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RS-04-141

10 CFR 50.90

September 15, 2004

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

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Clinton Power Station
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Dresden Nuclear Power Station, Units 2 and 3
Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

LaSalle County Station, Units 1 and 2
Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

Peach Bottom Atomic Power Station, Units 2 and 3
Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Quad Cities Nuclear Power Station, Units 1 and 2
Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Request for Amendment to Technical Specifications to Eliminate Requirements for Hydrogen Recombiners and Hydrogen/Oxygen Monitors Using the Consolidated Line Item Improvement Process

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (EGC) and AmerGen Energy Company, LLC (AmerGen) are requesting an amendment to Appendix A, Technical Specifications (TS) of the Facility Operating Licenses listed above. The proposed amendment will delete the TS requirements related to hydrogen recombiners and hydrogen/oxygen monitors. The proposed

A001

TS changes 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 changes are consistent with Revision 1 of NRC-approved Industry/Technical Specifications 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 (68 FR 55416) on September 25, 2003, as part of the consolidated line item improvement process (CLIIP).

The attached amendment request is subdivided as shown below.

Attachment 1 provides a description of the proposed changes and confirmation of applicability.

Attachments 2A – 2G include the marked-up TS pages for the stations listed above.

Attachments 3A – 3G include the associated typed TS pages with the proposed changes incorporated for the stations listed above.

Attachments 4A – 4G include the marked-up TS Bases pages for the stations listed above. The TS Bases pages are provided for information only, and do not require NRC approval.

Attachments 5A – 5G include the regulatory commitments for the stations listed above.

EGC and AmerGen request approval of the proposed change by March 31, 2005, with the amendment being implemented within 120 days of issuance.

The proposed amendment has been reviewed by the Plant Operations Review Committees at each of the stations and approved by their respective Nuclear Safety Review Boards in accordance with the requirements of the EGC and AmerGen Quality Assurance Programs.

EGC and AmerGen are notifying the State of Illinois and the Commonwealth of Pennsylvania of this application for a change to the TS by sending a copy of this letter and its attachments to the designated officials in accordance with 10 CFR 50.91, "Notice for public comment; State consultation."

Should you have any questions concerning this letter, please contact Ms. Alison M. Mackellar at (630) 657-2817.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 15th day of September 2004.

Keith R. Jury
Director, Licensing and Regulatory Affairs
Exelon Generation Company, LLC
AmerGen Energy Company, LLC

Attachment 1: Evaluation of Proposed Changes

Attachment 2A: Markup of Proposed Technical Specifications Changes for Braidwood
Attachment 2B: Markup of Proposed Technical Specifications Changes for Byron
Attachment 2C: Markup of Proposed Technical Specifications Changes for Clinton
Attachment 2D: Markup of Proposed Technical Specifications Changes for Dresden
Attachment 2E: Markup of Proposed Technical Specifications Changes for LaSalle
Attachment 2F: Markup of Proposed Technical Specifications Changes for Peach Bottom
Attachment 2G: Markup of Proposed Technical Specifications Changes for Quad Cities

Attachment 3A: Typed TS pages with proposed changes incorporated for Braidwood
Attachment 3B: Typed TS pages with proposed changes incorporated for Byron
Attachment 3C: Typed TS pages with proposed changes incorporated for Clinton
Attachment 3D: Typed TS pages with proposed changes incorporated for Dresden
Attachment 3E: Typed TS pages with proposed changes incorporated for LaSalle
Attachment 3F: Typed TS pages with proposed changes incorporated for Peach Bottom
Attachment 3G: Typed TS pages with proposed changes incorporated for Quad Cities

Attachment 4A: Markup of TS Bases pages with changes indicated for Braidwood
Attachment 4B: Markup of TS Bases pages with changes indicated for Byron
Attachment 4C: Markup of TS Bases pages with changes indicated for Clinton
Attachment 4D: Markup of TS Bases pages with changes indicated for Dresden
Attachment 4E: Markup of TS Bases pages with changes indicated for LaSalle
Attachment 4F: Markup of TS Bases pages with changes indicated for Peach Bottom
Attachment 4G: Markup of TS Bases pages with changes indicated for Quad Cities

Attachment 5A: Regulatory Commitments for Braidwood
Attachment 5B: Regulatory Commitments for Byron
Attachment 5C: Regulatory Commitments for Clinton
Attachment 5D: Regulatory Commitments for Dresden
Attachment 5E: Regulatory Commitments for LaSalle
Attachment 5F: Regulatory Commitments for Peach Bottom
Attachment 5G: Regulatory Commitments for Quad Cities

cc: Regional Administrator – NRC Region I
Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Braidwood Station
NRC Senior Resident Inspector – Byron Station
NRC Senior Resident Inspector – Clinton Power Station
NRC Senior Resident Inspector – Dresden Nuclear Power Station
NRC Senior Resident Inspector – LaSalle County Station
NRC Senior Resident Inspector – Peach Bottom Atomic Power Station
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station

bcc: Project Manager, NRR - Braidwood Station
Project Manager, NRR - Byron Station
Project Manager, NRR - Clinton Power Station
Project Manager, NRR - Dresden Nuclear Power Station
Project Manager, NRR - LaSalle County Station
Project Manager, NRR - Peach Bottom Atomic Power Station
Project Manager, NRR - Quad Cities Nuclear Power Station
Illinois Emergency Management Agency - Division of Nuclear Safety
Director, Bureau of Radiation Protection - Pennsylvania Department of Environmental Resources
Manager of Energy Practice - Winston & Strawn
Site Vice President - Braidwood Station
Site Vice President - Byron Station
Site Vice President - Clinton Power Station
Site Vice President - Dresden Nuclear Power Station
Site Vice President - LaSalle County Station
Site Vice President - Peach Bottom Atomic Power Station
Site Vice President - Quad Cities Nuclear Power Station
Regulatory Assurance Manager - Braidwood Station
Regulatory Assurance Manager - Byron Station
Regulatory Assurance Manager - Clinton Power Station
Regulatory Assurance Manager - Dresden Nuclear Power Station
Regulatory Assurance Manager - LaSalle County Station
Regulatory Assurance Manager - Peach Bottom Atomic Power Station
Regulatory Assurance Manager - Quad Cities Nuclear Power Station
Director, Licensing and Regulatory Affairs
Manager, Licensing - Braidwood, Byron and LaSalle County Stations
Manager, Licensing - Clinton, Dresden and Quad Cities Power Stations
Manager, Licensing - Peach Bottom Atomic Power Station
Nuclear Licensing Administrator - Braidwood, Byron, Clinton, Dresden, LaSalle, Peach Bottom and Quad Cities
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ATTACHMENT 1
EVALUATION OF PROPOSED CHANGE

INDEX

1.0 INTRODUCTION

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," Exelon Generation Company, LLC (EGC) and AmerGen Energy Company, LLC (AmerGen) are requesting an amendment to Appendix A, Technical Specifications (TS) for the following operating licenses.

Plant	Facility Operating License Nos.
Braidwood Station, Units 1 and 2	NPF-72 and NPF-77
Byron Station, Units 1 and 2	NPF-37 and NPF-66
Clinton Power Station, Unit 1	NPF-62
Dresden Nuclear Power Station, Units 2 and 3	DPR-19 and DPR-25
LaSalle County Station, Units 1 and 2	NPF-11 and NPF-18
Peach Bottom Atomic Power Station, Units 2 and 3	DPR-44 and DPR-56
Quad Cities Nuclear Power Station, Units 1 and 2	DPR-29 and DPR-30

The proposed amendment deletes TS requirements related to hydrogen recombiners and references to the hydrogen and oxygen monitors. The proposed TS changes 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 deletion of the requirements for the hydrogen recombiner and references to hydrogen/oxygen monitors resulted in numbering and formatting changes to other TS, which were otherwise unaffected by this proposed amendment.

The proposed change is consistent with NRC-approved Industry/Technical Specifications Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-447, Revision 1, "Elimination of Hydrogen Recombiners and Change to Hydrogen and Oxygen Monitors." The availability of this TS improvement through the consolidated line item improvement process (CLIIP) was announced in the Federal Register on September 25, 2003.

2.0 DESCRIPTION OF PROPOSED AMENDMENT

Consistent with the NRC-approved Revision 1 of TSTF-447, the proposed TS changes include the following:

Braidwood Station, Units 1 and 2

TS Section 3.3.3.F	Hydrogen Monitor	Deleted
TS Table 3.3.3-1 "Post Accident Monitoring Instrumentation"	Item 15, Hydrogen Monitors	Deleted
TS Section 3.6.8	Hydrogen Recombiners	Deleted

Byron Station, Units 1 and 2

TS Section 3.3.3.F	Hydrogen Monitor	Deleted
TS Table 3.3.3-1 "Post Accident Monitoring Instrumentation"	Item 15, Hydrogen Monitors	Deleted
TS Section 3.6.8	Hydrogen Recombiners	Deleted

Clinton Power Station

TS Table 3.3.3.1-1 "Post Accident Monitoring Instrumentation"	Item 8, Drywell and Containment H_2 & O_2 Analyzer	Deleted
TS Section 3.6.3.1	Hydrogen Recombiners	Deleted

Dresden Nuclear Power Station, Units 2 and 3

TS Table 3.3.3.1-1 "Post Accident Monitoring Instrumentation"	Item 7, Drywell H_2 Concentration Analyzer and Monitor	Deleted
TS Table 3.3.3.1-1 "Post Accident Monitoring Instrumentation"	Item 8, Drywell O_2 Concentration Analyzer and Monitor	Deleted

LaSalle County Station, Units 1 and 2

TS Table 3.3.3.1-1 "Post Accident Monitoring Instrumentation"	Item 7, Drywell O_2 Concentration Analyzer and Monitor	Deleted
TS Table 3.3.3.1-1 "Post Accident Monitoring Instrumentation"	Item 8, Drywell H_2 Concentration Analyzer and Monitor	Deleted
TS Section 3.6.3.1	Hydrogen Recombiners	Deleted
TS Section 3.8.1	AC Sources - Operating	Deleted requirement for hydrogen recombiners
TS Section 3.8.7	Distribution Systems-Operating	Deleted requirement for hydrogen recombiners
TS Section 5.5	Primary Coolant Sources Outside Containment	Modified requirement for controls to minimize leakage from hydrogen recombiner cooling penetrations when a future modification will eliminate penetrations as a potential leakage path.

Peach Bottom Atomic Power Station, Units 2 and 3

TS Table 3.3.3.1-1 "Post Accident Monitoring Instrumentation"	Item 9, Drywell H_2 & O_2 Analyzer	Deleted
TS Table 3.3.3.1-1 "Post Accident Monitoring Instrumentation"	Item 10, Suppression Chamber H_2 & O_2 Analyzer	Deleted

Quad Cities Nuclear Power Station, Units 1 and 2

Table 3.3.3.1-1 "Post Accident Monitoring Instrumentation"	Item 7, Drywell H_2 Concentration Analyzer and Monitor	Deleted
Table 3.3.3.1-1 "Post Accident Monitoring Instrumentation"	Item 8, Drywell O_2 Concentration Analyzer and Monitor	Deleted

TS changes included in this application are Limiting Condition for Operation (LCO), surveillance requirements, renumbering and formatting changes that resulted directly from the deletion of the above requirements related to hydrogen recombiners, hydrogen and oxygen monitors.

LaSalle County Station, Units 1 and 2 TS currently include an administrative requirement for a program, "Primary Coolant Sources Outside Containment," to minimize leakage from those portions of systems outside containment that could contain highly radioactive fluids during a transient or accident. At LaSalle County Station, the hydrogen recombiner cooling system falls under the scope of this requirement. Since a modification, if executed, may not be completed during the implementation period of this amendment, the TS for the Primary Coolant Sources Outside Containment program is being revised to add a parenthetical phrase following the associated listing for hydrogen recombiners. The phrase will state that the TS requirements would continue to apply until such time as a modification eliminates the hydrogen recombiner penetrations as a potential leakage path. This change provides clarification of the intent that the programmatic requirements of the Primary Coolant Sources Outside Containment program will continue to apply until the hydrogen recombiners are eliminated as a potential leakage path.

As described in NRC-approved Revision 1 of TSTF-447, the changes to TS requirements and associated renumbering of other TS results in changes to various TS Bases sections.
The TS bases pages are provided for information only, and do not require NRC approval.

3.0 BACKGROUND

The background for this application is adequately addressed by the NRC Notice of Availability published on September 25, 2003 (68 FR 55416), TSTF-447, the documentation associated with the 10 CFR 50.44 rulemaking, and other related documents.

4.0 REGULATORY REQUIREMENTS AND GUIDANCE

The applicable regulatory requirements and guidance associated with this application are adequately addressed by the NRC Notice of Availability published on September 25, 2003 (68 FR 55416), TSTF-447, the documentation associated with the 10 CFR 50.44 rulemaking, and other related documents.

5.0 TECHNICAL ANALYSIS

EGC and AmerGen have reviewed the safety evaluation (SE) published on September 25, 2003, (68 FR 55416), as part of the CLIIP Notice of Availability. This verification included a review of the NRC's SE, as well as the supporting information provided to support TSTF-447. EGC and AmerGen have concluded that the justifications presented in the TSTF proposal and the safety evaluation prepared by the NRC are applicable to the Braidwood, Byron, Clinton, Dresden, LaSalle, Peach Bottom and Quad Cities Stations and justify this amendment for the incorporation of the changes to the applicable TS.

6.0 REGULATORY ANALYSIS

A description of these proposed changes and the relationship to regulatory requirements and guidance was provided in the NRC Notice of Availability published on September 25, 2003 (68 FR 55416), TSTF-447, the documentation associated with the 10 CFR 50.44 rulemaking, and other related documents.

6.1 Verification and Commitments

As discussed in the model SE published in the Federal Register on September 25, 2003, (68 FR 55416) for this TS improvement, EGC and AmerGen are making the following verifications and regulatory commitments.

EGC and AmerGen are not proposing any variations or deviations from the requirements of the STS changes described in TSTF-447, Revision 1 or the NRC's model safety evaluation dated September 25, 2003. In accordance with the NRC's safety evaluation, the hydrogen and oxygen monitoring capability will be maintained but no longer considered safety related as defined in 10 CFR 50.2, "Definitions."

1. EGC and AmerGen have verified that a hydrogen monitoring system capable of diagnosing beyond design basis accidents is currently installed at Braidwood Station Units 1 and 2, Byron Station Units 1 and 2, Clinton Power Station Unit 1, Dresden Nuclear Power Station Units 2 and 3, LaSalle County Station Units 1 and 2, Peach Bottom Atomic Power Station Units 2 and 3, and Quad Cities Nuclear Power Station Units 1 and 2 and are making a regulatory commitment to maintain such a monitoring capability. The hydrogen monitors will be included in a licensee controlled document or program identified in Attachments 5A – 5G. This regulatory commitment will be implemented by the implementation date.

2. Braidwood Station Units 1 and 2, Byron Station Units 1 and 2, and Clinton Power Station Unit 1 do not have inerted containments.

3. LaSalle County Station Units 1 and 2, Dresden Nuclear Power Station Units 2 and 3, Quad Cities Nuclear Power Station Units 1 and 2 and Peach Bottom Atomic Power Station Units 2 and 3 all have inerted containments. EGC has verified that an oxygen monitoring system capable of verifying the status of the inerted containment is installed at each of these plants and is making a regulatory commitment to maintain that capability. The oxygen monitors will be included in a licensee controlled document or program identified in Attachments 5A – 5G. This regulatory commitment will be implemented by the implementation date.

7.0 NO SIGNIFICANT HAZARDS CONSIDERATION

Exelon Generation Company, LLC (EGC) and AmerGen Energy Company, LLC (AmerGen) have reviewed the proposed No Significant Hazards Consideration Determination (NSHCD) published in the Federal Register as part of the CLIIP. EGC and AmerGen have concluded that the proposed NSHCD presented in the Federal Register notice (68 FR 55416) is applicable to Braidwood, Byron, Clinton, Dresden, LaSalle, Peach Bottom and Quad Cities Stations and is hereby incorporated by reference to satisfy the requirements of 10 CFR 50.91," paragraph (a), "Notice for public comment."

8.0 ENVIRONMENTAL EVALUATION

EGC and AmerGen have reviewed the environmental evaluation included in the model SE dated September 25, 2003 (68 FR 55416), as part of the CLIIP. EGC and AmerGen have concluded that the NRC's findings presented in that evaluation are applicable to Braidwood, Byron, Clinton, Dresden, LaSalle, Peach Bottom and Quad Cities Stations and the evaluation is hereby incorporated by reference for this application.

9.0 PRECEDENT

This application is being made in accordance with the CLIIP. EGC and AmerGen are not proposing variations or deviations from the TS changes described in TSTF-447, Revision 1 or the NRC's model SE published on September 25, 2003 (68 FR 55416).

10.0 REFERENCES

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

2. Federal Register, Volume 68, Number 186, "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," dated September 25, 2003

ATTACHMENT 2-A

Markup of Proposed Technical Specifications Page Changes

BRAIDWOOD STATION

REVISED TS PAGES

3.3.3-2
3.3.3-3
3.3.3-4
5.6-5

DELETED TS PAGES

3.6.8 (ALL)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.3-1.	D.1	Restore one required channel to OPERABLE status.	7 days
E. ---------~~NOTE~~--------- ~~Not applicable to Function 15.~~ --------------------- One or more Functions with two or more required channels inoperable.	E.1	Restore all but one required channel to OPERABLE status.	7 days
~~F. Two hydrogen monitor channels inoperable.~~	~~F.1~~	~~Restore one hydrogen monitor channel to OPERABLE status.~~	~~72 hours~~
~~G~~F. ---------NOTE--------- Not applicable to Functions 11, 12, and 14. --------------------- Required Action and associated Completion Time of Condition D~~,~~ ~~E, or F not met.~~ or E not met.	~~G~~F.1 AND ~~G~~F.2	Be in MODE 3. ---------NOTE-------- ~~Not applicable to Function 15.~~ --------------------- Be in MODE 4.	6 hours 12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~H.~~ G. ---------NOTE--------- Only applicable to Functions 11, 12, and 14. --------------------- Required Action and associated Completion Time of Condition D or E not met.	~~H.1~~ G.1 Initiate action in accordance with Specification 5.6.7.	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------------------- Radiation detectors for Function 11, Containment Area Radiation, are excluded. --- Perform CHANNEL CALIBRATION.	18 months

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

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS
1.	Reactor Coolant System (RCS) Pressure (Wide Range)	1,2,3	2	B
2.	RCS Hot Leg Temperature (Wide Range)	1,2,3	2	B
3.	RCS Cold Leg Temperature (Wide Range)	1,2,3	2	B
4.	Steam Generator (SG) Water Level (Wide Range)(per SG)	1,2,3	1	D
5.	SG Water Level (Narrow Range)(per SG)	1,2,3	1	D
6.	Pressurizer Water Level (Narrow Range)	1,2,3	2	B
7.	Containment Pressure (Wide Range)	1,2,3	2	B
8.	Steam Line Pressure (per SG)	1,2,3	2	B
9.	Refueling Water Storage Tank Water Level	1,2,3	2	B
10.	Containment Floor Water Level (Wide Range)	1,2,3	2	B
11.	Containment Area Radiation (High Range)	1,2,3	1	D
12.	Main Steam Line Radiation (per steam line)	1,2,3	1	D
13.	Core Exit Temperature (per core quadrant)	1,2,3	4	B
14.	Reactor Vessel Water Level	1,2,3	2	B
~~15.~~	~~Hydrogen Monitors~~	~~1,2~~	~~2~~	~~B~~

3.6 CONTAINMENT SYSTEMS

3.6.8 ~~Hydrogen Recombiners~~ (Deleted)

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	--------NOTE-------- LCO 3.0.4 is not applicable. --------------------- 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.	1 hour AND Once per 12 hours thereafter
	AND		
	B.2	Restore one hydrogen recombiner to OPERABLE status.	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

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, and hydrostatic testing as well as heatup and cooldown rates, and Power Operated Relief Valve (PORV) lift settings shall be established and documented in the PTLR for the following:

LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," and LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System";

b. The analytical methods used to determine the RCS pressure and temperature limits shall be those previously reviewed and approved by the NRC, specifically those described in NRC letter dated January 21, 1998, "Byron Station Units 1 and 2, and Braidwood Station, Units 1 and 2, Acceptance for Referencing of Pressure Temperature Limits Report"; and

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 Post Accident Monitoring Report

When a report is required by Condition C or ~~H~~ G 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.

ATTACHMENT 2-B

Markup of Proposed Technical Specifications Page Changes

BYRON STATION

REVISED TS PAGES

3.3.3-2
3.3.3-3
3.3.3-4
5.6-5

DELETED TS PAGES

3.6.8 (ALL)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.3-1.	D.1	Restore one required channel to OPERABLE status.	7 days
E. ---------NOTE--------- ~~Not applicable to Function 15.~~ --------------------- One or more Functions with two or more required channels inoperable.	E.1	Restore all but one required channel to OPERABLE status.	7 days
~~F. Two hydrogen monitor channels inoperable.~~	~~F.1~~	~~Restore one hydrogen monitor channel to OPERABLE status.~~	~~72 hours~~
~~G.~~ F. ---------NOTE--------- Not applicable to Functions 11, 12, and 14. --------------------- Required Action and associated Completion Time of Condition D, or E, ~~or F~~ not met.	~~G.1~~ F.1 AND ~~G.2~~ F.2	Be in MODE 3. ---------~~NOTE~~--------- ~~Not applicable to Function 15.~~ --------------------- Be in MODE 4.	6 hours 12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. ~~H~~. ---------NOTE--------- Only applicable to Functions 11, 12, and 14. --------------------- Required Action and associated Completion Time of Condition D or E not met.	G ~~H~~.1 Initiate action in accordance with Specification 5.6.7.	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------------------ Radiation detectors for Function 11, Containment Area Radiation, are excluded. -- Perform CHANNEL CALIBRATION.	18 months

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

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS
1.	Reactor Coolant System (RCS) Pressure (Wide Range)	1,2,3	2	B
2.	RCS Hot Leg Temperature (Wide Range)	1,2,3	2	B
3.	RCS Cold Leg Temperature (Wide Range)	1,2,3	2	B
4.	Steam Generator (SG) Water Level (Wide Range)(per SG)	1,2,3	1	D
5.	SG Water Level (Narrow Range)(per SG)	1,2,3	1	D
6.	Pressurizer Water Level (Narrow Range)	1,2,3	2	B
7.	Containment Pressure (Wide Range)	1,2,3	2	B
8.	Steam Line Pressure (per SG)	1,2,3	2	B
9.	Refueling Water Storage Tank Water Level	1,2,3	2	B
10.	Containment Floor Water Level (Wide Range)	1,2,3	2	B
11.	Containment Area Radiation (High Range)	1,2,3	1	D
12.	Main Steam Line Radiation (per steam line)	1,2,3	1	D
13.	Core Exit Temperature (per core quadrant)	1,2,3	4	B
14.	Reactor Vessel Water Level	1,2,3	2	B
~~15.~~	~~Hydrogen Monitors~~	~~1,2~~	~~2~~	~~B~~

3.6 CONTAINMENT SYSTEMS

3.6.8 ~~Hydrogen Recombiners~~ (Deleted)

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 --------NOTE-------- LCO 3.0.4 is not applicable. --------------------- 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

5.6 Reporting Requirements

5.6.6 <u>Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)</u>

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

LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," and LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System";

b. The analytical methods used to determine the RCS pressure and temperature limits shall be those previously reviewed and approved by the NRC, specifically those described in NRC letter dated January 21, 1998, "Byron Station Units 1 and 2, and Braidwood Station, Units 1 and 2, Acceptance for Referencing of Pressure Temperature Limits Report"; and

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 <u>Post Accident Monitoring Report</u>

When a report is required by Condition C or ~~H~~ G 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.

ATTACHMENT 2-C

Markup of Proposed Technical Specifications Page Changes

CLINTON POWER STATION

REVISED TS PAGES

3.3-21
3.3-22

DELETED TS PAGES

3.6-36
3.6-37

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	-----------------NOTE----------------- Applicable for each Function in Table 3.3.3.1-1. -- Perform CHANNEL CHECK.	31 days
SR 3.3.3.1.2 Deleted	~~-----------------NOTE----------------- Only applicable for Function 8 in Table 3.3.3.1-1. -- Perform CHANNEL CALIBRATION.~~	~~92 days~~
SR 3.3.3.1.3	-----------------NOTE----------------- Applicable for each Function in Table 3.3.3.1-1 except Function 8. -- Perform CHANNEL CALIBRATION.	18 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1. Reactor Steam Dome Pressure	2	E
2. Reactor Vessel Water Level	2	E
3. Suppression Pool Water Level		
a. High Range	2	E
b. Low Range	2	E
4. Drywell Pressure	2	E
5. Primary Containment Area Radiation	2	F
6. Drywell Area Radiation	2	F
7. Penetration Flow Path, Automatic PCIV Position	2 per penetration flow path [(a)] [(b)]	E
8. Deleted ~~Drywell and Containment H_2 & O_2 Analyzer~~	~~2~~	~~E~~
9. Primary Containment Pressure		
a. High Range	2	E
b. Low Range	2	E
10. Suppression Pool Water Bulk Average Temperature	2[(c)]	E

(a) Not required for isolation valves whose associated penetration flow path is isolated.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) Monitoring each quadrant.

3.6 CONTAINMENT SYSTEMS

3.6.3.1 Deleted ~~Primary Containment Hydrogen Recombiners~~

LCO 3.6.3.1 Two primary containment hydrogen recombiners shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One primary containment hydrogen recombiner inoperable.	A.1	--------NOTE-------- LCO 3.0.4 is not applicable. -------------------- Restore primary containment hydrogen recombiner to OPERABLE status.	30 days
B. Two primary containment hydrogen recombiners inoperable.	B.1	Verify by administrative means that the hydrogen control function is maintained.	1 hour
	<u>AND</u>		
	B.2	Restore one primary containment hydrogen recombiner to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.3.1.1	Perform a system functional test for each primary containment hydrogen recombiner.	18 months
SR 3.6.3.1.2	Visually examine each primary containment hydrogen recombiner enclosure and verify there is no evidence of abnormal conditions.	18 months
SR 3.6.3.1.3	Perform a resistance to ground test for each heater phase.	18 months

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ATTACHMENT 2-D

Markup of Proposed Technical Specifications Page Changes

DRESDEN NUCLEAR POWER STATION

<u>REVISED TS PAGES</u>

3.3.3.1-3
3.3.3.1-4

SURVEILLANCE REQUIREMENTS

------------------------------------NOTES------------------------------------

1. These SRs apply to each Function in Table 3.3.3.1-1, except where identified in the SR.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the other required channel in the associated Function is OPERABLE.

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK.	31 days
SR 3.3.3.1.2	Perform CHANNEL CALIBRATION for Function~~s~~ 4.b, ~~7, and 8.~~	92 days
SR 3.3.3.1.3	------------------NOTE------------------ For Function 2, not required for the transmitters of the channels. -- Perform CHANNEL CALIBRATION for Functions 1 and 2.	184 days
SR 3.3.3.1.4	Perform CHANNEL CALIBRATION for Functions 3 and 9.	12 months
SR 3.3.3.1.5	Perform CHANNEL CALIBRATION for Functions 2, 4.a, 5, and 6.	24 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1. Reactor Vessel Pressure	2	E
2. Reactor Vessel Water Level		
a. Fuel Zone (Wide Range)	2	E
b. Medium Range	2	E
3. Torus Water Level	2	E
4. Drywell Pressure		
a. Wide Range	2	E
b. Narrow Range	2	E
5. Drywell Radiation Monitors	2	F
6. Penetration Flow Path PCIV Position	2 per penetration flow path(a)(b)	E
7. (Deleted) ~~Drywell H_2 Concentration Analyzer and Monitor~~	~~2~~	~~E~~
8. (Deleted) ~~Drywell O_2 Concentration Analyzer and Monitor~~	~~2~~	~~E~~
9. Torus Water Temperature	2	E

(a) Not required for isolation valves whose associated penetration flow path is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

ATTACHMENT 2-E

Markup of Proposed Technical Specifications Page Changes

LASALLE COUNTY STATION

REVISED TS PAGES

3.3.3.1-3
3.3.3.1-4
3.8.1-1
3.8.7-1
5.5-2

DELETED TS PAGES

3.6.3.1 (ALL)

SURVEILLANCE REQUIREMENTS

----------------------------------NOTES----------------------------------

1. These SRs apply to each Function in Table 3.3.3.1-1, ~~except where identified in the SR~~.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the other required channel in the associated Function is OPERABLE.

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK.	31 days
SR 3.3.3.1.2	~~Perform CHANNEL CALIBRATION for Functions 7 and 8~~. (Deleted)	~~92 days~~
SR 3.3.3.1.3	Perform CHANNEL CALIBRATION ~~for Functions other than Functions 7 and 8.~~	24 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1. Reactor Steam Dome Pressure	2	E
2. Reactor Vessel Water Level		
a. Fuel Zone	2	E
b. Wide Range	2	E
3. Suppression Pool Water Level	2	E
4. Drywell Pressure		
a. Narrow Range	2	E
b. Wide Range	2	E
5. Primary Containment Gross Gamma Radiation	2	F
6. Penetration Flow Path PCIV Position	2 per penetration flow path[a][b]	E
7. ~~Drywell O_2 Concentration Analyzer~~	~~2~~	~~E~~ (Deleted)
8. ~~Drywell H_2 Concentration Analyzer~~	~~2~~	~~E~~ (Deleted)
9. Suppression Pool Water Temperature	2	E

(a) Not required for isolation valves whose associated penetration flow path is isolated by at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

3.6 CONTAINMENT SYSTEMS

3.6.3.1 ~~Primary Containment Hydrogen Recombiners~~ (Deleted)

LCO 3.6.3.1 Two primary containment hydrogen recombiners shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One primary containment hydrogen recombiner inoperable.	A.1	--------NOTE-------- LCO 3.0.4 is not applicable. -------------------- Restore primary containment hydrogen recombiner to OPERABLE status.	30 days
B. Two primary containment hydrogen recombiners inoperable.	B.1	Verify by administrative means that the hydrogen control function is maintained.	1 hour <u>AND</u> Once per 12 hours thereafter
	<u>AND</u>		
	B.2	Restore one primary containment hydrogen recombiner to OPERABLE status.	7 days

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1.1	Perform a system functional test for each primary containment hydrogen recombiner.	24 months
SR 3.6.3.1.2	Perform a resistance to ground test for each heater phase.	24 months

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources—Operating

LCO 3.8.1 The following AC electrical power sources shall be OPERABLE:

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

b. Three diesel generators (DGs); and

c. The opposite unit's Division 2 DG capable of supporting the associated equipment required to be OPERABLE by ~~LCO 3.6.3.1, "Primary Containment Hydrogen Recombiners,"~~ LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Area Filtration (CRAF) System," and LCO 3.7.5, "Control Room Area Ventilation Air Conditioning (AC) System."

APPLICABILITY: MODES 1, 2, and 3.

---------------------------NOTES---------------------------

1. Division 3 AC electrical power sources are not required to be OPERABLE when High Pressure Core Spray (HPCS) System is inoperable.

2. The opposite unit's Division 2 DG in LCO 3.8.1.c is not required to be OPERABLE when the associated required equipment is inoperable.

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Distribution Systems—Operating

LCO 3.8.7 The following electrical power distribution subsystems shall be OPERABLE:

a. Division 1 and Division 2 AC and 125 V DC distribution subsystems;

b. Division 3 AC and 125 V DC distribution subsystems;

c. Division 1 250 V DC distribution subsystem; and

d. The portions of the opposite unit's Division 2 AC and 125 V DC electrical power distribution subsystems capable of supporting the equipment required to be OPERABLE by ~~LCO 3.6.3.1, "Primary Containment Hydrogen Recombiners,"~~ LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Area Filtration (CRAF) System," LCO 3.7.5, "Control Room Area Ventilation Air Conditioning (AC) System," and LCO 3.8.1, "AC Sources-Operating."

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both Division 1 and 2 AC electrical power distribution subsystems inoperable.	A.1 Restore Division 1 and 2 AC electrical power distribution subsystems to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO 3.8.7.a

(continued)

5.5 Programs and Manuals

5.5.1 Offsite Dose Calculation Manual (ODCM) (continued)

Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (i.e., month and year) the change was implemented.

5.5.2 Primary Coolant Sources Outside Containment

This program provides controls to minimize leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to levels as low as practicable. The systems include the Low Pressure Core Spray, High Pressure Core Spray, Residual Heat Removal/Low Pressure Coolant Injection, Reactor Core Isolation Cooling, ① ~~hydrogen recombiner, process sampling (until such time as a modification eliminates the PASS penetration as a potential leakage path), containment monitoring and Standby Gas Treatment.~~ The program shall include the following:

a. Preventive maintenance and periodic visual inspection requirements; and

b. Integrated leak test requirements for each system at 24 month intervals.

The provisions of SR 3.0.2 are applicable to the 24 month Frequency for performing integrated system leak test activities.

5.5.3 Deleted.

(continued)

INSERT ①

① containment monitoring, Standby Gas Treatment, hydrogen recombiner and process sampling (until such time as a modification eliminates the hydrogen recombiner and PASS penetrations as potential leakage paths).

ATTACHMENT 2-F

Markup of Proposed Technical Specifications Page Changes

PEACH BOTTOM ATOMIC POWER STATION UNIT 2

REVISED TS PAGES

3.3-25
3.3-26

PEACH BOTTOM ATOMIC POWER STATION UNIT 3

REVISED TS PAGES

3.3-25
3.3-26

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition C not met.	D.1 Enter the Condition referenced in Table 3.3.3.1-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.3.1-1.	E.1 Be in MODE 3.	12 hours
F. As required by Required Action D.1 and referenced in Table 3.3.3.1-1.	F.1 Initiate action in accordance with Specification 5.6.6.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK for each required PAM instrumentation channel.	31 days
SR 3.3.3.1.2 DELETED	~~Perform CHANNEL CALIBRATION of the Drywell and Suppression Chamber H_2 & O_2 Analyzers.~~	~~92 days~~
SR 3.3.3.1.3	Perform CHANNEL CALIBRATION for each required PAM instrumentation channel ~~except for the Drywell and Suppression Chamber H_2 & O_2 Analyzers~~.	24 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1. Reactor Pressure	2	E
2. Reactor Vessel Water Level (Wide Range)	2	E
3. Reactor Vessel Water Level (Fuel Zone)	2	E
4. Suppression Chamber Water Level (Wide Range)	2	E
5. Drywell Pressure (Wide Range)	2	E
6. Drywell Pressure (Subatmospheric Range)	2	E
7. Drywell High Range Radiation	2	F
8. PCIV Position	2 per penetration flow path (a)(b)	E
9. ~~Drywell H_2 & O_2 Analyzer~~ DELETED	~~2~~	~~E~~
10. ~~Suppression Chamber H_2 & O_2 Analyzer~~	~~2~~	~~E~~
11. Suppression Chamber Water Temperature	2(c)	E

(a) Not required for isolation valves whose associated penetration flow path is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) Each channel requires 10 resistance temperature detectors (RTDs) to be OPERABLE with no two adjacent RTDs inoperable.

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition C not met.	D.1	Enter the Condition referenced in Table 3.3.3.1-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.3.1-1.	E.1	Be in MODE 3.	12 hours
F. As required by Required Action D.1 and referenced in Table 3.3.3.1-1.	F.1	Initiate action in accordance with Specification 5.6.6.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK for each required PAM instrumentation channel.	31 days
SR 3.3.3.1.2	DELETED ~~Perform CHANNEL CALIBRATION of the Drywell and Suppression Chamber H_2 & O_2 Analyzers.~~	~~92 days~~
SR 3.3.3.1.3	Perform CHANNEL CALIBRATION for each required PAM instrumentation channel ~~except for the Drywell and Suppression Chamber H_2 & O_2 Analyzers~~.	24 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1. Reactor Pressure	2	E
2. Reactor Vessel Water Level (Wide Range)	2	E
3. Reactor Vessel Water Level (Fuel Zone)	2	E
4. Suppression Chamber Water Level (Wide Range)	2	E
5. Drywell Pressure (Wide Range)	2	E
6. Drywell Pressure (Subatmospheric Range)	2	E
7. Drywell High Range Radiation	2	F
8. PCIV Position	2 per penetration flow path (a)(b)	E
9. ~~Drywell H_2 & O_2 Analyzer~~ DELETED	~~2~~	~~E~~
10. ~~Suppression Chamber H_2 & O_2 Analyzer~~ DELETED	~~2~~	~~E~~
11. Suppression Chamber Water Temperature	2(c)	E

(a) Not required for isolation valves whose associated penetration flow path is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) Each channel requires 10 resistance temperature detectors (RTDs) to be OPERABLE with no two adjacent RTDs inoperable.

ATTACHMENT 2-G

Markup of Proposed Technical Specifications Page Changes

QUAD CITIES NUCLEAR POWER STATION

REVISED TS PAGES

3.3.3.1-3
3.3.3.1-4

SURVEILLANCE REQUIREMENTS

------------------------------------ NOTE~~S~~ ------------------------------------

~~1. These SRs apply to each Function in Table 3.3.3.1-1, except where identified in the SR.~~

~~2.~~ When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the other required channel in the associated Function is OPERABLE.

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK.	31 days
~~SR 3.3.3.1.2~~	~~Perform CHANNEL CALIBRATION for Functions 7 and 8.~~	~~92 days~~
SR 3.3.3.1.~~3~~2	Perform CHANNEL CALIBRATION. ~~for Functions other than Functions 7 and 8.~~	24 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1. Reactor Vessel Pressure	2	E
2. Reactor Vessel Water Level		
a. Wide Range	2	E
b. Narrow Range	2	E
3. Torus Water Level	2	E
4. Drywell Pressure		
a. Wide Range	2	E
b. Narrow Range	2	E
5. Drywell Radiation Monitors	2	F
6. Penetration Flow Path PCIV Position	2 per penetration flow path[(a)(b)]	E
~~7. Drywell H_2 Concentration Analyzer and Monitor~~	~~2~~	~~E~~
~~8. Drywell O_2 Concentration Analyzer and Monitor~~	~~2~~	~~E~~
7. ~~8.~~ Torus Water Temperature	2	E

(a) Not required for isolation valves whose associated penetration flow path is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

ATTACHMENT 3-A

Typed Pages

for

Technical Specifications Changes

BRAIDWOOD STATION

<u>REVISED TS PAGES</u>

3.3.3-2
3.3.3-3
3.3.3-4
5.6-5

<u>DELETED TS PAGES</u>

3.6.8 (ALL)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.3-1.	D.1	Restore one required channel to OPERABLE status.	7 days
E. One or more Functions with two or more required channels inoperable.	E.1	Restore all but one required channel to OPERABLE status.	7 days
F. ---------NOTE--------- Not applicable to Functions 11, 12, and 14. --------------------- Required Action and associated Completion Time of Condition D or E not met.	F.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	F.2	Be in MODE 4.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. ---------NOTE--------- Only applicable to Functions 11, 12, and 14. --------------------- Required Action and associated Completion Time of Condition D or E not met.	G.1 Initiate action in accordance with Specification 5.6.7.	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------------------- Radiation detectors for Function 11, Containment Area Radiation, are excluded. --	
	Perform CHANNEL CALIBRATION.	18 months

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

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS
1.	Reactor Coolant System (RCS) Pressure (Wide Range)	1,2,3	2	B
2.	RCS Hot Leg Temperature (Wide Range)	1,2,3	2	B
3.	RCS Cold Leg Temperature (Wide Range)	1,2,3	2	B
4.	Steam Generator (SG) Water Level (Wide Range)(per SG)	1,2,3	1	D
5.	SG Water Level (Narrow Range)(per SG)	1,2,3	1	D
6.	Pressurizer Water Level (Narrow Range)	1,2,3	2	B
7.	Containment Pressure (Wide Range)	1,2,3	2	B
8.	Steam Line Pressure (per SG)	1,2,3	2	B
9.	Refueling Water Storage Tank Water Level	1,2,3	2	B
10.	Containment Floor Water Level (Wide Range)	1,2,3	2	B
11.	Containment Area Radiation (High Range)	1,2,3	1	D
12.	Main Steam Line Radiation (per steam line)	1,2,3	1	D
13.	Core Exit Temperature (per core quadrant)	1,2,3	4	B
14.	Reactor Vessel Water Level	1,2,3	2	B

3.6 CONTAINMENT SYSTEMS

3.6.8 (Deleted)

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, and hydrostatic testing as well as heatup and cooldown rates, and Power Operated Relief Valve (PORV) lift settings shall be established and documented in the PTLR for the following:

   LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," and LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System";

b. The analytical methods used to determine the RCS pressure and temperature limits shall be those previously reviewed and approved by the NRC, specifically those described in NRC letter dated January 21, 1998, "Byron Station Units 1 and 2, and Braidwood Station, Units 1 and 2, Acceptance for Referencing of Pressure Temperature Limits Report"; and

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 Post Accident Monitoring Report

When a report is required by Condition C or G 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.

ATTACHMENT 3-B

Typed Pages

for

Technical Specifications Changes

BYRON STATION

REVISED TS PAGES

3.3.3-2
3.3.3-3
3.3.3-4
5.6-5

DELETED TS PAGES

3.6.8 (ALL)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.3-1.	D.1	Restore one required channel to OPERABLE status.	7 days
E. One or more Functions with two or more required channels inoperable.	E.1	Restore all but one required channel to OPERABLE status.	7 days
F. ---------NOTE--------- Not applicable to Functions 11, 12, and 14. --------------------- Required Action and associated Completion Time of Condition D or E not met.	F.1 AND F.2	Be in MODE 3. Be in MODE 4.	6 hours 12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. ---------NOTE--------- Only applicable to Functions 11, 12, and 14. --------------------- Required Action and associated Completion Time of Condition D or E not met.	G.1 Initiate action in accordance with Specification 5.6.7.	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------------------- Radiation detectors for Function 11, Containment Area Radiation, are excluded. -- Perform CHANNEL CALIBRATION.	18 months

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

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS
1.	Reactor Coolant System (RCS) Pressure (Wide Range)	1,2,3	2	B
2.	RCS Hot Leg Temperature (Wide Range)	1,2,3	2	B
3.	RCS Cold Leg Temperature (Wide Range)	1,2,3	2	B
4.	Steam Generator (SG) Water Level (Wide Range)(per SG)	1,2,3	1	D
5.	SG Water Level (Narrow Range)(per SG)	1,2,3	1	D
6.	Pressurizer Water Level (Narrow Range)	1,2,3	2	B
7.	Containment Pressure (Wide Range)	1,2,3	2	B
8.	Steam Line Pressure (per SG)	1,2,3	2	B
9.	Refueling Water Storage Tank Water Level	1,2,3	2	B
10.	Containment Floor Water Level (Wide Range)	1,2,3	2	B
11.	Containment Area Radiation (High Range)	1,2,3	1	D
12.	Main Steam Line Radiation (per steam line)	1,2,3	1	D
13.	Core Exit Temperature (per core quadrant)	1,2,3	4	B
14.	Reactor Vessel Water Level	1,2,3	2	B

3.6 CONTAINMENT SYSTEMS

3.6.8 (Deleted)

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, and hydrostatic testing as well as heatup and cooldown rates, and Power Operated Relief Valve (PORV) lift settings shall be established and documented in the PTLR for the following:

LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," and LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System";

b. The analytical methods used to determine the RCS pressure and temperature limits shall be those previously reviewed and approved by the NRC, specifically those described in NRC letter dated January 21, 1998, "Byron Station Units 1 and 2, and Braidwood Station, Units 1 and 2, Acceptance for Referencing of Pressure Temperature Limits Report"; and

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 Post Accident Monitoring Report

When a report is required by Condition C or G 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.

ATTACHMENT 3-C

Typed Pages

for

Technical Specifications Changes

CLINTON POWER STATION

REVISED TS PAGES

3.3-21
3.3-22

DELETED TS PAGES

3.6-36
3.6-37

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	---------------NOTE--------------------- Applicable for each Function in Table 3.3.3.1-1. --------------------------------------- Perform CHANNEL CHECK.	31 days
SR 3.3.3.1.2	Deleted	
SR 3.3.3.1.3	---------------NOTE--------------------- Applicable for each Function in Table 3.3.3.1-1. --------------------------------------- Perform CHANNEL CALIBRATION.	18 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1. Reactor Steam Dome Pressure	2	E
2. Reactor Vessel Water Level	2	E
3. Suppression Pool Water Level		
a. High Range	2	E
b. Low Range	2	E
4. Drywell Pressure	2	E
5. Primary Containment Area Radiation	2	F
6. Drywell Area Radiation	2	F
7. Penetration Flow Path, Automatic PCIV Position	2 per penetration flow path [(a)(b)]	E
8. Deleted		
9. Primary Containment Pressure		
a. High Range	2	E
b. Low Range	2	E
10. Suppression Pool Water Bulk Average Temperature	2[(c)]	E

(a) Not required for isolation valves whose associated penetration flow path is isolated.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) Monitoring each quadrant.

3.6 CONTAINMENT SYSTEMS

3.6.3.1 Deleted

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ATTACHMENT 3-D

Typed Pages

for

Technical Specifications Changes

DRESDEN NUCLEAR POWER STATION

<u>REVISED TS PAGES</u>

3.3.3.1-3
3.3.3.1-4

SURVEILLANCE REQUIREMENTS

------------------------------------NOTES------------------------------------

1. These SRs apply to each Function in Table 3.3.3.1-1, except where identified in the SR.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the other required channel in the associated Function is OPERABLE.

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK.	31 days
SR 3.3.3.1.2	Perform CHANNEL CALIBRATION for Function 4.b.	92 days
SR 3.3.3.1.3	------------------NOTE------------------ For Function 2, not required for the transmitters of the channels. -- Perform CHANNEL CALIBRATION for Functions 1 and 2.	184 days
SR 3.3.3.1.4	Perform CHANNEL CALIBRATION for Functions 3 and 9.	12 months
SR 3.3.3.1.5	Perform CHANNEL CALIBRATION for Functions 2, 4.a, 5, and 6.	24 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1. Reactor Vessel Pressure	2	E
2. Reactor Vessel Water Level		
a. Fuel Zone (Wide Range)	2	E
b. Medium Range	2	E
3. Torus Water Level	2	E
4. Drywell Pressure		
a. Wide Range	2	E
b. Narrow Range	2	E
5. Drywell Radiation Monitors	2	F
6. Penetration Flow Path PCIV Position	2 per penetration flow path(a)(b)	E
7. (Deleted)		
8. (Deleted)		
9. Torus Water Temperature	2	E

(a) Not required for isolation valves whose associated penetration flow path is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

ATTACHMENT 3-E

Typed Pages

for

Technical Specifications Changes

LASALLE COUNTY STATION

REVISED TS PAGES

3.3.3.1-3
3.3.3.1-4
3.8.1-1
3.8.7-1
5.5-2

DELETED TS PAGES

3.6.3.1 (ALL)

SURVEILLANCE REQUIREMENTS

------------------------------------NOTES ------------------------------------

1. These SRs apply to each Function in Table 3.3.3.1-1.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the other required channel in the associated Function is OPERABLE.

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK.	31 days
SR 3.3.3.1.2	(Deleted)	
SR 3.3.3.1.3	Perform CHANNEL CALIBRATION.	24 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1. Reactor Steam Dome Pressure	2	E
2. Reactor Vessel Water Level		
a. Fuel Zone	2	E
b. Wide Range	2	E
3. Suppression Pool Water Level	2	E
4. Drywell Pressure		
a. Narrow Range	2	E
b. Wide Range	2	E
5. Primary Containment Gross Gamma Radiation	2	F
6. Penetration Flow Path PCIV Position	2 per penetration flow path[(a)(b)]	E
7. (Deleted)		
8. (Deleted)		
9. Suppression Pool Water Temperature	2	E

(a) Not required for isolation valves whose associated penetration flow path is isolated by at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

3.6 CONTAINMENT SYSTEMS

3.6.3.1 (Deleted)

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources—Operating

LCO 3.8.1 The following AC electrical power sources shall be OPERABLE:

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

b. Three diesel generators (DGs); and

c. The opposite unit's Division 2 DG capable of supporting the associated equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Area Filtration (CRAF) System," and LCO 3.7.5, "Control Room Area Ventilation Air Conditioning (AC) System."

APPLICABILITY: MODES 1, 2, and 3.

---------------------------NOTES---------------------------

1. Division 3 AC electrical power sources are not required to be OPERABLE when High Pressure Core Spray (HPCS) System is inoperable.

2. The opposite unit's Division 2 DG in LCO 3.8.1.c is not required to be OPERABLE when the associated required equipment is inoperable.

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Distribution Systems—Operating

LCO 3.8.7 The following electrical power distribution subsystems shall be OPERABLE:

a. Division 1 and Division 2 AC and 125 V DC distribution subsystems;

b. Division 3 AC and 125 V DC distribution subsystems;

c. Division 1 250 V DC distribution subsystem; and

d. The portions of the opposite unit's Division 2 AC and 125 V DC electrical power distribution subsystems capable of supporting the equipment required to be OPERABLE by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Area Filtration (CRAF) System," LCO 3.7.5, "Control Room Area Ventilation Air Conditioning (AC) System," and LCO 3.8.1, "AC Sources-Operating."

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both Division 1 and 2 AC electrical power distribution subsystems inoperable.	A.1 Restore Division 1 and 2 AC electrical power distribution subsystems to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO 3.8.7.a

(continued)

5.5 Programs and Manuals

5.5.1 Offsite Dose Calculation Manual (ODCM) (continued)

Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (i.e., month and year) the change was implemented.

5.5.2 Primary Coolant Sources Outside Containment

This program provides controls to minimize leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to levels as low as practicable. The systems include the Low Pressure Core Spray, High Pressure Core Spray, Residual Heat Removal/Low Pressure Coolant Injection, Reactor Core Isolation Cooling, containment monitoring, Standby Gas Treatment, hydrogen recombiner and process sampling (until such time as a modification eliminates the hydrogen recombiner and PASS penetrations as potential leakage paths). The program shall include the following:

a. Preventive maintenance and periodic visual inspection requirements; and

b. Integrated leak test requirements for each system at 24 month intervals.

The provisions of SR 3.0.2 are applicable to the 24 month Frequency for performing integrated system leak test activities.

5.5.3 Deleted.

(continued)

ATTACHMENT 3-F

Typed Pages

for

Technical Specifications Change

PEACH BOTTOM ATOMIC POWER STATION UNIT 2

REVISED TS PAGES

3.3-25
3.3-26

PEACH BOTTOM ATOMIC POWER STATION UNIT 3

REVISED TS PAGES

3.3-25
3.3-26

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition C not met.	D.1 Enter the Condition referenced in Table 3.3.3.1-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.3.1-1.	E.1 Be in MODE 3.	12 hours
F. As required by Required Action D.1 and referenced in Table 3.3.3.1-1.	F.1 Initiate action in accordance with Specification 5.6.6.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK for each required PAM instrumentation channel.	31 days
SR 3.3.3.1.2	Deleted	
SR 3.3.3.1.3	Perform CHANNEL CALIBRATION for each required PAM instrumentation channel.	24 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1. Reactor Pressure	2	E
2. Reactor Vessel Water Level (Wide Range)	2	E
3. Reactor Vessel Water Level (Fuel Zone)	2	E
4. Suppression Chamber Water Level (Wide Range)	2	E
5. Drywell Pressure (Wide Range)	2	E
6. Drywell Pressure (Subatmospheric Range)	2	E
7. Drywell High Range Radiation	2	F
8. PCIV Position	2 per penetration flow path [(a)(b)]	E
9. Deleted		
10. Deleted		
11. Suppression Chamber Water Temperature	2[(c)]	E

(a) Not required for isolation valves whose associated penetration flow path is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) Each channel requires 10 resistance temperature detectors (RTDs) to be OPERABLE with no two adjacent RTDs inoperable.

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition C not met.	D.1	Enter the Condition referenced in Table 3.3.3.1-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.3.1-1.	E.1	Be in MODE 3.	12 hours
F. As required by Required Action D.1 and referenced in Table 3.3.3.1-1.	F.1	Initiate action in accordance with Specification 5.6.6.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK for each required PAM instrumentation channel.	31 days
SR 3.3.3.1.2	Deleted	
SR 3.3.3.1.3	Perform CHANNEL CALIBRATION for each required PAM instrumentation channel.	24 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1. Reactor Pressure	2	E
2. Reactor Vessel Water Level (Wide Range)	2	E
3. Reactor Vessel Water Level (Fuel Zone)	2	E
4. Suppression Chamber Water Level (Wide Range)	2	E
5. Drywell Pressure (Wide Range)	2	E
6. Drywell Pressure (Subatmospheric Range)	2	E
7. Drywell High Range Radiation	2	F
8. PCIV Position	2 per penetration flow path[(a)(b)]	E
9. Deleted		
10. Deleted		
11. Suppression Chamber Water Temperature	2[(c)]	E

(a) Not required for isolation valves whose associated penetration flow path is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

(c) Each channel requires 10 resistance temperature detectors (RTDs) to be OPERABLE with no two adjacent RTDs inoperable.

ATTACHMENT 3-G

Typed Pages

for

Technical Specifications Changes

QUAD CITIES NUCLEAR POWER STATION

REVISED TS PAGES

3.3.3.1-3
3.3.3.1-4

SURVEILLANCE REQUIREMENTS

NOTE

When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the other required channel in the associated Function is OPERABLE.

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK.	31 days
SR 3.3.3.1.2	Perform CHANNEL CALIBRATION.	24 months

Table 3.3.3.1-1 (page 1 of 1)
Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1.	Reactor Vessel Pressure	2	E
2.	Reactor Vessel Water Level		
	a. Wide Range	2	E
	b. Narrow Range	2	E
3.	Torus Water Level	2	E
4.	Drywell Pressure		
	a. Wide Range	2	E
	b. Narrow Range	2	E
5.	Drywell Radiation Monitors	2	F
6.	Penetration Flow Path PCIV Position	2 per penetration flow path[(a)(b)]	E
7.	Torus Water Temperature	2	E

(a) Not required for isolation valves whose associated penetration flow path is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

ATTACHMENT 4-A

Markup of Technical Specifications Bases Changes

BRAIDWOOD STATION

<u>REVISED TS BASES PAGES</u>

B 3.3.3-11
B 3.3.3-13
B 3.3.3-14
B 3.3.3-15
B 3.3.3-16

<u>DELETED TS BASES PAGES</u>

B 3.6.8 ALL

BASES

LCO (continued)

14. Reactor Vessel Water Level

Reactor Vessel Water Level is provided for verification and long term surveillance of core cooling. It is also used for accident diagnosis and to determine reactor coolant inventory adequacy.

The Reactor Vessel Water Level Monitoring System provides a direct measurement of the liquid level above the fuel. Two channels are required OPERABLE (Train A and Train B). Each channel consists of eight sensors on a probe. For a channel to be considered OPERABLE one of the two sensors in the "head" region and three of the six sensors in the "plenum" region shall be OPERABLE. The level indicated by the OPERABLE sensors represents the amount of liquid mass that is in the reactor vessel above the core. Operability of each sensor may be determined by reviewing the error codes displayed on the control room indicator.

~~15. Hydrogen Monitors~~ (Deleted)

~~Hydrogen Monitors are 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.~~

APPLICABILITY

The PAM instrumentation LCO is applicable in MODES 1, 2, and 3. ~~In MODE 3, the hydrogen monitoring function is not required since the hydrogen production rate and the total hydrogen produced would be less than that calculated for the DBA LOCA.~~ (Deleted) These variables are related to the diagnosis and pre-planned actions required to mitigate DBAs. The applicable DBAs are assumed to occur in MODES 1, 2, and 3. In MODES 4, 5, and 6, unit conditions are such that the likelihood of an event that would require PAM instrumentation is low; therefore, the PAM instrumentation is not required to be OPERABLE in these MODES.

BASES

ACTIONS (continued)

C.1

Condition C applies when the Required Action and associated Completion Time for Condition B are not met. This Required Action specifies the immediate initiation of actions in accordance with Specification 5.6.7, which requires a written report to be submitted to the NRC. This report discusses the results of the root cause evaluation of the inoperability and identifies proposed restorative actions. This action is appropriate 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.

D.1 and E.1

Condition D applies to Functions with one required channel as required to be entered by Table 3.3.3-1. Required Action D.1 requires restoration of an inoperable channel within 7 days. Condition E applies to one or more Functions with two or more required inoperable channels on the same Function. Required Action E.1 requires all but one channel on the same Function be restored 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. Continuous operation with no required channels OPERABLE 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 the channel(s) limits the risk that the PAM Function will be in a degraded condition should an accident occur. ~~Condition E is modified by a Note that excludes hydrogen monitor channels.~~

BASES

ACTIONS (continued)

~~F.1~~ (Deleted)

~~Condition F applies when two hydrogen monitor channels are inoperable. Required Action F.1 requires restoring one hydrogen monitor channel to OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable based on other core damage assessment capabilities available to monitor the hydrogen concentration for evaluation of core damage and to provide information for operator decisions. Also, it is unlikely that a LOCA (which would cause core damage) would occur during this time.~~

~~G.1 and G.2~~ F.1 and F.2

If the Required Action and associated Completion Time of Condition D or E, ~~or F~~ is not met, 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. Condition G is also modified by a Note that excludes Functions 11, 12, and 14. ~~Required Action G.2 is modified by a Note that excludes Function 15 since the hydrogen monitors are only applicable in MODES 1 and 2.~~

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 plant systems.

BASES

ACTIONS (continued)

G.1
~~H.1~~

If the Required Action and associated Completion Time of Condition D or E is not met, Required Action ~~H.1~~ G.1 specifies the immediate initiation of actions in accordance with Specification 5.6.7. This Specification requires a written report to be submitted to the NRC. This report discusses the results of the root cause evaluation of the inoperability and identifies proposed restorative actions. This action is appropriate in lieu of a shutdown requirement since alternative actions are identified before loss of functional capability, and given the low likelihood of unit conditions that would require information provided by this instrumentation. Condition ~~H~~ G is modified by a Note that indicates that this Condition is only applicable to Functions 11, 12, and 14.

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 high radiation instrumentation should be compared to similar instruments located throughout the plant.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Agreement criteria are determined 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 Frequency of 31 days is based on operating experience that demonstrates that channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

SR 3.3.3.2

A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to measured parameter with the necessary range and accuracy. The CHANNEL CALIBRATION may consist of an electronic calibration of the channel for range decades above 10 R/h and a one point calibration check of the detector below 10 R/h with an installed or portable gamma source. ~~For the hydrogen monitors, a CHANNEL CALIBRATION is performed using five gas samples which cover the range from zero volume percent hydrogen (100% N_2) to ≥ 20 volume percent hydrogen, balance~~ nitrogen.

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 Steam Line Break (SLB). 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 and shared between the units. Each consists of controls located in the auxiliary building, a power supply and a recombiner. Recombination is accomplished by heating a hydrogen air mixture to 1325°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.

The hydrogen recombiners are described in UFSAR, Section 6.2.5 (Ref. 3).

BASES

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;

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 4 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 2.6 v/o about 20 hours after the LOCA and 4.0 v/o about 4 days later if no recombiner was functioning (Ref. 3). Initiating a hydrogen recombiner when the primary containment hydrogen concentration reaches 2.6 v/o will maintain the hydrogen concentration in the primary containment below flammability limits.

BASES

APPLICABLE SAFETY ANAYLSES (continued)

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. 5).

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 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.

BASES

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 SLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.

Required Action A.1 has been modified by a Note that states the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when one recombiner is inoperable. This allowance 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 SLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.

BASES

ACTIONS (continued)

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 natural convection processes, containment fan cooler operation, containment spray, and the Post-LOCA 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 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 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 or the hydrogen control function cannot be maintained, 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.

BASES

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 sheath temperature increases to ≥ 1200°F in ≤ 90 minutes. After reaching 1200°F, the power is increased to maximum power for approximately 2 minutes and power is verified to be ≥ 38 kW.

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 (e.g., loose wiring or structural connections, deposits of foreign material, 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.

SR 3.6.8.3

This SR 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.

BASES

REFERENCES

1. 10 CFR 50.44.
2. 10 CFR 50, Appendix A, GDC 41.
3. UFSAR, Section 6.2.5.
4. Regulatory Guide 1.7, Revision 2.
5. UFSAR, Chapter 15.

BASES

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ATTACHMENT 4-B

Markup of Technical Specifications Bases Changes

BYRON STATION

<u>REVISED TS BASES PAGES</u>

B 3.3.3-11
B 3.3.3-13
B 3.3.3-14
B 3.3.3-15
B 3.3.3-16

<u>DELETED TS BASES PAGES</u>

B 3.6.8 ALL

BASES

LCO (continued)

14. Reactor Vessel Water Level

Reactor Vessel Water Level is provided for verification and long term surveillance of core cooling. It is also used for accident diagnosis and to determine reactor coolant inventory adequacy.

The Reactor Vessel Water Level Monitoring System provides a direct measurement of the liquid level above the fuel. Two channels are required OPERABLE (Train A and Train B). Each channel consists of eight sensors on a probe. For a channel to be considered OPERABLE one of the two sensors in the "head" region and three of the six sensors in the "plenum" region shall be OPERABLE. The level indicated by the OPERABLE sensors represents the amount of liquid mass that is in the reactor vessel above the core. Operability of each sensor may be determined by reviewing the error codes displayed on the control room indicator.

~~15. Hydrogen Monitors~~

~~Hydrogen Monitors are 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.~~

APPLICABILITY

The PAM instrumentation LCO is applicable in MODES 1, 2, and 3. ~~In MODE 3, the hydrogen monitoring function is not required since the hydrogen production rate and the total hydrogen produced would be less than that calculated for the DBA LOCA.~~ These variables are related to the diagnosis and pre-planned actions required to mitigate DBAs. The applicable DBAs are assumed to occur in MODES 1, 2, and 3. In MODES 4, 5, and 6, unit conditions are such that the likelihood of an event that would require PAM instrumentation is low; therefore, the PAM instrumentation is not required to be OPERABLE in these MODES.

BASES

ACTIONS (continued)

C.1

Condition C applies when the Required Action and associated Completion Time for Condition B are not met. This Required Action specifies the immediate initiation of actions in accordance with Specification 5.6.7, which requires a written report to be submitted to the NRC. This report discusses the results of the root cause evaluation of the inoperability and identifies proposed restorative actions. This action is appropriate 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.

D.1 and E.1

Condition D applies to Functions with one required channel as required to be entered by Table 3.3.3-1. Required Action D.1 requires restoration of an inoperable channel within 7 days. Condition E applies to one or more Functions with two or more required inoperable channels on the same Function. Required Action E.1 requires all but one channel on the same Function be restored 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. Continuous operation with no required channels OPERABLE 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 the channel(s) limits the risk that the PAM Function will be in a degraded condition should an accident occur. ~~Condition E is modified by a Note that excludes hydrogen monitor channels.~~

BASES

ACTIONS (continued)

~~F.1~~ (Deleted)

~~Condition F applies when two hydrogen monitor channels are inoperable. Required Action F.1 requires restoring one hydrogen monitor channel to OPERABLE status within 72 hours. The 72 hour Completion Time is reasonable based on other core damage assessment capabilities available to monitor the hydrogen concentration for evaluation of core damage and to provide information for operator decisions. Also, it is unlikely that a LOCA (which would cause core damage) would occur during this time.~~

F ~~G~~.1 and F ~~G~~.2

If the Required Action and associated Completion Time of Condition D or E~~, or F~~ is not met, 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. Condition G is also modified by a Note that excludes Functions 11, 12, and 14. ~~Required Action G.2 is modified by a Note that excludes Function 15 since the hydrogen monitors are only applicable in MODES 1 and 2.~~

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 plant systems.

BASES

ACTIONS (continued)

~~H.1~~ G.1

If the Required Action and associated Completion Time of Condition D or E is not met, Required Action ~~H~~G.1 specifies the immediate initiation of actions in accordance with Specification 5.6.7. This Specification requires a written report to be submitted to the NRC. This report discusses the results of the root cause evaluation of the inoperability and identifies proposed restorative actions. This action is appropriate in lieu of a shutdown requirement since alternative actions are identified before loss of functional capability, and given the low likelihood of unit conditions that would require information provided by this instrumentation. Condition ~~H~~G is modified by a Note that indicates that this Condition is only applicable to Functions 11, 12, and 14.

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 high radiation instrumentation should be compared to similar instruments located throughout the plant.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Agreement criteria are determined 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 Frequency of 31 days is based on operating experience that demonstrates that channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

SR 3.3.3.2

A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to measured parameter with the necessary range and accuracy. The CHANNEL CALIBRATION may consist of an electronic calibration of the channel for range decades above 10 R/h and a one point calibration check of the detector below 10 R/h with an installed or portable gamma source. ~~For the hydrogen monitors, a CHANNEL CALIBRATION is performed using five gas samples which cover the range from zero volume percent hydrogen (100% N_2) to > 20 volume percent hydrogen, balance nitrogen.~~

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	--------NOTE-------- LCO 3.0.4 is not applicable. -------------------- 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.	1 hour AND Once per 12 hours thereafter
	AND		
	B.2	Restore one hydrogen recombiner to OPERABLE status.	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

BASES

APPLICABLE SAFETY ANAYLSES (continued)

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. 5).

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 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.

BASES

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 SLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.

Required Action A.1 has been modified by a Note that states the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when one recombiner is inoperable. This allowance 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 SLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.

BASES

ACTIONS (continued)

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 natural convection processes, containment fan cooler operation, containment spray, and the Post-LOCA 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 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 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 or the hydrogen control function cannot be maintained, 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.

BASES

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 sheath temperature increases to ≥ 1200°F in ≤ 90 minutes. After reaching 1200°F, the power is increased to maximum power for approximately 2 minutes and power is verified to be ≥ 38 kW.

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 (e.g., loose wiring or structural connections, deposits of foreign material, 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.

SR 3.6.8.3

This SR 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.

BASES

REFERENCES

1. 10 CFR 50.44.
2. 10 CFR 50, Appendix A, GDC 41.
3. UFSAR, Section 6.2.5.
4. Regulatory Guide 1.7, Revision 2.
5. UFSAR, Chapter 15.

BASES

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ATTACHMENT 4-C

Markup of Technical Specifications Bases Changes

CLINTON POWER STATION

<u>REVISED TS BASES PAGES</u>

B 3.3-53
B 3.3-54
B 3.3-59

<u>DELETED TS BASES PAGES</u>

B 3.6.66
B 3.6.67
B 3.6.68
B 3.6.69
B 3.6.70
B 3.6.71

BASES

LCO (continued)

6. Drywell Area Radiation

Drywell area radiation (high range) is a Category I 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. Two high range radiation detectors are provided to monitor the drywell area gross gamma radiation levels. These detectors monitor the range 1 to 10E7 R/hr and provide inputs to monitors in the main control room. The monitors are the primary indication used by the operator during an accident. Therefore, the PAM Specification deals specifically with this portion of the instrument channel.

7. Primary Containment Isolation Valve (PCIV) Position

PCIV position is provided for verification of containment integrity. In the case of PCIV position, the important information is the status of the containment penetration. The LCO requires one channel of valve position indication in the control room to be OPERABLE for each automatic PCIV in a containment penetration flow path; i.e., two total channels of PCIV position indication for a penetration flow path with two automatic valves. For containment penetrations with only one automatic PCIV having control room indication, Note (b) requires a single channel of valve position indication to be OPERABLE. This is sufficient to verify redundantly the isolation status of each isolable penetration via indicated status of the automatic valve and, as applicable, prior knowledge of passive valve or system boundary status. If a penetration is isolated by at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured, position indication for the PCIV(s) in the associated penetration flow path is not needed to determine status. Therefore, the position indication for valves in an isolated penetration is not required to be OPERABLE.

8. Drywell and Containment Hydrogen and Oxygen Analyzer (Deleted)

Drywell and containment hydrogen and oxygen analyzers are Category I instruments provided to detect high hydrogen or oxygen concentration conditions that represent a potential for containment breach. This variable is also important in verifying the adequacy of mitigating actions.

(continued)

BASES

LCO

8. Drywell and Containment Hydrogen and Oxygen Analyzer (continued)

Two gas chromatograph hydrogen and oxygen analyzers are provided. Each of these monitors automatically takes samples from five locations in the drywell and containment. Gas chromatograph techniques are then utilized to separate the gaseous sample mixture into its individual components. A thermal conductivity cell analyzes each component to determine its concentration with respect to total sample volume. The results of the analysis are indicated and printed out in the main control room. The indicators provide the primary indication used by the operator during an accident. Therefore, the PAM Specification deals specifically with this portion of the instrument channel.

9. Primary Containment Pressure

Primary containment pressure is a Category I variable provided to verify RCS and containment integrity and to verify the effectiveness of ECCS actions taken to prevent containment breach. Four wide range primary containment pressure signals are transmitted from separate pressure transmitters and are continuously recorded and displayed on four control room recorders. Two of these instruments monitor containment pressure from -5 psig to 10 psig (low range). The remaining two instruments monitor containment pressure from 5 psig to 45 psig (high range). These recorders are the primary indication used by the operator during an accident. Therefore, the PAM Specification deals specifically with this portion of the instrument channel.

10. Suppression Pool Water Bulk Average Temperature

Suppression pool water bulk average temperature is a Type A variable provided to detect a condition that could potentially lead to containment breach, and to verify the effectiveness of ECCS actions taken to prevent containment breach. The suppression pool water temperature instrumentation allows operators to detect trends in suppression pool water temperature in sufficient time to take action to prevent steam quenching vibrations in the suppression pool. Eight temperature sensors are arranged in two channels (i.e., divisions), located such that there is one sensor from each channel (division) within each quadrant of the suppression pool. These instruments provide the capability to monitor suppression pool water temperature

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.1 (Deleted)
~~SR 3.3.3.1.2 and~~ SR 3.3.3.1.3

For all Functions ~~except the drywell and containment hydrogen and oxygen analyzers~~, a CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop including the sensor. The test verifies that the channel responds to the measured parameter with the necessary range and accuracy. The Frequency is based on operating experience and consistency with the typical industry refueling cycles.

The CHANNEL CALIBRATION of the Primary Containment and Drywell Area Radiation Functions consists of an electronic calibration of the channel, not including the detector, for range decades above 10 R per hour and a one point calibration check of the detector below 10 R per hour with an installed or portable gamma source.

~~For the hydrogen and oxygen analyzers, a CHANNEL CALIBRATION is performed every 92 days. This calibration is performed using an integral gas supply containing hydrogen, oxygen, and inert components in concentrations consistent with the manufacturer's recommendations.~~

REFERENCES

1. Regulatory Guide 1.97, "Instrumentation for Light-Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 3, May 1983.
2. SSER 5, Section 7.5.3.1.
3. USAR, Table 7.1-13.
4. USAR Section 7.5.1.4.2.4.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.3.1 Primary Containment Hydrogen Recombiners

BASES

BACKGROUND

The primary containment hydrogen recombiner eliminates the potential breach of primary containment due to a hydrogen oxygen reaction and is part of combustible gas control required by 10 CFR 50.44, "Standards for Combustible Gas Control in Light-Water-Cooled Reactors" (Ref. 1), and GDC 41, "Containment Atmosphere Cleanup" (Ref. 2). The primary containment hydrogen recombiner is required to reduce the hydrogen concentration in the primary containment following a loss of coolant accident (LOCA). The primary containment hydrogen recombiner accomplishes this by recombining hydrogen and oxygen to form water vapor. The vapor is returned to the primary containment, thus eliminating any discharge to the environment. The primary containment hydrogen recombiner is manually initiated, since flammability limits would not be reached until several days after a Design Basis Accident (DBA).

Two 100% capacity independent primary containment hydrogen recombiner subsystems are provided. Each consists of controls located in the control room, a power supply, an enclosed blower assembly, a heater section, a reaction section, and a cooler section located in the control building, and associated piping, instruments, and valves. Recombination is accomplished by heating a hydrogen air mixture to ≥ 1150°F. The resulting water vapor and discharge gases are cooled prior to being discharged from the unit and returned to the containment. Air flows through the unit at 70 cfm, with a blower in the unit providing the motive force. A single recombiner, in conjunction with the Containment Drywell Hydrogen Mixing System, is capable of maintaining the hydrogen concentration in the drywell and primary 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 and associated containment isolation valves are powered from a separate Engineered Safety Feature bus.

Plant procedures direct that the hydrogen concentration in primary containment be monitored following a DBA and that the primary containment hydrogen recombiner be manually

(continued)

BASES

BACKGROUND (continued)	activated to prevent the primary containment atmosphere from reaching a bulk hydrogen concentration of 4.0 v/o.

APPLICABLE SAFETY ANALYSES

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

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

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

b. Radiolytic decomposition of water in the Reactor Coolant System.

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

The calculation confirms that when the mitigating systems are actuated in accordance with plant procedures, the peak hydrogen concentration in the primary containment remains < 4 v/o (Ref. 4).

The primary containment hydrogen recombiners satisfy Criterion 3 of the NRC Policy Statement.

LCO

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

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

(continued)

BASES (continued)

APPLICABILITY

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

In MODE 3, both the hydrogen production rate and the total hydrogen production after a LOCA would be less than that calculated for the DBA LOCA. Also, because of the limited time in this MODE, the probability of an accident requiring the primary containment hydrogen recombiner is low. Therefore, the primary containment hydrogen recombiner is not required in MODE 3.

In MODES 4 and 5, the probability and consequences of a LOCA are low due to the pressure and temperature limitations in these MODES. Therefore, the primary containment hydrogen recombiner is not required in these MODES.

ACTIONS

A.1

With one primary containment hydrogen recombiner inoperable, the inoperable primary containment hydrogen recombiner must be restored to OPERABLE status within 30 days. In this Condition, the remaining OPERABLE primary containment 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 low probability of the occurrence of a LOCA that would generate hydrogen in amounts capable of exceeding the flammability limit, the amount of time available after the event for operator action to prevent hydrogen accumulation exceeding this limit, and the low probability of failure of the OPERABLE primary containment hydrogen recombiner.

Required Action A.1 has been modified by a Note stating that the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when one recombiner is inoperable. This allowance is provided because of the low probability of the occurrence of a LOCA that would generate hydrogen in amounts capable of exceeding the flammability limit, the low probability of the failure of the OPERABLE

(continued)

ACTIONS

A.1 (continued)

recombiner, and the amount of time available after a postulated LOCA for operator action to prevent exceeding the flammability limit.

B.1 and B.2

With two primary containment 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 one division of the hydrogen igniters. The 1 hour Completion Time allows a reasonable period of time to verify that a loss of hydrogen control function does not exist. The verification 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 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 low probability of the occurrence of a LOCA that would generate hydrogen in the amounts capable of exceeding the flammability limit.

C.1

If any Required Action and required Completion Time cannot be met, 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 12 hours. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1.1

Performance of a system functional test for each primary containment hydrogen recombiner ensures that the recombiners are OPERABLE and can attain and sustain the temperature necessary for hydrogen recombination. In particular, this SR requires verification that the reaction chamber temperature increases to ≥ 1150°F in 2 hours and that the reaction chamber is maintained ≥ 1177°F and ≤ 1223° for ≥ 2 hours. These verifications are required to check the capability of the recombiner to properly function.

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.

With regard to reaction chamber temperature values obtained pursuant to this SR, as read from plant indication instrumentation, the specified limit is considered to be a nominal value and therefore does not require compensation for instrument indication uncertainties (Ref. 5).

SR 3.6.3.1.2

This SR ensures that there are no physical problems that could affect primary containment hydrogen recombiner operation. Since the recombiners are mechanically passive, except for the blower assemblies, they are subject to only minimal mechanical failure. The only credible failures involve loss of power, blockage of the internal flow path, missile impact, etc. A visual inspection is sufficient to determine abnormal conditions that could cause such failures.

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.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1.3

This SR requires performance of a resistance to ground test of 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 when this SR is performed within 2 hours following the performance of SR 3.6.3.1.1.

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.

With regard to heater resistance values obtained pursuant to this SR, as read from plant indication instrumentation, the specified limit is considered to be a nominal value and therefore does not require compensation for instrument indication uncertainties (Ref. 5).

REFERENCES

1. 10 CFR 50.44.
2. 10 CFR 50, Appendix A, GDC 41.
3. Regulatory Guide 1.7.
4. USAR, Section 6.2.5.
5. Calculation IP-0-0076.

ATTACHMENT 4-D

Markup of Technical Specifications Bases Changes

DRESDEN NUCLEAR POWER STATION

REVISED TS BASES PAGES

B 3.3.3.1-6
B 3.3.3.1-11
B 3.3.3.1-12

BASES

LCO

6. Penetration Flow Path Primary Containment Isolation Valve (PCIV) Position (continued)

active PCIV having control room indication, Note (b) requires a single channel of valve position indication to be OPERABLE. This is sufficient to redundantly verify the isolation status of each isolable penetration via indicated status of the active valve, as applicable, and prior knowledge of passive valve or system boundary status. If a penetration flow path is isolated, position indication for the PCIV(s) in the associated penetration flow path is not needed to determine status. Therefore, the position indication for valves in an isolated penetration flow path is not required to be OPERABLE. Each penetration is treated separately and each penetration flow path is considered a separate function. Therefore, separate Condition entry is allowed for each inoperable penetration flow path.

The indication for each PCIV is provided at the valve controls in the control room. Each indication consists of green and red indicator lights that illuminate to indicate whether the PCIV is fully open, fully closed, or in a mid-position. Therefore, the PAM Specification deals specifically with this portion of the instrumentation channel.

7,8 (Deleted)

~~7, 8. Drywell Hydrogen and Oxygen Concentration Analyzers and Monitors~~

~~Drywell hydrogen and oxygen analyzers and monitors are Category I instruments provided to detect high hydrogen or oxygen concentration conditions that represent a potential for containment breach. This variable is also important in verifying the adequacy of mitigating actions. Hydrogen and oxygen concentrations are each measured by two independent analyzers and are monitored in the control room. The drywell hydrogen and oxygen analyzer PAM instrumentation consists of two independent gas analyzer systems. Each gas analyzer system consists of a hydrogen analyzer and an oxygen analyzer. The analyzers are capable of determining hydrogen concentration in the range of 0% to 10% and oxygen concentration in the range of 0% to 10%. Each gas analyzer system must be capable of sampling the drywell. There are two independent recorders in the control room to display the results.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.1.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel against 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 instrument channels could be an indication of excessive instrument drift in one of the channels or 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 high radiation instrumentation should be compared to similar plant instruments located throughout the plant.

Agreement criteria are determined by the plant staff, based on a combination of the channel instrument uncertainties, including 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.

The Frequency of 31 days is based upon plant operating experience, with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any 31 day interval is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of those displays associated with the channels required by the LCO.

SR 3.3.3.1.2, SR 3.3.3.1.3, SR 3.3.3.1.4, and SR 3.3.3.1.5

A CHANNEL CALIBRATION is performed every 92 days for Function~~s~~ 4.b, ~~7, and 8,~~ every 184 days for Functions 1 and 2 (recorder only), every 12 months for Functions 3 and 9, and every 24 months for Functions 2, 4.b, 5, and 6. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies the channel responds to measured parameter with the necessary range and accuracy. For Function 5, the CHANNEL CALIBRATION shall

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.3.1.2, SR 3.3.3.1.3, SR 3.3.3.1.4, and SR 3.3.3.1.5 (continued)

consist of an electronic calibration of the channel, excluding the detector, for range decades > 10 R/hour and a one point calibration check of the detector with an installed or portable gamma source for the range decade < 10 R/hour. For Function 6, the CHANNEL CALIBRATION shall consist of verifying that the position indication conforms to actual valve position.

The Note to SR 3.3.3.1.3 states that for Function 2, this SR is not required for the transmitters of these channels. This allowance is consistent with the plant specific setpoint methodology. This portion of the Function 2 channels must be calibrated in accordance with SR 3.3.3.1.5.

The Frequency of 92 days for Function~~s~~ 4.b, ~~7, and 8~~, 184 days for Functions 1 and 2 (recorder only), and 12 months for Functions 3 and 9, for CHANNEL CALIBRATION is based on operating experience.

The 24 month Frequency for CHANNEL CALIBRATION of Functions 2, 4.a, 5, and 6 is based on operating experience and consistency with the refueling cycles.

REFERENCES

1. Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 2, December 1980.

2. NRC letter, D.R. Muller (NRC) to H.E. Bliss (Commonwealth Edison Company), "Emergency Response Capability - Conformance to Regulatory Guide 1.97 Revision 2, Dresden Unit Nos. 2 and 3," September 1, 1988.

ATTACHMENT 4-E

Markup of Technical Specifications Bases Changes

LASALLE COUNTY STATION

REVISED TS BASES PAGES

B 3.3.3.1-6
B 3.3.3.1-11

B 3.6.3.2-1
B 3.6.3.2-2

B 3.7.2-4

B 3.8.1-1
B 3.8.1-4
B 3.8.1-7

B 3.8.7-1
B 3.8.7-3

DELETED TS BASES PAGES

B 3.6.3.1 (ALL)

BASES

LCO

6. Penetration Flow Path Primary Containment Isolation Valve (PCIV) Position (continued)

The indication for each PCIV is provided in the control room. Indicator lights illuminate to indicate PCIV position. Therefore, the PAM Specification deals specifically with this portion of the instrumentation channel.

(Deleted)

~~7. 8. Drywell Hydrogen and Oxygen Concentration Analyzer~~

~~Drywell hydrogen and oxygen concentration analyzers are Category I instruments provided to detect high hydrogen or oxygen concentration conditions that represent a potential for containment breach. Additionally, hydrogen concentration is a Type A variable. This variable is also important in verifying the adequacy of mitigating actions.~~

~~High hydrogen and oxygen concentrations are each measured by two independent analyzers. Following receipt of a LOCA signal, the analyzers are initiated and continuously record hydrogen and oxygen concentration on two recorders in the control room. The analyzers are designed to operate under accident conditions. The available 0% to 10% range for the hydrogen analyzers and 0% to 20% range for the oxygen analyzers satisfy the intent of Regulatory Guide 1.97. These recorders are the primary indication used by the operator during an accident. Therefore, the PAM Specification deals specifically with this portion of the instrument channel.~~

9. Suppression Pool Water Temperature

Suppression pool water temperature is a Type A and Category I variable provided to detect a condition that could potentially lead to containment breach, and to verify the effectiveness of ECCS actions taken to prevent containment breach. The suppression pool water temperature instrumentation allows operators to detect trends in suppression pool water temperature in sufficient time to take action to prevent steam quenching vibrations in the suppression pool. There are 14 total thermocouple instrument wells in the suppression pool. Each thermocouple

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.3.1.1 (continued)

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including 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.

The Frequency of 31 days is based upon plant operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given function in any 31 day interval is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of those displays associated with the channels required by the LCO.

SR 3.3.3.1.2 (Deleted)

~~SR 3.3.3.1.2 and~~ SR 3.3.3.1.3

A CHANNEL CALIBRATION is performed ~~every 92 days for Functions 7 and 8 and~~ every 24 months. ~~for all other functions~~. For Function 6, the CHANNEL CALIBRATION shall consist of verifying that the position indication conforms to the actual valve position. CHANNEL CALIBRATION is a complete check of the instrument loop including the sensor. The test verifies that the channel responds to the measured parameter with the necessary range and accuracy. ~~The 92 day Frequency for CHANNEL CALIBRATION of Functions 7 and 8 is based on operating experience~~. The 24 month Frequency for CHANNEL CALIBRATION of all other PAM Instrumentation of Table 3.3.3.1-1 is based on operating experience and consistency with the refueling cycles.

REFERENCES

1. Regulatory Guide 1.97, "Instrumentation for Light-Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 2, December 1980.

2. NRC Safety Evaluation Report, "Commonwealth Edison Company, LaSalle County Station, Unit Nos. 1 and 2, Conformance to Regulatory Guide 1.97," dated August 20, 1987.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.3.2 Primary Containment Oxygen Concentration

BASES

BACKGROUND

The primary containment is designed to withstand events that generate hydrogen either due to the zirconium metal water reaction in the core or due to radiolysis. The primary method to control hydrogen is to inert the primary containment. With the primary containment inerted, that is, oxygen concentration < 4.0 volume percent (v/o), a combustible mixture cannot be present in the primary containment for any hydrogen concentration. ~~The capability to inert the primary containment and maintain oxygen < 4.0 v/o works together with the Hydrogen Recombiner System (LCO 3.6.3.1, "Primary Containment Hydrogen Recombiners") to provide redundant and diverse methods to mitigate events that produce hydrogen. For example, an~~ An event that rapidly generates hydrogen from zirconium metal water reaction will result in excessive hydrogen in primary containment, but oxygen concentration will remain < 4.0 v/o and no combustion can occur. ~~Long term generation of both hydrogen and oxygen from radiolytic decomposition of water may eventually result in a combustible mixture in primary containment, except that the hydrogen recombiners remove hydrogen and oxygen gases faster than they can be produced from radiolysis and again no combustion can occur~~. This LCO ensures that oxygen concentration does not exceed 4.0 v/o during operation in the applicable conditions.

APPLICABLE SAFETY ANALYSES

The Reference 1 calculations assume that the primary containment is inerted when a Design Basis Accident loss of coolant accident occurs. Thus, the hydrogen assumed to be released to the primary containment as a result of metal water reaction in the reactor core will not produce combustible gas mixtures in the primary containment. ~~Oxygen, which is subsequently generated by radiolytic decomposition of water, is recombined by the hydrogen recombiners (LCO 3.6.3.1) more rapidly than it is produced~~.

Primary containment oxygen concentration satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

(continued)

BASES (continued)

LCO	The primary containment oxygen concentration is maintained < 4.0 v/o to ensure that an event that produces any amount of hydrogen does not result in a combustible mixture inside primary containment.
APPLICABILITY	The primary containment oxygen concentration must be within the specified limit when primary containment is inerted, except as allowed by the relaxations during startup and shutdown addressed below. The primary containment must be inert in MODE 1, since this is the condition with the highest probability of an event that could produce hydrogen. Inerting the primary containment is an operational problem because it prevents containment access without an appropriate breathing apparatus. Therefore, the primary containment is inerted as late as possible in the plant startup and de-inerted as soon as possible in the plant shutdown. As long as reactor power is < 15% RTP, the potential for an event that generates significant hydrogen is low and the primary containment need not be inert. Furthermore, the probability of an event that generates hydrogen occurring within the first 24 hours of a startup, or within the last 24 hours before a shutdown, is low enough that these "windows," when the primary containment is not inerted, are also justified. The 24 hour time period is a reasonable amount of time to allow plant personnel to perform inerting or de-inerting.
ACTIONS	A.1 If oxygen concentration is ≥ 4.0 v/o at any time while operating in MODE 1, with the exception of the relaxations allowed during startup and shutdown, oxygen concentration must be restored to < 4.0 v/o within 24 hours. The 24 hour Completion Time is allowed when oxygen concentration is ≥ 4.0 v/o because ~~of the availability of other hydrogen mitigating systems (e.g., hydrogen recombiners) and~~ the low probability and long duration of an event that would generate significant amounts of hydrogen occurring during this period.

(continued)

BASES

ACTIONS

A.1 (continued)

also requires entering into the Applicable Conditions and Required Actions for LCO 3.4.9, "RHR Shutdown Cooling System -Hot Shutdown," LCO 3.5.1, "ECCS-Operating," LCO 3.5.3, "RCIC System," LCO 3.6.2.3, "RHR Suppression Pool Cooling," LCO 3.6.2.4, "RHR Suppression Pool Spray," ~~LCO 3.6.3.1~~, "~~Primary Containment Hydrogen Recombiners~~," and LCO 3.8.1, "AC Sources—Operating," as appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1

Verifying the correct alignment for manual, power operated, and automatic valves in each DGCW subsystem flow path provides assurance that the proper flow paths will exist for DGCW subsystem operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve is also allowed to be in the nonaccident position, and yet be considered in the correct position provided it can be automatically realigned to its accident position, within the required time. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

SR 3.7.2.2

This SR ensures that each DGCW subsystem pump will automatically start to provide required cooling to the associated DG, LPCS pump motor cooling coils, and ECCS cubicle area cooling coils, as applicable, when the associated DG starts and the respective bus is energized. For the Division 1 DGCW subsystem, this SR also ensures the DGCW pump automatically starts on receipt of a start signal for the unit LPCS pump. These starts may be performed using actual or simulated initiation signals.

(continued)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.1 AC Sources—Operating

BASES

BACKGROUND

The unit Class 1E AC Electrical Power Distribution System AC sources consist of the offsite power sources and the onsite standby power sources (diesel generators (DGs)). As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the design of the AC electrical power system provides independence and redundancy to ensure an available source of power to the Engineered Safety Feature (ESF) systems.

The Class 1E AC distribution system supplies electrical power to three divisional load groups, Divisions 1, 2, and 3, with each division powered by an independent Class 1E 4.16 kV emergency bus (refer to LCO 3.8.7, "Distribution Systems—Operating"). The Division 2 emergency bus associated with each unit is shared by each unit since some systems are common to both units. The opposite unit Division 2 emergency bus supports equipment required to be OPERABLE ~~by LCO 3.6.3.1, "Primary Containment Hydrogen Recombiners,"~~ by LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Area Filtration (CRAF) System," and LCO 3.7.5, "Control Room Area Ventilation Air Conditioning (AC) System." Division 1 and 2 emergency buses have access to two offsite power supplies (one normal and one alternate). The alternate offsite power source is normally supplied via the opposite unit system auxiliary transformer (SAT) and the opposite unit circuit path. The alternate offsite circuit path includes the associated opposite unit's 4.16 kV emergency bus, unit tie breakers, and associated interconnecting bus to the given unit's 4.16 kV emergency bus. Division 3 load group has access to one offsite power supply (respective unit's SAT). Division 2 and 3 emergency buses on each unit have a dedicated onsite DG. The Division 1 emergency bus of both units share a common DG. The ESF systems of any two of the three divisions provide for the minimum safety functions necessary to shut down the unit and maintain it in a safe shutdown condition.

Offsite power is supplied to the switchyard from the transmission network. From the switchyard two electrically

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)	are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System (RCS), and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.5, Emergency Core Cooling System (ECCS) and Reactor Core Isolation Cooling (RCIC) System; and Section 3.6, Containment Systems. The OPERABILITY of the AC electrical power sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the onsite or offsite AC sources OPERABLE during accident conditions in the event of: a. An assumed loss of all offsite power or all onsite AC power; and b. A worst case single failure. AC sources satisfy the requirements of Criterion 3 of 10 CFR 50.36(c)(2)(ii).
LCO	Two qualified circuits (normal and alternate) between the offsite transmission network and the onsite Class 1E Distribution System (i.e., the unit Division 1, 2, and 3 4.16 kV emergency buses and the opposite unit Division 2 4.16 kV emergency bus), three separate and independent unit DGs, and the opposite unit's DG capable of supporting the opposite unit Division 2 onsite Class 1E AC electrical power distribution subsystem to power the equipment required to be OPERABLE by ~~LCO 3.6.3.1,~~ LCO 3.6.4.3, LCO 3.7.4, and LCO 3.7.5 ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence (AOO) or a postulated DBA. A specific LCO requirement for a qualified circuit to provide power to the opposite unit Division 2 4.16 kV emergency bus is not provided since the alternate qualified circuit to the units Division 2 4.16 kV emergency bus encompasses the circuit path to the opposite unit Division 2 4.16 kV emergency bus. Qualified offsite circuits are those that are described in the UFSAR and are part of the licensing basis for the unit.

(continued)

BASES

APPLICABILITY (continued)

allowed by this Note, the Division 3 AC sources cannot be considered as a support system to the Division 3 AC distribution subsystem. Thus, as required by LCO 3.0.2, the Distribution System-Operating ACTIONS for the inoperable Division 3 AC electrical power distribution subsystem must be entered.

Note 2 has been added taking exception to the Applicability requirements for the required opposite unit's Division 2 DG in LCO 3.8.1.c, provided the associated required equipment is inoperable (i.e., one SGT subsystem, ~~one primary containment hydrogen recombiner subsystem~~, one control room area filtration subsystem, and one control room area ventilation air conditioning subsystem). This exception is intended to allow declaring the opposite unit's Division 2 supported equipment inoperable either in lieu of declaring the opposite unit's Division 2 DG inoperable, or at any time subsequent to entering ACTIONS for an inoperable opposite unit Division 2 DG. This exception is acceptable since, with the opposite unit powered Division 2 equipment inoperable and the associated ACTIONS entered, the opposite unit Division 2 DG provides no additional assurance of meeting the above criteria.

AC power requirements for MODES 4 and 5 and other conditions in which AC sources are required are covered in LCO 3.8.2, "AC Sources—Shutdown."

ACTIONS

A.1

To ensure a highly reliable power source remains, it is necessary to verify the availability of the remaining required offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in the Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition D, for two required offsite circuits inoperable, is entered.

A.2

Required Action A.2, which only applies if the division cannot be powered from an offsite source, is intended to

(continued)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.7 Distribution Systems—Operating

BASES

BACKGROUND

The onsite Class 1E AC and DC electrical power distribution system for each unit is divided by division into three independent AC and DC electrical power distribution subsystems. Each unit is also dependent on portions of the opposite unit's Division 2 AC and DC power distribution subsystems.

The primary AC Distribution System consists of three 4.16 kV emergency buses that are supplied from the transmission system by two physically independent circuits. The Division 2 and 3 emergency buses also have a dedicated onsite diesel generator (DG) source, while the Unit 1 and 2 Division 1 buses share an onsite DG source. The Division 1, 2, and 3 4.16 kV emergency buses are normally supplied through the system auxiliary transformer (SAT). In addition to the SAT, Division 1 and 2 can be supplied from the unit auxiliary transformer or the opposite unit's SAT. Control power for the 4.16 kV breakers is supplied from the Class 1E batteries. Additional description of this system may be found in the Bases for LCO 3.8.1, "AC Sources—Operating," and the Bases for LCO 3.8.4, "DC Sources—Operating."

The secondary plant AC distribution system includes 480 V ESF load centers and associated loads, motor control centers, and transformers.

There are three independent 125 VDC electrical power distribution subsystems. The Division 2 Class 1E AC and DC electrical power distribution subsystems associated with each unit are shared by each unit since some systems are common to both units. The opposite unit Division 2 Class 1E AC and DC electrical power distribution subsystems support equipment required to be OPERABLE by ~~LCO 3.6.3.1, "Primary Containment Hydrogen Recombiners,"~~ LCO 3.6.4.3, "Standby Gas Treatment (SGT) System," LCO 3.7.4, "Control Room Area Filtration (CRAF) System," LCO 3.7.5, "Control Room Area Ventilation Air Conditioning (AC) System," and LCO 3.8.1, "AC Sources—Operating."

(continued)

BASES

LCO (continued)

OPERABLE and certain buses of the opposite unit Division 2 AC and DC electrical power distribution subsystems are required to be OPERABLE to support the equipment required to be OPERABLE by ~~LCO 3.6.3.1~~, LCO 3.6.4.3, LCO 3.7.4, LCO 3.7.5, and LCO 3.8.1. As noted in Table B 3.8.7-1 and Table B 3.8.7-2 (Footnote a), each division of the AC and DC electrical power distribution systems is a subsystem.

Maintaining the Division 1, 2, and 3 AC and DC electrical power distribution subsystems OPERABLE ensures that the redundancy incorporated into the design of ESF is not defeated. Any two of the three divisions of the distribution system are capable of providing the necessary electrical power to the associated ESF components. Therefore, a single failure within any system or within the electrical power distribution subsystems does not prevent safe shutdown of the reactor.

OPERABLE AC electrical power distribution subsystems require the associated buses to be energized to their proper voltages. OPERABLE DC electrical power distribution subsystems require the associated buses to be energized to their proper voltage from either the associated battery or charger.

Based on the number of safety significant electrical loads associated with each bus listed in Table B 3.8.7-1 for Unit 1 and Table B 3.8.7-2 for Unit 2, if one or more of the buses becomes inoperable, entry into the appropriate ACTIONS of LCO 3.8.7 is required. Some buses, such as distribution panels, which help comprise the AC and DC distribution systems are not listed in Table B 3.8.7-1 for Unit 1 and Table B 3.8.7-2 for Unit 2. The loss of electrical loads associated with these buses may not result in a complete loss of a redundant safety function necessary to shut down the reactor and maintain it in a safe condition. Therefore, should one or more of these buses become inoperable due to a failure not affecting the OPERABILITY of a bus listed in Table B 3.8.7-1 for Unit 1 and Table B 3.8.7-2 for Unit 2 (e.g., a breaker supplying a single distribution panel fails open), the individual loads on the bus would be considered inoperable, and the appropriate Conditions and Required Actions of the LCOs governing the individual loads would be entered. However, if one or more of these buses is

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B 3.6 CONTAINMENT SYSTEMS

B 3.6.3.1 Primary Containment Hydrogen Recombiners

BASES

BACKGROUND

The primary containment hydrogen recombiner eliminates the potential breach of primary containment due to a hydrogen oxygen reaction and is part of combustible gas control required by 10 CFR 50.44, "Standards for Combustible Gas Control in Light-Water-Cooled Reactors" (Ref. 1), and GDC 41, "Containment Atmosphere Cleanup" (Ref. 2). The primary containment hydrogen recombiners are required to reduce the hydrogen concentration in the primary containment following a loss of coolant accident (LOCA). The primary containment hydrogen recombiners accomplish this by recombining hydrogen and oxygen to form water vapor. The vapor is condensed and returned to the suppression pool, thus eliminating any discharge to the environment. The primary containment hydrogen recombiner is manually initiated, since flammability limits would not be reached until several hours after a Design Basis Accident (DBA).

Two 100% capacity independent primary containment hydrogen recombiner subsystems are provided and are shared between Unit 1 and Unit 2. Each consists of controls located in the control room and in the auxiliary electric equipment room, a power supply, and a recombiner located in the reactor building. Recombination is accomplished by heating a hydrogen air mixture to > 1150°F. The resulting water vapor and discharge gases are cooled prior to discharge from the unit. Air flows through the unit at 125 cfm, with a blower in the unit providing the motive force. A single recombiner is capable of maintaining the hydrogen concentration in primary 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 Feature bus and is provided with separate power panel and control panel (with one recombiner powered from Unit 1 and the other recombiner powered from Unit 2).

Emergency operating procedures direct that the hydrogen concentration in primary containment be monitored following a DBA and that the primary containment hydrogen recombiner

(continued)

BASES

BACKGROUND (continued)

be manually activated to prevent the primary containment atmosphere from reaching a bulk hydrogen concentration of 4.0 v/o.

APPLICABLE SAFETY ANALYSES

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

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

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

b. Radiolytic decomposition of water in the Reactor Coolant System.

To evaluate the potential for hydrogen accumulation in primary containment following a LOCA, the hydrogen generation as a function of time following the initiation of the accident is calculated. Assumptions recommended by Reference 3 were complied with to maximize the amount of hydrogen calculated.

The calculation confirms that when the mitigating systems are actuated in accordance with plant procedures, the peak hydrogen concentration in the primary containment remains < 4 v/o (Ref. 4).

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

LCO

Two primary containment hydrogen recombiners, including the associated Residual Heat Removal (RHR) pumps, piping and valves necessary to provide recombiner cooling, must be OPERABLE. This ensures operation of at least one primary containment hydrogen recombiner in the event of a worst case single active failure.

(continued)

BASES

LCO (continued)	Operation with at least one primary containment hydrogen recombiner subsystem ensures that the post LOCA hydrogen concentration can be prevented from exceeding the flammability limit.
APPLICABILITY	In MODES 1 and 2, the two primary containment hydrogen recombiners are required to control the hydrogen concentration within primary containment below its flammability limit of 4.0 v/o following a LOCA, assuming a worst case single failure. In MODE 3, both the hydrogen production rate and the total hydrogen production after a LOCA would be less than that calculated for the DBA LOCA. Also, because of the limited time in this MODE, the probability of an accident requiring the primary containment hydrogen recombiner is low. Therefore, the primary containment hydrogen recombiners are not required in MODE 3. In MODES 4 and 5, the probability and consequences of a LOCA are low due to the pressure and temperature limitations in these MODES. Therefore, the primary containment hydrogen recombiners are not required in these MODES.
ACTIONS	A.1 With one primary containment hydrogen recombiner inoperable, the inoperable primary containment hydrogen recombiner must be restored to OPERABLE status within 30 days. In this condition, the remaining OPERABLE primary containment 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 low probability of the occurrence of a LOCA that would generate hydrogen in amounts capable of exceeding the flammability limit, the amount of time available after the event for operator action to prevent hydrogen accumulation exceeding this limit, and the low probability of failure of the OPERABLE primary containment hydrogen recombiner.

(continued)

BASES

ACTIONS

A.1 (continued)

Required Action A.1 has been modified by a Note stating that the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when one recombiner is inoperable. This allowance is provided because of the low probability of the occurrence of a LOCA that would generate hydrogen in amounts capable of exceeding the flammability limit, the low probability of the failure of the OPERABLE recombiner, and the amount of time available after a postulated LOCA for operator action to prevent exceeding the flammability limit.

B.1 and B.2

With two primary containment 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 Primary Containment Vent and 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 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 low probability of the occurrence of a LOCA that would generate hydrogen in the amounts capable of exceeding the flammability limit.

(continued)

BASES

ACTIONS (continued)

C.1

If any Required Action and associated Completion Time cannot be met, 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 12 hours. The allowed Completion Time of 12 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 3.6.3.1.1

Performance of a system functional test for each primary containment hydrogen recombiner ensures that the recombiners are OPERABLE and can attain and sustain the temperature necessary for hydrogen recombination. In particular, this SR requires verification that the reaction chamber gas temperature increases to ≥ 1175°F in ≤ 2 hours and that significant heater elements are not burned out by determining that the current in each phase differs by less than or equal to 5% from the other phases and is within 5% of the value observed in the original acceptance test, corrected for line voltage differences.

Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.3.1.2

This SR requires performance of a resistance to ground test of 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 ≥ 1.0E5 ohms within 30 minutes following completion of SR 3.6.3.1.1.

Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

(continued)

BASES (continued)

REFERENCES	1.	10 CFR 50.44.
	2.	10 CFR 50, Appendix A, GDC 41.
	3.	Regulatory Guide 1.7, Revision 0, March 10, 1971.
	4.	UFSAR, Section 6.2.5.

ATTACHMENT 4-F

Markup of Technical Specifications Bases Changes

PEACH BOTTOM ATOMIC POWER STATION UNIT 2

REVISED TS BASES PAGES

B 3.3-70
B 3.3-74
B 3.3-75

PEACH BOTTOM ATOMIC POWER STATION UNIT 3

REVISED TS BASES PAGES

B 3.3-71
B 3.3-75
B 3.3-76

DELETED

BASES

LCO (continued)

9. 10. ~~Drywell and Suppression Chamber Hydrogen and Oxygen Analyzers~~

Instruments: XR-80411A, XR-80411B

Drywell and suppression chamber hydrogen and oxygen analyzers are Category I instruments provided to detect high hydrogen or oxygen concentration conditions that represent a potential for containment breach. This variable is also important in verifying the adequacy of mitigating actions. The drywell and suppression chamber hydrogen and oxygen analyzer PAM instrumentation consists of two independent gas analyzers. Each gas analyzer can determine either hydrogen or oxygen concentration. The analyzers are capable of determining hydrogen concentration in the range of 0 to 30% by volume and oxygen concentration in the range of 0 to 10% by volume. Each gas analyzer must be capable of sampling either the drywell or the suppression chamber. The hydrogen and oxygen concentration from each analyzer are displayed on its associated control room recorder. Therefore, the PAM Specification deals specifically with these portions of the analyzer channels.

DELETE

11. Suppression Chamber Water Temperature

Instruments: TR-8123 A, B
TIS-2-2-71 A, B Recorders

Suppression chamber water temperature is a Category I variable provided to detect a condition that could potentially lead to containment breach and to verify the effectiveness of ECCS actions taken to prevent containment breach. The suppression chamber water temperature instrumentation allows operators to detect trends in suppression chamber water temperature in sufficient time to take action to prevent steam quenching vibrations in the suppression pool. Suppression chamber water temperature is monitored by two redundant channels. Each channel is assigned to a separate safeguard power division. Each channel consists of 13 resistance temperature detectors (RTDs) mounted in thermowells installed in the suppression chamber shell below the minimum water level, a processor, and control room recorders. The RTDs are mounted in each of 13 of the 16 segments of the suppression chamber. The RTD

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.3.1.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel against 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 instrument channels could be an indication of excessive instrument drift in one of the channels or 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 high radiation instrumentation should be compared to similar plant instruments located throughout the plant.

Agreement criteria are determined by the plant 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.

The Frequency of 31 days is based upon plant operating experience, with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any 31 day interval is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of those displays associated with the channels required by the LCO.

SR 3.3.3.1.2 ~~and SR 3.3.3.1.3~~ DELETED

SR 3.3.3.1.3

These SRs require CHANNEL CALIBRATIONs to be performed. A CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies the channel responds to measured parameter with the necessary range and accuracy. For the PCIV Position Function, the CHANNEL CALIBRATION consists of verifying the remote indication conforms to actual valve position.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

~~SR 3.3.3.1.2 and~~ SR 3.3.3.1.3 (continued)

~~The 92 day Frequency for CHANNEL CALIBRATION of the drywell and suppression chamber hydrogen and oxygen analyzers is based on vendor recommendations.~~ The 24 month Frequency for CHANNEL CALIBRATION of ~~all other~~ PAM instrumentation of Table 3.3.3.1-1 is based on operating experience and consistency with the Peach Bottom Atomic Power Station refueling cycles.

REFERENCES

1. Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 3, May 1983.

2. NRC Safety Evaluation Report, "Peach Bottom Atomic Power Station, Unit Nos. 2 and 3, Conformance to Regulatory Guide 1.97," January 15, 1988.

3. Letter from G. Y. Suh (NRC) to G. J. Beck (PECo) dated February 13, 1991 concerning "Conformance to Regulatory Guide 1.97 for Peach Bottom Atomic Power Station, Units 2 and 3".

4. Letter from S. Dembek (NRC) to G. A. Hunger (PECO Energy) dated March 7, 1994 concerning "Regulatory Guide 1.97 - Boiling Water Reactor Neutron Flux Monitoring, Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3".

DELETED

BASES

LCO (continued)

9. 10. ~~Drywell and Suppression Chamber Hydrogen and Oxygen Analyzers~~

DELETE

Instruments: XR-90411A, XR-90411B

Drywell and suppression chamber hydrogen and oxygen analyzers are Category I instruments provided to detect high hydrogen or oxygen concentration conditions that represent a potential for containment breach. This variable is also important in verifying the adequacy of mitigating actions. The drywell and suppression chamber hydrogen and oxygen analyzer PAM instrumentation consists of two independent gas analyzers. Each gas analyzer can determine either hydrogen or oxygen concentration. The analyzers are capable of determining hydrogen concentration in the range of 0 to 30% by volume and oxygen concentration in the range of 0 to 10% by volume. Each gas analyzer must be capable of sampling either the drywell or the suppression chamber. The hydrogen and oxygen concentration from each analyzer are displayed on its associated control room recorder. Therefore, the PAM Specification deals specifically with these portions of the analyzer channels.

11. Suppression Chamber Water Temperature

Instruments: TR-9123 A, B
TIS-3-2-71 A, B Recorders

Suppression chamber water temperature is a Category I variable provided to detect a condition that could potentially lead to containment breach and to verify the effectiveness of ECCS actions taken to prevent containment breach. The suppression chamber water temperature instrumentation allows operators to detect trends in suppression chamber water temperature in sufficient time to take action to prevent steam quenching vibrations in the suppression pool. Suppression chamber water temperature is monitored by two redundant channels. Each channel is assigned to a separate safeguard power division. Each channel consists of 13 resistance temperature detectors (RTDs) mounted in thermowells installed in the suppression chamber shell below the minimum water level, a processor, and control room recorders. The RTDs are mounted in each of 13 of the 16 segments of the suppression chamber. The RTD

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.3.1.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel against 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 instrument channels could be an indication of excessive instrument drift in one of the channels or 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 high radiation instrumentation should be compared to similar plant instruments located throughout the plant.

Agreement criteria are determined by the plant 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.

The Frequency of 31 days is based upon plant operating experience, with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any 31 day interval is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of those displays associated with the channels required by the LCO.

SR 3.3.3.1.2 ~~and SR 3.3.3.1.3~~ DELETED

SR 3.3.3.1.3

These SRs require CHANNEL CALIBRATIONs to be performed. A CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies the channel responds to measured parameter with the necessary range and accuracy. For the PCIV Position Function, the CHANNEL CALIBRATION consists of verifying the remote indication conforms to actual valve position.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

~~SR 3.3.3.1.2 and~~ SR 3.3.3.1.3 (continued)

~~The 92 day Frequency for CHANNEL CALIBRATION of the drywell and suppression chamber hydrogen and oxygen analyzers is based on vendor recommendations.~~ The 24 month Frequency for CHANNEL CALIBRATION of ~~all other~~ PAM instrumentation of Table 3.3.3.1-1 is based on operating experience and consistency with the Peach Bottom Atomic Power Station refueling cycles.

REFERENCES

1. Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 3, May 1983.

2. NRC Safety Evaluation Report, "Peach Bottom Atomic Power Station, Unit Nos. 2 and 3, Conformance to Regulatory Guide 1.97," January 15, 1988.

3. Letter from G. Y. Suh (NRC) to G. J. Beck (PECo) dated February 13, 1991 concerning "Conformance to Regulatory Guide 1.97 for Peach Bottom Atomic Power Station, Units 2 and 3".

4. Letter from S. Dembek (NRC) to G. A. Hunger (PECO Energy) dated March 7, 1994 concerning "Regulatory Guide 1.97 - Boiling Water Reactor Neutron Flux Monitoring, Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3".

ATTACHMENT 4-G

Markup of Technical Specifications Bases Changes

QUAD CITIES NUCLEAR POWER STATION

<u>REVISED TS BASES PAGES</u>

B 3.3.3.1-6
B 3.3.3.1-7
B 3.3.3.1-10
B 3.3.3.1-11
B 3.3.3.1-12

LCO

6. Penetration Flow Path Primary Containment Isolation Valve (PCIV) Position (continued)

active PCIV having control room indication, Note (b) requires a single channel of valve position indication to be OPERABLE. This is sufficient to redundantly verify the isolation status of each isolable penetration via indicated status of the active valve, as applicable, and prior knowledge of passive valve or system boundary status. If a penetration flow path is isolated, position indication forthe PCIV(s) in the associated penetration flow path is not needed to determine status. Therefore, the position indication for valves in an isolated penetration flow path is not required to be OPERABLE. Each penetration is treated separately and each penetration flow path is considered a separate function. Therefore, separate Condition entry is allowed for each inoperable penetration flow path.

The indication for each PCIV is provided at the valve controls in the control room. Each indication consists of green and red indicator lights that illuminate to indicate whether the PCIV is fully open, fully closed, or in a mid-position. Therefore, the PAM Specification deals specifically with this portion of the instrumentation channel.

~~7. 8. Drywell Hydrogen and Oxygen Concentration Analyzers and Monitors~~

~~Drywell hydrogen and oxygen analyzers and monitors are Category I instruments provided to detect high hydrogen or oxygen concentration conditions that represent a potential for containment breach. This variable is also important in verifying the adequacy of mitigating actions. Hydrogen and oxygen concentrations are each measured by two independent analyzers and are monitored in the control room. The drywell hydrogen and oxygen analyzer PAM instrumentation consists of two independent gas analyzer systems. Each gas analyzer system consists of a hydrogen analyzer and an oxygen analyzer. The analyzers are capable of determining hydrogen concentration in the range of 0% to 10% and oxygen concentration in the range of 0% to 10%. Each gas analyzer~~

(continued)

BASES

LCO

~~7. 8. Drywell Hydrogen and Oxygen Concentration Analyzers and Monitors (continued)~~

~~system must be capable of sampling the drywell. There are two independent recorders in the control room to display the results. Therefore, the PAM Specification deals specifically with this portion of the instrument channel.~~

7. ~~8.~~ Torus Water Temperature

Torus water temperature is a Type A and Category I variable provided to detect a condition that could potentially lead to containment breach and to verify the effectiveness of ECCS actions taken to prevent containment breach. The torus water temperature instrumentation allows operators to detect trends in torus water temperature in sufficient time to take action to prevent steam quenching vibrations in the torus. Sixteen temperature sensors are arranged in two groups of eight sensors in independent and redundant channels, located such that there are two sensors (one inner and one outer) located in each of the four quadrants to assure an accurate measurement of bulk water temperature. The range of the torus water temperature channels is 0°F to 300°F.

Thus, two groups of sensors are sufficient to monitor the bulk average temperature of the torus water. Each group of eight sensors is averaged to provide two bulk temperature inputs for PAM. The outputs for the sensors are recorded on two independent recorders in the control room. Both of these recorders must be OPERABLE to furnish two channels of PAM indication. These recorders are the primary indication used by the operator during an accident. Therefore, the PAM Specification deals specifically with this portion of the instrument channels.

APPLICABILITY

The PAM instrumentation LCO is applicable in MODES 1 and 2. These variables are related to the diagnosis and preplanned actions required to mitigate DBAs. The applicable DBAs are assumed to occur in MODES 1 and 2. In MODES 3, 4, and 5, plant conditions are such that the likelihood of an event that would require PAM instrumentation is extremely low; therefore, PAM instrumentation is not required to be OPERABLE in these MODES.

(continued)

BASES

ACTIONS (continued)

E.1

For the majority of Functions in Table 3.3.3.1-1, if the Required Action and associated Completion Time of Condition C is not met, 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 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

F.1

Since alternate means of monitoring drywell radiation have been developed and tested, the Required Action is not to shut down the plant, but rather to follow the directions of Specification 5.6.6. These alternate means may be temporarily installed if the normal PAM channel cannot be restored to OPERABLE status within the allotted time. The report provided to the NRC should discuss the alternate means used, describe the degree to which the alternate means are equivalent to the installed PAM channels, justify the areas in which they are not equivalent, and provide a schedule for restoring the normal PAM channels.

SURVEILLANCE REQUIREMENTS

~~As noted at the beginning of the SRs, the following SRs apply to each PAM instrumentation Function in Table 3.3.3.1-1, except where identified in the SR.~~

The Surveillances are modified by a ~~second~~ Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours, provided the other required channel in the associated Function is OPERABLE. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. The 6 hour testing allowance is acceptable since it does not significantly reduce the probability of properly monitoring post-accident parameters, when necessary.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.1.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel against 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 instrument channels could be an indication of excessive instrument drift in one of the channels or 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 high radiation instrumentation should be compared to similar plant instruments located throughout the plant.

Agreement criteria are determined by the plant staff, based on a combination of the channel instrument uncertainties, including 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.

The Frequency of 31 days is based upon plant operating experience, with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any 31 day interval is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of those displays associated with the channels required by the LCO.

SR 3.3.3.1.2 ~~and SR 3.3.3.1.3~~

A CHANNEL CALIBRATION is performed ~~every 92 days for Functions 7 and 8 and~~ every 24 months for all ~~other~~ functions. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies the channel responds to measured parameter with the necessary range and accuracy. For Function 5, the CHANNEL CALIBRATION shall consist of an electronic calibration of

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.3.1.2 ~~and SR 3.3.3.1.3~~ (continued)

the channel, excluding the detector, for range decades > 10 R/hour and a one point calibration check of the detector with an installed or portable gamma source for the range decade < 10 R/hour. For Function 6, the CHANNEL CALIBRATION shall consist of verifying that the position indication conforms to actual valve position.

~~The 92 day Frequency for CHANNEL CALIBRATION of Functions 7 and 8 is based on operating experience~~. The 24 month Frequency for CHANNEL CALIBRATION of all ~~other~~ PAM Instrumentation of Table 3.3.3.1-1 is based on operating experience and consistency with the refueling cycles.

REFERENCES

1. Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 2, December 1980.

2. NRC letter, T. Ross (NRC) to H.E. Bliss (Commonwealth Edison Company), "Conformance of Post Accident Monitoring Instrumentation at Quad Cities with Regulatory Guide 1.97," dated August 16, 1988.

ATTACHMENT 5-A

REGULATORY COMMITMENTS FOR BRAIDWOOD STATION

The following table identifies those actions committed to by Exelon Generation Company, LLC (EGC) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Alison Mackellar at (630) 657-2817.

Regulatory Commitments	Due Date / Event
Exelon Generation Company, LLC (EGC) will maintain the capability of monitoring containment hydrogen for beyond design basis accidents.	Implemented by TS Amendment implementation date. Relocated to Technical Requirements Manual.

ATTACHMENT 5-B

REGULATORY COMMITMENTS FOR BYRON STATION

The following table identifies those actions committed to by Exelon Generation Company, LLC (EGC) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Alison Mackellar at (630) 657-2817.

Regulatory Commitments	**Due Date / Event**
Exelon Generation Company, LLC (EGC) will maintain the capability of monitoring containment hydrogen for beyond design basis accidents.	Implemented by TS Amendment implementation date. Relocated to Technical Requirements Manual.

ATTACHMENT 5-C

REGULATORY COMMITMENTS FOR CLINTON POWER STATION

The following table identifies those actions committed to by AmerGen Energy Company, LLC (AmerGen) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Alison Mackellar at (630) 657-2817.

Regulatory Commitments	Due Date / Event
AmerGen Energy Company, LLC (AmerGen) will maintain the capability of monitoring containment hydrogen for beyond design basis accidents.	Implemented by TS Amendment implementation date. Relocated to a licensee controlled document.

ATTACHMENT 5-D

REGULATORY COMMITMENTS FOR DRESDEN NUCLEAR POWER STATION

The following table identifies those actions committed to by Exelon Generation Company, LLC (EGC) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Alison Mackellar at (630) 657-2817.

Regulatory Commitments	Due Date / Event
Exelon Generation Company, LLC (EGC) will maintain the capability of monitoring containment hydrogen for beyond design basis accidents.	Implemented by TS Amendment implementation date. Relocated to Technical Requirements Manual.
Exelon Generation Company, LLC (EGC) will maintain the capability of monitoring containment oxygen to verify the status of the inerted containment.	Implemented by TS Amendment implementation date. Relocated to Technical Requirements Manual.

ATTACHMENT 5-E

REGULATORY COMMITMENTS FOR LASALLE COUNTY STATION

The following table identifies those actions committed to by Exelon Generation Company, LLC (EGC) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Alison Mackellar at (630) 657-2817.

Regulatory Commitments	Due Date / Event
Exelon Generation Company, LLC (EGC) will maintain the capability of monitoring containment hydrogen for beyond design basis accidents.	Implemented by TS Amendment implementation date. Relocated to Technical Requirements Manual.
Exelon Generation Company, LLC (EGC) will maintain the capability of monitoring containment oxygen to verify the status of the inerted containment.	Implemented by TS Amendment implementation date. Relocated to Technical Requirements Manual.

ATTACHMENT 5-F

REGULATORY COMMITMENTS FOR PEACH BOTTOM ATOMIC POWER STATION

The following table identifies those actions committed to by Exelon Generation Company, LLC (EGC) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Alison Mackellar at (630) 657-2817.

Regulatory Commitments	**Due Date / Event**
Exelon Generation Company, LLC (EGC) will maintain the capability of monitoring containment hydrogen for beyond design basis accidents.	Implemented by TS Amendment implementation date. Relocated to Technical Requirements Manual.
Exelon Generation Company, LLC (EGC) will maintain the capability of monitoring containment oxygen to verify the status of the inerted containment.	Implemented by TS Amendment implementation date. Relocated to Technical Requirements Manual.

ATTACHMENT 5-G

REGULATORY COMMITMENTS FOR QUAD CITIES NUCLEAR POWER STATION

The following table identifies those actions committed to by Exelon Generation Company, LLC (EGC) in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Alison Mackellar at (630) 657-2817.

Regulatory Commitments	Due Date / Event
Exelon Generation Company, LLC (EGC) will maintain the capability of monitoring containment hydrogen for beyond design basis accidents.	Implemented by TS Amendment implementation date. Relocated to Technical Requirements Manual.
Exelon Generation Company, LLC (EGC) will maintain the capability of monitoring containment oxygen to verify the status of the inerted containment.	Implemented by TS Amendment implementation date. Relocated to Technical Requirements Manual.