6 interlock provides a backup block signal to the source range flux multiplication circuit.~~

→ **INSERT 2**

ACTIONS The most common cause of channel inoperability is outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by the unit specific calibration procedure. Typically, the drift is found to be small and results in a delay of actuation rather than a total loss of function. This determination of setpoint drift is generally made during the performance of a COT when the process instrumentation is set

(continued)

INSERT 2 (Page 1 of 3)

The Applicability is modified by a Note that allows the boron dilution flux multiplication signal to be blocked during subcritical physics testing, during control bank movement in MODE 2 (below the P-6 setpoint), during control bank movement in MODE 3, or during shutdown bank movement in MODE 3. The BDMS function may be blocked just prior to shutdown bank withdrawal in MODE 3 using switches SEHS0011 and SEHS0012 on the main control board. After the shutdown banks are fully withdrawn, the BDMS function will be restored (unblocked) until just prior to control bank withdrawal, at which point the BDMS function may again be blocked using SEHS0011 and SEHS0012 and by placing the two-phi module normal/test switches in the test position at the NIS racks (SEIN0031A and SEIN0032A). MODE 2 is administratively declared just prior to the commencement of control bank withdrawal even though k_{eff} should not yet be greater than or equal to 0.99 at that time. After the P-6 setpoint is exceeded, this LCO is no longer applicable. Blocking the flux multiplication signal is acceptable during the above evolutions based on the heightened operator awareness and reactivity management administrative controls in place.

Administrative controls require operator awareness during all reactivity manipulations. These administrative controls include:

- Reactivity management briefs of the control room operations staff (typically conducted at the beginning of each shift);
- Use of self-verification techniques by all licensed operators performing core reactivity manipulations;
- Peer checks for all reactivity manipulations during routine operations and for all positive reactivity additions during transient or off-normal operations;
- Off-normal procedures are available that address reactor makeup control system (RMCS) malfunctions and potential loss of shutdown margin (SDM);
- Criticality is anticipated anytime the shutdown banks are being withdrawn, and when RCS boron dilution is in progress, and when the control banks are being withdrawn;
- RCS boron dilutions are not performed after control bank withdrawal has been initiated until the reactor is critical and stabilized with an intermediate flux nuclear instrumentation system (NIS) reading of 1E-08 amps; and

INSERT 2 (Page 2 of 3)

- A senior reactor operator (SRO) is designated as the reactivity management SRO. Positive reactivity additions are added by only one method during the approach to criticality.

During any and all rod motion, operators monitor all available indications of nuclear power. During RCS boron concentration change evolutions, operators observe the various indications and alarms provided in the RMCS design for monitoring proper system operation as discussed in FSAR Section 15.4.6 (Reference 1).

Under the revised LCO Applicability Note, the BDMS function would be blocked during subcritical physics testing which either directly involves rod movement or is performed at the same time as such testing, and the BDMS function would also be blocked during a rod withdrawal approach to criticality. Testing activities to be performed with the BDMS function blocked include:

- Rod drop time testing per SR 3.1.4.3;
- Current traces for selected rods per Callaway's response to NRC Generic Letter 93-04 (Reference: Union Electric letter ULNRC-03131 dated January 19, 1995);
- Digital rod position indication (DRPI) testing over the full indicated range of rod travel per SR 3.1.7.1 and FSAR Section 16.1.3.1.1;
- Subcritical Physics Testing with Subcritical Rod Worth Measurement (SRWM) which encompasses testing described in FSAR Section 4.3.2.2.8 as well as the Core Reactivity and beginning of life (BOL) upper limit Moderator Temperature Coefficient (MTC) surveillances of SR 3.1.2.1 and SR 3.1.3.1, respectively. Subcritical Physics Testing includes brief periods of static rod conditions but primarily involves testing that requires rod movement.

Under the revised LCO Applicability Note the BDMS function would be enabled during the following testing activities which do not require rod movement:

- Verification that the estimated critical position (ECP) is within the COLR limits per SR 3.1.6.1;
- Shutdown margin verifications per SR 3.1.1.1;
- Reactor trip breaker P-4 verification;

INSERT 2 (Page 3 of 3)

- Verification that the RCS boron concentration is greater than all-rods-out critical concentration per SR 3.1.9.1.

BASES

ACTIONS
(continued)

up for adjustment to bring it to within specification. If the Trip Setpoint is less conservative than the tolerance specified by the calibration procedure, the channel must be declared inoperable immediately and the appropriate Condition entered.

A.1

With one train of the BDMS inoperable, Required Action A.1 requires that the inoperable train must be restored to OPERABLE status within 72 hours. In this Condition, the remaining BDMS train is adequate to provide protection. The 72 hour Completion Time is based on the BDMS Function and is consistent with Engineered Safety Feature Completion Times for loss of one redundant train. Also, the remaining OPERABLE train provides continuous indication of core power status to the operator, has an alarm function, and sends a signal to both trains of the BDMS to assure system actuation.

*(Moved to the
Applicability Bases
and supplemented)*

Administrative controls require operator awareness during all reactivity manipulations. These administrative controls include:

- Reactivity management briefs of the Control Room Operations Staff (typically conducted at the beginning of each shift);
- Use of self-verification techniques by all licensed operators performing core reactivity manipulations;
- Peer checks for all reactivity manipulations during routine operations and for all positive reactivity additions during transient or off-normal operations;
- Off-normal procedures are available that address reactor makeup control system (RMCS) malfunctions and potential loss of shutdown margin (SDM).

During any and all rod motion, operators monitor all available indications of nuclear power. During RCS boron concentration change evolutions, operators observe the various indications and alarms provided in the RMCS design for monitoring proper system operation as discussed in FSAR Section 15.4.6 (Reference 1).

B.1, B.2, B.3.1, and B.3.2

With two trains inoperable, or the Required Action and associated Completion Time of Condition A not met, the initial action (Required

(continued)