May 1, 2002

Mr. Garry L. Randolph
Vice President and Chief Nuclear Officer
Union Electric Company
Post Office Box 620
Fulton, MO 65251

SUBJECT: CALLAWAY PLANT, UNIT 1 - ISSUANCE OF AMENDMENT RE: SUSPENSION OF POSITIVE REACTIVITY ADDITIONS (TAC NO. MB3642)

Dear Mr. Randolph:

The Commission has issued the enclosed Amendment No. 149 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 December 6, 2001 (ULNRC-04578).

The amendment revises several of the Required Actions in the Callaway Plant Technical Specifications (TSs) that require suspension of operations involving positive reactivity additions or suspension of operations involving reactor coolant system (RCS) boron concentration reductions. In addition, the proposed amendment revises several Limiting Condition for Operation (LCO) Notes that preclude reductions in RCS boron concentration. This amendment revises these Required Actions and LCO Notes to allow small, controlled, safe insertions of positive reactivity, but limits the introduction of positive reactivity such that compliance with the required shutdown margin or refueling boron concentration limits will still be satisfied. This amendment is based on an NRC-approved traveler, Technical Specification Task Force (TSTF)-286, Revision 2.

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,

/RA/

Alan Wang, Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-483

Enclosures: 1. Amendment No. 149 to NPF-30
2. Safety Evaluation

cc w/encls: See next page

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Sincerely,
/RA/
Alan Wang, Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

TS: ML
PKG.: ML

Docket No. 50-483

Enclosures: 1. Amendment No. 149 to NPF-30
2. Safety Evaluation

cc w/encls: See next page

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UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 149
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 December 6, 2001, 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. 149 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 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/
Stephen Dembek, Chief, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: May 1, 2002

ATTACHMENT TO LICENSE AMENDMENT NO. 149

FACILITY OPERATING LICENSE NO. NPF-30

DOCKET NO. 50-483

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains vertical lines indicating the areas of change.

REMOVE	INSERT
3.3-5	3.3-5
3.3-70	3.3-70
3.4-7	3.4-7
3.4-8	3.4-8
3.4-10	3.4-10
3.4-11	3.4-11
3.4-12	3.4-12
3.4-13	3.4-13
3.4-15	3.4-15
3.4-16	3.4-16
3.8-17	3.8-17
3.8-18	3.8-18
3.8-25	3.8-25
3.8-26	3.8-26
3.8-33	3.8-33
3.8-34	3.8-34
3.8-37	3.8-37
3.9-4	3.9-4
3.9-8	3.9-8
3.9-9	3.9-9
3.9-11	3.9-11

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 149 TO FACILITY OPERATING LICENSE NO. NPF-30

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

1.0 INTRODUCTION

By letter dated December 6, 2001 (Reference 1), Union Electric Company (UE, the licensee) submitted an application to amend the Callaway Plant Technical Specifications (TS). The proposed change would revise several of the Required Actions in the Callaway Plant TS that require suspension of operations involving positive reactivity additions or suspension of operations involving reactor coolant system (RCS) boron concentration reductions. In addition, the proposed amendment revises several Limiting Condition for Operation (LCO) Notes that preclude reductions in RCS boron concentration. This amendment revises these Required Actions and LCO Notes to allow small, controlled, safe insertions of positive reactivity, but limits the introduction of positive reactivity such that compliance with the required shutdown margin (SDM) or refueling boron concentration limits will still be satisfied. This amendment is based on an NRC-approved traveler, Technical Specification Task Force (TSTF)-286, Revision 2.

2.0 BACKGROUND

Callaway adopted the Improved Technical Specifications (ITS) in License Amendment No. 133 (Reference 2) based on NUREG-1431, "Standard Technical Specifications [STS] for Westinghouse Plants," Revision 1, dated April 1995. Since then, industry and the NRC staff have been working to improve the ITS, in NUREG-1430 through NUREG-1434 for the different plant vendors, and as a result, generic changes have been developed for the ITS in NUREG-1431.

The proposed changes adopt NRC-approved generic changes in industry TSTF-286, Revision 2 (i.e., TSTF-286), which was approved by the staff on July 6, 2000 (Reference 3). This TSTF revises most Actions requiring "Suspend operations involving positive reactivity additions" to limit the introduction into the RCS of reactivity more positive than that required to meet the required SDM or refueling boron concentration, as applicable. TSTF-286 allows applicable licensees to revise their plant TS and clarify limits on the introduction of reactivity such that the required SDM or refueling boron concentration will be satisfied. The licensee provided plant-specific differences in the TS for TSTF-286.

Callaway employs two independent reactivity control systems: one uses the movable control and shutdown rod cluster control assemblies (RCCAs), and the other uses the chemical and volume control system (CVCS) to adjust the soluble boron concentration. In MODES 1 and 2, both systems are used to compensate for the reactivity effects from the fuel and coolant temperature changes in the RCS during power operation from full load to no load condition. In MODES 3, 4, and 5, the CVCS is used to compensate for the reactivity effects from temperature and xenon changes. In MODE 6, the CVCS is used to maintain the boron concentration within the required limits.

The Callaway SDM limit provides sufficient subcritical reactivity margin to ensure that the specified acceptable fuel design limits (SAFDLs) will not be exceeded for normal shutdown and anticipated operational occurrences (AOOs). The SDM definition assumes that the single RCCA with the highest reactivity worth remains fully withdrawn. In MODES 1 and 2, the TS satisfies the required SDM (which is the amount of subcriticality that would immediately occur following the insertion of control and shutdown RCCAs that had been withdrawn, assuming the fuel and moderator temperatures are at hot zero power values) by limiting the insertion of the control and shutdown banks. Small reactivity changes due to RCS coolant inventory management and temperature control are also considered in specifying SDM, including moderator temperature coefficient (MTC) effects. In MODES 3, 4, and 5, the TS specifies the required SDM (which is the reactivity margin by which the reactor will remain subcritical with the RCCAs fully inserted) by reference to the Core Operating Limits Report (COLR).

In MODE 6, reactor subcriticality margin is ensured by the limit on the boron concentration of all filled portions of the RCS and the refueling pool that have direct access to the reactor vessel.

The TS will be modified by this amendment to permit the addition of positive reactivity and changes to the RCS boron concentration as long as the change preserves the margin to core criticality as defined by the SDM and refueling boron concentration limit specifications.

3.0 EVALUATION

3.1 Summary and Justification of Proposed Changes

In their letter dated December 6, 2001, the licensee requested a change to the TS for Callaway to revise TS Actions that currently require suspending all operations involving any positive reactivity additions, and to revise TS LCO Notes that preclude any reduction in boron concentration. The proposed changes would allow the introduction of reactivity while maintaining RCS coolant inventory and temperature as long as the required SDM or refueling boron concentration is properly maintained. These necessary operations may involve additions to the RCS of cooler borated water or require makeup from borated sources that have lower boron concentration than the existing RCS boron concentration. These changes would be allowed if the overall effect on core reactivity still assures that the required SDM is maintained.

The proposed amendment would revise various TS relating to the Callaway positive reactivity additions while in shutdown modes or TS 3.3.1, Action G.1. The proposed changes relax the TS involving positive reactivity additions to the shutdown reactor. The proposed changes will allow small, controlled, safe insertions of positive reactivity while in shutdown modes or when two required intermediate range neutron flux channels are inoperable.

The proposed changes conform with TSTF-286 except where noted in Section 3.2. The proposed changes revise most of Callaway's TS Actions requiring "Suspend operations involving positive reactivity additions" to allow positive reactivity addition, but limit the introduction, into the reactor coolant system, of reactivity more positive than that required to meet the required SDM or refueling boron concentration, as applicable. The licensee provided plant-specific differences between the proposed changes and TSTF-286 as part of its December 6, 2001, submittal. A correlation of the proposed changes to the complete list of approved TSTF-286 changes was provided by the licensee. The correlation is summarized in Appendix A to this safety evaluation, and was provided as Appendix A to the licensee's December 6, 2001, application.

3.2 Staff Evaluation

TSTF-286 revises the following in the ITS: (1) Actions that require "Suspend operations involving positive reactivity additions," and (2) various Notes precluding reduction in boron concentration. The revised TS will limit the introduction of positive reactivity into the RCS to that which would maintain the TS required SDM or refueling boron concentrations, as applicable. Additionally, the TS Required Actions that require the suspension of positive reactivity changes, will have Bases additions that clarify the intent to preclude a loss of required SDM.

The justification given in the TSTF is that the change provides the flexibility necessary to provide for continued safe reactor operations, while also limiting any potential for excess positive reactivity addition. The Actions that preclude positive reactivity changes and/or reduction in boron concentration ensure either no power increases, or continued margin to core criticality operations. During conditions in which these Actions may be required, the following various activities for unit operation must be continued: RCS inventory must be maintained, and RCS temperature must be controlled. These activities involve addition to the RCS of cooler water and may involve inventory makeup from sources that are at boron concentrations less than the current RCS concentration but limit the introduction, into the RCS, of reactivity more positive than that required to meet the required SDM or refueling boron concentration, as applicable. These activities should not be precluded to ensure that, for the worst-case overall effect on the core, there would still be assurance that the required SDM is maintained.

In MODES 1 through 4, the minimum required SDM is assumed as an initial condition for the reload safety analyses to ensure that the SAFDLs will not be exceeded for normal shutdown and AOOs, assuming that the highest worth RCCA remains stuck out following a reactor scram. The minimum required SDM is assumed as an initial condition in the safety analyses to ensure that the specified acceptable fuel design limits will not be exceeded for normal shutdown and AOOs, assuming that the highest worth RCCA remains stuck out following a reactor scram. The main steamline break (MSLB) is the most limiting event to establish the minimum SDM value for LCO 3.1.1, and this ensures that the departure from nucleate boiling ratio safety limit is not exceeded.

In MODES 3, 4, and 5, the reactivity of the core must be consistent with the initial conditions assumed for the boron dilution accident analysis to ensure the minimum time required for automatic actuation of the boron dilution mitigation system (BDMS) to terminate the event is met. This is satisfied by complying with the requirements of LCO 3.1.1 for the minimum SDM. Additionally, for MODE 6, the required boron concentration of LCO 3.9.1 ensures subcriticality during refueling operations. As described in the SDM LCO 3.1.1 Bases, a sufficient shutdown

margin ensures that: (1) the reactor can be made subcritical from all operating conditions, transients, and design basis events; (2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits; and (3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition. The Bases for LCO 3.9.1 refueling boron concentration similarly indicate that the limitations on reactivity conditions during refueling ensure that the reactor will remain subcritical during MODE 6. Since the proposed changes will not alter the limits established in these specifications, there will be no effect on the ability to shut down and maintain the reactor in a subcritical condition.

The intent of TSTF-286 is to ensure that, under the specified plant conditions for each operating mode, unplanned power increases or reductions in the margin to core criticality are precluded. The proposed revision to existing TS Notes and the addition of wording (i.e., Notes) to the TS Actions allow the small reactivity variations that result from addition of water with a reduced boron concentration compared to the RCS and temperature changes when forced circulation is not occurring. The proposed changes only permit the addition of inventory from sources whose boron concentration is sufficient to maintain the required boron concentration if the entire RCS inventory was replaced from the selected source. That is, the source of the water being added must be of high enough boron concentration that the effects of stratification, and subsequent mixing upon restoration of forced flow, cannot result in failure to meet the required boron concentration limits. This limitation addresses potential concerns with stratification and subsequent introduction of the "reduced" concentration borated water into the reactor vessel when forced circulation is re-established. These normal activities are permitted to be performed while maintaining the minimum SDM requirement of LCO 3.1.1 and the minimum boron concentration requirement of LCO 3.9.1.

In Appendix A to its application, the licensee stated that the TS changes in TSTF-286 apply to Callaway and identified plant-specific differences to the TS changes to take into account the Callaway plant design and operation. The technical analysis for the proposed amendment provided by the licensee follows the justification (above) given in TSTF-286. The Callaway plant-specific clarifications provide the staff the assurance that the initial assumptions of the most limiting accident safety analyses are still maintained, while acknowledging that necessary compensatory activities may still be taken by adding cooler water to the RCS to lower the current temperature; and makeup sources are of borated water at boron concentrations less than the current RCS boron concentration. Such plant operations are described in Section 5.0 of Attachment 1 to the application, including these compensatory activities, and are part of plant procedures, which would assure that the overall effect on core reactivity is properly monitored and the required SDM or the required refueling boron concentration maintained. The required SDM at Callaway is determined during the reload core design and is ensured during plant operation by the positioning of the RCCA control and shutdown rod banks and through adjustments of the soluble boron concentration in the reactor coolant.

Appendix A to the safety evaluation summarizes the licensee’s proposed changes in terms of the TS changes in TSTF-286 that are applicable to NUREG-1431 (i.e., is the proposed change the same as that in the TSTF or is there a plant-specific design difference). The changes in TSTF-286 that are not applicable to NUREG-1431 are not part of this amendment (because the Callaway TS are based on NUREG-1431) and are not discussed. The changes to the TS Bases in the TSTF are also not discussed because changes to the Bases are made in accordance with TS Section 5.5.14, "Technical Specifications (TS) Bases Control Program."

The proposed TS changes with the plant-specific differences from the TSTF are discussed below, with the licensee's justification for the differences.

(a) The proposed changes include adding notes to TS 3.3.1, "RPS Instrumentation," Required Actions G.1 and I.1.

Currently at Callaway, Required Actions G.1 and I.1 state: "Suspend operations involving positive reactivity additions." The TSTF-286 equivalent notes would state that: "Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM."

The licensee proposed that the Action state: "Limited boron concentration changes associated with RCS inventory control or limited plant temperature changes are allowed."

As stated previously, the intent of TSTF-286 is to ensure that under the specified plant conditions for each operating mode, unplanned power increases or reductions in the margin to core criticality are precluded. The proposed changes will allow limited insertions of positive reactivity that are associated with routine plant operations. All reactivity manipulations at Callaway are governed by plant procedures that assure the overall effect on core reactivity is properly monitored and the TS-required reactivity limits (minimum SDM requirement of LCO 3.1.1 and the minimum boron concentration requirement of LCO 3.9.1) are maintained. The Callaway application provides the staff the assurance that the initial assumptions of the most limiting accident safety analyses are still maintained. Routine operating evolutions, controlled under plant procedures, may require makeup to the RCS with inventory that is of a different temperature or boron concentration. The licensee has stated that these routine operating evolutions are controlled under plant procedures, and thus allows the proposed TS change "limited boron concentration changes ... or limited plant temperature changes" to meet the intent of TSTF-286. The proposed change is acceptable because the overall effect on core reactivity is being monitored and the required refueling boron concentration is being maintained.

Furthermore, the staff finds the wording "temperature changes" refers to the fact that the moderator temperature coefficient must be considered both during cooldown and heatup operations. Similarly, the staff finds the wording "boron concentration changes associated with RCS inventory control" is more descriptive of operations at Callaway than "boron dilution." These wording changes are both more accurate with regard to Callaway's existing design of employing two independent reactivity control systems: one uses the movable control and shutdown RCCAs, and the other uses the CVCS TS, and this additional clarification allows the adoption of TSTF-286, Revision 2. The TSTF includes a statement that the "change is accounted for in the calculated SDM," which has not been adopted. In MODES 1 and 2 with $k_{eff} \geq 1.0$, the SDM is not a "calculated" value. Rather, the SDM is assured by operation within the rod insertion limits of LCO 3.1.5, "Shutdown Bank Insertion Limits" and LCO 3.1.6, "Control Bank Insertion Limits" and by operating the plant in accordance with the requirements of LCO 3.4.2, "RCS Minimum Temperature for Criticality." This clarification is also described in the proposed Bases discussion of the new Note.

Because the TSTF-286 changes are for NUREG-1431, the justification for the TSTF changes is applicable to Callaway. Since the licensee's proposed changes are consistent with the TSTF, but clarified by additional activities during operation to more accurately define their plant-specific application at Callaway, the staff finds that the proposed changes, with the plant-specific differences, are acceptable.

(b) The proposed changes also include a Note to TS 3.3.9, "BDMS," Required Action B.1. Currently at Callaway, Required Action B.1 simply states: "Suspend operations involving positive reactivity additions." The proposed changes would add a note to state that: "Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM."

The licensee provided the same justification for Callaway as that provided by the staff for approving TSTF-286. This change is identical to TSTF-286 and is applicable to Callaway; therefore, the staff concludes that it is acceptable.

(c) The proposed changes include Required Actions for the following TS:

- TS 3.4.5, "RCS Loops - MODE 3," Required Action D.2
- TS 3.4.6, "RCS Loops - MODE 4," Required Action C.1
- TS 3.4.7, "RCS Loops - MODE 5, Loops Filled," Required Action B.1
- TS 3.4.8, "RCS Loops - MODE 5, Loops Not Filled," Required Action B.1
- TS 3.4.6, "RCS Loops - MODE 4, Required Loops Inoperable," Required Action B.1

The proposed changes would revise the Required Actions to state the following: "Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1." The current Required Actions state: "Suspend all operations involving a reduction of RCS boron concentration." These Required Actions are intended to preclude dilution of the RCS when no forced mixing is taking place. The proposed changes allow dilution of the RCS, but the source of boric acid is required to contain a soluble boron concentration greater than that required to meet the SDM requirement of LCO 3.1.1. These proposed changes are identical to that in TSTF-286.

The licensee provided the same justification for Callaway for these changes as that provided by the staff for the TSTF. These changes are identical with TSTF-286 and are applicable to Callaway; therefore, the staff finds that the proposed changes are acceptable.

(d) The proposed changes include Notes for the following LCOs:

- LCO 3.4.5, "RCS Loops - MODE 3," Note a
- LCO 3.4.6, "RCS Loops - MODE 4," Note 1a
- LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," Note 1a
- LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled," Note 1b

The Notes would be changed to state that "No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1." These Notes currently state: "No operations are permitted that would cause reduction of the RCS boron concentration." These Notes are intended to preclude dilution of the RCS when no forced mixing (i.e., coolant circulation by residual heat removal (RHR) pumps or reactor coolant pumps) is taking place. The proposed changes allow dilution of the RCS, but the source of boric acid is required to contain a soluble boron concentration greater than that required to meet the SDM requirement of LCO 3.1.1. These proposed changes are identical to that in TSTF-286.

The licensee provided the same justification for Callaway for these changes as that provided by the staff for the TSTF. These changes are identical with TSTF-286 and are applicable to Callaway; therefore, the staff finds that the proposed changes are acceptable.

(e) The proposed changes include Required Actions for the following TS:

- TS 3.8.2, "AC Sources - Shutdown," Required Actions A.2.3 and B.3
- TS 3.8.5, "DC Sources - Shutdown," Required Action A.2.3
- TS 3.8.8, "AC Instrument Buses - Shutdown," Required Action A.2.3
- TS 3.8.10, "Distribution Systems - Shutdown," Required Action A.2.3

The proposed Required Actions would state the following: "Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration." These Required Actions currently state: "Initiate action to suspend operations involving positive reactivity additions." These Required Actions are intended to initiate suspension of operations involving positive reactivity additions based on the loss of required electrical sources and distribution equipment. The proposed changes allow dilution of the RCS, but the source of boric acid is required to contain a soluble boron concentration greater than that required to meet the SDM requirement of LCO 3.1.1 or the refueling boron concentration of LCO 3.9.1. The proposed changes will also allow temperature changes that could increase reactivity provided the reactivity insertions do not result in a loss of required SDM or required refueling boron concentration. These proposed changes are identical to that in TSTF-286.

The licensee provided the same justification for Callaway for these changes as that provided by the staff for the TSTF. These changes are identical with TSTF-286 and are applicable to Callaway; therefore, the staff finds that the proposed changes are acceptable.

(f) Required Action A.2 for TS 3.9.3, "Nuclear Instrumentation," would be revised to state the following: "Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1." This Required Action currently states: "Suspend positive reactivity additions." This Required Action is intended to initiate suspension of operations involving positive reactivity additions when there is a loss of one required source range neutron flux monitor, thereby rendering inoperable the redundant channel for monitoring core

reactivity. The proposed change allows dilution of the RCS, but the source of boric acid is required to contain a soluble boron concentration greater than that required to meet the minimum refueling boron concentration requirement of LCO 3.9.1. This proposed change also removes the implicit limitation on temperature changes that could result in a positive reactivity addition. No limitation on temperature change-induced reactivity insertion is needed, because appropriate SDM in MODE 6 is maintained by compliance with LCO 3.9.1. This proposed change is identical to that in TSTF-286.

The licensee provided the same justification for Callaway for these changes as that provided by the staff for the TSTF. These changes are identical with TSTF-286 and are applicable to Callaway; therefore, the staff finds that the proposed changes are acceptable.

(g) LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level," would be revised to state the following: "The required RHR loop may be removed from operation for $\leq$ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction into the Reactor Coolant System, coolant with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1." This LCO Note currently states: "The required RHR loop may be removed from operation for $\leq$ 1 hour per 8 hour period, provided no operations are permitted that would cause reduction of the Reactor Coolant System boron concentration." This note is intended to preclude dilution of the RCS when no forced mixing is taking place. The proposed change allows dilution of the RCS, but the source of boric acid is required to contain a soluble boron concentration greater than that required to meet the minimum refueling boron concentration requirement of LCO 3.9.1. This proposed change is identical to that in TSTF-286.

The licensee provided the same justification for Callaway for these changes as that provided by the staff for the TSTF. These changes are identical with TSTF-286 and are applicable to Callaway; therefore, the staff finds that the proposed changes are acceptable.

(h) The Required Actions A.1 and B.1 of TS 3.9.5, "RHR and Coolant Circulation - High Water Level," and TS 3.9.6, "RHR and Coolant Circulation - Low Water Level," respectively, would be revised to state the following: "Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1." These Required Actions currently state: "Suspend operations involving a reduction in reactor coolant boron concentration." These Required Actions are intended to preclude dilution of the RCS when no forced mixing is taking place. The proposed changes allow dilution of the RCS, but the source of the boric acid is required to contain a soluble boron concentration greater than that required to meet the minimum refueling boron concentration requirement of LCO 3.9.1. These proposed changes are identical to that in TSTF-286.

The licensee provided the same justification for Callaway for these changes as that provided by the staff for the TSTF. These changes are identical with TSTF-286 and are applicable to Callaway; therefore, the staff finds that the proposed changes are acceptable.

3.3 Conclusion

The NRC staff has reviewed the licensee's application with the supporting documentation. Based on its review, the NRC staff concludes that the proposed TS changes to the Callaway TS are acceptable because these changes are consistent with the approved TSTF-286, which is applicable to Callaway and takes into account plant-specific design differences discussed above, and the justification for the TSTF is applicable to Callaway, and continues to ensure that the required minimum SDM and boron concentration margins for Callaway are met. Therefore, based on this, the NRC staff concludes that the proposed amendment is acceptable.

The licensee provided the associated TS Bases that reflect the proposed TS changes as an attachment to its application. The Bases changes are implemented and controlled by the licensee pursuant to TS Section 5.5.14. Because the TS Bases changes are consistent with the TSTF and the licensee's proposed plant-specific TS changes, the staff has no objections to the Bases changes.

4.0 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.

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 (67 FR 5340). 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) 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.

7.0 REFERENCES

1. Letter from John D. Blosser (UE), to USNRC, "Revision to Technical Specifications Regarding Suspension of Positive Reactivity Additions," dated December 6, 2001.

2. Callaway Plant License Amendment 133 dated May 28, 1999, Conversion to Improved Technical Specifications.

3. Letter from W. D. Beckner, USNRC, to J. Davis, Nuclear Energy Institute, Industry/TSTF Standard Technical Specification Change Traveler TSTF-286, Revision 2, "Define 'Operations Involving Positive Reactivity Additions'," July 6, 2000.

Attachment: Appendix A - A Correlation of Proposed Changes to Approved TSTRF-286, Revision 2, STS Changes

Principal Contributor: A. Wang

Date: May 1, 2002

APPENDIX A

A CORRELATION OF PROPOSED CHANGES TO APPROVED TSTF-286, REVISION 2, STS CHANGES

The following TSTF-286 changes are applicable to Callaway, but require some additional justification or clarification before incorporation in the technical specifications (TS) or TS Bases, as discussed in Section 2.0 of Attachment 1, "Description of Proposed Amendment," of the licensee's December 6, 2001, application. The TS Bases changes are included in this list for information only since they are under the licensee's control. Changes to the TS Bases are controlled by TS Section 5.5.14. The discussion below provides a correlation between the manner in which the licensee intends to revise the Callaway TS Bases vs. the TS and the TS Bases changes included in the approved traveler. The deviations from TSTF-286, Revision 2, are identical to those previously approved for the H. B. Robinson Steam Electric Plant Unit 2 in Amendment No. 190 dated March 14, 2001, with an additional reference in the 3.3.1, Action G.1 Bases change to the Core Operating Limits Report (COLR), since that document specifies the shutdown margin (SDM) limits:

- 3.3.1 Action G.1 — Reactor Trip System (RTS) Instrumentation
- 3.3.1 Action G.1 Bases — RTS Instrumentation
- 3.3.1 Action I.1 — RTS Instrumentation

The following TSTF-286 TS changes are applicable to Callaway and are therefore incorporated identically as written in the traveler:

- 3.3.9, Action B.1 — Boron Dilution Mitigation System (BDMS)
- 3.3.9, Action B.1 Bases — BDMS
- 3.4.5, Limiting Condition for Operation (LCO) Note a — Reactor Coolant System (RCS) Loops – Mode 3
- 3.4.5, Action D.2 — RCS Loops – MODE 3
- 3.4.6, LCO Note 1.a — RCS Loops – MODE 4
- 3.4.6, Action B.1 — RCS Loops – MODE 4
- 3.4.7, LCO Note 1.a — RCS Loops – MODE 5, Loops Filled
- 3.4.7, Action B.1 — RCS Loops – MODE 5, Loops Filled
- 3.4.8, LCO Note 1.b — RCS Loops – MODE 5, Loops Not Filled
- 3.4.8, Action B.1 — RCS Loops – MODE 5, Loops Not Filled
- 3.8.2, Action A.2.3 — AC Sources – Shutdown
- 3.8.2, Action B.3 — AC Sources – Shutdown
- 3.8.5, Action A.2.3 — DC Sources – Shutdown
- 3.8.8, Action A.2.3 — Inverters – Shutdown
- 3.8.10, Action A.2.3 — Distribution Systems – Shutdown
- 3.9.1, Action A.3 Bases — Boron Concentration
- 3.9.3, Action A.2 — Nuclear Instrumentation
- 3.9.5, LCO Note — Residual Heat Removal (RHR) and Coolant Circulation – High Water Level
- 3.9.5, Action A.1 — RHR and Coolant Circulation – High Water Level
- 3.9.6, Action B.1 — RHR and Coolant Circulation – Low Water Level

The following TSTF-286 TS changes are applicable to Callaway; however, requirements related to the analysis of an inadvertent boron dilution event need clarification. For example, sentences detailing the requirement to have at least one reactor coolant pump (RCP) in operation to satisfy the mixing requirements for the inadvertent boron dilution event are retained. These sentences were added during the ITS conversion and are consistent with the analysis basis, as further discussed in TS 3.3.9 and Final Safety Analysis Report (FSAR) Section 15.4.6. Clarification is added regarding the equipment credited during various operating MODES. In addition, restrictions on the use of the chemical volume and control system (CVCS) mixing tee for introducing reactor makeup water into the RCS during those times when one source range neutron flux channel is inoperable and during loss of RCS flow conditions, limitations on the RCS makeup sources to satisfy not only shutdown margin (SDM) limits but also the RCS boron concentration assumptions used in FSAR Section 15.4.6, and administrative controls during all reactivity manipulations are added to prudently recognize the potential for an initiating event, analysis assumptions and initial conditions, and the reduced mitigative capability for an inadvertent boron dilution event.

- 3.3.1, Action I.1 Bases — Reactor Trip System (RTS) Instrumentation
- 3.3.1, Condition K Bases — RTS Instrumentation
- 3.3.1, References — RTS Instrumentation
- 3.3.9, ASA Bases — BDMS
- 3.3.9, Applicability Bases — BDMS
- 3.3.9, Action A.1 Bases — BDMS
- 3.4.5, LCO Note a Bases — RCS Loops – MODE 3
- 3.4.5, Action D.2 Bases — RCS Loops – MODE 3
- 3.4.6, LCO Note 1.a Bases — RCS Loops – MODE 4
- 3.4.6, Action B.1 Bases — RCS Loops – MODE 4
- 3.4.7, LCO Note 1.a Bases — RCS Loops – MODE 5, Loops Filled
- 3.4.7, Action B.1 Bases — RCS Loops – MODE 5, Loops Filled
- 3.4.8, LCO Note 1.b Bases — RCS Loops – MODE 5, Loops Not Filled
- 3.4.8, Action B.1 Bases — RCS Loops – MODE 5, Loops Not Filled

The following TSTF-286 TS changes are applicable to Callaway and are incorporated with minor editorial changes identical to those previously approved for H. B. Robinson, Unit 2:

- 3.8.2, Action A.2.3 Bases — AC Sources – Shutdown
- 3.8.2, Action B.3 Bases — AC Sources – Shutdown
- 3.8.5, Action A.2.3 Bases — DC Sources – Shutdown
- 3.8.8, Action A.2.3 Bases — Inverters – Shutdown
- 3.8.10, Action A.2.3 Bases — Distribution Systems – Shutdown
- 3.9.1, Action A.2 Bases — Boron Concentration
- 3.9.3, Action A.2 Bases — Nuclear Instrumentation
- 3.9.5, LCO Note Bases — RHR and Coolant Circulation – High Water Level
- 3.9.5, Action A.1 Bases — RHR and Coolant Circulation – High Water Level
- 3.9.6 Action B.1 Bases — RHR and Coolant Circulation – Low Water Level

The following change is in addition to those contained in TSTF-286; however, it is directly related to the TSTF-286 change to the 3.9.3, Action A.2 Bases, as discussed in Section 2.0 of Attachment 1, "Description of Proposed Amendment," of the licensee's December 6, 2001, application. This was an oversight in TSTF-286. The list of affected TS in TSTF-286 included "Action 3.9.3.B Bases, Nuclear Instrumentation, NUREG-1431 Only;" however, there were no changes to the Action 3.9.3.B Bases marked on page B 3.9-9 of the traveler.

- 3.9.3, Action B.2 Bases — Nuclear Instrumentation

The following TSTF-286 TS changes are not applicable to Callaway and are therefore not incorporated:

- 3.3.1, Action L.1 — RTS Instrumentation
- 3.3.1, Action L.1 Bases — RTS Instrumentation
- 3.4.18, LCO Note a — RCS Isolated Loop Startup
- SR 3.4.18.2 — RCS Isolated Loop Startup
- 3.4.18, Background Bases — RCS Isolated Loop Startup
- SR 3.4.18.2, Bases — RCS Isolated Loop Startup

The following changes in the list of affected TS in TSTF-286 are not applicable to NUREG-1431 (Westinghouse plants) and are therefore not incorporated:

- Action 3.4.5.C — RCS Loops – MODE 3
- Action 3.4.5.C Bases — RCS Loops – MODE 3
- Action 3.9.2.A — Nuclear Instrumentation
- Action 3.9.2.A Bases — Nuclear Instrumentation
- Action 3.9.2.B Bases — Nuclear Instrumentation
- Action 3.3.9.B — Source Range Neutron Flux
- Action 3.3.9.B Bases — Source Range Neutron Flux
- Action 3.3.10.B — Intermediate Range Neutron Flux
- Action 3.3.10.B Bases — Intermediate Range Neutron Flux
- LCO 3.9.4 — Decay Heat Removal (DHR) and Coolant Circulation - High Water Level
- LCO 3.9.4 Bases — DHR and Coolant Circulation – High Water Level
- Action 3.9.4.A — DHR and Coolant Circulation – High Water Level
- Action 3.9.4.A Bases — DHR and Coolant Circulation – High Water Level
- Action 3.9.5.B — DHR and Coolant Circulation – Low Water Level
- Action 3.9.5.B Bases — DHR and Coolant Circulation – Low Water Level
- Action 3.3.8.A Bases — Control Room Isolation Signal (CRIS) (Analog)
- Action 3.3.8.C — CRIS (Analog)
- Action 3.3.9.A Bases — CRIS (Digital)
- Action 3.3.9.C — CRIS (Digital)
- Action 3.3.13.A — [Logarithmic] Power Monitoring Channels (Analog)

• Action 3.3.13.A	[Logarithmic] Power Monitoring Channels (Digital)
• Action 3.3.13.A Bases	[Logarithmic] Power Monitoring Channels (Analog)
• Action 3.3.13.A Bases	[Logarithmic] Power Monitoring Channels (Digital)
• LCO 3.9.4	Shutdown Cooling (SDC) and Coolant Circulation – High Water Level
• LCO 3.9.4 Bases	SDC and Coolant Circulation – High Water Level
• Action 3.9.4.A	SDC and Coolant Circulation – High Water Level
• Action 3.9.4.A Bases	SDC and Coolant Circulation – High Water Level
• Action 3.9.5.B	SDC and Coolant Circulation – Low Water Level
• Action 3.9.5.B Bases	SDC and Coolant Circulation – Low Water Level