

March 2, 2001

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

ULNRC-04400

Gentlemen:

DOCKET NUMBER 50-483
UNION ELECTRIC COMPANY
CALLAWAY PLANT
BDMS ELIMINATION

Reference: ULNRC-04257 dated May 25, 2000



Union Electric Company herewith revises the application for amendment to Facility Operating License No. NPF-30 for the Callaway Plant submitted in the above referenced letter.

The Boron Dilution Mitigation System (BDMS), a microprocessor-based system driven by inputs from the source range neutron flux channels, is currently required by 10CFR50.36(c)(2)(ii) Criterion 3 for inadvertent boron dilution event mitigation. The BDMS, as currently configured, will no longer be credited and the automatic valve swap-over function will be eliminated. In lieu of crediting the BDMS for automatic event mitigation, alarms, indicators, procedures and controls will direct a manual response to inadvertent boron dilution transients. Operator action will be credited to mitigate this event in MODES 3, 4, and 5.

As originally proposed, the referenced amendment application would have deleted Technical Specification (TS) 3.3.9, "Boron Dilution Mitigation System (BDMS)," and its associated Bases. Operational details associated with the revised analysis were originally proposed to be contained in new FSAR Section 16.3.5 (e.g., one RCS loop in operation and two OPERABLE high VCT water level alarm channels). Based on NRC feedback that those requirements should not be relocated to licensee control since they meet 10CFR50.36(c)(2)(ii) Criteria 2 and 3, the attached TS 3.3.9 mark-ups supersede the mark-ups provided in Attachments 3 (TS 3.3.9) and 5 (FSAR 16.3.5) of the referenced letter. Since TS 3.3.9 will remain subject to NRC review, the attachment represents more restrictive administrative controls than those originally requested. In addition, the retention of Required Actions B.1 and B.2 and the retention of Surveillance Requirement (SR) 3.3.9.1 and a modified SR 3.3.9.3 (consistent with typical actions and surveillances found in Section 3.3 of the STS, NUREG-1431) represent more restrictive administrative controls than those originally requested. As such, the conclusions of the licensing evaluations documented in Attachments 1 and 2 of the referenced letter

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remain valid. The only change to those licensing evaluations is the document where the administrative controls will reside, i.e., in the TS vs. the FSAR.

In developing the attachment, a decision was made to minimize nomenclature and surveillance numbering changes. In the revised TS 3.3.9, the acronym BDMS will refer to the new high VCT water level alarm channels being added and the operators' procedure-driven response to those new alarms, since together they will mitigate (Criterion 3) any inadvertent dilution event. The requirement to have one RCS loop in operation is related to the initial condition on RCS mixing volume in the reanalysis, which is related to Criterion 2. All TS controls over RCS and RHR loops in MODES 3, 4, and 5 must be met, whether those controls are detailed in TS Section 3.3, 3.4, or 3.5. There is no need to further complicate these TS Sections by adding or revising Notes in Section 3.4, given the differing functional requirements being addressed in the respective TS Sections.

All existing TS 3.3.9 requirements related to the source range neutron flux channels and the automatic valve swap-over function are deleted (e.g., the portion of the LCO APPLICABILITY related to MODE 2 below P-6, the APPLICABILITY NOTE allowing blocking the flux multiplication signal, the reference to P-6 in the Note above SR 3.3.9.3 and the flux multiplication setpoint of 1.7 in SR 3.3.9.3, the Note above SR 3.3.9.4, and SR 3.3.9.5). In addition, as discussed on page 19 of Appendix A to the referenced letter, there is no MODE 5 reanalysis assumption related to closing manual valve BGV0178 and SR 3.3.9.2 is deleted.

The 72-hour Completion Time for revised TS 3.3.9 Required Action A.1 is reasonable considering that another independent high VCT water level alarm channel would remain OPERABLE, the multitude of other alarms and indications available to assist operator diagnosis as detailed on pages 8 and 9 of Appendix A to the referenced letter, and the low probability of an inadvertent dilution event occurring during this time interval. The 72-hour Completion Time is also consistent with that given in other Technical Specifications affecting ECCS train operability. For example, the most likely failure scenarios affecting the new high VCT water level alarm channels would also affect other bistables being driven by that instrument loop, e.g., a transmitter or loop power supply card failure in the low direction would close the VCT suction isolation valve to the corresponding train's centrifugal charging pump (CCP) and open its suction isolation valve from the RWST. This design feature is described more fully in FSAR Section 7.6.11 and shown on FSAR Figure 7.6-5. Since these valves would not be in their correct position, that train of ECCS would be declared inoperable and the 72-hour Completion Time of TS 3.5.2 Required Action A.1 would apply.

Combining existing TS 3.3.9 Condition C with the default actions of Condition B represents more conservative actions to be taken in the event no RCS loop is operating during the applicable MODES.

All commitments associated with this amendment application continue to be detailed in Section X (page 26) of Appendix A to the referenced letter, with the exception that the FSAR Chapter 16 changes are replaced by the attached TS 3.3.9 changes.

NRC also requested that we formally docket the following discussion of operator actions. Operator actions are discussed in Attachment 1 of the referenced letter (page 3 of 7) and Appendix A (page 16). The specific operator actions credited in the reanalysis, after diagnosing the event, would be performed from the control room to fully open the RWST isolation valves (BNLCV0112D/E) and then fully close the VCT isolation valves (BGLVC0112B/C). The valve stroke times are included in the analysis as sequential actions, as discussed in Appendix A to the referenced letter (total of 25 seconds). No specific simulator runs were performed to support this amendment application since 1) it was assumed that meeting the SRP 15.4.6 acceptance criteria (demonstrating the availability of 15 minutes for operator action) would be sufficient and 2) the required operator actions are the same as those currently credited in MODES 1 and 2 to prevent a loss of shutdown margin as a result of an inadvertent dilution event (see FSAR pages 15.4-26a through 15.4-28 and Table 15.4-1, sheet 3). However, based on operating experience, it is anticipated that the operator would terminate this event in 10 minutes or less:

1. Simulator training on this event includes postulated malfunctions of the current automatic BDMS to effect valve position changes. If the desired automatic response is not obtained, the operators are directed by procedure to remote-manually reposition the valves from the control room. Based on the experience of licensed SROs at Callaway, this step in the response procedure would be reached in approximately 5-10 minutes.
2. The annunciator response procedure to be issued for implementation of this license amendment will cover the response to the new high VCT level alarms being added to the BGL-0112 and BGL-0185 level instrument loops. This procedure will include a caution that will highlight the need to ensure the valves are repositioned and the basis for that requirement. It is expected that valve repositioning would occur in 10 minutes or less.

The Callaway Plant Onsite Review Committee and the Nuclear Safety Review Board have reviewed these changes. The attachment provides the final Technical Specification Changes in support of this amendment request. Final Bases changes will be implemented under our TS 5.5.14 Bases Control Program after NRC approval of this amendment application. It has been determined that this letter does not revise any findings related to significant hazard considerations, as determined per 10CFR50.92 in the referenced letter. Pursuant to 10CFR51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

Approval of these Technical Specifications is requested by March 20, 2001. The amendment will be fully implemented prior to entering MODE 5 from MODE 6 during startup from Refuel 11.

If you have any questions on this amendment application, please contact us.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Alan C. Passwater".

Alan C. Passwater
Manager-Corporate Nuclear Services

Attachment:

Technical Specification Changes

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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. *high VCT water level alarm channels*

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.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One train inoperable. <i>high VCT water level alarm channel</i>	A.1 <i>channel</i> Restore train to OPERABLE status.	72 hours
B. Two trains inoperable. <i>high VCT water level alarm channels</i> <u>OR</u>	B.1 Suspend operations involving positive reactivity additions.	Immediately
Required Action and associated Completion Time of Condition A not met.	<u>AND</u>	(continued)

No RCS loop in operation.
OR

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	<p>B.2 Perform SR 3.1.1.1.</p> <p><u>AND</u></p> <p>B.3.1 Close and secure unborated water source isolation valves, BGV0178 and BGV0601.</p> <p><u>AND</u></p> <p>B.3.2 Verify unborated water source isolation valves, BGV0178 and BGV0601, are closed and secured.</p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p> <p>4 hours</p> <p>Once per 31 days</p>
G. No RGS loop in operation.	<p>C.1 Close and secure unborated water source isolation valves, BGV0178 and BGV0601.</p> <p><u>AND</u></p> <p>C.2 Verify unborated water source isolation valves, BGV0178 and BGV0601, are closed and secured.</p>	<p>4 hours</p> <p>Once per 31 days</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.9.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.9.2	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Only required to be performed in MODE 5.</p> <p><i>Not used.</i></p> <p>Verify BGV0178 is secured in the closed position.</p>	31 days
SR 3.3.9.3	<p style="text-align: center;">NOTE</p> <p>Not required to be performed until 4 hours after reducing power below P-6 interlock. <i>from MODE 2 until 4 hours after entry into MODE 3.</i></p> <p>Perform COT, and verify nominal flux multiplication setpoint of 1.7.</p>	92 days
SR 3.3.9.4	<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Neutron detectors are excluded from CHANNEL CALIBRATION.</p> <p>Perform CHANNEL CALIBRATION.</p>	18 months
SR 3.3.9.5	<p><i>Not used.</i></p> <p>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.</p>	18 months
SR 3.3.9.6	Verify one RCS loop is in operation.	12 hours

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	<p>B.2 Perform SR 3.1.1.1.</p> <p><u>AND</u></p> <p>B.3.1 Close and secure unborated water source isolation valves, BGV0178 and BGV0601.</p> <p><u>AND</u></p> <p>B.3.2 Verify unborated water source isolation valves, BGV0178 and BGV0601, are closed and secured.</p>	<p>1 hour</p> <p><u>AND</u></p> <p>Once per 12 hours thereafter</p> <p>4 hours</p> <p>Once per 31 days</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.9.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.9.2	Not used.	
SR 3.3.9.3	<p>----- NOTE ----- Not required to be performed prior to entering MODE 3 from MODE 2 until 4 hours after entry into MODE 3. -----</p> Perform COT.	92 days
SR 3.3.9.4	Perform CHANNEL CALIBRATION	18 months
SR 3.3.9.5	Not used.	
SR 3.3.9.6	Verify one RCS loop is in operation.	12 hours