Union Electric
Callaway Plant

PO Box 620
Fulton, MO 65251

July 10, 2009

ULNRC-05627

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

10 CFR 50.90

Ladies and Gentlemen:

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
FACILITY OPERATING LICENSE NPF-30
LICENSE AMENDMENT REQUEST OL-1253
ELIMINATION OF TECHNICAL SPECIFICATION REQUIREMENTS FOR HYDROGEN RECOMBINERS AND MONITORS
USING THE CONSOLIDATED LINE ITEM IMPROVEMENT PROCESS

Pursuant to 10 CFR 50.90, AmerenUE (Union Electric Company) hereby requests an amendment to Facility Operating License No. NPF-30 for the Callaway Plant.

The proposed amendment would delete the Technical Specification (TS) requirements for the containment hydrogen recombiners and hydrogen monitors. The proposed TS changes support implementation of the revision to 10 CFR 50.44, "Standards for Combustible Gas Control System in Light-Water-Cooled Power Reactors," that became effective on October 16, 2003. As such, the TS changes are consistent with Revision 1 of NRC-approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-447, "Elimination of Hydrogen Recombiners and Change to Hydrogen and Oxygen Monitors." The availability of this TS improvement was announced in the Federal Register on September 25, 2003, as part of the consolidated line item improvement process (CLIIP).

Besides the changes related to requirements for the hydrogen recombiners and monitors, this amendment application includes four unrelated, minor changes to correct typographical errors identified in Callaway's Technical Specifications.

Information essential to this amendment application is provided in the attachments to this letter. Attachment 1 provides a description of the proposed changes. It also provides, with regard to the hydrogen recombiner and analyzer TS changes, the confirmation of applicability and plant-specific verifications and commitments as requested in the NRC's Notice of Availability in the Federal Register. Attachment 2 provides the affected TS pages marked-up to show the proposed changes. Attachment 3 provides revised/retyped TS pages as they would appear with the proposed changes incorporated. Attachment 4 provides the TS Bases changes (for information only) that are anticipated for the changes to be made to the hydrogen recombiner and analyzer Technical Specifications. Revision to the TS Bases will be implemented pursuant to the TS Bases Control Program, TS 5.5.14, upon implementation of this license amendment. Attachment 5 contains a summary of commitments made in conjunction with this application.

This amendment application was reviewed by the Callaway Onsite Review Committee and the Nuclear Safety Review Board. In accordance with 10 CFR 50.91, a copy of this amendment application, with attachments, is being provided to the designated Missouri State official.

In light of the CLIIP supporting this amendment request, AmerenUE requests NRC approval within 12 months of the date of this letter. AmerenUE anticipates that the amendment will be effective upon issuance, with implementation no later than 90 days following issuance.

Please contact Scott Maglio, Assistant Manager, Regulatory Affairs at (573) 676-8719 for any questions you may have regarding this amendment application.

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

Sincerely,

Executed on: 7/10/09

Scott Sandbothe
Manager, Regulatory Affairs

TBE/KRA

Attachments: 1 Evaluation
2 Mark-up of Technical Specification Pages
3 Retyped Technical Specification Pages
4 TS Bases Changes (For Information Only)
5 Summary of Regulatory Commitments

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EVALUATION

1.0 DESCRIPTION

The proposed license amendment would delete Technical Specification (TS) 3.6.8, "Hydrogen Recombiners," and remove the containment hydrogen analyzers (monitors) from the scope of TS 3.3.3, "Post Accident Monitoring (PAM) Instrumentation." These proposed TS changes are intended to support implementation of the revisions to 10 CFR 50.44, "Standards for Combustible Gas Control System in Light-Water-Cooled Power Reactors," that became effective on October 16, 2003.

The subject changes are consistent with Revision 1 of NRC-approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler TSTF-447, "Elimination of Hydrogen Recombiners and Change to Hydrogen and Oxygen Monitors." The availability of this TS improvement was announced in the Federal Register on September 25, 2003 (68 FR 55416) as part of the consolidated line item improvement process (CLIIP). Included in that Federal Register notice was a model safety evaluation (SE) for licensees to reference in their amendment applications.

2.0 PROPOSED CHANGES

The proposed changes for the TS requirements concerning the hydrogen recombiners and monitors are described in detail below, i.e., in Section 2.1. The proposed changes for correcting typographical errors identified in the Technical Specifications, as mentioned in the cover letter of this application, are described in Section 2.2.

2.1. TS CHANGES PROPOSED PER TSTF-447

As noted above, the TS changes proposed for the hydrogen recombiners and monitors are in accordance with TSTF-447 (Rev. 1). Due to slight differences, however, between the Callaway Plant Technical Specifications (and TS Bases) and the model Standard Technical Specifications in NUREG-1431, Revision 2, "Standard Technical Specifications, Westinghouse Plants," minor variances from the TSTF mark-ups/changes are required to some degree. These variances are identified below and do not invalidate the NRC staff's model safety evaluation supporting the adoption of TSTF-447, Revision 1. Consistent with NRC-approved Revision 1 of TSTF-447, the proposed TS changes consist of the following:

- In TS 3.3.3, the Note in Condition C indicating that this Condition is not applicable to hydrogen analyzer channels is deleted. (This Note is not addressed in TSTF-447. However, removal of the hydrogen analyzers from the scope of Callaway TS 3.3.3 requires the removal of all references to the hydrogen analyzers, including this Note.)

- In TS 3.3.3, Condition D is deleted (since it solely addresses inoperable hydrogen analyzers). Deletion of Condition D requires revising the lettering of subsequent Conditions and Required Actions that are listed or identified in the ACTIONS Table and in Table 3.3.3-1. This change includes removing the reference to this Condition from what will be Condition D (i.e., removing the "or D" in current Condition E).

- The text of Surveillance Requirement (SR) 3.3.3.1 is revised to delete the words "for each required instrumentation channel that is normally energized." The hydrogen analyzers are the only instruments in the scope of TS 3.3.3 (Table 3.3.3-1) to which these provisional words apply (i.e., the analyzers are the only instruments that are normally de-energized). It is therefore appropriate to remove the identified words since they would no longer be applicable upon removal of the hydrogen analyzer requirements. The words to be deleted are not included in the Standard Technical Specifications (NUREG-1431) since they are unique to Callaway with its normally de-energized hydrogen analyzers. Consequently, this change is not included in TSTF-447 and is a variance from the TSTF. The change is a necessary and minor one, however, and is consistent with the changes being made pursuant to TSTF-447.

- In TS Table 3.3.3-1, Function 10, "Containment Hydrogen Analyzers," is deleted. The minor variance is that in TSTF-447 the "Hydrogen Monitors" function (identified as Function 11 in the TSTF/Standard Technical Specifications) is simply deleted, whereas in Callaway's mark-up Function 10 is deleted and identified as "Not Used." This precludes renumbering the subsequent Functions, thus minimizing changes to plant procedures.

- TS 3.6.8, "Hydrogen Recombiners," is deleted in its entirety. Page 3 of the Table of Contents for the Technical Specifications is revised to reflect the deletion of TS 3.6.8.

- TS 5.6.8, "PAM Report," is revised to reflect changing Condition G to Condition F in TS 3.3.3 (due to the second change described above).

As described in NRC-approved Revision 1 of TSTF-447, the changes to TS 3.3.3 and TS 3.6.8 require changes to be made to the associated TS Bases sections. Proposed TS Bases changes, in the form of marked-up TS Bases pages, are indicated in Attachment 4 and are provided for information. (The changes indicated in Attachment 4 include correction of a typographical error on TS Bases page B 3.3.3-15, which is unrelated to the subject changes.) The TS Bases changes will be implemented pursuant to the TS Bases Control Program, TS 5.5.14, upon implementation of this license amendment.

2.2 TS CHANGES FOR CORRECTION OF TYPOGRAPHICAL ERRORS

The TS changes requested by AmerenUE for correction of typographical errors are as follows:

1. In order to conform with TSTF-GG-05-01, Writer's Guide for Plant-Specific Improved Technical Specifications, "With one" should be replaced with "One" in TS 3.7.4 CONDITION D. Similarly, "Associated" should be replaced with "associated" in REQUIRED ACTION D.1.

2. In TS 3.8.1 REQUIRED ACTION A.2 and C.1 the word "Modes" appears where "MODES" is intended. "Modes" should be replaced with "MODES" to indicate that this is a term defined in TS Section 1.1.

3. In part "e" of TS 5.5.16, "Containment Leakage Rate Testing Program," the word "or" appears where the word "of" is intended. The "or" should be replaced with "of" so that the sentence begins, "The provisions of Technical Specification SR 3.0.2 do not apply..."

4. A period that is inadvertently situated within the first sentence of TS 5.6.3, "Radioactive Effluent Release Report," is to be removed. The unwanted period appears just after the phrase, "prior to May 1 of each year."

3.0 BACKGROUND

The background for this application and justification for the proposed changes concerning requirements for the hydrogen recombiners and monitors are adequately addressed by the NRC Notice of Availability published on September 25, 2003 (68 FR 55416), the NRC Notice for Comment published August 2, 2002 (67 FR 50374), TSTF-447 (Revision 1), and the documentation associated with the 10 CFR 50.44 rulemaking.

4.0 TECHNICAL ANALYSIS

With regard to the changes proposed for Callaway's Technical Specifications concerning the hydrogen recombiners and monitors, AmerenUE has reviewed the model SE that was published for such changes on September 25, 2003 (68 FR 55416) as part of the CLIIP Notice of Availability. This verification included a review of the NRC staff's SE as well as the information provided to support TSTF-447, Revision 1. AmerenUE has concluded that the justifications presented in the TSTF and the SE prepared by the NRC staff are applicable to the Callaway Plant and justify AmerenUE's proposed changes to the Technical Specifications for the hydrogen recombiners and monitors.

No technical or regulatory analysis is required for the proposed typographical corrections included in this application.

5.0 REGULATORY ANALYSIS

5.1 NO SIGNIFICANT HAZARDS CONSIDERATION

AmerenUE has reviewed the proposed no significant hazards consideration determination published on September 25, 2003 (68 FR 55416) as part of the CLIIP for the hydrogen recombiner and hydrogen monitor TS changes. AmerenUE has concluded that the proposed determination presented in the Federal Register notice is applicable to the changes proposed for Callaway's Technical Specifications. Therefore, that determination, including the conclusion that the requested changes do not involve a significant hazards consideration, is hereby incorporated into this application by reference pursuant to the requirements of 10 CFR 50.91(a).

For the TS changes requested to correct typographical errors identified in Callaway's Technical Specifications, AmerenUE similarly concludes that these changes do not involve a significant hazards consideration. That is, pursuant to 10 CFR 50.91(a), by applying the criteria or standards set forth in 10 CFR 50.92, AmerenUE concludes that the proposed typographical changes do not involve a significant increase in the probability or consequences of an accident previously evaluated, do not create the possibility of a new or different kind of accident from any previously evaluated, and do not involve a significant reduction in the margin of safety, based on the nature of these changes. They are strictly for the purpose of correcting typographical errors and do not change the TS requirements themselves. They involve no changes to the facility, its safety analyses or design requirements, or the manner in which it is operated or expected to respond under normal or accident conditions.

5.2 APPLICABLE REGULATORY REQUIREMENTS/CRITERIA

A regulatory basis and analysis for the TS changes concerning the hydrogen recombiners and monitors was provided in the NRC Notice of Availability published on September 25, 2003 (68 FR 55416), as well as TSTF-447 (Revision 1) and the documentation associated with the 10 CFR 50.44 rulemaking.

6.0 ENVIRONMENTAL CONSIDERATION

AmerenUE has reviewed the environmental evaluation included in the model SE published on September 25, 2003 (68 FR 55416) as part of the CLIIP for the hydrogen recombiner and hydrogen monitor TS changes. AmerenUE has concluded that the NRC staff's findings presented in that evaluation are applicable to the proposed TS changes for Callaway, and on that basis the evaluation is hereby incorporated by reference in this application. This includes the conclusion that the proposed changes involve 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.

For the proposed TS changes to correct typographical errors, AmerenUE makes a similar conclusion. That is, based on the nature of these changes, which do not change the affected TS requirements themselves or any other requirements, and do not involve any changes to the

facility whatsoever, it may be concluded that the proposed changes involve no significant increase in the amounts and no significant increase 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. As stated in Section 5.2, these changes involve no significant hazards consideration. Consequently, it may be concluded that the changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9).

7.0 VERIFICATION AND COMMITMENTS

With respect to the model SE published in the Federal Register on September 25, 2003 (68 FR 55416) for the TS improvements concerning the hydrogen recombiners and monitors, AmerenUE is making the following verifications and regulatory commitments:

1. AmerenUE has verified that a hydrogen monitoring system capable of diagnosing beyond design-basis accidents is installed at the Callaway Plant, and therefore AmerenUE is making a regulatory commitment to maintain that capability. Requirements for the hydrogen monitors (analyzers) will thus be included in Chapter 16 of the Final Safety Analysis Report when the associated TS changes are implemented. The requirements contained therein will be commensurate with the requirements applicable to the monitors under revised 10 CFR 50.44. This regulatory commitment will be implemented as part of implementing the requested amendment (after NRC approval of the requested amendment). [Note: This commitment regarding the hydrogen monitors is also summarized in Attachment 5.]

2. Callaway Plant does not have an inerted containment.

8.0 REFERENCES

1. Federal Register Notice: Notice of Availability of Model Application Concerning Technical Specification Improvement To Eliminate Hydrogen Recombiner Requirement, and Relax the Hydrogen and Oxygen Monitor Requirements for Light Water Reactors Using the Consolidated Line Item Improvement Process, published September 25, 2003 (68 FR 55416).

2. Federal Register Notice: Combustible Gas Control in Containment, Proposed Rule published August 2, 2002 (67 FR 50374)

3. Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-447, "Elimination of Hydrogen Recombiners and Change to Hydrogen and Oxygen Monitors," Revision 1.

4. Federal Register Notice: Combustible Gas Control in Containment, Final Rule published September 16, 2003 (68 FR 54123)

ATTACHMENT 2

MARK-UP OF TECHNICAL SPECIFICATION PAGES

No changes to this page. Provided for context/continuity.

3.3 INSTRUMENTATION

3.3.3 Post Accident Monitoring (PAM) Instrumentation

LCO 3.3.3 The PAM instrumentation for each Function in Table 3.3.3-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3.

ACTIONS

---------- NOTE ----------
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action in accordance with Specification 5.6.8.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ~~NOTE Not applicable to hydrogen analyzer channels.~~ One or more Functions with two or more required channels inoperable.	C.1 Restore all but one channel to OPERABLE status.	7 days
~~D. Two hydrogen analyzer channels inoperable.~~	~~D.1 Restore one hydrogen analyzer channel to OPERABLE status.~~	~~72 hours~~
F. Required Action and associated Completion Time of Condition C not met.	E.1 Enter the Condition referenced in Table 3.3.3-1 for the channel.	Immediately
E. As required by Required Action E.1 and referenced in Table 3.3.3-1.	F.1 Be in MODE 3.	6 hours
	AND	
	F.2 Be in MODE 4.	12 hours
F. As required by Required Action E.1 and referenced in Table 3.3.3-1.	G.1 Initiate action in accordance with Specification 5.6.8.	Immediately

SURVEILLANCE REQUIREMENTS

---------- NOTE ----------
SR 3.3.3.1 and SR 3.3.3.2 apply to each PAM instrumentation Function in Table 3.3.3-1.

	SURVEILLANCE	FREQUENCY
SR 3.3.3.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 3.3.3.2	---------- NOTE ---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	18 months

Table 3.3.3-1 (page 1 of 2)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITION REFERENCED FROM REQUIRED ACTION
1.	Neutron Flux	2	H
2.	Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range)	2	H
3.	RCS Cold Leg Temperature (Wide Range)	2	H
4.	RCS Pressure (Wide Range)	2	H
5.	Reactor Vessel Level Indicating System (RVLIS)	2	B
6.	Containment Normal Sump Water Level	2	H
7.	Containment Pressure (Normal Range)	2	H
8.	Steam Line Pressure	2 per steam generator	H
9.	Containment Radiation Level (High Range)	2	G
10.	~~Containment Hydrogen Analyzers~~	~~2~~	~~F~~
11.	Pressurizer Water Level	2	H
12.	Steam Generator Water Level (Wide Range)	4	F
13.	Steam Generator Water Level (Narrow Range)	2 per steam generator	H

Not Used

D.1

E

F

E

F

E

(continued)

Table 3.3.3-1 (page 2 of 2)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITION REFERENCED FROM REQUIRED ACTION
14.	Core Exit Temperature - Quadrant 1	2[a]	
15.	Core Exit Temperature - Quadrant 2	2[a]	
16.	Core Exit Temperature - Quadrant 3	2[a]	
17.	Core Exit Temperature - Quadrant 4	2[a]	
18.	Auxiliary Feedwater Flow Rate	4	
19.	Refueling Water Storage Tank Level	2	

(a) A channel consists of two core exit thermocouples (CETs).

3.6 CONTAINMENT SYSTEMS

3.6.8 Hydrogen Recombiners

LCO 3.6.8 Two hydrogen recombiners shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One hydrogen recombiner inoperable.	A.1 Restore hydrogen recombiner to OPERABLE status.	30 days
B. Two hydrogen recombiners inoperable.	B.1 Verify by administrative means that the hydrogen control function is maintained. AND B.2 Restore one hydrogen recombiner to OPERABLE status.	1 hour AND Once per 12 hours thereafter 7 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.8.1	Perform a system functional test for each hydrogen recombiner.	18 months
SR 3.6.8.2	Visually examine each hydrogen recombiner enclosure and verify there is no evidence of abnormal conditions.	18 months
SR 3.6.8.3	Perform a resistance to ground test for each heater phase.	18 months

No changes to this page.
Provided for context/continuity.

3.7 PLANT SYSTEMS

3.7.4 Atmospheric Steam Dump Valves (ASDs)

LCO 3.7.4 Four ASD lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required ASD line inoperable for reasons other than excessive ASD seat leakage.	A.1 Restore required ASD line to OPERABLE status.	7 days
B. Two required ASD lines inoperable for reasons other than excessive ASD seat leakage.	B.1 Restore all but one required ASD line to OPERABLE status.	72 hours
C. Three or more required ASD lines inoperable for reasons other than excessive ASD seat leakage.	C.1 Restore all but two required ASD lines to OPERABLE status.	24 hours

(continued)

ACTIONS (continued)

CONDITION		REQUIRED ACTION	COMPLETION TIME
D. With one or more of the required ASD(s) inoperable because of excessive seat leakage.	D.1	Initiate action to close the associated manual isolation valve(s).	Immediately
	AND		
	D.2	Restore ASD(s) to OPERABLE status.	30 days
E. Required Action and associated Completion Time not met.	E.1	Be in MODE 3.	6 hours
	AND		
	E.2	Be in MODE 4.	12 hours

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - Operating

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and

b. Two diesel generators (DGs) capable of supplying the onsite Class 1E power distribution subsystem(s); and

c. Load Shedder and Emergency Load Sequencer (LSELS) for Train A and Train B.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

---------- NOTE ----------
LCO 3.0.4.b is not applicable to DGs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit. AND A.2 ---------- NOTE ---------- In MODES 1, 2, and 3, the turbine driven auxiliary feedwater pump is considered a required redundant feature. ----------	1 hour AND Once per 8 hours thereafter

MODES

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One DG inoperable. (continued)	B.4 Restore DG to OPERABLE status.	---------NOTE--------- A one-time Completion Time of 14 days is allowed to support planned replacement of ESW 'B' train piping prior to April 30, 2009. ---------- 72 hours AND 6 days from discovery of failure to meet LCO
C. Two offsite circuits inoperable.	C.1 ---------- NOTE ---------- In Modes 1, 2, and 3, the turbine driven auxiliary feedwater pump is considered a required redundant feature. ---------- Declare required feature(s) inoperable when its redundant required feature(s) is inoperable. AND	12 hours from discovery of Condition C concurrent with inoperability of redundant required features

MODES

(continued)

5.5 Programs and Manuals

5.5.16 Containment Leakage Rate Testing Program (continued)

2. The visual examination of the steel liner plate inside containment intended to fulfill the requirements of 10 CFR 50, Appendix J, Option B testing, will be performed in accordance with the requirements of and frequency specified by ASME Section XI Code, Subsection IWE, except where relief has been authorized by the NRC.

3. The unit is excepted from post-modification integrated leakage rate testing requirements associated with steam generator replacement during the Refuel 14 outage (fall of 2005).

b. The peak calculated containment internal pressure for the design basis loss of coolant accident, P_a, is 48.1 psig.

c. The maximum allowable containment leakage rate, L_a, at P_a, shall be 0.20% of the containment air weight per day.

d. Leakage rate acceptance criteria are:

1. Containment leakage rate acceptance criterion is $\leq 1.0\ L_a$. During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are $< 0.60\ L_a$ for the Type B and C tests and $\leq 0.75\ L_a$ for Type A tests;

2. Air lock testing acceptance criteria are:

a) Overall air lock leakage rate is $\leq 0.05\ L_a$ when tested at $\geq P_a$;

b) For each door, leakage rate is $\leq 0.005\ L_a$ when pressurized to ≥ 10 psig.

e. The provisions of Technical Specification SR 3.0.2 do not apply to the test frequencies in the Containment Leakage Rate Testing Program.

f. The provisions of Technical Specification SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.

5.0 ADMINISTRATIVE CONTROLS

5.6 Reporting Requirements

The following reports shall be submitted in accordance with 10 CFR 50.4.

5.6.1 Not Used.

5.6.2 Annual Radiological Environmental Operating Report

The Annual Radiological Environmental Operating Report covering the operation of the unit during the previous calendar year shall be submitted by May 1 of each year. The report shall include summaries, interpretations, and analyses of trends of the results of the radiological environmental monitoring program for the reporting period.

The material provided shall be consistent with the objectives outlined in the Offsite Dose Calculation Manual (ODCM), and in 10 CFR 50, Appendix I, Sections IV.B.2, IV.B.3, and IV.C.

The Annual Radiological Environmental Operating Report shall include the results of analyses of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the table and figures in the ODCM, as well as summarized and tabulated results of these analyses and measurements in a format similar to the table in the Radiological Assessment Branch Technical Position, Revision 1, November 1979. In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted in a supplementary report as soon as possible.

5.6.3 Radioactive Effluent Release Report

The Radioactive Effluent Release Report covering the operation of the unit during the previous year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The material provided shall be consistent with the objectives outlined in the ODCM and Process Control Program and in conformance with 10 CFR 50.36a and 10 CFR Part 50, Appendix I, Section IV.B.1.

5.6.4 Not used.

(continued)

5.6 Reporting Requirements

5.6.6 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)

a. RCS pressure and temperature limits for heat up, cooldown, low temperature operation, criticality, hydrostatic testing and PORV lift setting as well as heatup and cooldown rates shall be established and documented in the PTLR for the following:

1. Specification 3.4.3, "RCS Pressure and Temperature (P/T) Limits," and

2. Specification 3.4.12, "Cold Overpressure Mitigation System (COMS)."

b. The analytical methods used to determine the RCS pressure and temperature and COMS PORV limits shall be those previously reviewed and approved by the NRC, specifically those described in WCAP-14040-NP-A, "Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves".

c. The PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for any revision or supplement thereto.

5.6.7 Not used.

5.6.8 PAM Report

When a report is required by Condition B or F of LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

5.6.9 Not used.

(continued)

ATTACHMENT 3

RETYPED TECHNICAL SPECIFICATION PAGES

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more Functions with two or more required channels inoperable.	C.1	Restore all but one channel to OPERABLE status.	7 days
D. Required Action and associated Completion Time of Condition C not met.	D.1	Enter the Condition referenced in Table 3.3.3-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.3-1.	E.1	Be in MODE 3.	6 hours
	AND		
	E.2	Be in MODE 4.	12 hours
F. As required by Required Action D.1 and referenced in Table 3.3.3-1.	F.1	Initiate action in accordance with Specification 5.6.8.	Immediately

SURVEILLANCE REQUIREMENTS

---------- NOTE ----------
SR 3.3.3.1 and SR 3.3.3.2 apply to each PAM instrumentation Function in Table 3.3.3-1.

	SURVEILLANCE	FREQUENCY
SR 3.3.3.1	Perform CHANNEL CHECK.	31 days
SR 3.3.3.2	---------- NOTE ---------- Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	18 months

Table 3.3.3-1 (page 1 of 2)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITION REFERENCED FROM REQUIRED ACTION D.1
1.	Neutron Flux	2	E
2.	Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range)	2	E
3.	RCS Cold Leg Temperature (Wide Range)	2	E
4.	RCS Pressure (Wide Range)	2	E
5.	Reactor Vessel Level Indicating System (RVLIS)	2	F
6.	Containment Normal Sump Water Level	2	E
7.	Containment Pressure (Normal Range)	2	E
8.	Steam Line Pressure	2 per steam generator	E
9.	Containment Radiation Level (High Range)	2	F
10.	Not Used.		
11.	Pressurizer Water Level	2	E
12.	Steam Generator Water Level (Wide Range)	4	E
13.	Steam Generator Water Level (Narrow Range)	2 per steam generator	E

(continued)

Table 3.3.3-1 (page 2 of 2)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITION REFERENCED FROM REQUIRED ACTION D.1
14.	Core Exit Temperature - Quadrant 1	2[(a)]	E
15.	Core Exit Temperature - Quadrant 2	2[(a)]	E
16.	Core Exit Temperature - Quadrant 3	2[(a)]	E
17.	Core Exit Temperature - Quadrant 4	2[(a)]	E
18.	Auxiliary Feedwater Flow Rate	4	E
19.	Refueling Water Storage Tank Level	2	E

(a) A channel consists of two core exit thermocouples (CETs).

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. One or more of the required ASD(s) inoperable because of excessive seat leakage.	D.1	Initiate action to close the associated manual isolation valve(s).	Immediately
	AND		
	D.2	Restore ASD(s) to OPERABLE status.	30 days
E. Required Action and associated Completion Time not met.	E.1	Be in MODE 3.	6 hours
	AND		
	E.2	Be in MODE 4.	12 hours

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources - Operating

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and

b. Two diesel generators (DGs) capable of supplying the onsite Class 1E power distribution subsystem(s); and

c. Load Shedder and Emergency Load Sequencer (LSELS) for Train A and Train B.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

---------- NOTE ----------
LCO 3.0.4.b is not applicable to DGs.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One offsite circuit inoperable.	A.1	Perform SR 3.8.1.1 for OPERABLE offsite circuit.	1 hour AND Once per 8 hours thereafter
	AND		
	A.2	---------- NOTE ---------- In MODES 1, 2, and 3, the turbine driven auxiliary feedwater pump is considered a required redundant feature. ----------	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One DG inoperable. (continued)	B.4 Restore DG to OPERABLE status.	---------NOTE--------- A one-time Completion Time of 14 days is allowed to support planned replacement of ESW 'B' train piping prior to April 30, 2009. ---------- 72 hours AND 6 days from discovery of failure to meet LCO
C. Two offsite circuits inoperable.	C.1 ---------- NOTE ---------- In MODES 1, 2, and 3, the turbine driven auxiliary feedwater pump is considered a required redundant feature. ---------- Declare required feature(s) inoperable when its redundant required feature(s) is inoperable. AND	12 hours from discovery of Condition C concurrent with inoperability of redundant required features

(continued)

5.5 Programs and Manuals

5.5.16 Containment Leakage Rate Testing Program (continued)

2. The visual examination of the steel liner plate inside containment intended to fulfill the requirements of 10 CFR 50, Appendix J, Option B testing, will be performed in accordance with the requirements of and frequency specified by ASME Section XI Code, Subsection IWE, except where relief has been authorized by the NRC.

3. The unit is excepted from post-modification integrated leakage rate testing requirements associated with steam generator replacement during the Refuel 14 outage (fall of 2005).

b. The peak calculated containment internal pressure for the design basis loss of coolant accident, P_a, is 48.1 psig.

c. The maximum allowable containment leakage rate, L_a, at P_a, shall be 0.20% of the containment air weight per day.

d. Leakage rate acceptance criteria are:

1. Containment leakage rate acceptance criterion is $\leq 1.0\ L_a$. During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are $< 0.60\ L_a$ for the Type B and C tests and $\leq 0.75\ L_a$ for Type A tests;

2. Air lock testing acceptance criteria are:

a) Overall air lock leakage rate is $\leq 0.05\ L_a$ when tested at $\geq P_a$;

b) For each door, leakage rate is $\leq 0.005\ L_a$ when pressurized to ≥ 10 psig.

e. The provisions of Technical Specification SR 3.0.2 do not apply to the test frequencies in the Containment Leakage Rate Testing Program. |

f. The provisions of Technical Specification SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.

(continued)

5.0 ADMINISTRATIVE CONTROLS

5.6 Reporting Requirements

The following reports shall be submitted in accordance with 10 CFR 50.4.

5.6.1 Not Used.

5.6.2 Annual Radiological Environmental Operating Report

The Annual Radiological Environmental Operating Report covering the operation of the unit during the previous calendar year shall be submitted by May 1 of each year. The report shall include summaries, interpretations, and analyses of trends of the results of the radiological environmental monitoring program for the reporting period.

The material provided shall be consistent with the objectives outlined in the Offsite Dose Calculation Manual (ODCM), and in 10 CFR 50, Appendix I, Sections IV.B.2, IV.B.3, and IV.C.

The Annual Radiological Environmental Operating Report shall include the results of analyses of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the table and figures in the ODCM, as well as summarized and tabulated results of these analyses and measurements in a format similar to the table in the Radiological Assessment Branch Technical Position, Revision 1, November 1979. In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted in a supplementary report as soon as possible.

5.6.3 Radioactive Effluent Release Report

The Radioactive Effluent Release Report covering the operation of the unit during the previous year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The material provided shall be consistent with the objectives outlined in the ODCM and Process Control Program and in conformance with 10 CFR 50.36a and 10 CFR Part 50, Appendix I, Section IV.B.1.

5.6.4 Not used.

(continued)

5.6 Reporting Requirements

5.6.6 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)

a. RCS pressure and temperature limits for heat up, cooldown, low temperature operation, criticality, hydrostatic testing and PORV lift setting as well as heatup and cooldown rates shall be established and documented in the PTLR for the following:

1. Specification 3.4.3, "RCS Pressure and Temperature (P/T) Limits," and

2. Specification 3.4.12, "Cold Overpressure Mitigation System (COMS)."

b. The analytical methods used to determine the RCS pressure and temperature and COMS PORV limits shall be those previously reviewed and approved by the NRC, specifically those described in WCAP-14040-NP-A, "Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves".

c. The PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for any revision or supplement thereto.

5.6.7 Not used.

5.6.8 PAM Report

When a report is required by Condition B or F of LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status. |

5.6.9 Not used.

(continued)

ATTACHMENT 4

TS BASES CHANGES
(FOR INFORMATION ONLY)

BASES

BACKGROUND (continued)

- Provide information regarding the potential release of radioactive materials to allow for early indication of the need to initiate action necessary to protect the public, and to estimate the magnitude of any impending threat.

These key variables are identified by References 1 through 4. These analyses identify the unit specific Type A and required non-Type A, Category 1 variables to be included in this specification and provide justification for deviating from the NRC proposed list of Category 1 variables.

Type A variables at Callaway include:

RCS Hot Leg Temperature (Wide Range);

RCS Cold Leg Temperature (Wide Range);

RCS Pressure (Wide Range);

Containment Normal Sump Water Level;

Containment Pressure (Normal Range);

Steam Line Pressure;

Containment Radiation Level (High Range);

Pressurizer Water Level;

Steam Generator (SG) Water Level (Narrow Range); and

Refueling Water Storage Tank (RWST) Level.

The required non-Type A, Category 1 variables include:

Neutron Flux;

Reactor Vessel Level Indicating System (RVLIS);

SG Water Level (Wide Range);

Containment Hydrogen Analyzers; and

Core Exit Temperature.

(continued)

BASES

LCO (continued)

7. Containment Pressure (Normal Range)

Containment Pressure (Normal Range) is a Type A, Category 1 variable provided for verification of RCS and containment OPERABILITY.

Containment pressure is used to verify whether closure of main steam isolation valves (MSIVs) is required (at High-2) and whether containment spray and Phase B isolation are required when containment pressure High-3 is reached.

8. Steam Line Pressure

Steam Line Pressure is a Type A, Category 1 variable for event diagnosis and natural circulation. It is a variable for determining if a secondary pipe rupture has occurred. This indication is provided to aid the operator in determining the faulted steam generator and to verify natural circulation.

9. Containment Radiation Level (High Range), GTRIC0059 and GTRIC0060 (or GTRR0060)

Containment Radiation Level is a Type A, Category 1 variable provided to monitor for the potential of significant radiation releases and to provide release assessment for use by operators in determining the need to invoke site emergency plans.

Containment radiation level is used to determine if a high energy line break (HELB) has occurred, and whether the event is inside or outside of containment. The radiation monitor identification "RIC" refers to the RM-23 on panel SP067. Chart recorder GTRR0060 may be used to satisfy this specification in lieu of GTRIC0060.

Not used.

10. Containment Hydrogen Analyzers

Hydrogen analyzers are Category 1 variables provided to detect high hydrogen concentration conditions that represent a potential for containment breach from a hydrogen explosion. This variable is also important in verifying the adequacy of mitigating actions.

(continued)

BASES

ACTIONS (continued)

A.1

Condition A applies when one or more Functions have one required channel that is inoperable. Required Action A.1 requires restoring the inoperable channel to OPERABLE status within 30 days. The 30 day Completion Time is based on operating experience and takes into account the remaining OPERABLE channel(s), the passive nature of the instrument (no critical automatic action is assumed to occur from these instruments), and the low probability of an event requiring PAM instrumentation during this interval. Implementation of an alternate method of monitoring is required prior to expiration of the Completion Time.

B.1

Condition B applies when the Required Action and associated Completion Time for Condition A are not met. This Required Action specifies initiation of actions in Specification 5.6.8, which requires a written report to be submitted to the NRC within the following 14 days. Implementation of an alternate method of monitoring is required in lieu of a shutdown requirement since alternative actions are identified before loss of functional capability, and given the likelihood of unit conditions that would require information provided by this instrumentation.

C.1

Condition C applies when one or more Functions have two or more inoperable required channels (i.e., two or more channels inoperable in the same Function). Required Action C.1 requires restoring all but one channel in the Function(s) to OPERABLE status within 7 days. The Completion Time of 7 days is based on the relatively low probability of an event requiring PAM instrument operation and the availability of alternate means to obtain the required information. Implementation of an alternate method of monitoring is required prior to expiration of the Completion Time. Continuous operation with two or more required channels inoperable in a Function is not acceptable because the alternate indications may not fully meet all performance qualification requirements applied to the PAM instrumentation. Therefore, requiring restoration of all but one inoperable channel of the Function limits the risk that the PAM Function will be in a degraded condition should an accident occur. Condition C is modified by a Note that excludes hydrogen analyzer channels.

(continued)

BASES

ACTIONS
(continued)

D.1

Condition D applies when two hydrogen analyzer channels are inoperable. Required Action D.1 requires restoring one hydrogen analyzer channel to OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable based on the unlikely event that a LOCA (which would cause core damage) would occur during this time.

Condition E applies when the Required Action and associated Completion Time of Condition C or D are not met. Required Action E.1 requires entering the appropriate Condition referenced in Table 3.3.3-1 for the channel immediately. The applicable Condition referenced in the Table is Function dependent. Each time an inoperable channel has not met any Required Action of Condition C or D, and the associated Completion Time has expired, Condition E is entered for that channel and provides for transfer to the appropriate subsequent Condition.

E.1 and E.2

If the Required Action and associated Completion Time of Condition C or D are not met and Table 3.3.3-1 directs entry into Condition E, the unit must be brought to a MODE where the requirements of this LCO do not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and MODE 4 within 12 hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

F.1

Alternate means of monitoring Reactor Vessel Level Indicating System and Containment Radiation Level (High Range) have been developed. These alternate means may be temporarily used if the normal PAM channel cannot be restored to OPERABLE status within the allotted time. If these alternate means are used, the Required Action is not to shut down the unit but rather to follow the directions of Specification 5.6.8, in the Administrative Controls section of the TS. Monitoring the core exit thermocouples, pressurizer level indication (BB-LI-0459A, -0460A, or -0461), and RCS subcooling monitor indication (BB-TI-1390A or B)

(continued)

BASES

ACTIONS (continued)

provide an alternate means for RVLIS. These three parameters provide diverse information to verify there is adequate core cooling. When Containment Radiation Level (High Range) monitors (GTRIC0059 and GTRIC0060 or GTRR0060) are inoperable, the area radiation monitors inside containment are used as an alternate method below 10 R/hr, and portable survey equipment with the capability to detect gamma radiation over the range 1E-03 to 1E 04 R/hr is used above 10 R/hr.

SURVEILLANCE REQUIREMENTS

A Note has been added to the SR Table to clarify that SR 3.3.3.1 and SR 3.3.3.2 apply to each PAM instrumentation Function in Table 3.3.3-1.

SR 3.3.3.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross instrumentation failure has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION. The RM-23 unit display for loop GTR-0059, and either the RM-23 unit display or the GTRR0060 recorder for loop GTR-0060, must be used to perform the CHANNEL CHECK of the Containment Radiation Level (High Range) monitors.

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit. If the channels are within the criteria, it is an indication that the channels are OPERABLE.

As specified in the SR, a CHANNEL CHECK is only required for those channels that are normally energized. The containment hydrogen analyzers are not normally energized.

The Frequency of 31 days is based on operating experience that demonstrates that channel failure is rare. The CHANNEL CHECK

(continued)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.8 Hydrogen Recombiners

BASES

BACKGROUND

The function of the hydrogen recombiners is to eliminate the potential breach of containment due to a hydrogen oxygen reaction.

Per 10 CFR 50.44, "Standards for Combustible Gas Control Systems in Light-Water-Cooled Reactors" (Ref. 1), and GDC 41, "Containment Atmosphere Cleanup" (Ref. 2), hydrogen recombiners are required to reduce the hydrogen concentration in the containment following a loss of coolant accident (LOCA) or main steam line break (MSLB). The recombiners accomplish this by recombining hydrogen and oxygen to form water vapor. The vapor remains in containment, thus eliminating any discharge to the environment. The hydrogen recombiners are manually initiated since flammable limits would not be reached until several days after a Design Basis Accident (DBA).

Two 100% capacity independent hydrogen recombiner systems are provided. Each consists of controls located in the control room, a power supply and a recombiner. Recombination is accomplished by heating a hydrogen air mixture above 1150°F. The resulting water vapor and discharge gases are cooled prior to discharge from the recombiner. A single recombiner is capable of maintaining the hydrogen concentration in containment below the 4.0 volume percent (v/o) flammability limit. Two recombiners are provided to meet the requirement for redundancy and independence. Each recombiner is powered from a separate Engineered Safety Features bus, and is provided with a separate power panel and control panel.

APPLICABLE SAFETY ANALYSES

The hydrogen recombiners provide for the capability of controlling the bulk hydrogen concentration in containment to less than the lower flammable concentration of 4.0 v/o following a DBA. This control would prevent a containment wide hydrogen burn, thus ensuring the pressure and temperature assumed in the analyses are not exceeded. The limiting DBA relative to hydrogen generation is a LOCA.

Hydrogen may accumulate in containment following a LOCA as a result of:

a. A metal steam reaction between the zirconium fuel rod cladding and the reactor coolant;

b. Radiolytic decomposition of water in the Reactor Coolant System (RCS) and the containment sump;

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

c. Hydrogen in the RCS at the time of the LOCA (i.e., hydrogen dissolved in the reactor coolant and hydrogen gas in the pressurizer vapor space); or

d. Corrosion of metals exposed to containment spray and Emergency Core Cooling System solutions.

To evaluate the potential for hydrogen accumulation in containment following a LOCA, the hydrogen generation as a function of time following the initiation of the accident is calculated. Conservative assumptions recommended by Reference 3 are used to maximize the amount of hydrogen calculated.

Based on the conservative assumptions used to calculate the hydrogen concentration versus time after a LOCA, the hydrogen concentration in the primary containment would reach 3.0 v/o about 5 days after the LOCA (Ref. 3). Initiating the hydrogen recombiners when the primary containment hydrogen concentration reaches 3.5 v/o will maintain the hydrogen concentration in the primary containment below flammability limits.

The hydrogen recombiners are designed such that, with the conservatively calculated hydrogen generation rates discussed above, a single recombiner is capable of limiting the peak hydrogen concentration in containment to less than 4.0 v/o (Ref. 4). The Hydrogen Purge System is similarly designed as an adequate backup to the redundant hydrogen recombiners.

The hydrogen recombiners satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two hydrogen recombiners must be OPERABLE. This ensures operation of at least one hydrogen recombiner in the event of a worst case single active failure.

Operation with at least one hydrogen recombiner ensures that the post LOCA hydrogen concentration can be prevented from exceeding the flammability limit.

APPLICABILITY

In MODES 1 and 2, two hydrogen recombiners are required to control the hydrogen concentration within containment below its flammability limit of 4.0 v/o following a LOCA, assuming a worst case single failure.

In MODES 3 and 4, both the hydrogen production rate and the total hydrogen produced after a LOCA would be less than that calculated for

(continued)

BASES

APPLICABILITY (continued)

the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the hydrogen recombiners is low. Therefore, the hydrogen recombiners are not required in MODE 3 or 4.

In MODES 5 and 6, the probability and consequences of a LOCA are low, due to the pressure and temperature limitations in these MODES. Therefore, hydrogen recombiners are not required in these MODES.

ACTIONS

A.1

With one containment hydrogen recombiner inoperable, the inoperable recombiner must be restored to OPERABLE status within 30 days. In this condition, the remaining OPERABLE hydrogen recombiner is adequate to perform the hydrogen control function. However, the overall reliability is reduced because a single failure in the OPERABLE recombiner could result in reduced hydrogen control capability. The 30 day Completion Time is based on the availability of the other hydrogen recombiner, the small probability of a LOCA or SLB occurring (that would generate an amount of hydrogen that exceeds the flammability limit), and the amount of time available after a LOCA or MSLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.

B.1 and B.2

With two hydrogen recombiners inoperable, the ability to perform the hydrogen control function via alternate capabilities must be verified by administrative means within 1 hour. The alternate hydrogen control capabilities are provided by the containment Hydrogen Purge System. The 1 hour Completion Time allows a reasonable period of time to verify that a loss of hydrogen control function does not exist. In addition, the alternate hydrogen control system capability must be verified once per 12 hours thereafter to ensure its continued availability. Both the initial verification and all subsequent verifications may be performed as an administrative check by examining logs or other information to determine the availability of the alternate hydrogen control system. It does not mean to perform the Surveillances needed to demonstrate OPERABILITY of the alternate hydrogen purge control system. If the ability to perform the hydrogen control function is maintained, continued operation is permitted with two hydrogen recombiners inoperable for up to 7 days. Seven days is a reasonable time to allow two hydrogen recombiners to be inoperable because the hydrogen control function is maintained and because of the

(continued)

BASES

ACTIONS

B.1 and B.2 (continued)

low probability of the occurrence of a LOCA that would generate hydrogen in the amounts capable of exceeding the flammability limit.

C.1

If the inoperable hydrogen recombiner(s) cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.8.1

Performance of a system functional test for each hydrogen recombiner ensures the recombiners are operational and can attain and sustain the temperature necessary for hydrogen recombination. In particular, this SR verifies that the minimum heater air temperature increases to Š 1150 °F in ≤ 5 hours.

Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.8.2

This SR ensures there are no physical problems that could affect recombiner operation. Since the recombiners are mechanically passive, they are not subject to mechanical failure. The only credible failure involves loss of power, blockage of the internal flow, missile impact, etc. A visual inspection is sufficient to determine abnormal conditions (i.e., loose wiring or structural connections; deposits of foreign materials, etc.) that could cause such failures. The 18 month Frequency for this SR was developed considering the incidence of hydrogen recombiners failing the SR in the past is low.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.8.3

This SR which is performed following the functional test of SR 3.6.8.1, requires performance of a resistance to ground test for each heater phase to ensure that there are no detectable grounds in any heater phase. This is accomplished by verifying that the resistance to ground for any heater phase is ≥ 10,000 ohms.

The 18 month Frequency for this Surveillance was developed considering the incidence of hydrogen recombiners failing the SR in the past is low.

REFERENCES

1. 10 CFR 50.44.

2. 10 CFR 50, Appendix A, GDC 41.

3. Regulatory Guide 1.7, Revision 2.

4. FSAR Section 6.2.5.

LIST OF COMMITMENTS

The following table identifies those actions committed to by AmerenUE in this document. Any other statements in this document are provided for information purposes and are not considered commitments. Please direct questions regarding these commitments to: Mr. Scott Maglio, Assistant Manager, Regulatory Affairs, (573) 676-8719.

COMMITMENT	Due Date/Event
AmerenUE has verified that a hydrogen monitoring system capable of diagnosing beyond design-basis accidents is installed at the Callaway Plant, and therefore AmerenUE is making a regulatory commitment to maintain that capability. Requirements for the hydrogen monitors (analyzers) will thus be included in Chapter 16 of the Final Safety Analysis Report when the associated TS changes are implemented. The requirements contained therein will be commensurate with the requirements applicable to the monitors under revised 10 CFR 50.44.	When the associated TS changes are implemented after NRC approval of the requested license amendment.