October 2, 2003

Mr. Garry L. Randolph
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: STEAM GENERATOR (SG) WATER LEVEL LOW-LOW FUNCTIONS ALLOWABLE VALUES (TAC NO. MB6504)

Dear Mr. Randolph:

The Commission has issued the enclosed Amendment No. 157 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 October 3, 2002 (ULNRC-04743).

The amendment revises Tables 3.3.1-1 (Reactor Trip System (RTS) Instrumentation) and 3.3.2-1 (Engineered Safety Feature Actuation System (ESFAS) Instrumentation) of Limiting Conditions for Operation 3.3.1, "RTS Instrumentation," and 3.3.2, "ESFAS Instrumentation," of the TSs. The revisions are for the SG water level low-low (adverse and normal containment environment) functions.

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/

Jack Donohew, Senior 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. 157 to NPF-30
2. Safety Evaluation

cc w/encls: See next page

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Callaway Plant, Unit 1

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UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 157
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 October 3, 2002, 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. 157 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 of 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: October 2, 2003

ATTACHMENT TO LICENSE AMENDMENT NO. 157

FACILITY OPERATING LICENSE NO. NPF-30

DOCKET NO. 50-483

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

REMOVE	INSERT
3.3-19	3.3-19
3.3-40	3.3-40
3.3-41	3.3-41
3.3-42	3.3-42

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 157 TO FACILITY OPERATING LICENSE NO. NPF-30

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

1.0 INTRODUCTION

By application dated October 3, 2002 (Reference 1), Union Electric Company (the licensee) requested changes to the Technical Specifications (TSs, Appendix A to Facility Operating License No. NPF-30) for the Callaway Plant, Unit 1 (Callaway). The proposed amendment would revise Tables 3.3.1-1, "Reactor Trip System [RTS] Instrumentation," and 3.3.2-1, "Engineered Safety Feature Actuation System [ESFAS] Instrumentation," of Limiting Conditions for Operation (LCOs) 3.3.1, "RTS Instrumentation," and 3.3.2, "ESFAS Instrumentation." The proposed changes are for the steam generator (SG) water level low-low (adverse and normal containment environment) trip functions.

2.0 REGULATORY EVALUATION

General Design Criterion (GDC) 10, "Reactor Design," requires the reactor core and associated coolant, control and protection systems to be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences (AOOs).

GDC 13, "Instrumentation and Control," requires that instrumentation be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems.

GDC 15, "Reactor Coolant System Design," requires that the reactor coolant system and associated auxiliary, control, and protection systems be designed with sufficient margin to assure that the design conditions of the reactor coolant pressure boundary (RCPB) are not exceeded during any condition of normal operation, including AOOs.

GDC 20, "Protection System Functions," requires that the protection system(s) shall be designed: (1) to initiate automatically the operation of appropriate systems including the

reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of AOOs; and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

The RTS and ESFAS instrumentation, including their applicable modes and allowable values which are being changed in the proposed amendment, must meet the requirements in GDC 10, 13, 15, and 20 to be acceptable. The actual modes of the instrumentation are not being changed, but a footnote is being added to the applicable modes for the SG water level low-low (normal containment environment) function in TS Tables 3.3.1-1 and 3.3.2-1.

However, because the proposed amendment only involves changes to allowable values to conservatively account for the design basis accidents for Callaway, and does not involve any new accident or any new instrumentation, the applicable regulatory requirements are in GDC 10, 15, and 20. The requirements are that the associated protection systems (i.e., RTS and ESFAS instrumentation) are designed (and thus operated) with sufficient margin to assure (1) that specified acceptable fuel design limits (GDC 10 and 20), and (2) that design conditions of the RCPB (GDC 15) are not exceeded during any condition of normal operation, including AOOs.

3.0 BACKGROUND

The function of the reactor protection and ESFAS circuits and the anticipated transient without scram mitigating system actuation circuitry (AMSAC) associated with low SG water level is to preserve the SG heat sink for removal of long term residual heat. At Callaway, the SG water low-low level trip function trips the reactor and provides protection against a loss of heat sink by assuring the isolation of main (or normal) feedwater flow and delivery of auxiliary feedwater (AFW) flow to the SGs. The trip function is used as a primary protection signal for the design basis events of loss of normal feedwater (LONF), loss of offsite power (LOOP), and feedwater line breaks.

Because the SG water level transmitters are located inside containment, they may experience adverse environmental conditions due to a feedwater line break inside containment. The environmental allowance modifier (EAM) function is used to monitor the presence of adverse containment conditions (elevated pressure) and enables the SG water low-low level (adverse containment environment) trip setpoint. When the EAM channels are tripped, the SG water low-low level (normal containment environment) channels are in a functional state of bypass because of the increased transmitter uncertainties in the harsh environment. In the event of a transient leading to low SG water level while the EAM channels are tripped, the reactor would trip, normal feedwater would isolate, and the AFW system would start on the higher SG water level trip setpoint associated with the SG water low-low level (adverse containment environment) channels. The adverse containment environment trip setpoint is 5.4 percent of narrow range instrument span (NRIS) higher than the normal containment environment trip setpoint to prevent loss of heat sink.

On March 7, 2002, the NRC issued Information Notice (IN) 2002-10 (Reference 2), to inform licensees of operating nuclear power reactors about the potential for non-conservative setpoints for SG water level. The information notice was issued as a result of a February 9, 2002,

occurrence at Diablo Canyon Power Plant Unit 2, where the narrow-range SG water level instrumentation did not respond as expected to initiate an automatic reactor trip and emergency feedwater actuation on low-low water level in the SG. This event prompted Westinghouse, the SG manufacturer, to issue Nuclear Safety Advisory Letter (NSAL) 02-3, "Steam Generator Mid-Deck Plate Pressure Loss Issue," February 15, 2002 (Reference 3), and Revision 1 on April 8, 2002. Westinghouse attributed this water level discrepancy to a differential pressure (ΔP) which is created by steam flow past the mid-deck plate in the moisture separator in the SG and previously not accounted for in determining SG water level. The licensee reported this to the NRC in Licensee Event Report (LER) 2002-005-00 dated April 12, 2002.

To reduce moisture carryover to the turbines, Westinghouse-designed SGs incorporate a mid-deck plate at the top of the primary separator assembly. The mid-deck plate is located between the upper and lower taps used for SG water level measurements. When some of the steam flows through the separator downcomer instead of the separator orifice, this steam with some entrained moisture will eventually flow upwards through the flow area in the mid-deck plate. This steam flow through the mid-deck plate will in most cases result in a measurable ΔP. This ΔP potentially impacts the low-low setpoint margins for SGs when the narrow range level tap is above the lower deck plate. The mid-deck plate ΔP causes the SG narrow-range instrumentation to read higher than the actual water level and adversely affects the SG low-low level trip with an uncertainty bias in the non-conservative direction.

If the ΔP phenomenon is not accounted for, the SG water level instrumentation could be nonconservative during certain transients. Westinghouse stated that this ΔP effect may require up to an approximately 9 percent decrease (in percent of the narrow-range span) in the safety analysis limit (SAL) for establishing the low-low SG water level reactor trip for the LONF, the LOOP transient, or feedwater line breaks to compensate for the bias.

Westinghouse provided the mid-deck plate ΔP for Model "F" SGs for the Callaway plant. The ΔP is a bias in the non-conservative direction, impacting the existing SG low-low water level trip setpoint.

The licensee states that the mid-deck ΔP was not accounted for and adversely affects SG low level setpoint uncertainty calculations in the high direction. To correct this problem, the licensee proposed to change the SG water low-low level trip setpoint and allowable values to be more conservative with the allowable values for the SG water level low-low trip functions in TS Tables 3.3.1-1 and 3.3.2-1 being increased by 6.8 percent of NRIS to agree with the actual settings. This license amendment request is to change the TSs to increase the allowable values for the SG water level low-low trip functions to more restrictive values than the current settings in the TSs. In the staff's review, it will ensure the proposed changes continue to meet the requirements of GDC 10, 15 and 20 by ensuring that the proposed setpoints and allowable values are conservative.

In TS Table 3.3.1-1 on RTS instrumentation, the SG water level low-low function is listed as Numbers 14.a and 14.b for the reactor trip. In TS Table 3.3.2-1 on ESFAS instrumentation, the SG water level low-low function is listed as Numbers 5.e.1 and 5.e.2 for feedwater isolation, and Numbers 6.d.1 and 6.d.2 for auxiliary feedwater operation.

4.0 TECHNICAL EVALUATION

The licensee proposed the following changes to the TSs:

- Increase the allowable values, in percent of NRIS, for the two SG water level low-low trip functions, adverse and normal containment environment, in TS Table 3.3.1-1.

- Add footnote p to TS Table 3.3.1-1 and add the footnote to the applicable modes for the one SG water level low-low trip function, normal containment environment, in TS Table 3.3.1-1.

- For feedwater isolation, increase the allowable values, in percent of NRIS, for the two SG water level low-low trip functions, adverse and normal containment environment, in TS Table 3.3.2-1.

- For feedwater isolation, add superscript "(r)" to the applicable modes for the SG water level low-low trip function, normal containment environment, in TS Table 3.3.2-1. Note that the superscript "(r)" refers to table footnote r.

- For auxiliary feedwater, increase the allowable values (percent of NRIS) for the two SG water level low-low trip functions, adverse and normal containment environment, in TS Table 3.3.2-1.

- For auxiliary feedwater, add footnote r to the applicable modes for the SG water level low-low trip function, normal containment environment, in TS Table 3.3.2-1.

- Add footnote r to the footnote section of Table 3.3.2-1 with the applicable reference information.

For the proposed changes that would add a footnote to an applicable mode, the applicable modes are not being changed by the proposed changes. The footnotes p and r to be added to TS Tables 3.3.1-1 and 3.3.2-1, respectively, are the same statement "Except when the Containment Pressure - Environmental Allowance Modifier channels in the same protection sets are tripped."

The above proposed changes are addressed in the following sections on the instrumentation and controls and reactor systems reviews of the proposed amendment.

4.1 Instrumentation and Controls Review

4.1.1 Increase Allowable Values

The proposed changes would increase the allowable values associated with the SG water level low-low trip functions in Tables 3.3.1-1 and 3.3.2-1 by 6.8 percent of NRIS as follows:

- The allowable value would be increased from 18.4 percent of NRIS to 25.2 percent of NRIS for the SG water level low-low (adverse containment environment) trip functions in

the following TS tables: (a) Table 3.3.1-1, RTS instrumentation, Function 14.a; (b) Table 3.3.2-1, ESFAS instrumentation, Function 5.e.(1); and (c) TS Table 3.3.2-1, ESFAS instrumentation, Function 6.d.(1).

- The allowable values would be increased from 13.0 percent of NRIS to 19.8 percent of NRIS for the SG water level low-low (normal containment environment) trip functions in the following TS tables: (a) Table 3.3.1-1, RTS instrumentation, Function 14.b; (b) Table 3.3.2-1, ESFAS instrumentation, Function 5.e.(2); and (c) Table 3.3.2-1, ESFAS instrumentation, Function 6.d.(2).

As discussed in Section 3.0 above, the Westinghouse-designed SGs incorporate a mid-deck plate at the top of the primary separator assembly. When some of the steam flows through the separator downcomer instead of the separator orifice, this steam with some entrained moisture will eventually flow upwards through the flow area in the mid-deck plate. This steam flow through the mid-deck plate will in most cases result in a measurable pressure drop. Based on test data taken on the Wolf Creek Model F SGs in the 1986-1987 time frame and documented in WCAP-11276-FNP, Westinghouse indicates that this pressure drop at full load (100 percent of rated thermal power) would be 0.22 pounds per square inch (psi) for the Callaway SGs.

Westinghouse recently informed the licensee of the ramifications of this data on the associated setpoint calculation via Westinghouse NSAL 02-03. The mid-deck plate is located between the upper and lower taps used for SG water level measurements. This pressure drop impacts the low-level setpoints for SGs when the lower narrow-range level tap is above the lower deck plate. This error source has not been accounted for and adversely affects SG low-level setpoint uncertainty calculations as an algebraic bias that must be accounted for in the high direction.

In the licensee's application, the licensee stated that for the Callaway SGs, the 0.22 psi pressure drop equates to 6.8 percent of NRIS as follows. The calibrated span for the SG level transmitters is 89.6 inches of water column (inwc). Converting the 0.22 psi pressure drop to inwc (i.e., 1 inwc = 0.03609 psi), the resulting 6.094 inwc pressure drop is equal to 6.8 percent of NRIS. Therefore, resolution of this issue requires either reanalysis using a 6.8 percent of NRIS decrease in the SAL, or a 6.8 percent of NRIS increase in the nominal trip setpoints. The nominal trip setpoints for the SG water level low-low (normal containment environment) channels in TS Bases Tables B 3.3.1-1 and B 3.3.2-1 include an algebraic bias term of 9.17 percent of NRIS for environmental allowance (EA) terms. EA is to account for adverse containment conditions during certain accidents as discussed in Section 3.0 above.

Since the LONF transient and the LOOP transient are not characterized by the generation of an adverse environment inside containment, there is sufficient margin between the 0 percent of NRIS for these events and the previous SG water level low-low (normal containment environment) nominal trip setpoint to accommodate for the new mid-deck plate bias since neither event exhibits any EA terms. However, the channel statistical allowance (CSA) for a feedwater line break (FLB) accident inside containment must include the EA terms for transmitter error, reference leg heatup, and instrument cable errors. Since the FLB inside containment, also analyzed with a SAL of 0 percent of NRIS, would be characterized by a large EA algebraic bias term in the CSA, there is insufficient margin to accommodate the new mid-deck plate pressure drop bias. The calculation of the setpoint uncertainties consists of process

effects and instrumentation loop uncertainty. The allowance for process effects accounts for the non-instrument-related effects such as process pressure variation and mid-deck plate pressure drop. These process effects are treated as biases and are combined algebraically. Since this issue could not be accommodated by a reduction of the SAL, the nominal trip setpoints were increased by the licensee.

The nominal trip setpoints in TS Bases Tables B 3.3.1-1 and B 3.3.2-1 were increased by 6.8 percent of NRIS when the trip setpoints were changed in the field. However, the allowable values in TS Tables 3.3.1-1 and 3.3.2-1 must also be increased to provide valid acceptance criteria for determining channel operability, based on the setpoint methodology criteria for rack drift, bistable accuracy, and rack calibration accuracy. When the nominal trip setpoints were increased in the field, the licensee submitted the proposed amendment to have a corresponding increase to the allowable values.

GDC 10, 15, and 20 require the RTS and ESFAS instrumentation for the core protection systems to be designed with appropriate margin to assure that the (1) specified acceptable fuel design limits, and (2) design conditions of the RCPB are not exceeded during any condition of normal operation, including AOOs. Because the licensee has proposed more conservative allowable values for the SG water level low-low trip functions in TS Tables 3.3.1-1 and 3.3.2-1 to conservatively account for a previously unaccounted for pressure drop in the SGs, the staff concludes that these trip functions meet GDC 10, 15 and 20. Based on this, the staff further concludes that the proposed amendment to increase the allowable values in TS Tables 3.3.1-1 and 3.3.2-1 is acceptable.

4.1.2 Add Footnote p and r to TS Tables 3.3.1-1 and 3.3.2-1

The proposed footnote p and r for TS Tables 3.3.1-1 and 3.3.2-1, respectively, are the same statement, which is the following: "Except when the Containment Pressure - Environmental Allowance Modifier channels in the same protection sets are tripped." The proposed wording means that the SG water level low-low (normal containment environment) channels may be inoperable if the containment pressure - EA modifier channels in the same channels are tripped. This is for the applicable modes in TS Tables 3.3.1-1 and 3.3.2-1.

Based on the staff's review of the information provided by the licensee in its application, the EAM and the trip time delay (TTD) circuitry reduce the potential for an inadvertent trip. Because the SG water level transmitters (differential pressure (d/p) cells) are located inside containment, they may experience adverse environmental conditions due to a feedline break. The EAM function is used to monitor the presence of adverse containment conditions (elevated pressure) and enables the SG water level low-low (adverse containment environment) trip setpoint to reflect the increased transmitter uncertainties due to this harsh environment. The EAM enables a lower SG water level low-low (normal containment environment) trip setpoint when adverse containment environment conditions are not present, thus allowing more margin to trip for normal operating conditions.

The staff concludes that the plant is designed so that one or more EAM channels can be tripped and plant operation can continue with the SG water level low-low (adverse containment environment) channels enabled. In this situation, the SG water level low-low (normal

containment environment) channels have no safety function since the trip will occur at a higher level trip setpoint. The adverse containment environment trip setpoint is 5.4 percent of NRIS higher than the normal containment environment trip setpoint. When an RTS or ESFAS channel provides no safety function, it should have no operability requirements. Therefore, the staff finds that the proposed footnotes to TS Tables 3.3.1-1 and 3.3.2-1 provide an exception to the LCO applicability requirements for the SG water level low-low (normal containment environment) channels whenever the containment pressure-EAM channels in the same protection sets are tripped.

The staff has determined that the proposed footnote exception only allows the SG water level low-low (normal containment environment) channels to be inoperable when they are not needed because the containment pressure-EAM channels in the same protection sets are tripped. Because of this, the staff concludes that the proposed footnote meets GDC 10, 15, and 20, and is appropriate and acceptable.

4.2 Reactor Systems Review

The licensee provided the revised calculations of the SG water low-low level trip setpoints and allowable values for Callaway. As stated previously, the licensee determined that the 0.22 psi pressure drop due to the mid-deck plate would equate to a setpoint uncertainty of 6.8 percent of NRIS. This uncertainty needs to be added to the current nominal trip setpoints and TS allowable values.

The licensee also determined that of the three design basis events in the Chapter 15 events in the Callaway Final Safety Analysis Report (FSAR) that credit SG water level low-low trip setpoints, the FLB event was found to have insufficient margin to accommodate the mid-deck bias. The CSA for a FLB accident inside containment must include the EA terms for transmitter error, reference leg heatup, and instrument cable errors. Therefore, the licensee proposed increasing the trip setpoints and allowable values by 6.8 percent of NRIS.

The SG water low-low level trip function in TS Tables 3.3.1-1 and 3.3.2-1 specifies a 13.0 percent allowable value for normal containment environment and 18.4 percent allowable value for adverse containment environment. The licensee proposed to raise these allowable values by 6.8 percent to 19.8 percent (normal containment environment) and 25.2 percent (adverse containment environment). The inequality for the allowable values in the tables is not being changed.

The licensee also proposed to change the Bases and raise the trip setpoints from 14.8 to 21.6 percent (normal containment environment) and from 20.2 to 27.0 percent (adverse containment environment). These changes are necessary to correct the non-conservative bias due to the SG mid-deck plate ΔP, discussed above.

The staff has reviewed the licensee's request to amend the TSs to increase the allowable values for the SG water level low-low functions in Tables 3.3.1-1 and 3.3.2-1 by 6.8 percent to 19.8 percent (normal containment environment) and 25.2 percent (adverse containment environment). The licensee stated that (1) with the proposed allowable values of 19.8 percent and 25.2 percent to account for the mid-deck plate ΔP, the existing safety analysis using the

SAL of 0.0 percent for the SG low-low trip remains valid and (2) increasing the trip setpoints to provide earlier reactor trips, AFW actuations, feedwater isolation and AMSAC actuations is conservative and will ensure the specified acceptable fuel design limits and the RCPB limits are not exceeded, as required by GDC 10, 15, and 20. Based on the licensee's statement, the staff concludes that the proposed allowable values conservatively correct the previously unaccounted for bias due to SG mid-deck differential pressure and, therefore, comply with the requirements in GDC 10, 15, and 20 to ensure that (1) the specified acceptable fuel design limits (GDC 10 and 20), and (2) that design conditions of the RCPB (GDC 15) are not exceeded during any condition of normal operation, including AOOs. Based on this, the staff also concludes that the proposed changes to the allowable values in TS Tables 3.3.1-1 and 3.3.2-1 are acceptable.

4.3 Conclusion

Based on the above evaluation, which shows that the proposed amendment will have the SG water level low-low trip function (adverse and normal containment environment) meet GDC 10, 15, and 20, the staff concludes that the changes to the allowable values and the addition of footnotes p and r in TS Tables 3.3.1-1 and 3.3.2-1, respectively, in the proposed amendment are acceptable.

5.0 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 did not offer any comments.

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes surveillance requirements. 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 70770). 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.

7.0 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.

8.0 REFERENCES

1. Letter from J. Blosser, AmerenUE, to NRC, "Revision to SG Water Level Low-Low LCO Applicability and Allowable Values in Technical Specifications 3.3.1 and 3.3.2," Docket Number 50-483, October 3, 2002.

2. NRC Information Notice 2002-10, "Nonconservative Water Level Setpoints on Steam Generators," March 7, 2002.

3. NSAL-02-3, "Steam Generator Mid-Deck Plate Pressure Loss Issue," Westinghouse Electric Company, February 15, 2002.

Principal Contributors: S. Rhow
M. Barillas

Date: October 2, 2003