FENOC™
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March 25, 2014
L-14-106

10 CFR 50.90

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

SUBJECT:
Perry Nuclear Power Plant
Docket Number 50-440, License Number NPF-58
License Amendment Request for Adoption of TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – RITSTF Initiative 5b"

Pursuant to 10 CFR 50.90, FirstEnergy Nuclear Operating Company (FENOC) hereby submits an amendment application for the Perry Nuclear Power Plant (PNPP).

The proposed amendment would modify the PNPP Technical Specifications by relocating specific surveillance frequencies to a licensee controlled program with the implementation of Nuclear Energy Institute (NEI) 04-10, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies." The proposed changes are consistent with the approved Technical Specifications Task Force (TSTF) Traveler TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – RITSTF Initiative 5b." However, certain deviations from TSTF-425 are proposed by FENOC, and these are addressed in the description and assessment of the proposed change that is provided as Enclosure A. Also in support of the proposed amendment, Enclosure B addresses the technical adequacy of the PNPP probabilistic risk assessment (PRA) model.

A cross-reference listing of the TSTF-425 Technical Specification Surveillances for the standard Boiling Water Reactor (BWR) - 6 versus the PNPP Technical Specifications Surveillances is provided as an attachment. This attachment is provided for information and can be referenced to aid in comparing the approved TSTF-425, Revision 3 changes to the proposed PNPP Technical Specification changes.

To allow for normal NRC processing, FENOC requests approval of the proposed license amendment by March 31, 2015 and an implementation period of 120 days after the effective date of the amendment.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager - Fleet Licensing, at (330) 315-6810.

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 25, 2014.

Sincerely,

Ernest J. Harkness

Enclosures:
A FENOC Description and Assessment of the Proposed Amendment
B Documentation of PNPP PRA Technical Adequacy

Attachment:
TSTF-425 (NUREG-1434) Versus Perry Nuclear Power Plant (PNPP) Cross-Reference

cc: NRC Region III Administrator
NRC Resident Inspector
NRC Project Manager
State of Ohio (NRC Liaison)
Utility Radiological Safety Board

ENCLOSURE A

FENOC DESCRIPTION AND ASSESSMENT OF THE PROPOSED AMENDMENT

FENOC Description and Assessment of the Proposed Amendment

Subject: License Amendment Request for Adoption of TSTF-425, Revision 3, “Relocate Surveillance Frequencies to Licensee Control – Risk Informed Technical Specification Task Force (RITSTF) Initiative 5b”

Table of Contents

Attachments:

1. Proposed Technical Specification and Technical Specification Bases Inserts
2. Proposed Technical Specification Changes (Mark-Ups)
3. Proposed Technical Specification Pages (Retyped)
4. Proposed Technical Specification Bases Changes (Mark-up)

1.0 DESCRIPTION

The proposed amendment would modify the Perry Nuclear Power Plant, Unit No. 1 (PNPP) technical specifications (TS) by relocating specific surveillance frequencies to a licensee-controlled program with the adoption of Technical Specification Task Force (TSTF)-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – Risk Informed Technical Specification Task Force (RITSTF) Initiative 5b." Additionally, the change would add a new program, the Surveillance Frequency Control Program, to TS Section 5, "Administrative Controls."

The proposed changes are consistent with the Nuclear Regulatory Commission (NRC) approved Industry/TSTF Standard Technical Specification (STS) change TSTF-425, Revision 3 (Accession No. ML090850642); however, FirstEnergy Nuclear Operating Company (FENOC) proposes certain variations and deviations from TSTF-425, Revision 3, for the proposed PNPP amendment as discussed in Section 2.2, "Optional Changes and Variations." The Federal Register notice published on July 6, 2009 (74 FR 31996) announced the availability of this TS improvement.

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

FENOC has reviewed the safety evaluation dated July 6, 2009 (74 FR 31996). This review included a review of the NRC staff's evaluation, TSTF-425, Revision 3, and the requirements specified in Nuclear Energy Institute (NEI) 04-10, Revision 1, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies," dated April 2007 (Accession No. ML071360456).

"Documentation of PNPP Probabilistic Risk Assessment (PRA) Technical Adequacy" includes FENOC documentation with regard to PRA technical adequacy consistent with the requirements of Regulatory Guide 1.200, Revision 1, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," (Accession No. ML070240001).

FENOC has concluded that the justifications presented in the TSTF proposal and the safety evaluation prepared by the NRC staff are applicable to the Perry Nuclear Power Plant, Unit No. 1 and justify this amendment to incorporate the changes to the Perry Nuclear Power Plant TS.

2.2 Optional Changes and Variations

The proposed amendment is consistent with the standard TS changes described in TSTF-425, Revision 3; however, FENOC proposes the following deviations:

- After NRC approval of TSTF-425, it was recognized that surveillance frequencies that have not been changed under the Surveillance Frequency Control Program may not be based on operating experience, equipment reliability, or plant risk. Therefore, the TSTF and the NRC agreed that the TSTF-425 TS Bases insert, "The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program," should be revised to state, "The Surveillance Frequency is controlled under the Surveillance Frequency Control Program." The existing TS Bases information describing the basis for the surveillance frequency will be relocated to the licensee-controlled Surveillance Frequency Control Program.

- The TSTF-425 TS Section 5.5.15 insert references NEI 04-10, “Risk-Informed Method for Control of Surveillance Frequencies.” The PNPP TS Section 5.5.15 references NEI 04-10, “Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies.” This is an administrative deviation from TSTF-425 with no impact on the NRC’s model safety evaluation dated July 6, 2009 (74 FR 31996).

- The “TSTF-425 (NUREG-1434) Versus Perry Nuclear Power Plant (PNPP) Cross-Reference” is provided for information and is a cross-reference between the NUREG-1434, “Standard Technical Specifications General Electric BWR/6 Plants,” Surveillance Requirements (SRs) included in TSTF-425 versus the PNPP SRs included in this amendment request. The cross-reference includes a summary description of the referenced TSTF-425 (NUREG-1434)/PNPP TS SRs, which is provided for information purposes only and is not intended to be a verbatim description of the TS SRs. The cross-reference contains the following items:

a) NUREG-1434 SRs included in TSTF-425 and corresponding PNPP SRs with identical SR numbers

PNPP SRs that have SR numbers identical to the corresponding NUREG-1434 SRs are not deviations from TSTF-425 with the exception of administrative deviations such as formatting and plant-specific frequencies. These deviations are administrative deviations from TSTF-425 with no impact on the NRC’s model safety evaluation dated July 6, 2009 (74 FR 31996).

b) NUREG-1434 SRs included in TSTF-425 and corresponding PNPP SRs with differing SR numbers

This is an administrative deviation from TSTF-425 with no impact on the NRC's model safety evaluation dated July 6, 2009 (74 FR 31996).

c) NUREG-1434 SRs included in TSTF-425 that are not contained in the PNPP TS

For NUREG-1434 SRs that are not contained in the PNPP TS, the corresponding NUREG-1434 mark-ups included in TSTF-425 for these SRs are not applicable to PNPP. This is an administrative deviation from TSTF-425 with no impact on the NRC's model safety evaluation dated July 6, 2009 (74 FR 31996).

d) PNPP plant-specific SRs that are not contained in NUREG-1434; and therefore, are not included in the TSTF-425 mark-ups

The following TS and associated SRs are PNPP plant-specific:

- 3.3.1.3, “Oscillation Power Range Monitor (OPRM) Instrumentation”
- 3.6.1.8, “Feedwater Leakage Control System (FWLCS)”
- 3.6.1.10, “Primary Containment – Shutdown”
- 3.6.1.11, “Containment Vacuum Breakers”
- 3.6.1.12, “Containment Humidity Control”
- 3.7.8, “Fuel Handling Building (FHB)”
- 3.7.9, “FHB Ventilation Exhaust System”
- 3.7.10, “Emergency Closed Cooling Water (ECCW) System”

FENOC has determined that the PNPP plant-specific SRs involve fixed periodic frequencies and do not meet any of the four exclusion criteria of TSTF-425, Revision 3. The four criteria that exclude surveillance frequencies from being relocated are:

- Frequencies that reference other approved programs for the specific interval (such as the Inservice Testing Program or the Primary Containment Leakage Rate Testing Program);

- Frequencies that are purely event driven (for example, “Each time the control rod is withdrawn to the ‘full out’ position”);

- Frequencies that are event-driven but have a time component for performing the surveillance on a one-time basis once the event occurs (for example, “within 24 hours after thermal power reaching ≥ 95% RTP”); and

- Frequencies that are related to specific conditions (for example, battery degradation, age, and capacity) or conditions for the performance of a surveillance requirement (for example, “drywell to suppression chamber differential pressure decrease”).

In accordance with TSTF-425, changes to the frequencies for SRs with periodic frequencies that do not meet the exclusion criteria would be controlled under the Surveillance Frequency Control Program. The Surveillance Frequency Control Program provides the necessary administrative controls to require that SRs related to testing, calibration, and inspection are conducted at a frequency to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met. Changes to frequencies in the Surveillance Frequency Control Program would be evaluated using the methodology and probabilistic risk guidelines contained in NEI 04-10, Revision 1, as approved by NRC letter dated September 19, 2007 (Accession No. ML072570267). The NEI 04-10, Revision 1, methodology includes qualitative considerations, risk analyses, sensitivity studies and bounding analyses, as necessary, and recommended monitoring of the performance of systems, structures, and components (SSCs) for which frequencies are changed to assure that reduced testing does not adversely impact the SSCs. In addition, the NEI 04-10, Revision 1, methodology satisfies the five key safety principles specified in Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," dated August 1998 relative to changes in SR frequencies. Relocation of these frequencies is also consistent with TSTF-425, Revision 3, and with the NRC's model safety evaluation dated July 6, 2009 (74 FR 31996), including the scope exclusions identified in Section 1.0, "Introduction," of the model safety evaluation.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration

FirstEnergy Nuclear Operating Company (FENOC) has reviewed the proposed no significant hazards consideration (NSHC) determination published in the Federal Register dated July 6, 2009 (74 FR 31996). FENOC has concluded that the proposed NSHC presented in the Federal Register notice is applicable to the Perry Nuclear Power Plant, Unit No. 1 and satisfies the requirements of 10 CFR 50.91(a). The NSHC is provided below.

Description of Amendment Request:

This change request involves the adoption of an approved change to the standard technical specifications (STS) for General Electric Plants, BWR/6 (NUREG-1434), to allow relocation of specific TS surveillance frequencies to a licensee-controlled program. The proposed change is described in Technical Specification Task Force (TSTF) Traveler, TSTF-425, Revision 3, (Accession No. ML090850642) related to the Relocation of Surveillance Frequencies to Licensee Control – RITSTF Initiative 5b and is described in the Notice of Availability published in the Federal Register on July 6, 2009 (74 FR 31996).

The proposed changes are consistent with Nuclear Regulatory Commission (NRC)-approved Industry/Technical Specifications Task Force (TSTF) Traveler, TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – RITSTF Initiative 5b." The proposed change relocates surveillance frequencies to a licensee-controlled program, the Surveillance Frequency Control Program. This change is applicable to licensees using probabilistic risk guidelines contained in NRC-approved NEI 04-10, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies," (Accession No. ML071360456).

Basis for proposed no significant hazards consideration: As required by 10 CFR 50.91(a), the FENOC analysis of the issue of no significant hazards consideration is presented below:

1. Does the proposed change involve a significant increase in the probability or consequences of any accident previously evaluated?

   Response: No.

   The proposed change relocates the specified frequencies for periodic surveillance requirements to licensee control under a new Surveillance Frequency Control Program. Surveillance frequencies are not an initiator to any accident previously evaluated. As a result, the probability of any accident previously evaluated is not significantly increased. The systems and components required by the technical specifications for which the surveillance frequencies are relocated are still required to be operable, meet the acceptance criteria for the surveillance requirements, and be capable of performing any mitigation function assumed in the accident analysis. As a result, the consequences of any accident previously evaluated are not significantly increased.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

No new or different accidents result from utilizing the proposed change. The changes do not involve a physical alteration of the plant (that is, no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. In addition, the changes do not impose any new or different requirements. The changes do not alter assumptions made in the safety analysis. The proposed changes are consistent with the safety analysis assumptions and current plant operating practice.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in the margin of safety?

Response: No.

The design, operation, testing methods, and acceptance criteria for systems, structures, and components (SSCs), specified in applicable codes and standards (or alternatives approved for use by the NRC) will continue to be met as described in the plant licensing basis (including the final safety analysis report and bases to the TS), since these are not affected by changes to the surveillance frequencies. Similarly, there is no impact to safety analysis acceptance criteria as described in the plant licensing basis. To evaluate a change in the relocated surveillance frequency, FENOC will perform a probabilistic risk evaluation using the guidance contained in NRC approved Nuclear Energy Institute (NEI) 04-10, Revision 1, in accordance with the TS Surveillance Frequency Control Program. NEI 04-10, Revision 1, methodology provides reasonable acceptance guidelines and methods for evaluating the risk increase of proposed changes to surveillance frequencies consistent with

Regulatory Guide 1.177, “An Approach for Plant-Specific, Risk Informed Decisionmaking: Technical Specifications.”

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based upon the reasoning presented above, FENOC concludes that the requested change does not involve a significant hazards consideration as set forth in 10 CFR 50.92(c), Issuance of Amendment.

3.2 Applicable Regulatory Requirements

A description of the proposed changes and their relationship to applicable regulatory requirements is provided in TSTF-425, Revision 3 and the NRC's model safety evaluation published in the Notice of Availability dated July 6, 2009 (74 FR 31996). FENOC has concluded that the relationship of the proposed changes to the applicable regulatory requirements presented in the Federal Register notice is applicable to Perry Nuclear Power Plant, Unit No. 1.

3.3 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission’s regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

4.0 ENVIRONMENTAL CONSIDERATION

FENOC has reviewed the environmental consideration included in the NRC's model safety evaluation published in the Federal Register on July 6, 2009 (74 FR 31996). FENOC has concluded that the NRC's findings presented therein are applicable to Perry Nuclear Power Plant, Unit No. 1, and the determination is incorporated by reference for this application.

Attachment 1

Perry Nuclear Power Plant, Unit No. 1

Proposed Technical Specification and Technical Specification Bases Inserts

The following inserts are consistent with the inserts provided in TSTF-425, Revision 3:

INSERT 1

In accordance with the Surveillance Frequency Control Program

INSERT 2

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program

INSERT 3

5.5.15 Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, “Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies,” Revision 1.

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

Perry Nuclear Power Plant, Unit No. 1

Proposed Technical Specification Changes (Mark-Ups)

The following lists the pages included within Attachment 2:

1.0-6	3.3-28	3.4-25	3.6-38
3.1-10	3.3-30	3.4-27	3.6-39
3.1-13	3.3-31	3.4-29	3.6-41
3.1-17	3.3-38	3.4-32	3.6-43
3.1-19	3.3-46	3.5-4	3.6-47
3.1-21	3.3-53	3.5-5	3.6-48
3.1-22	3.3.53a	3.5-7	3.6-50
3.1-25	3.3-62	3.5-8	3.6-52
3.2-1	3.3-66	3.5-9	3.6-55
3.2-2	3.3-69	3.5-11	3.6-58
3.2-3	3.3-72	3.5-12	3.6-60
3.3-3	3.3-75	3.6-7	3.6-60a
3.3-4	3.3-79	3.6-8	3.6-64
3.3-5	3.4-4	3.6-15	3.6-67
3.3-6	3.4-6	3.6-16	3.6-69
3.3-12	3.4-7	3.6-17	3.6-70
3.3-13	3.4-8	3.6-19	3.6-72
3.3-14a	3.4-9	3.6-20	3.7-2
3.3-14b	3.4-10*	3.6-21	3.7-3
3.3-16	3.4-11	3.6-23	3.7-6
3.3-17	3.4-13	3.6-25	3.7-7
3.3-22	3.4-15	3.6-26	3.7-10
3.3-24	3.4-18	3.6-30	3.7-12
3.3-25	3.4-20	3.6-33	3.7-13
3.3-27	3.4-23	3.6-35	3.7-14

* No Change. Included for Context.

Note: As a result of the proposed changes, additional Technical Specification pages other than those listed above would need to be repaginated. As no content change would be required, the pages requiring repagination are not included in Attachment 2.

Perry Nuclear Power Plant, Unit No. 1

Proposed Technical Specification Changes (Mark-Ups)

The following lists the pages included within Attachment 2:

3.7-15	3.9-4
3.7-18	3.9-7
3.7-20	3.9-8
3.8-5	3.9-9
3.8-6	3.9-12
3.8-7	3.9-15
3.8-8	3.10-5
3.8-9	3.10-8
3.8-10	3.10-11
3.8-11	3.10-12
3.8-12	3.10-14
3.8-13	3.10-15
3.8-14	3.10-17
3.8-15	3.10-21
3.8-23	3.10-22
3.8-25	5.0-15c
3.8-26	-END-
3.8-27	
3.8-33	
3.8-34	
3.8-37	
3.8-39	
3.9-1	
3.9-2	
3.9-3	

* No Change. Included for Context.

Note: As a result of the proposed changes, additional Technical Specification pages other than those listed above would need to be repaginated. As no content change would be required, the pages requiring repagination are not included in Attachment 2.

1.1 Definitions (continued)

SHUTDOWN MARGIN (SDM)	SDM shall be the amount of reactivity by which the reactor is subcritical or would be subcritical assuming that: a. The reactor is xenon free; b. The moderator temperature is 68°F; and c. All control rods are fully inserted except for the single control rod of highest reactivity worth, which is assumed to be fully withdrawn. With control rods not capable of being fully inserted, the reactivity worth of these control rods must be accounted for in the determination of SDM.
~~STAGGERED TEST BASIS~~	~~A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function.~~
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
TURBINE BYPASS SYSTEM RESPONSE TIME	The TURBINE BYPASS SYSTEM RESPONSE TIME consists of two components: a. The time from initial movement of the main turbine stop valve or control valve until 80% of the turbine bypass capacity is established; and b. The time from initial movement of the main turbine stop valve or control valve until initial movement of the turbine bypass valve. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.3.1	Determine the position of each control rod.	~~24 hours~~ Insert 1
SR 3.1.3.2	-------------------NOTE-------------------- Not required to be performed until 31 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of the RPCS. -- Insert each withdrawn control rod at least one notch.	~~31 days~~ Insert 1
SR 3.1.3.3	Verify each control rod scram time from fully withdrawn to notch position 13 is ≤ 7 seconds.	In accordance with SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.1.4.2	Verify, for a representative sample, each tested control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 950 psig.	~~200 days cumulative operation in MODE 1~~ Insert 1
SR 3.1.4.3	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with any reactor steam dome pressure.	Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect scram time
SR 3.1.4.4	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 950 psig.	Prior to exceeding 40% RTP after fuel movement within the affected core cell <u>AND</u> Prior to exceeding 40% RTP after work on control rod or CRD System that could affect scram time

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2 Declare the associated control rod inoperable.	1 hour
D. Required Action and associated Completion Time of Required Action B.1 or C.1 not met.	D.1 ---------NOTE--------- Not applicable if all inoperable control rod scram accumulators are associated with fully inserted control rods. ---------------------- Place the reactor mode switch in the shutdown position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify each control rod scram accumulator pressure is ≥ 1520 psig.	~~7 days~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Nine or more OPERABLE control rods not in compliance with BPWS.	B.1	--------NOTE--------- Affected control rods may be bypassed in RACS in accordance with SR 3.3.2.1.9 for insertion only. --------------------- Suspend withdrawal of control rods.	Immediately
	AND		
	B.2	Place the reactor mode switch in the shutdown position.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.6.1	Verify all OPERABLE control rods comply with BPWS.	~~24 hours~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.1	Verify available volume of borax-boric acid solution is within the limits of Figure 3.1.7-1.	~~24 hours~~ Insert 1
SR 3.1.7.2	Verify temperature of borax-boric acid solution is ≥ 70°F.	~~24 hours~~ Insert 1
SR 3.1.7.3	Verify temperature of pump suction piping is ≥ 70°F.	~~24 hours~~ Insert 1
SR 3.1.7.4	Verify continuity of explosive charge.	~~31 days~~ Insert 1
SR 3.1.7.5	Verify the concentration of boron in solution is within the limits of Figure 3.1.7-1.	~~31 days~~ Insert 1 AND Once within 24 hours after water or boron is added to solution AND Once within 24 hours after solution temperature is restored to ≥ 70°F

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.7.6	Verify each SLC subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position, or can be aligned to the correct position.	~~31 days~~ Insert 1
SR 3.1.7.7	Verify each pump develops a flow rate ≥ 32.4 gpm at a discharge pressure ≥ 1220 psig.	In accordance with the Inservice Testing Program
SR 3.1.7.8	Verify flow through one SLC subsystem from pump into reactor pressure vessel.	~~24 months on a STAGGERED TEST BASIS~~ Insert 1
SR 3.1.7.9	Verify all heat traced piping between storage tank and pump suction is unblocked.	~~24 months~~ Insert 1 <u>AND</u> Once within 24 hours after pump suction piping temperature is restored to ≥ 70°F

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.8.1	-------------------NOTE------------------- Not required to be met on vent and drain valves closed during performance of SR 3.1.8.2. -- Verify each SDV vent and drain valve is open.	~~31 days~~ Insert 1
SR 3.1.8.2	Cycle each SDV vent and drain valve to the fully closed and fully open position.	~~92 days~~ Insert 1
SR 3.1.8.3	Verify each SDV vent and drain valve: a. Closes in ≤ 30 seconds after receipt of an actual or simulated scram signal; and b. Opens when the actual or simulated scram signal is reset.	~~24 months~~ Insert 1

3.2 POWER DISTRIBUTION LIMITS

3.2.1 AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)

LCO 3.2.1 All APLHGRs shall be less than or equal to the limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 23.8% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any APLHGR not within limits.	A.1 Restore APLHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23.8% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.1 Verify all APLHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ 23.8% RTP AND ~~24 hours thereafter~~ Insert 1

3.2 POWER DISTRIBUTION LIMITS

3.2.2 MINIMUM CRITICAL POWER RATIO (MCPR)

LCO 3.2.2 All MCPRs shall be greater than or equal to the MCPR operating limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 23.8% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any MCPR not within limits.	A.1 Restore MCPR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23.8% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.2.1 Verify all MCPRs are greater than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ 23.8% RTP AND ~~24 hours thereafter~~ Insert 1

3.2 POWER DISTRIBUTION LIMITS

3.2.3 LINEAR HEAT GENERATION RATE (LHGR)

LCO 3.2.3 All LHGRs shall be less than or equal to the limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 23.8% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Any LHGR not within limits.	A.1	Restore LHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to < 23.8% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.3.1	Verify all LHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ 23.8% RTP AND ~~24 hours thereafter~~ Insert 1

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.

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 associated Function maintains RPS trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	~~12 hours~~ Insert 1
SR 3.3.1.1.2	------------------NOTE------------------ Not required to be performed until 12 hours after THERMAL POWER ≥ 23.8% RTP. -- Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power ≤ 2% RTP while operating at ≥ 23.8% RTP.	~~7 days~~ Insert 1
SR 3.3.1.1.3	Adjust the channel to conform to a calibrated flow signal.	~~7 days~~ Insert 1
SR 3.3.1.1.4	------------------NOTE------------------ Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. -- Perform CHANNEL FUNCTIONAL TEST.	~~7 days~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.5	Perform CHANNEL FUNCTIONAL TEST.	~~7 days~~ Insert 1
SR 3.3.1.1.6	Verify the source range monitor (SRM) and intermediate range monitor (IRM) channels overlap.	Prior to withdrawing SRMs from the fully inserted position
SR 3.3.1.1.7	-------------------NOTE------------------- Only required to be met during entry into MODE 2 from MODE 1. -- Verify the IRM and APRM channels overlap.	~~7 days~~ Insert 1
SR 3.3.1.1.8	Calibrate the local power range monitors.	~~1000 MWD/T average core exposure~~ Insert 1
SR 3.3.1.1.9	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1
SR 3.3.1.1.10	Calibrate the trip unit.	~~92 days~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.11	-----NOTES----- 1. Neutron detectors and flow reference transmitters are excluded. 2. For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --------------- Perform CHANNEL CALIBRATION.	~~184 days~~ Insert 1
SR 3.3.1.1.12	Perform CHANNEL FUNCTIONAL TEST.	~~24 months~~ Insert 1
SR 3.3.1.1.13	-----NOTES----- 1. Neutron detectors are excluded. 2. For IRMs, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --------------- Perform CHANNEL CALIBRATION.	~~24 months~~ Insert 1
SR 3.3.1.1.14	Verify the APRM Flow Biased Simulated Thermal Power—High time constant is within the limits specified in the COLR.	~~24 months~~ Insert 1
SR 3.3.1.1.15	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.16	Verify Turbine Stop Valve Closure and Turbine Control Valve Fast Closure Trip Oil Pressure-Low Functions are not bypassed when THERMAL POWER is ≥ 38% RTP.	~~24 months~~ Insert 1
SR 3.3.1.1.17	Calibrate flow reference transmitters.	~~24 months~~ Insert 1
SR 3.3.1.1.18	-----NOTES----- 1. Neutron detectors are excluded. 2. For Functions 3, 4 and 5 in Table 3.3.1.1-1, the channel sensors are excluded. ~~3. For Function 6, "n" equals 4 channels for the purpose of determining the STAGGERED TEST BASIS Frequency.~~ ----- Verify the RPS RESPONSE TIME is within limits.	~~24 months on a STAGGERED TEST BASIS~~ Insert 1
SR 3.3.1.1.19	Perform CHANNEL FUNCTIONAL TEST	~~31 days~~ Insert 1

SURVEILLANCE REQUIREMENTS

---------------------------------------NOTE---------------------------------------
Refer to Table 3.3.1.2-1 to determine which SRs apply for each applicable MODE or other specified conditions.

SURVEILLANCE		FREQUENCY
SR 3.3.1.2.1	Perform CHANNEL CHECK.	~~12 hours~~ Insert 1
SR 3.3.1.2.2	------------------NOTES------------------ 1. Only required to be met during CORE ALTERATIONS. 2. One SRM may be used to satisfy more than one of the following. --- Verify an OPERABLE SRM detector is located in: a. The fueled region; b. The core quadrant where CORE ALTERATIONS are being performed when the associated SRM is included in the fueled region; and c. A core quadrant adjacent to where CORE ALTERATIONS are being performed, when the associated SRM is included in the fueled region.	~~12 hours~~ Insert 1
SR 3.3.1.2.3	Perform CHANNEL CHECK.	~~24 hours~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.2.4	-------------------NOTE------------------- Not required to be met with less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant. --- Verify count rate is: a. ≥ 3.0 cps, or b. ≥ 0.7 cps with a signal to noise ratio ≥ 2:1.	~~12 hours during CORE ALTERATIONS~~ ~~AND~~ ~~24 hours~~ Insert 1
SR 3.3.1.2.5	-------------------NOTE------------------- Not required to be performed until 12 hours after IRMs on Range 2 or below. --- Perform CHANNEL FUNCTIONAL TEST.	~~31 days~~ Insert 1
SR 3.3.1.2.6	-------------------NOTES------------------- 1. Neutron detectors are excluded. 2. Not required to be performed until 12 hours after IRMs on Range 2 or below. --- Perform CHANNEL CALIBRATION.	~~24 months~~ Insert 1

No Change - Included for Context

3.3 INSTRUMENTATION

3.3.1.3 Oscillation Power Range Monitor (OPRM) Instrumentation

LCO 3.3.1.3 Four channels of the OPRM Period Based Algorithm instrumentation shall be OPERABLE.

APPLICABILITY: THERMAL POWER ≥ 23.8% RTP

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1 Place channel in trip.	30 days
	<u>OR</u>	
	A.2 Place associated RPS trip system in trip.	30 days
	<u>OR</u>	
	A.3 Initiate alternate method to detect and suppress thermal hydraulic instability oscillations.	30 days
B. OPRM trip capability not maintained.	B.1 Initiate alternate method to detect and suppress thermal hydraulic instability oscillations.	12 hours
C. Required Action and associated Completion Time not met.	C.1 Reduce THERMAL POWER to < 23.8% RTP.	4 hours

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 OPRM maintains trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.1.3.1	Perform CHANNEL FUNCTIONAL TEST.	~~184 days~~ Insert 1
SR 3.3.1.3.2	Calibrate the local power range monitors.	~~1000 MWD/T average core exposure~~ Insert 1
SR 3.3.1.3.3	------------------NOTE------------------ Neutron detectors are excluded. -- Perform CHANNEL CALIBRATION.	~~24 months~~ Insert 1
SR 3.3.1.3.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ Insert 1
SR 3.3.1.3.5	Verify OPRM is not bypassed when THERMAL POWER is ≥ 23.8% RTP and recirculation drive flow is < the value corresponding to 60% of rated core flow.	~~24 months~~ Insert 1
SR 3.3.1.3.6	------------------NOTE------------------ Neutron detectors are excluded. -- Verify the RPS RESPONSE TIME is within limits.	~~24 months on a STAGGERED TEST BASIS~~ Insert 1

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.

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 associated Function maintains control rod block capability.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1.1	------------------NOTE------------------ Not required to be performed until 1 hour after THERMAL POWER is > 66.7% RTP. -- Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1
SR 3.3.2.1.2	------------------NOTE------------------ Not required to be performed until 1 hour after THERMAL POWER is > 33.3% RTP and ≤ 66.7% RTP. -- Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1
SR 3.3.2.1.3	------------------NOTE------------------ Not required to be performed until 1 hour after any control rod is withdrawn in MODE 2. -- Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.1.4	------------------NOTE------------------ Not required to be performed until 1 hour after THERMAL POWER is ≤ 19% RTP in MODE 1. -- Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1
SR 3.3.2.1.5	Calibrate the low power setpoint trip units. The Allowable Value shall be > 19% RTP and ≤ 33.3% RTP.	~~92 days~~ Insert 1
SR 3.3.2.1.6	Verify the RWL high power Function is not bypassed when THERMAL POWER is > 66.7% RTP.	~~92 days~~ Insert 1
SR 3.3.2.1.7	Perform CHANNEL CALIBRATION.	~~184 days~~ Insert 1
SR 3.3.2.1.8	------------------NOTE------------------ Not required to be performed until 1 hour after reactor mode switch is in the shutdown position. -- Perform CHANNEL FUNCTIONAL TEST.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK.	~~31 days~~ Insert 1
SR 3.3.3.1.2	Deleted.	
SR 3.3.3.1.3	Perform CHANNEL CALIBRATION.	~~24 months~~ Insert 1

3.3 INSTRUMENTATION

3.3.3.2 Remote Shutdown System

LCO 3.3.3.2 The Remote Shutdown System Functions shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required Functions inoperable.	A.1	Restore required Function to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.2.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	~~31 days~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.3.2.2	Verify each required control circuit and transfer switch is capable of performing the intended functions.	~~24 months~~ Insert 1
SR 3.3.3.2.3	Perform CHANNEL CALIBRATION for each required instrumentation channel, except valve position instrumentation.	~~24 months~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more Functions with EOC-RPT trip capability not maintained.	B.1 Restore EOC-RPT trip capability.	2 hours
C. Required Action and associated Completion Time not met.	C.1 Remove the associated recirculation pump fast speed breaker from service.	4 hours
	OR	
	C.2 Reduce THERMAL POWER to < 38% RTP.	4 hours

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 associated Function maintains EOC-RPT trip capability.

SURVEILLANCE	FREQUENCY
SR 3.3.4.1.1 Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.4.1.2	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. TSV Closure: ≤ 7% closed; and b. TCV Fast Closure, Trip Oil Pressure—Low: ≥ 465 psig.	~~24 months~~ Insert 1
SR 3.3.4.1.3	Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.	~~24 months~~ Insert 1
SR 3.3.4.1.4	Verify TSV Closure and TCV Fast Closure, Trip Oil Pressure—Low Functions are not bypassed when THERMAL POWER is ≥ 38% RTP.	~~24 months~~ Insert 1
SR 3.3.4.1.5	------------------NOTE------------------ Breaker arc suppression time may be assumed from the most recent performance of SR 3.3.4.1.6. -- Verify the EOC-RPT SYSTEM RESPONSE TIME is within limits.	~~24 months on a STAGGERED TEST BASIS~~ Insert 1
SR 3.3.4.1.6	Determine RPT breaker arc suppression time.	~~60 months~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One Function with ATWS-RPT trip capability not maintained.	B.1 Restore ATWS-RPT trip capability.	72 hours
C. Both Functions with ATWS-RPT trip capability not maintained.	C.1 Restore ATWS-RPT trip capability for one Function.	1 hour
D. Required Action and associated Completion Time not met.	D.1 Remove the associated recirculation pump from service. OR D.2 Be in MODE 2.	6 hours 6 hours

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 associated Function maintains ATWS-RPT trip capability.

SURVEILLANCE	FREQUENCY
SR 3.3.4.2.1 Perform CHANNEL CHECK.	~~12 hours~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.4.2.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1
SR 3.3.4.2.3	Calibrate the trip unit.	~~92 days~~ Insert 1
SR 3.3.4.2.4	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Reactor Vessel Water Level—Low Low, Level 2: ≥ 127.6 inches; and b. Reactor Vessel Pressure—High: ≤ 1098 psig.	~~24 months~~ Insert 1
SR 3.3.4.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.5.1-1 to determine which SRs apply for each ECCS Function.

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 as follows: (a) for up to 6 hours for Functions 3.c, 3.f, 3.g, and 3.h; and (b) for up to 6 hours for Functions other than 3.c, 3.f, 3.g, and 3.h, provided the associated Function or the redundant Function maintains ECCS initiation capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.5.1.1	Perform CHANNEL CHECK.	~~12 hours~~ Insert 1
SR 3.3.5.1.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1
SR 3.3.5.1.3	Calibrate the trip unit.	~~92 days~~ Insert 1
SR 3.3.5.1.4	Perform CHANNEL CALIBRATION.	~~92 days~~ Insert 1
SR 3.3.5.1.5	Perform CHANNEL CALIBRATION.	~~24 months~~ Insert 1
SR 3.3.5.1.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ Insert 1
SR 3.3.5.1.7	Perform CHANNEL CALIBRATION.	~~6 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

---NOTES---

1. Refer to Table 3.3.5.2-1 to determine which SRs apply for each RCIC Function.

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 as follows: (a) for up to 6 hours for Function 5; and (b) for up to 6 hours for Functions 1, 2, 3, and 4 provided the associated Function maintains RCIC initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.5.2.1	Perform CHANNEL CHECK.	~~12 hours~~ Insert 1
SR 3.3.5.2.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1
SR 3.3.5.2.3	Calibrate the trip unit.	~~92 days~~ Insert 1
SR 3.3.5.2.4	Perform CHANNEL CALIBRATION.	~~24 months~~ Insert 1
SR 3.3.5.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ Insert 1
SR 3.3.5.2.6	Perform CHANNEL CALIBRATION.	~~6 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.6.1-1 to determine which SRs apply for each Function.

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 associated Function maintains isolation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.6.1.1	Perform CHANNEL CHECK.	~~12 hours~~ Insert 1
SR 3.3.6.1.2	----------------NOTE---------------- For Function 1.e in Table 3.3.6.1-1, this SR is applicable only to the Division 3 and 4 instruments. ------------------------------------ Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1
SR 3.3.6.1.3	Calibrate the trip unit.	~~92 days~~ Insert 1
SR 3.3.6.1.4	Perform CHANNEL CALIBRATION.	~~24 months~~ Insert 1
SR 3.3.6.1.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ Insert 1
SR 3.3.6.1.6	----------------NOTE---------------- Channel sensors are excluded. ------------------------------------ Verify the ISOLATION SYSTEM RESPONSE TIME for the main steam isolation valves is within limits.	~~24 months on a STAGGERED TEST BASIS~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.6.1.7	------------------NOTE------------------ For Function 1.e in Table 3.3.6.1-1, this SR is applicable only to the Division 1 and 2 instruments. -- Perform CHANNEL FUNCTIONAL TEST.	~~184 days~~ Insert 1

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.6.2-1 to determine which SRs apply for each RHR Containment Spray System Function.

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 associated Function maintains RHR containment spray initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.6.2.1	Perform CHANNEL CHECK.	~~12 hours~~ Insert 1
SR 3.3.6.2.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1
SR 3.3.6.2.3	Calibrate the trip unit.	~~92 days~~ Insert 1
SR 3.3.6.2.4	Perform CHANNEL CALIBRATION.	~~24 months~~ Insert 1
SR 3.3.6.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ Insert 1
SR 3.3.6.2.6	Perform CHANNEL CALIBRATION	~~92 days~~ Insert 1

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.6.3-1 to determine which SRs apply for each SPMU Function.

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 associated Function maintains SPMU initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.6.3.1	Perform CHANNEL CHECK.	~~12 hours~~ Insert 1
SR 3.3.6.3.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1
SR 3.3.6.3.3	Calibrate the trip unit.	~~92 days~~ Insert 1
SR 3.3.6.3.4	Perform CHANNEL CALIBRATION.	~~92 days~~ Insert 1
SR 3.3.6.3.5	Perform CHANNEL CALIBRATION.	~~24 months~~ Insert 1
SR 3.3.6.3.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ Insert 1

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 associated Function maintains LLS or relief initiation capability, as applicable.

SURVEILLANCE		FREQUENCY
SR 3.3.6.4.1	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1
SR 3.3.6.4.2	Calibrate the trip unit.	~~92 days~~ Insert 1
SR 3.3.6.4.3	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Relief Function Low: 1103 ± 15 psig Medium: 1113 ± 15 psig High: 1123 ± 15 psig b. LLS Function Low open: 1033 ± 15 psig close: 926 ± 15 psig Medium open: 1073 ± 15 psig close: 936 ± 15 psig High open: 1113 ± 15 psig close: 946 ± 15 psig	~~24 months~~ Insert 1
SR 3.3.6.4.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

-NOTES-

1. Refer to Table 3.3.7.1-1 to determine which SRs apply for each Function.

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 associated Function maintains CRER initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.7.1.1	Perform CHANNEL CHECK.	~~12 hours~~ Insert 1
SR 3.3.7.1.2	Perform CHANNEL FUNCTIONAL TEST.	~~92 days~~ Insert 1
SR 3.3.7.1.3	Calibrate the trip unit.	~~92 days~~ Insert 1
SR 3.3.7.1.4	Perform CHANNEL CALIBRATION.	~~24 months~~ Insert 1
SR 3.3.7.1.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.8.1-1 to determine which SRs apply for each LOP Function.

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 2 hours provided the associated Function maintains DG initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.8.1.1	Perform CHANNEL CHECK.	~~12 hours~~ Insert 1
SR 3.3.8.1.2	Perform CHANNEL FUNCTIONAL TEST.	~~31 days~~ Insert 1
SR 3.3.8.1.3	Perform CHANNEL CALIBRATION.	~~24 months~~ Insert 1
SR 3.3.8.1.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.8.2.1	-------------------NOTE------------------- Only required to be performed prior to entering MODE 2 or 3 from MODE 4, when in MODE 4 for ≥ 24 hours. -- Perform CHANNEL FUNCTIONAL TEST.	~~184 days~~ Insert 1
SR 3.3.8.2.2	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Overvoltage Bus A ≤ 132 V Bus B ≤ 132 V b. Undervoltage Bus A ≥ 108 V Bus B ≥ 108 V c. Underfrequency (with time delay set to ≤ 4.0 seconds) Bus A ≥ 57 Hz Bus B ≥ 57 Hz	~~24 months~~ Insert 1
SR 3.3.8.2.3	Perform a system functional test.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	-------------------NOTE------------------- Not required to be performed until 24 hours after both recirculation loops are in operation. -- Verify recirculation loop jet pump flow mismatch with both recirculation loops in operation is: a. ≤ 10% of rated core flow when operating at < 70% of rated core flow; and b. ≤ 5% of rated core flow when operating at ≥ 70% of rated core flow.	~~24 hours~~ Insert 1

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 Flow Control Valves (FCVs)

LCO 3.4.2 A recirculation loop FCV shall be OPERABLE in each operating recirculation loop.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required FCVs inoperable.	A.1 Lock up the FCV.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.2.1 Verify each FCV fails "as is" on loss of hydraulic pressure at the hydraulic unit.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.2.2	Verify average rate of each FCV movement is: a. ≤ 11% of stroke per second for opening; and b. ≤ 11% of stroke per second for closing.	~~24 months~~ Insert 1

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 Jet Pumps

LCO 3.4.3 All jet pumps shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more jet pumps inoperable.	A.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	------------------NOTES------------------ 1. Not required to be performed until 4 hours after associated recirculation loop is in operation. 2. Not required to be performed until 24 hours after > 25% RTP. --- Verify at least two of the following criteria (a, b, and c) are satisfied for each operating recirculation loop: a. Recirculation loop drive flow versus flow control valve position differs by ≤ 10% from established patterns.	~~24 hours~~ Insert 1 (continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	(continued) b. Recirculation loop drive flow versus total core flow differs by ≤ 10% from established patterns. c. Each jet pump diffuser to lower plenum differential pressure differs by ≤ 20% from established patterns, or each jet pump flow differs by ≤ 10% from established patterns.	

No Change - Included for Context

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 Safety/Relief Valves (S/RVs)

LCO 3.4.4 The safety function of seven S/RVs shall be OPERABLE,

AND

The relief function of six additional S/RVs shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required S/RVs inoperable.	A.1 Be in MODE 3. AND A.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.4.1 Verify the safety function lift setpoints of the required S/RVs are as follows: Number of S/RVs / Setpoint (psig) 8 / 1165 ± 34.9 6 / 1180 ± 35.4 5 / 1190 ± 35.7	In accordance with the Inservice Testing Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.4.2	-------------------NOTE------------------- Valve actuation may be excluded. -- Verify each required relief function S/RV actuates on an actual or simulated automatic initiation signal.	~~24 months~~ Insert 1
SR 3.4.4.3	-------------------NOTE------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. -- Verify each required S/RV actuator strokes when manually actuated.	~~24 months on a STAGGERED TEST BASIS for each valve solenoid~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met. OR Pressure boundary LEAKAGE exists.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Verify RCS unidentified LEAKAGE, total LEAKAGE, and unidentified LEAKAGE increase are within limits.	~~12 hours~~ Insert 1

No Change - Included for Context

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.6.1 Verify equivalent leakage of each RCS PIV is ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm, at an RCS pressure ≥ 1040 psig and ≤ 1060 psig.	In accordance with Inservice Testing Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Perform CHANNEL CHECK of required drywell atmospheric monitoring system.	~~12 hours~~ Insert 1
SR 3.4.7.2	Perform CHANNEL FUNCTIONAL TEST of required leakage detection instrumentation.	~~31 days~~ Insert 1
SR 3.4.7.3	Perform CHANNEL CALIBRATION of required leakage detection instrumentation.	~~24 months~~ Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2.2.1 Be in MODE 3. AND B.2.2.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	-------------------NOTE------------------- Only required to be performed in MODE 1. -- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity is ≤ 0.2 μCi/gm.	~~7 days~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	-------------------NOTE------------------- Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR cut in permissive pressure. -- Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	~~12 hours~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	B.1 Verify reactor coolant circulation by an alternate method. AND B.2 Monitor reactor coolant temperature and pressure.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.10.1 Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	~~12 hours~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ---------NOTE--------- Required Action C.2 shall be completed if this Condition is entered. --------------------- Requirements of the LCO not met in other than MODES 1, 2, and 3.	C.1 Initiate action to restore parameter(s) to within limits. AND C.2 Determine RCS is acceptable for operation.	Immediately Prior to entering MODE 2 or 3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.1	-------------------NOTE------------------- Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. -- Verify: a. RCS pressure and RCS temperature are within the limits of Figure 3.4.11-1; and b. RCS heatup and cooldown rates are ≤ 100°F in any one hour period.	~~30 minutes~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.11.5	------------------NOTE------------------ Only required to be performed when tensioning the reactor vessel head bolting studs. -- Verify reactor vessel flange and head flange temperatures are ≥ 70°F.	~~30 minutes~~ Insert 1
SR 3.4.11.6	------------------NOTE------------------ Not required to be performed until 30 minutes after RCS temperature ≤ 80°F in MODE 4. -- Verify reactor vessel flange and head flange temperatures are ≥ 70°F.	~~30 minutes~~ Insert 1
SR 3.4.11.7	------------------NOTE------------------ Not required to be performed until 12 hours after RCS temperature ≤ 100°F in MODE 4. -- Verify reactor vessel flange and head flange temperatures are ≥ 70°F.	~~12 hours~~ Insert 1

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Reactor Steam Dome Pressure

LCO 3.4.12 The reactor steam dome pressure shall be ≤ 1045 psig.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor steam dome pressure not within limit.	A.1 Restore reactor steam dome pressure to within limit.	15 minutes
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.12.1 Verify reactor steam dome pressure is ≤ 1045 psig.	~~12 hours~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.	~~31 days~~ Insert 1
SR 3.5.1.2	-------------------NOTE------------------- Low pressure coolant injection (LPCI) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the residual heat removal cut in permissive pressure in MODE 3, if capable of being manually realigned and not otherwise inoperable. --- Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ Insert 1
SR 3.5.1.3	Verify ADS accumulator supply pressure is ≥ 150 psig.	~~31 days~~ Insert 1
SR 3.5.1.4	Verify each ECCS pump develops the specified flow rate with sufficient pump total head to overcome the total system resistance which includes the specified reactor-to-containment wetwell differential pressure. SYSTEM / FLOW RATE / REACTOR-TO-CONTAINMENT WETWELL DIFFERENTIAL PRESSURE LPCS / ≥ 6110 gpm / ≥ 128 psid LPCI / ≥ 7100 gpm / ≥ 24 psid HPCS / ≥ 6110 gpm / ≥ 200 psid	In accordance with the Inservice Testing Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.5	-------------------NOTE------------------- Vessel injection/spray may be excluded. -- Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	~~24 months~~ Insert 1
SR 3.5.1.6	-------------------NOTE------------------- Valve actuation may be excluded. -- Verify the ADS actuates on an actual or simulated automatic initiation signal.	~~24 months~~ Insert 1
SR 3.5.1.7	-------------------NOTE------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. -- Verify each ADS valve actuator strokes when manually actuated.	~~24 months on a STAGGERED TEST BASIS for each valve solenoid~~ Insert 1
SR 3.5.1.8	-------------------NOTE------------------- ECCS actuation instrumentation is excluded. -- Verify the ECCS RESPONSE TIME for each ECCS injection/spray subsystem is within limits.	~~24 months~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action C.2 and associated Completion Time not met.	D.1 Initiate action to restore primary containment to OPERABLE status.	Immediately
	AND	
	D.2 Initiate action to restore isolation capability in each required primary containment penetration flow path not isolated.	Immediately
	AND	
	D.3 -------NOTE------- Entry and exit is permissible under administrative control. ------------------	
	Initiate action to close one door in each primary containment air lock.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify, for each required low pressure ECCS injection/spray subsystem, the suppression pool water level is ≥ 16 ft 6 in.	~~12 hours~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.2	Verify, for the required High Pressure Core Spray (HPCS) System, the: a. Suppression pool water level is ≥ 16 ft 6 in; or b. Condensate storage tank water volume is ≥ 249,700 gal.	~~12 hours~~ Insert 1
SR 3.5.2.3	Verify, for each required ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.	~~31 days~~ Insert 1
SR 3.5.2.4	-------------------NOTE------------------- One low pressure coolant injection (LPCI) subsystem may be considered OPERABLE during alignment and operation for decay heat removal, if capable of being manually realigned and not otherwise inoperable. -- Verify each required ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.5	Verify each required ECCS pump develops the specified flow rate with sufficient pump total head to overcome the total system resistance which includes the specified reactor to containment wetwell differential pressure. SYSTEM / FLOW RATE / REACTOR TO CONTAINMENT WETWELL DIFFERENTIAL PRESSURE LPCS / ≥ 6110 gpm / ≥ 128 psid LPCI / ≥ 7100 gpm / ≥ 24 psid HPCS / ≥ 6110 gpm / ≥ 200 psid	In accordance with the Inservice Testing Program
SR 3.5.2.6	-------------------NOTE------------------- Vessel injection/spray may be excluded. -- Verify each required ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.3.1	Verify the RCIC System piping is filled with water from the pump discharge valve to the injection valve.	~~31 days~~ Insert 1
SR 3.5.3.2	Verify each RCIC System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ Insert 1
SR 3.5.3.3	-------------------NOTE------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. --- Verify, with RCIC steam supply pressure ≥ 920 psig and ≤ 1045 psig, the RCIC pump can develop a flow rate ≥ 700 gpm against a system head corresponding to reactor pressure.	~~92 days~~ Insert 1
SR 3.5.3.4	-------------------NOTE------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. --- Verify, with RCIC steam supply pressure ≥ 150 psig and ≤ 165 psig, the RCIC pump can develop a flow rate ≥ 700 gpm against a system head corresponding to reactor pressure.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.3.5	-------------------NOTE------------------- Vessel injection may be excluded. -- Verify the RCIC System actuates on an actual or simulated automatic initiation signal.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.2.1	-------------------NOTES------------------- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. During MODES 1, 2, and 3, results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1.1. --- Perform required primary containment air lock leakage rate testing in accordance with the Primary Containment Leakage Rate Testing Program.	In accordance with the Primary Containment Leakage Rate Testing Program
SR 3.6.1.2.2	Verify primary containment air lock seal air header pressure is ≥ 90 psig.	~~7 days~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.2.3	------------------NOTE------------------ Only required to be performed upon entry or exit through the primary containment air lock. -- Verify only one door in the primary containment air lock can be opened at a time.	~~184 days~~ Insert 1
SR 3.6.1.2.4	Verify, from an initial pressure of 90 psig, the primary containment air lock seal pneumatic system pressure does not decay at a rate equivalent to > 1.5 psig for a period of 24 hours.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.1	------------------NOTE------------------ Only required to be met in MODES 1, 2, and 3. -- Verify each inboard 42 inch primary containment purge valve is sealed closed except for one purge valve in a penetration flow path while in Condition D of this LCO.	~~31 days~~ Insert 1
SR 3.6.1.3.2	------------------NOTES------------------ 1. Only required to be met in MODES 1, 2, and 3. 2. Not required to be met when the 18 inch or outboard 42 inch primary containment purge valves are open for pressure control, ALARA or air quality considerations for personnel entry, or Surveillances or special testing on the purge system that require the valves to be open. -- Verify each 18 inch and outboard 42 inch primary containment purge valve is closed.	~~31 days~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.3	------------------NOTES------------------ 1. Only required to be met in MODES 1, 2, and 3. 2. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 3. Not required to be met for PCIVs that are open under administrative controls. --- Verify each primary containment isolation manual valve and blind flange that is located outside primary containment, drywell, and steam tunnel and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	~~31 days~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.6.1.3.5	Verify the isolation time of each power operated and each automatic PCIV, except MSIVs, is within limits.	In accordance with the Inservice Testing Program
SR 3.6.1.3.6	------------------NOTE------------------ Only required to be met in MODES 1, 2, and 3. -- Perform leakage rate testing for each primary containment purge valve with resilient seals.	~~184 days~~ Insert 1 AND Once within 92 days after opening the valve
SR 3.6.1.3.7	Verify the isolation time of each MSIV is ≥ 2.5 seconds, and ≤ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.6.1.3.8	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.11	-------------------NOTE------------------- 1. Only required to be met in MODES 1, 2, and 3. 2. Feedwater lines are excluded. -- Verify combined leakage rate of 1 gpm times the total number of PCIVs through hydrostatically tested lines that penetrate the primary containment is not exceeded when these isolation valves are tested at ≥ 1.1 P_a.	In accordance with the Primary Containment Leakage Rate Testing Program
SR 3.6.1.3.12	-------------------NOTE------------------- Only required to be met in MODES 1, 2, and 3. -- Verify each outboard 42 inch primary containment purge valve is blocked to restrict the valve from opening > 50°.	~~24 months~~ Insert 1
SR 3.6.1.3.13	-------------------NOTE------------------- Not required to be met when the Backup Hydrogen Purge System isolation valves are open for pressure control, ALARA or air quality considerations for personnel entry, or Surveillances or special testing of the Backup hydrogen Purge System that require the valves to be open. -- Verify each 2 inch Backup Hydrogen Purge System isolation valve is closed.	~~31 days~~ Insert 1

3.6 CONTAINMENT SYSTEMS

3.6.1.4 Primary Containment Pressure

LCO 3.6.1.4 Primary containment to secondary containment differential pressure shall be ≥ -0.1 psid and ≤ 1.0 psid.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary containment to secondary containment differential pressure not within limits.	A.1 Restore primary containment to secondary containment differential pressure to within limits.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.1.4.1 Verify primary containment to secondary containment differential pressure is within limits.	~~12 hours~~ Insert 1

3.6 CONTAINMENT SYSTEMS

3.6.1.5 Primary Containment Air Temperature

LCO 3.6.1.5 Primary containment average air temperature shall be $\leq$ 95°F.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary containment average air temperature not within limit.	A.1 Restore primary containment average air temperature to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.1.5.1 Verify primary containment average air temperature is within limit.	~~24 hours~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.6.1	-------------------NOTE------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. -- Verify each LLS valve actuator strokes when manually actuated.	~~24 months on a STAGGERED TEST BASIS for each valve solenoid~~ Insert 1
SR 3.6.1.6.2	-------------------NOTE------------------- Valve actuation may be excluded. -- Verify the LLS function of the six safety/relief valves actuates on an actual or simulated automatic initiation signal.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.7.1	-------------------NOTE------------------- RHR containment spray subsystems may be considered OPERABLE during alignment and operation for decay heat removal when below the RHR cut in permissive pressure in MODE 3 if capable of being manually realigned and not otherwise inoperable. -- Verify each RHR containment spray subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	~~31 days~~ Insert 1
SR 3.6.1.7.2	Verify each RHR pump develops a flow rate of ≥ 5250 gpm on recirculation flow through the associated heat exchangers to the suppression pool.	In accordance with the Inservice Testing Program
SR 3.6.1.7.3	Verify each RHR containment spray subsystem automatic valve in the flow path actuates to its correct position on an actual or simulated automatic initiation signal.	~~24 months~~ Insert 1
SR 3.6.1.7.4	Verify each spray nozzle is unobstructed.	Following maintenance which could result in nozzle blockage.

3.6 CONTAINMENT SYSTEMS

3.6.1.8 Feedwater Leakage Control System (FWLCS)

LCO 3.6.1.8 Two FWLCS subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One FWLCS subsystem inoperable.	A.1 Restore FWLCS subsystems to OPERABLE status.	30 days
B. Two FWLCS subsystems inoperable.	B.1 Restore one FWLCS subsystem to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.1.8.1 Verify associated ECCS water leg pump operates properly.	~~31 days~~ Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.1.10.1	-------------------NOTES------------------- 1. Not required to be met for pathways capable of being closed by OPERABLE primary containment automatic isolation valves. 2. Not required to be met for the Fire Protection System manual hose reel containment isolation valves. 3. Not required to be met for manual isolation valves open under administrative controls. --- Verify each penetration flow path, required to be closed during accident conditions, is closed.	~~31 days~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.11.1	-----NOTES----- 1. Not required to be met for vacuum breakers open during Surveillances. 2. Not required to be met for vacuum breakers open when performing their intended function. ---------- Verify each vacuum breaker is closed.	~~24 hours~~ Insert 1
SR 3.6.1.11.2	Perform a functional test of each required vacuum breaker and its associated isolation valve.	~~31 days~~ Insert 1
SR 3.6.1.11.3	Verify the opening pressure differential of each required vacuum breaker is ≤ 0.1 psid, and the opening setpoint of the vacuum breaker isolation valve is ≥ 0.052 psid and ≤ 0.160 psid.	~~24 months~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours
C. Required Action and associated Completion Time of Condition A not met during movement of recently irradiated fuel assemblies in the primary containment, or during OPDRVs.	C.1	Suspend movement of recently irradiated fuel assemblies in the primary containment.	Immediately
	AND		
	C.2	Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENT

	SURVEILLANCE	FREQUENCY
SR 3.6.1.12.1	Verify containment average temperature-to-relative humidity to be within limits.	~~24 hours~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Suppression pool average temperature > 120°F.	E.1 Depressurize the reactor vessel to < 200 psig. AND E.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.2.1.1 Verify suppression pool average temperature is within the applicable limits.	~~24 hours~~ Insert 1 AND 5 minutes when performing testing that adds heat to the suppression pool

3.6 CONTAINMENT SYSTEMS

3.6.2.2 Suppression Pool Water Level

LCO 3.6.2.2 Corrected suppression pool water level shall be ≥ 17 ft 9.5 inches and ≤ 18 ft 6 inches.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Suppression pool water level not within limits.	A.1 Restore suppression pool water level to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.2.2.1 Verify suppression pool water level is within limits.	~~24 hours~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.3.1	Verify each RHR suppression pool cooling subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position.	~~31 days~~ Insert 1
SR 3.6.2.3.2	Verify each RHR pump develops a flow rate $\geq$ 7100 gpm through the associated heat exchangers to the suppression pool.	In accordance with the Inservice Testing Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.4.1	Verify upper containment pool water level is: a. ≥ 22 ft 9 inches above the reactor pressure vessel (RPV) flange, OR b. ≥ 22 ft 5 inches above the RPV flange, and suppression pool water level ≥ 17 ft 11.7 inches.	~~24 hours~~ Insert 1
SR 3.6.2.4.2	Verify upper containment pool water temperature is ≤ 110°F.	~~24 hours~~ Insert 1
SR 3.6.2.4.3	Verify each SPMU subsystem manual, power operated, and automatic valve that is not locked, sealed, or otherwise secured in position is in the correct position.	~~31 days~~ Insert 1
SR 3.6.2.4.4	Verify all required upper containment pool gates are in the stored position or are otherwise removed from the upper containment pool.	~~31 days~~ Insert 1
SR 3.6.2.4.5	------------------NOTE------------------ Actual makeup to the suppression pool may be excluded. -- Verify each SPMU subsystem automatic valve actuates to the correct position on an actual or simulated automatic initiation signal.	~~24 months~~ Insert 1

ACTIONS (continued)

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 3.6.3.2.1	Energize each primary containment and drywell hydrogen igniter division and perform current versus voltage measurements to verify required igniters in service.	~~184 days~~ Insert 1
SR 3.6.3.2.2	-------------------NOTE------------------- Not required to be performed until 92 days after discovery of four or more igniters in the division inoperable. --- Energize each primary containment and drywell hydrogen igniter division and perform current versus voltage measurements to verify required igniters in service.	~~92 days~~ Insert 1
SR 3.6.3.2.3	Verify each required igniter in inaccessible areas develops sufficient current draw for a ≥ 1700°F surface temperature.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.3.2.4	Verify each required igniter in accessible areas develops a surface temperature of ≥ 1700°F.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.3.1	Operate each combustible gas mixing subsystem for ≥ 15 minutes.	~~92 days~~ Insert 1
SR 3.6.3.3.2	Verify each combustible gas mixing subsystem flow rate is ≥ 500 scfm.	~~24 months~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Secondary containment inoperable during movement of recently irradiated fuel assemblies in the primary containment, or during OPDRVs.	C.1	Suspend movement of recently irradiated fuel assemblies in the primary containment.	Immediately
	<u>AND</u>		
	C.2	Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.1.1	Verify secondary containment vacuum is ≥ 0.66 inch of vacuum water gauge.	~~24 hours~~ Insert 1
SR 3.6.4.1.2	Verify the primary containment equipment hatch is closed and sealed and the shield blocks are installed adjacent to the shield building.	~~31 days~~ Insert 1
SR 3.6.4.1.3	Verify each secondary containment access door is closed, except when the access opening is being used for entry and exit.	~~31 days~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition A or B not met during movement of recently irradiated fuel assemblies in the primary containment, or during OPDRVs.	D.1	Suspend movement of recently irradiated fuel assemblies in the primary containment.	Immediately
	AND		
	D.2	Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.2.1	-------------------NOTES------------------- 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for SCIVs that are open under administrative controls. -- Verify each secondary containment isolation manual valve and blind flange that is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	~~31 days~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each AEGT subsystem for ≥ 10 continuous hours with heaters operating.	~~31 days~~ Insert 1
SR 3.6.4.3.2	Perform required AEGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.4.3.3	Verify each AEGT subsystem actuates on an actual or simulated initiation signal.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.1.1	Verify bypass leakage is less than or equal to the bypass leakage limit. However, during the first unit startup following bypass leakage testing performed in accordance with this SR, the acceptance criterion is ≤ 10% of the drywell bypass leakage limit.	24 months following 2 consecutive tests with bypass leakage greater than the bypass leakage limit AND 48 months following a test with bypass leakage greater than the bypass leakage limit AND ------NOTE----- SR 3.0.2 extensions are limited to 12 months. --------------- ~~120 months~~ Insert 1
SR 3.6.5.1.2	Visually inspect the exposed accessible interior and exterior surfaces of the drywell.	~~Three times during each 10-year service period, at approximately equal intervals~~. Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.5.1.3	Quantify air lock door seal leakage rate when the gap between the door seals is pressurized to ≥ 2.5 psig.	Once within 72 hours after each drywell air lock door closing.
SR 3.6.5.1.4	------------------NOTE------------------ An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. -- Quantify drywell air lock leakage by performing an air lock barrel leakage test at ≥ 2.5 psig.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.2.1	Deleted.	
SR 3.6.5.2.2	Verify drywell air lock seal air header pressure is ≥ 60 psig.	~~7 days~~ Insert 1
SR 3.6.5.2.3	-----NOTE----- Only required to be performed upon entry into drywell. ----- Verify only one door in the drywell air lock can be opened at a time.	~~24 months~~ Insert 1
SR 3.6.5.2.4	Deleted.	
SR 3.6.5.2.5	Verify, from an initial pressure of 60 psig, the drywell air lock seal pneumatic system pressure does not decay at a rate equivalent to > 3 psig for a period of 24 hours.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.3.1	Verify each 24 inch and 36 inch drywell purge supply and exhaust isolation valve is sealed closed.	~~31 days~~ Insert 1
SR 3.6.5.3.2	Deleted.	
SR 3.6.5.3.3	-------------------NOTES------------------ 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for drywell isolation valves that are open under administrative controls. --- Verify each drywell isolation manual valve and blind flange that is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	Prior to entering MODE 2 or 3 from MODE 4, if not performed in the previous 92 days
SR 3.6.5.3.4	Verify the isolation time of each power operated and each automatic drywell isolation valve is within limits.	In accordance with the Inservice Testing Program
SR 3.6.5.3.5	Verify each automatic drywell isolation valve actuates to the isolation position on an actual or simulated isolation signal.	~~24 months~~ Insert 1

3.6 CONTAINMENT SYSTEMS

3.6.5.4 Drywell Pressure

LCO 3.6.5.4 Drywell-to-primary containment differential pressure shall be ≥ -0.5 psid and ≤ 2.0 psid.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell-to-primary containment differential pressure not within limits.	A.1 Restore drywell-to-primary containment differential pressure to within limits.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.5.4.1 Verify drywell-to-primary containment differential pressure is within limits.	~~12 hours~~ Insert 1

3.6 CONTAINMENT SYSTEMS

3.6.5.5 Drywell Air Temperature

LCO 3.6.5.5 Drywell average air temperature shall be ≤ 145°F.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell average air temperature not within limit.	A.1 Restore drywell average air temperature to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.5.5.1 Verify drywell average air temperature is within limit.	~~24 hours~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.5.6.1	-------------------NOTES------------------- 1. Not required to be met for drywell vacuum breakers open during Surveillances. 2. Not required to be met for drywell vacuum breakers open when performing their intended function. -- Verify each drywell vacuum breaker and its associated isolation valve is closed.	~~7 days~~ Insert 1
SR 3.6.5.6.2	Perform a functional test of each drywell vacuum breaker and its associated isolation valve.	~~31 days~~ Insert 1
SR 3.6.5.6.3	Verify the opening pressure differential of each drywell vacuum breaker is $\leq$ 0.5 psid, and the allowable value of each associated isolation valve is $\leq$ 0.810 inches water gauge dp.	~~24 months~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> Both ESW Division 1 and Division 2 subsystems inoperable.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	Verify each required Division 1 and 2 ESW subsystem manual, power operated, and automatic valve in the flow path servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ Insert 1
SR 3.7.1.2	Verify each required Division 1 and 2 ESW subsystem actuates on an actual or simulated initiation signal.	~~24 months~~ Insert 1

3.7 PLANT SYSTEMS

3.7.2 Emergency Service Water (ESW) System—Division 3

LCO 3.7.2 The Division 3 ESW subsystem shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ESW Division 3 subsystem inoperable.	A.1 Declare High Pressure Core Spray System inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.2.1 Verify each required Division 3 ESW subsystem manual, power operated, and automatic valve in the flow path servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ Insert 1
SR 3.7.2.2 Verify the Division 3 ESW subsystem actuates on an actual or simulated initiation signal.	~~24 months~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two CRER subsystems inoperable during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs. OR One or more CRER subsystems inoperable due to inoperable CRE boundary during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.	F.1 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building. AND F.2 Initiate action to suspend OPDRVs.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Operate each CRER subsystem for ≥ 10 continuous hours with the heaters operating.	~~31 days~~ Insert 1
SR 3.7.3.2	Perform required CRER filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.3.3	Verify each CRER subsystem actuates on an actual or simulated initiation signal.	~~24 months~~ Insert 1
SR 3.7.3.4	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition B not met during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.	------------NOTE------------ LCO 3.0.3 is not applicable. ----------------------------	
	E.1 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building.	Immediately
	AND	
	E.2 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify each control room HVAC subsystem has the capability to remove the assumed heat load.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Verify the release rate of the specified noble gases is ≤ 358 mCi/second after decay of 30 minutes.	Once within 4 hours after a ≥ 50% increase in the nominal steady state fission gas release rate after factoring out increases due to changes in THERMAL POWER level
SR 3.7.5.2	--------------------NOTE-------------------- Not required to be performed until 31 days after any main steam line not isolated and SJAE in operation. --- Verify the release rate of the specified noble gases is ≤ 358 mCi/second after decay of 30 minutes.	~~31 days~~ Insert 1

3.7 PLANT SYSTEMS

3.7.6 Main Turbine Bypass System

LCO 3.7.6 The Main Turbine Bypass System shall be OPERABLE.

APPLICABILITY: THERMAL POWER ≥ 23.8% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Main Turbine Bypass System inoperable.	A.1 Restore Main Turbine Bypass System to OPERABLE status.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23.8% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify one complete cycle of each main turbine bypass valve.	~~31 days~~ Insert 1
SR 3.7.6.2	Perform a system functional test.	~~24 months~~ Insert 1
SR 3.7.6.3	Verify the TURBINE BYPASS SYSTEM RESPONSE TIME is within limits.	~~24 months~~ Insert 1

3.7 PLANT SYSTEMS

3.7.7 Fuel Pool Water Level

LCO 3.7.7 The fuel pool water level shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the fuel handling building (FHB) and upper containment fuel storage racks.

APPLICABILITY: During movement of irradiated fuel assemblies in the associated fuel storage pools.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel pool water level not within limit.	A.1 ---------NOTE--------- LCO 3.0.3 is not applicable. --------------------- Suspend movement of irradiated fuel assemblies in the associated fuel storage pool(s).	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.7.1	Verify the fuel pool water level is ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks.	~~7 days~~ Insert 1

3.7 PLANT SYSTEMS

3.7.8 Fuel Handling Building

LCO 3.7.8 The fuel handling building (FHB) shall be OPERABLE.

APPLICABILITY: During movement of recently irradiated fuel assemblies in the FHB.

ACTIONS

-----NOTE-----
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. FHB inoperable.	A.1 Suspend movement of recently irradiated fuel assemblies in the FHB.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	Verify all FHB floor hatches and the shield blocks adjacent to the shield building are installed, and the FHB railroad track door is closed.	~~24 hours~~ Insert 1
SR 3.7.8.2	Verify each FHB access door is closed, except when the access opening is being used for entry and exit.	~~24 hours~~ Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.9.1	Operate each FHB ventilation exhaust subsystem for ≥ 10 continuous hours with heaters operating.	~~31 days~~ Insert 1
SR 3.7.9.2	Perform FHB ventilation exhaust filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.9.3	Perform a system functional test.	~~24 months~~ Insert 1
SR 3.7.9.4	Perform a CHANNEL FUNCTIONAL TEST of the FHB ventilation exhaust radiation monitor (noble gas)	~~92 days~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Verify each required ECCW subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position or can be aligned to the correct position.	~~31 days~~ Insert 1
SR 3.7.10.2	Verify each ECCW subsystem actuates on an actual or simulated initiation signal.	~~24 months~~ Insert 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	~~7 days~~ Insert 1
SR 3.8.1.2	-------------------NOTES-------------------- 1. Performance of SR 3.8.1.7 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. --- Verify each DG starts from standby conditions and achieves: Steady state voltage ≥ 3900 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	~~31 days~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.3	------------------NOTES------------------ 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by, and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.7. --- Verify each DG operates for ≥ 60 minutes at a load ≥ 5600 kW and ≤ 7000 kW for Division 1 and 2 DGs, and ≥ 2600 kW for Division 3 DG.	~~31 days~~ Insert 1
SR 3.8.1.4	Verify each day tank contains ≥ 316 gal of fuel oil for Divisions 1 and 2 and ≥ 279 gal for Division 3.	~~31 days~~ Insert 1
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	~~31 days~~ Insert 1
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from the storage tank to the day tank.	~~31 days~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.7	-------------------NOTE------------------- All DG starts may be preceded by an engine prelube period. -- Verify each DG starts from standby conditions and achieves: a. In ≤ 10 seconds for Division 1 and 2, and ≤ 13 seconds for Division 3, voltage ≥ 3900 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3900 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	~~184 days~~ Insert 1
SR 3.8.1.8	---------------NOTE----------------------- This Surveillance shall not be performed in MODE 1 or 2 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. -- Verify manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	-----------------NOTES----------------- 1. This Surveillance shall not be performed in MODE 1 or 2 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. 2. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. --------------------------------------- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load. Following load rejection, engine speed is maintained less than nominal plus 75% of the difference between nominal speed and the overspeed trip setpoint, or 15% above nominal, whichever is less.	~~24 months~~ Insert 1
SR 3.8.1.10	-----------------NOTE----------------- This Surveillance shall not be performed in MODE 1 or 2 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. --------------------------------------- Verify each DG operating at a power factor ≤ 0.9 does not trip and voltage is maintained ≤ 4784 V for Division 1 and 2 DGs and ≤ 5000 V for Division 3 DG during and following a load rejection of a load ≥ 5600 kW for Division 1 and 2 DGs and ≥ 2600 kW for Division 3 DG.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	------------------NOTES------------------ 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. --- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses for Divisions 1 and 2; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds for Division 1 and 2 DGs and ≤ 13 seconds for Division 3, 2. energizes auto-connected loads for Divisions 1 and 2, 3. maintains steady state voltage ≥ 3900 V and ≤ 4400 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected loads for ≥ 5 minutes.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	-------------------NOTES------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1 or 2 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. --- Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and: a. In ≤ 10 seconds for Division 1 and 2, and ≤ 13 seconds for Division 3, after auto-start and during tests, achieves voltage ≥ 3900 V and frequency ≥ 58.8 Hz; and b. Achieves steady state voltage ≥ 3900 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz; and c. Operates for ≥ 5 minutes.	~~24 months~~ Insert 1
SR 3.8.1.13	-----------------NOTE-------------------- This Surveillance shall not be performed in MODE 1, 2, or 3 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. --- Verify each DG's automatic trips are bypassed on an actual or simulated ECCS initiation signal except: a. Engine overspeed; and b. Generator differential current	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.14	---------------NOTES--------------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. Credit may be taken for unplanned events that satisfy this SR. ------------------------------------- Verify each DG operating at a power factor ≤ 0.9 operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 6800 kW and ≤ 7000 kW for Division 1 and 2 DGs, and ≥ 2860 kW for Division 3 DG; and b. For the remaining hours of the test loaded ≥ 5600 kW and ≤ 7000 kW for Division 1 and 2 DGs, and ≥ 2600 kW for Division 3 DG.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.15	------------------NOTES------------------ 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 1 hour loaded ≥ 5600 kW and ≤ 7000 kW for Division 1 and 2 DGs, and ≥ 2600 kW for Division 3 DG. Momentary transients outside of the load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. --- Verify each DG starts and achieves: a. In ≤ 10 seconds for Division 1 and 2, and ≤ 13 seconds for Division 3, voltage ≥ 3900 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3900 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	~~24 months~~ Insert 1
SR 3.8.1.16	------------------NOTE------------------ This Surveillance shall not be performed in MODE 1, 2, or 3 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. --- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.17	-------------------NOTE------------------ This Surveillance shall not be performed in MODE 1, 2, or 3 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. -- Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode by: a. Returning DG to ready-to-load operation; and b. Automatically energizing the emergency loads from offsite power.	~~24 months~~ Insert 1
SR 3.8.1.18	-----------------NOTE-------------------- This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. -- Verify for Division 1 and 2 DGs, the sequence time is within ± 10% of design for each load sequence timer.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.19	-------------------NOTES------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. --- Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses for Divisions 1 and 2; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds for Divisions 1 and 2 and ≤ 13 seconds for Division 3, 2. energizes auto-connected emergency loads (for Division 3, verify energization in ≤ 13 seconds), 3. achieves steady state voltage ≥ 3900 V and ≤ 4400 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	------------------NOTE------------------ All DG starts may be preceded by an engine prelube period. --- Verify, when started simultaneously from standby condition, each DG achieves: a. In ≤ 10 seconds for Division 1 and 2, and ≤ 13 seconds for Division 3, voltage ≥ 3900 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3900 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	~~10 years~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains: a. ≥ 73,700 gal of fuel for Div 1 DG and Div 2 DG; and b. ≥ 36,700 gal of fuel for Div 3 DG.	~~31 days~~ Insert 1
SR 3.8.3.2	Verify lube oil inventory is: a. ≥ 374 gal for Div 1 DG and Div 2 DG; and b. ≥ 260 gal for Div 3 DG.	~~31 days~~ Insert 1
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each required DG air start receiver pressure is ≥ 210 psig.	~~31 days~~ Insert 1
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	~~92 days~~ Insert 1
SR 3.8.3.6	For each fuel oil storage tank: a. Drain the fuel oil; b. Remove the sediment; and c. Clean the tank.	~~10 years~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is ≥ 129 V on float charge.	~~7 days~~ Insert 1
SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. <u>OR</u> Verify battery connection resistance is ≤ 5.0 E-5 ohm for inter-cell connections, ≤ 5.0 E-5 ohm for inter-rack connections, ≤ 5.0 E-5 ohm for inter-tier connections, ≤ 5.0 E-5 ohm for terminal connections; for Div 1 and Div 2 and ≤ 1.0 E-4 ohm for inter-cell connections, ≤ 1.0 E-4 ohm for inter-rack connections, ≤ 1.0 E-4 ohm for inter-tier connections, ≤ 1.0 E-4 ohm for terminal connections. for Div 3.	~~92 days~~ Insert 1
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.	~~24 months~~ Insert 1
SR 3.8.4.4	Remove visible corrosion, and verify battery cell to cell and terminal connections are coated with anti-corrosion material.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.5	Verify battery connection resistance is ≤ 5.0 E-5 ohm for inter-cell connections, ≤ 5.0 E-5 ohm for inter-rack connections, ≤ 5.0 E-5 ohm for inter-tier connections, ≤ 5.0 E-5 ohm for terminal connections; for Div 1 and Div 2 and ≤ 1.0 E-4 ohm for inter-cell connections, ≤ 1.0 E-4 ohm for inter-rack connections, ≤ 1.0 E-4 ohm for inter-tier connections, ≤ 1.0 E-4 ohm for terminal connections for Div 3.	~~24 months~~ Insert 1
SR 3.8.4.6	Verify each required Division 1 and 2 battery charger supplies ≥ 400 amps at ≥ 125 V for ≥ 8 hours; and each required Division 3 battery charger supplies ≥ 50 amps at ≥ 125 V for ≥ 8 hours.	~~24 months~~ Insert 1
SR 3.8.4.7	-------------------NOTE----------------- SR 3.8.4.8 may be performed in lieu of SR 3.8.4.7 ~~once per 60 months.~~ --------------------------------------- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.	~~24 months~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.8	Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test.	~~60 months~~ Insert 1 AND ------NOTE----- Only applicable when battery shows degradation or has reached 85% of expected life. --------------- 18 months

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. OR One or more batteries with average electrolyte temperature of the representative cells < 72°F. OR One or more batteries with one or more battery cell parameters not within Table 3.8.6-1 Category C limits.	B.1 Declare associated battery inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.6.1 Verify battery cell parameters meet Table 3.8.6-1 Category A limits.	~~7 days~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.6.2	Verify battery cell parameters meet Table 3.8.6-1 Category B limits.	~~92 days~~ Insert 1 AND Once within 72 hours after battery overcharge > 145 V
SR 3.8.6.3	Verify average electrolyte temperature of representative cells is ≥ 72°F.	~~92 days~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours
D. One or more Division 3 AC or DC electrical power distribution subsystems inoperable.	D.1 Declare High Pressure Core Spray System inoperable.	Immediately
E. Two or more divisions with inoperable distribution subsystems that result in a loss of function.	E.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	~~7 days~~ Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	<u>AND</u>	
	A.2.4 Initiate actions to restore required AC and DC electrical power distribution subsystems to OPERABLE status.	Immediately
	<u>AND</u>	
	A.2.5 Declare associated required shutdown cooling subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.8.1 Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	~~7 days~~ Insert 1

3.9 REFUELING OPERATIONS

3.9.1 Refueling Equipment Interlocks

LCO 3.9.1 The refueling equipment interlocks shall be OPERABLE.

APPLICABILITY: During in-vessel fuel movement with equipment associated with the interlocks.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required refueling equipment interlocks inoperable.	A.1 Suspend in-vessel fuel movement with equipment associated with the inoperable interlock(s).	Immediately
	OR	
	A.2.1 Insert a control rod withdrawal block.	Immediately
	AND	
	A.2.2 Verify all control rods are fully inserted.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.1.1 Perform CHANNEL FUNCTIONAL TEST on each of the following required refueling equipment interlock inputs: a. All-rods-in, b. Refuel platform position, and c. Refuel platform main hoist, fuel loaded.	~~7 days~~ Insert 1

3.9 REFUELING OPERATIONS

3.9.2 Refuel Position One-Rod-Out Interlock

LCO 3.9.2 The refuel position one-rod-out interlock shall be OPERABLE.

APPLICABILITY: MODE 5 with the reactor mode switch in the refuel position and any control rod withdrawn.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refuel position one-rod-out interlock inoperable.	A.1 Suspend control rod withdrawal.	Immediately
	AND	
	A.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.2.1 Verify reactor mode switch locked in refuel position.	~~12 hours~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.9.2.2	-------------------NOTE------------------- Not required to be performed until 1 hour after any control rod is withdrawn. -- Perform CHANNEL FUNCTIONAL TEST.	~~7 days~~ Insert 1

3.9 REFUELING OPERATIONS

3.9.3 Control Rod Position

LCO 3.9.3 All control rods shall be fully inserted.

APPLICABILITY: When loading fuel assemblies into the core.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more control rods not fully inserted.	A.1 Suspend loading fuel assemblies into the core.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.3.1 Verify all control rods are fully inserted.	~~12 hours~~ Insert 1

3.9 REFUELING OPERATIONS

3.9.5 Control Rod OPERABILITY—Refueling

LCO 3.9.5 Each withdrawn control rod shall be OPERABLE.

APPLICABILITY: MODE 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more withdrawn control rods inoperable.	A.1 Initiate action to fully insert inoperable withdrawn control rods.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	-------------------NOTE------------------- Not required to be performed until 7 days after the control rod is withdrawn. -- Insert each withdrawn control rod at least one notch.	~~7 days~~ Insert 1
SR 3.9.5.2	Verify each withdrawn control rod scram accumulator pressure is ≥ 1520 psig.	~~7 days~~ Insert 1

3.9 REFUELING OPERATIONS

3.9.6 Reactor Pressure Vessel (RPV) Water Level—Irradiated Fuel

LCO 3.9.6 RPV water level shall be ≥ 22 ft 9 inches above the top of the RPV flange.

APPLICABILITY: During movement of irradiated fuel assemblies within the RPV.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RPV water level not within limit.	A.1 Suspend movement of irradiated fuel assemblies within the RPV.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.6.1 Verify RPV water level is ≥ 22 ft 9 inches above the top of the RPV flange.	~~24 hours~~ Insert 1

3.9 REFUELING OPERATIONS

3.9.7 Reactor Pressure Vessel (RPV) Water Level—New Fuel or Control Rods

LCO 3.9.7 RPV water level shall be ≥ 23 ft above the top of irradiated fuel assemblies seated within the RPV.

APPLICABILITY: During movement of new fuel assemblies or handling of control rods within the RPV when irradiated fuel assemblies are seated within the RPV.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RPV water level not within limit.	A.1 Suspend movement of new fuel assemblies and handling of control rods within the RPV.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.7.1 Verify RPV water level is ≥ 23 ft above the top of irradiated fuel assemblies seated within the RPV.	~~24 hours~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify one RHR shutdown cooling subsystem is operating.	~~12 hours~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.9.1	Verify one RHR shutdown cooling subsystem is operating.	~~12 hours~~ Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3.1 Place the reactor mode switch in the shutdown position.	1 hour
	<u>OR</u>	
	A.3.2 --------NOTE--------- Only applicable in MODE 5. --------------------- Place the reactor mode switch in the refuel position.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.2.1	Verify all control rods are fully inserted in core cells containing one or more fuel assemblies.	~~12 hours~~ Insert 1
SR 3.10.2.2	Verify no CORE ALTERATIONS are in progress.	~~24 hours~~ Insert 1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.3.1	Perform the applicable SRs for the required LCOs.	According to the applicable SRs
SR 3.10.3.2	-------------------NOTE------------------- Not required to be met if SR 3.10.3.1 is satisfied for LCO 3.10.3.d.1 requirements. -- Verify all control rods, other than the control rod being withdrawn, in a five by five array centered on the control rod being withdrawn, are disarmed.	~~24 hours~~ Insert 1
SR 3.10.3.3	Verify all control rods, other than the control rod being withdrawn, are fully inserted.	~~24 hours~~ Insert 1

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more of the above requirements not met with the affected control rod not insertable.	B.1 Suspend withdrawal of the control rod and removal of associated CRD.	Immediately
	AND	
	B.2.1 Initiate action to fully insert all control rods.	Immediately
	OR	
	B.2.2 Initiate action to satisfy the requirements of this LCO.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.4.1	Perform the applicable SRs for the required LCOs.	According to applicable SRs
SR 3.10.4.2	--------------------NOTE-------------------- Not required to be met if SR 3.10.4.1 is satisfied for LCO 3.10.4.c.1 requirements. --- Verify all control rods, other than the control rod being withdrawn, in a five by five array centered on the control rod being withdrawn, are disarmed.	~~24 hours~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.10.4.3	Verify all control rods, other than the control rod being withdrawn, are fully inserted.	~~24 hours~~ Insert 1
SR 3.10.4.4	------------------NOTE------------------ Not required to be met if SR 3.10.4.1 is satisfied for LCO 3.10.4.b.1 requirements. -- Verify a control rod withdrawal block is inserted.	~~24 hours~~ Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.1 Initiate action to fully insert all control rods.	Immediately
	<u>OR</u>	
	A.2.2 Initiate action to satisfy the requirements of this LCO.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.5.1	Verify all controls rods, other than the control rod withdrawn for the removal of the associated CRD, are fully inserted.	~~24 hours~~ Insert 1
SR 3.10.5.2	Verify all control rods, other than the control rod withdrawn for the removal of the associated CRD, in a five by five array centered on the control rod withdrawn for the removal of the associated CRD, are disarmed.	~~24 hours~~ Insert 1
SR 3.10.5.3	Verify a control rod withdrawal block is inserted.	~~24 hours~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.10.5.4	Perform SR 3.1.1.1.	According to SR 3.1.1.1
SR 3.10.5.5	Verify no CORE ALTERATIONS are in progress.	~~24 hours~~ Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3.1 Initiate action to fully insert all control rods in core cells containing one or more fuel assemblies. OR A.3.2 Initiate action to satisfy the requirements of this LCO.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.6.1	Verify the four fuel assemblies are removed from core cells associated with each control rod or CRD removed.	~~24 hours~~ Insert 1
SR 3.10.6.2	Verify all other control rods in core cells containing one or more fuel assemblies are fully inserted.	~~24 hours~~ Insert 1
SR 3.10.6.3	------------------NOTE------------------ Only required to be met during fuel loading. -- Verify fuel assemblies being loaded are in compliance with an approved spiral reload sequence.	~~24 hours~~ Insert 1

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.10.8.2	-------------------NOTE------------------- Not required to be met if SR 3.10.8.3 satisfied. -- Perform the MODE 2 applicable SRs for LCO 3.3.2.1, Function 1.b of Table 3.3.2.1-1.	According to the applicable SRs
SR 3.10.8.3	-------------------NOTE------------------- Not required to be met if SR 3.10.8.2 satisfied. -- Verify movement of control rods is in compliance with the approved control rod sequence for the SDM test by a second licensed operator or other qualified member of the technical staff.	During control rod movement
SR 3.10.8.4	Verify no other CORE ALTERATIONS are in progress.	~~12 hours~~ Insert 1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.10.8.5	Verify each withdrawn control rod does not go to the withdrawn overtravel position.	Each time the control rod is withdrawn to "full out" position AND Prior to satisfying LCO 3.10.8.c requirement after work on control rod or CRD System that could affect coupling
SR 3.10.8.6	Verify CRD charging water header pressure ≥ 1520 psig.	~~7 days~~ Insert 1

5.5 Programs and Manuals

5.5.14 Control Room Envelope Habitability Program (continued)

protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem Total Effective Dose Equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

a. The definition of the CRE and the CRE boundary.

b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.

c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

d. Measurement of leakage through the outside air intake and exhaust dampers at a Frequency of 24 months. The results shall be trended and used as part of the periodic assessment of the CRE boundary.

e. The quantitative limits on unfiltered air inleakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air inleakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.

f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered inleakage, and measuring outside air intake and exhaust damper leakage, as required by paragraphs c and d, respectively.

Insert 3

Attachment 3

<u>Perry Nuclear Power Plant, Unit No. 1</u>

Proposed Technical Specification Pages (Retyped)

The following lists the pages included within Attachment 3:

1.0-6	3.3-28	3.4-27	3.6-39
3.1-10	3.3-30	3.4-29	3.6-41
3.1-13	3.3-31	3.4-32	3.6-43
3.1-17	3.3-38	3.5-4	3.6-47
3.1-19	3.3-38a*	3.5-5	3.6-48
3.1-21	3.3-46	3.5-7	3.6-50
3.1-22	3.3-53	3.5-8	3.6-52
3.1-25	3.3.53a	3.5-9	3.6-55
3.2-1	3.3-62	3.5-11	3.6-58
3.2-2	3.3-66	3.5-12	3.6-60
3.2-3	3.3-69	3.6-7	3.6-60a
3.3-3	3.3-72	3.6-8	3.6-64
3.3-4	3.3-75	3.6-15	3.6-67
3.3-5	3.3-79	3.6-16	3.6-69
3.3-6	3.4-4	3.6-17	3.6-70
3.3-12	3.4-6	3.6-19	3.6-72
3.3-13	3.4-7	3.6-20	3.7-2
3.3-14b	3.4-8	3.6-21	3.7-3
3.3-14c*	3.4-9	3.6-23	3.7-6
3.3-16	3.4-11	3.6-25	3.7-7
3.3-17	3.4-13	3.6-26	3.7-10
3.3-22	3.4-18	3.6-30	3.7-12
3.3-24	3.4-20	3.6-33	3.7-13
3.3-25	3.4-23	3.6-35	3.7-14
3.3-27	3.4-25	3.6-38	3.7-15

* New page added.

Attachment 3

Perry Nuclear Power Plant, Unit No. 1

Proposed Technical Specification Pages (Retyped)

The following lists the pages included within Attachment 3:

3.7-18	3.9-7
3.7-20	3.9-8
3.8-5	3.9-9
3.8-6	3.9-12
3.8-7	3.9-15
3.8-8	3.10-5
3.8-9	3.10-8
3.8-10	3.10-11
3.8-11	3.10-12
3.8-12	3.10-14
3.8-13	3.10-15
3.8-14	3.10-17
3.8-15	3.10-21
3.8-23	3.10-22
3.8-25	5.0-15c
3.8-26	5.0-15d*
3.8-27	-END-
3.8-33	
3.8-34	
3.8-37	
3.8-39	
3.9-1	
3.9-2	
3.9-3	
3.9-4	

* New page added.

1.1 Definitions (continued)

SHUTDOWN MARGIN (SDM)	SDM shall be the amount of reactivity by which the reactor is subcritical or would be subcritical assuming that: a. The reactor is xenon free; b. The moderator temperature is 68°F; and c. All control rods are fully inserted except for the single control rod of highest reactivity worth, which is assumed to be fully withdrawn. With control rods not capable of being fully inserted, the reactivity worth of these control rods must be accounted for in the determination of SDM.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
TURBINE BYPASS SYSTEM RESPONSE TIME	The TURBINE BYPASS SYSTEM RESPONSE TIME consists of two components: a. The time from initial movement of the main turbine stop valve or control valve until 80% of the turbine bypass capacity is established; and b. The time from initial movement of the main turbine stop valve or control valve until initial movement of the turbine bypass valve. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.3.1	Determine the position of each control rod.	In accordance with the Surveillance Frequency Control Program
SR 3.1.3.2	-------------------NOTE------------------- Not required to be performed until 31 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of the RPCS. --- Insert each withdrawn control rod at least one notch.	In accordance with the Surveillance Frequency Control Program
SR 3.1.3.3	Verify each control rod scram time from fully withdrawn to notch position 13 is ≤ 7 seconds.	In accordance with SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.4.2	Verify, for a representative sample, each tested control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 950 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.1.4.3	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with any reactor steam dome pressure.	Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect scram time
SR 3.1.4.4	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 950 psig.	Prior to exceeding 40% RTP after fuel movement within the affected core cell AND Prior to exceeding 40% RTP after work on control rod or CRD System that could affect scram time

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. (continued)	C.2	Declare the associated control rod inoperable.	1 hour
D. Required Action and associated Completion Time of Required Action B.1 or C.1 not met.	D.1	--------NOTE--------- Not applicable if all inoperable control rod scram accumulators are associated with fully inserted control rods. ---------------------	
		Place the reactor mode switch in the shutdown position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify each control rod scram accumulator pressure is ≥ 1520 psig.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Nine or more OPERABLE control rods not in compliance with BPWS.	B.1	--------NOTE--------- Affected control rods may be bypassed in RACS in accordance with SR 3.3.2.1.9 for insertion only. ---------------------	
		Suspend withdrawal of control rods.	Immediately
	<u>AND</u>		
	B.2	Place the reactor mode switch in the shutdown position.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.6.1	Verify all OPERABLE control rods comply with BPWS.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.1	Verify available volume of borax-boric acid solution is within the limits of Figure 3.1.7-1.	In accordance with the Surveillance Frequency Control Program
SR 3.1.7.2	Verify temperature of borax-boric acid solution is ≥ 70°F.	In accordance with the Surveillance Frequency Control Program
SR 3.1.7.3	Verify temperature of pump suction piping is ≥ 70°F.	In accordance with the Surveillance Frequency Control Program
SR 3.1.7.4	Verify continuity of explosive charge.	In accordance with the Surveillance Frequency Control Program
SR 3.1.7.5	Verify the concentration of boron in solution is within the limits of Figure 3.1.7-1.	In accordance with the Surveillance Frequency Control Program <u>AND</u> Once within 24 hours after water or boron is added to solution <u>AND</u> Once within 24 hours after solution temperature is restored to ≥ 70°F

(continued)

URVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.7.6	Verify each SLC subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position, or can be aligned to the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.1.7.7	Verify each pump develops a flow rate ≥ 32.4 gpm at a discharge pressure ≥ 1220 psig.	In accordance with the Inservice Testing Program
SR 3.1.7.8	Verify flow through one SLC subsystem from pump into reactor pressure vessel.	In accordance with the Surveillance Frequency Control Program
SR 3.1.7.9	Verify all heat traced piping between storage tank and pump suction is unblocked.	In accordance with the Surveillance Frequency Control Program <u>AND</u> Once within 24 hours after pump suction piping temperature is restored to ≥ 70°F

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.8.1	-------------------NOTE-------------------- Not required to be met on vent and drain valves closed during performance of SR 3.1.8.2. --- Verify each SDV vent and drain valve is open.	In accordance with the Surveillance Frequency Control Program
SR 3.1.8.2	Cycle each SDV vent and drain valve to the fully closed and fully open position.	In accordance with the Surveillance Frequency Control Program
SR 3.1.8.3	Verify each SDV vent and drain valve: a. Closes in ≤ 30 seconds after receipt of an actual or simulated scram signal; and b. Opens when the actual or simulated scram signal is reset.	In accordance with the Surveillance Frequency Control Program

3.2 POWER DISTRIBUTION LIMITS

3.2.1 AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)

LCO 3.2.1 All APLHGRs shall be less than or equal to the limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 23.8% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any APLHGR not within limits.	A.1 Restore APLHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23.8% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.1 Verify all APLHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ 23.8% RTP AND In accordance with the Surveillance Frequency Control Program

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3.2 POWER DISTRIBUTION LIMITS

3.2.2 MINIMUM CRITICAL POWER RATIO (MCPR)

LCO 3.2.2 All MCPRs shall be greater than or equal to the MCPR operating limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 23.8% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any MCPR not within limits.	A.1 Restore MCPR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23.8% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.2.1 Verify all MCPRs are greater than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ 23.8% RTP <u>AND</u> In accordance with the Surveillance Frequency Control Program

3.2 POWER DISTRIBUTION LIMITS

3.2.3 LINEAR HEAT GENERATION RATE (LHGR)

LCO 3.2.3 All LHGRs shall be less than or equal to the limits specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 23.8% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Any LHGR not within limits.	A.1 Restore LHGR(s) to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23.8% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.3.1 Verify all LHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ 23.8% RTP <u>AND</u> In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS Function.

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 associated Function maintains RPS trip capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.2	-----------------NOTE------------------ Not required to be performed until 12 hours after THERMAL POWER ≥ 23.8% RTP. --------------------------------------- Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power ≤ 2% RTP while operating at ≥ 23.8% RTP.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.3	Adjust the channel to conform to a calibrated flow signal.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.4	-----------------NOTE------------------ Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --------------------------------------- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.5	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.6	Verify the source range monitor (SRM) and intermediate range monitor (IRM) channels overlap.	Prior to withdrawing SRMs from the fully inserted position
SR 3.3.1.1.7	------------------NOTE------------------ Only required to be met during entry into MODE 2 from MODE 1. -- Verify the IRM and APRM channels overlap.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.8	Calibrate the local power range monitors.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.9	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.10	Calibrate the trip unit.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.11	------------------NOTES------------------ 1. Neutron detectors and flow reference transmitters are excluded. 2. For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.12	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.13	------------------NOTES------------------ 1. Neutron detectors are excluded. 2. For IRMs, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.14	Verify the APRM Flow Biased Simulated Thermal-High time constant is within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.15	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.1.16	Verify Turbine Stop Valve Closure and Turbine Control Valve Fast Closure Trip Oil Pressure-Low Functions are not bypassed when THERMAL POWER is ≥ 38% RTP.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.17	Calibrate flow reference transmitters.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.18	-----------------NOTES----------------- 1. Neutron detectors are excluded. 2. For Functions 3, 4 and 5 in Table 3.3.1.1-1, the channel sensors are excluded. --------------------------------------- Verify the RPS RESPONSE TIME is within limits.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.1.19	Perform CHANNEL FUNCTIONAL TEST	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.1.2-1 to determine which SRs apply for each applicable MODE or other specified conditions.

SURVEILLANCE		FREQUENCY
SR 3.3.1.2.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.2.2	-----NOTES----- 1. Only required to be met during CORE ALTERATIONS. 2. One SRM may be used to satisfy more than one of the following. ----- Verify an OPERABLE SRM detector is located in: a. The fueled region; b. The core quadrant where CORE ALTERATIONS are being performed when the associated SRM is included in the fueled region; and c. A core quadrant adjacent to where CORE ALTERATIONS are being performed, when the associated SRM is included in the fueled region.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.2.3	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.2.4	------------------NOTE------------------ Not required to be met with less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant. -- Verify count rate is: a. ≥ 3.0 cps, or b. ≥ 0.7 cps with a signal to noise ratio ≥ 2:1.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.2.5	------------------NOTE------------------ Not required to be performed until 12 hours after IRMs on Range 2 or below. -- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.2.6	------------------NOTES------------------ 1. Neutron detectors are excluded. 2. Not required to be performed until 12 hours after IRMs on Range 2 or below. -- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

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 OPRM maintains trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.1.3.1	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.3.2	Calibrate the local power range monitors.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.3.3	-----------------NOTE----------------- Neutron detectors are excluded. -------------------------------------- Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.3.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.1.3.5	Verify OPRM is not bypassed when THERMAL POWER is ≥ 23.8% RTP and recirculation drive flow is < the value corresponding to 60% of rated core flow.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.1.3.6	-------------------NOTE------------------ Neutron detectors are excluded. --- Verify the RPS RESPONSE TIME is within limits.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.

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 associated Function maintains control rod block capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.2.1.1	------------------NOTE------------------ Not required to be performed until 1 hour after THERMAL POWER is > 66.7% RTP. -- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.1.2	------------------NOTE------------------ Not required to be performed until 1 hour after THERMAL POWER is > 33.3% RTP and ≤ 66.7% RTP. -- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.1.3	------------------NOTE------------------ Not required to be performed until 1 hour after any control rod is withdrawn in MODE 2. -- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.1.4	------------------NOTE------------------ Not required to be performed until 1 hour after THERMAL POWER is ≤ 19% RTP in MODE 1. -- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.1.5	Calibrate the low power setpoint trip units. The Allowable Value shall be > 19% RTP and ≤ 33.3% RTP.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.1.6	Verify the RWL high power Function is not bypassed when THERMAL POWER is > 66.7% RTP.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.1.7	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.2.1.8	------------------NOTE------------------ Not required to be performed until 1 hour after reactor mode switch is in the shutdown position. -- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.1.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.3.1.2	Deleted.	
SR 3.3.3.1.3	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

3.3 INSTRUMENTATION

3.3.3.2 Remote Shutdown System

LCO 3.3.3.2 The Remote Shutdown System Functions shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Functions inoperable.	A.1 Restore required Function to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.3.2.1 Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	In accordance with the Surveillance Frequency Control Program

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.3.2.2	Verify each required control circuit and transfer switch is capable of performing the intended functions.	In accordance with the Surveillance Frequency Control Program
SR 3.3.3.2.3	Perform CHANNEL CALIBRATION for each required instrumentation channel, except valve position instrumentation.	In accordance with the Surveillance Frequency Control Program

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ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One or more Functions with EOC-RPT trip capability not maintained.	B.1	Restore EOC-RPT trip capability.	2 hours
C. Required Action and associated Completion Time not met.	C.1	Remove the associated recirculation pump fast speed breaker from service.	4 hours
	<u>OR</u>		
	C.2	Reduce THERMAL POWER to < 38% RTP.	4 hours

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 associated Function maintains EOC-RPT trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.4.1.1	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.4.1.2	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. TSV Closure: ≤ 7% closed; and b. TCV Fast Closure, Trip Oil Pressure-Low: ≥ 465 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.1.3	Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.1.4	Verify TSV Closure and TCV Fast Closure, Trip Oil Pressure-Low Functions are not bypassed when THERMAL POWER is ≥ 38% RTP.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.1.5	------------------NOTE------------------ Breaker arc suppression time may be assumed from the most recent performance of SR 3.3.4.1.6. -- Verify the EOC-RPT SYSTEM RESPONSE TIME is within limits.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.1.6	Determine RPT breaker arc suppression time.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One Function with ATWS-RPT trip capability not maintained.	B.1	Restore ATWS-RPT trip capability.	72 hours
C. Both Functions with ATWS-RPT trip capability not maintained.	C.1	Restore ATWS-RPT trip capability for one Function.	1 hour
D. Required Action and associated Completion Time not met.	D.1	Remove the associated recirculation pump from service.	6 hours
	<u>OR</u>		
	D.2	Be in MODE 2.	6 hours

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 associated Function maintains ATWS-RPT trip capability.

SURVEILLANCE		FREQUENCY
SR 3.3.4.2.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.4.2.2	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.2.3	Calibrate the trip unit.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.2.4	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Reactor Vessel Water Level-Low Low, Level 2: ≥ 127.6 inches; and b. Reactor Vessel Pressure-High: ≤ 1098 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.3.4.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.5.1-1 to determine which SRs apply for each ECCS Function.

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 as follows: (a) for up to 6 hours for Functions 3.c, 3.f, 3.g, and 3.h; and (b) for up to 6 hours for Functions other than 3.c, 3.f, 3.g, and 3.h, provided the associated Function or the redundant Function maintains ECCS initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.5.1.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.1.2	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.1.3	Calibrate the trip unit.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.1.4	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.1.5	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.3.5.1.6 Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.1.7 Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.5.2-1 to determine which SRs apply for each RCIC Function.

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 as follows: (a) for up to 6 hours for Function 5; and (b) for up to 6 hours for Functions 1, 2, 3, and 4 provided the associated Function maintains RCIC initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.5.2.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2.2	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2.3	Calibrate the trip unit.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2.4	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2.6	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-------------------------------------NOTES-------------------------------------
1. Refer to Table 3.3.6.1-1 to determine which SRs apply for each Function.

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 associated Function maintains isolation capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.6.1.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.1.2	---------------NOTE------------------ For Function 1.e in Table 3.3.6.1-1, this SR is applicable only to the Division 3 and 4 instruments. ------------------------------------- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.1.3	Calibrate the trip unit.	In accordance with the Surveillance Frequency Control Program

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.6.1.4	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.1.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.1.6	------------------NOTE------------------ Channel sensors are excluded. -- Verify the ISOLATION SYSTEM RESPONSE TIME for the main steam isolation valves is within limits.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.1.7	------------------NOTE------------------ For Function 1.e in Table 3.3.6.1-1, this SR is applicable only to the Division 1 and 2 instruments. -- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.6.2-1 to determine which SRs apply for each RHR Containment Spray System Function.

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 associated Function maintains RHR containment spray initiation capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.6.2.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2.2	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2.3	Calibrate the trip unit.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2.4	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.2.6	Perform CHANNEL CALIBRATION	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.6.3-1 to determine which SRs apply for each SPMU Function.

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 associated Function maintains SPMU initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.6.3.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3.2	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3.3	Calibrate the trip unit.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3.4	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3.5	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.3.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

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 associated Function maintains LLS or relief initiation capability, as applicable.

SURVEILLANCE		FREQUENCY
SR 3.3.6.4.1	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.4.2	Calibrate the trip unit.	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.4.3	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Relief Function Low: 1103 ± 15 psig Medium: 1113 ± 15 psig High: 1123 ± 15 psig b. LLS Function Low open: 1033 ± 15 psig close: 926 ± 15 psig Medium open: 1073 ± 15 psig close: 936 ± 15 psig High open: 1113 ± 15 psig close: 946 ± 15 psig	In accordance with the Surveillance Frequency Control Program
SR 3.3.6.4.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. Refer to Table 3.3.7.1-1 to determine which SRs apply for each Function.

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 associated Function maintains CRER initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.7.1.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.1.2	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.1.3	Calibrate the trip unit.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.1.4	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.7.1.5	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.8.1-1 to determine which SRs apply for each LOP Function.

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 2 hours provided the associated Function maintains DG initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.8.1.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.1.2	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.1.3	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.1.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.3.8.2.1	-------------------NOTE------------------- Only required to be performed prior to entering MODE 2 or 3 from MODE 4, when in MODE 4 for ≥ 24 hours. -- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.2.2	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Overvoltage Bus A ≤ 132 V Bus B ≤ 132 V b. Undervoltage Bus A ≥ 108 V Bus B ≥ 108 V c. Underfrequency (with time delay set to ≤ 4.0 seconds) Bus A ≥ 57 Hz Bus B ≥ 57 Hz	In accordance with the Surveillance Frequency Control Program
SR 3.3.8.2.3	Perform a system functional test.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.1.1	-------------------NOTE------------------- Not required to be performed until 24 hours after both recirculation loops are in operation. -- Verify recirculation loop jet pump flow mismatch with both recirculation loops in operation is: a. $\leq$ 10% of rated core flow when operating at < 70% of rated core flow; and b. $\leq$ 5% of rated core flow when operating at $\geq$ 70% of rated core flow.	In accordance with the Surveillance Frequency Control Program

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 Flow Control Valves (FCVs)

LCO 3.4.2 A recirculation loop FCV shall be OPERABLE in each operating recirculation loop.

APPLICABILITY: MODES 1 and 2.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required FCVs inoperable.	A.1 Lock up the FCV.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.2.1 Verify each FCV fails "as is" on loss of hydraulic pressure at the hydraulic unit.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.2.2	Verify average rate of each FCV movement is: a. ≤ 11% of stroke per second for opening; and b. ≤ 11% of stroke per second for closing.	In accordance with the Surveillance Frequency Control Program

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3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 Jet Pumps

LCO 3.4.3 All jet pumps shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more jet pumps inoperable.	A.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.3.1	-------------------NOTES------------------- 1. Not required to be performed until 4 hours after associated recirculation loop is in operation. 2. Not required to be performed until 24 hours after > 25% RTP. --- Verify at least two of the following criteria (a, b, and c) are satisfied for each operating recirculation loop: a. Recirculation loop drive flow versus flow control valve position differs by ≤ 10% from established patterns.	In accordance with the Surveillance Frequency Control Program (continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.3.1 (continued) b. Recirculation loop drive flow versus total core flow differs by ≤ 10% from established patterns. c. Each jet pump diffuser to lower plenum differential pressure differs by ≤ 20% from established patterns, or each jet pump flow differs by ≤ 10% from established patterns.	

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.4.4.2	-------------------NOTE------------------- Valve actuation may be excluded. -- Verify each required relief function S/RV actuates on an actual or simulated automatic initiation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.4.4.3	-------------------NOTE------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. -- Verify each required S/RV actuator strokes when manually actuated.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met. <u>OR</u> Pressure boundary LEAKAGE exists.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.5.1	Verify RCS unidentified LEAKAGE, total LEAKAGE, and unidentified LEAKAGE increase are within limits.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.7.1	Perform CHANNEL CHECK of required drywell atmospheric monitoring system.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.2	Perform CHANNEL FUNCTIONAL TEST of required leakage detection instrumentation.	In accordance with the Surveillance Frequency Control Program
SR 3.4.7.3	Perform CHANNEL CALIBRATION of required leakage detection instrumentation.	In accordance with the Surveillance Frequency Control Program

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ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2.2.1 Be in MODE 3. AND B.2.2.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.8.1	-------------------NOTE------------------- Only required to be performed in MODE 1. -- Verify reactor coolant DOSE EQUIVALENT I-131 specific activity is ≤ 0.2 μCi/gm.	In accordance with the Surveillance Frequency Control Program

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	-------------------NOTE------------------- Not required to be met until 2 hours after reactor steam dome pressure is less than the RHR cut in permissive pressure. --- Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. No RHR shutdown cooling subsystem in operation. AND No recirculation pump in operation.	B.1 Verify reactor coolant circulation by an alternate method. AND B.2 Monitor reactor coolant temperature and pressure.	1 hour from discovery of no reactor coolant circulation AND Once per 12 hours thereafter Once per hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.10.1 Verify one RHR shutdown cooling subsystem or recirculation pump is operating.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. ---------NOTE--------- Required Action C.2 shall be completed if this Condition is entered. --------------------- Requirements of the LCO not met in other than MODES 1, 2, and 3.	C.1	Initiate action to restore parameter(s) to within limits.	Immediately
	AND		
	C.2	Determine RCS is acceptable for operation.	Prior to entering MODE 2 or 3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.11.1	------------------NOTE------------------ Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. --- Verify: a. RCS pressure and RCS temperature are within the limits of Figure 3.4.11-1; and b. RCS heatup and cooldown rates are ≤ 100°F in any one hour period.	In accordance with the Surveillance Frequency Control Program

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.11.5	------------------NOTE------------------ Only required to be performed when tensioning the reactor vessel head bolting studs. -- Verify reactor vessel flange and head flange temperatures are ≥ 70°F.	In accordance with the Surveillance Frequency Control Program
SR 3.4.11.6	------------------NOTE------------------ Not required to be performed until 30 minutes after RCS temperature ≤ 80°F in MODE 4. -- Verify reactor vessel flange and head flange temperatures are ≥ 70°F.	In accordance with the Surveillance Frequency Control Program
SR 3.4.11.7	------------------NOTE------------------ Not required to be performed until 12 hours after RCS temperature ≤ 100°F in MODE 4. -- Verify reactor vessel flange and head flange temperatures are ≥ 70°F.	In accordance with the Surveillance Frequency Control Program

(continued)

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3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Reactor Steam Dome Pressure

LCO 3.4.12 The reactor steam dome pressure shall be ≤ 1045 psig.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor steam dome pressure not within limit.	A.1 Restore reactor steam dome pressure to within limit.	15 minutes
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.12.1 Verify reactor steam dome pressure is ≤ 1045 psig.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.2	-------------------NOTE------------------- Low pressure coolant injection (LPCI) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the residual heat removal cut in permissive pressure in MODE 3, if capable of being manually realigned and not otherwise inoperable. -- Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3	Verify ADS accumulator supply pressure is ≥ 150 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.4	Verify each ECCS pump develops the specified flow rate with sufficient pump total head to overcome the total system resistance which includes the specified reactor-to-containment wetwell differential pressure. SYSTEM / FLOW RATE / REACTOR-TO-CONTAINMENT WETWELL DIFFERENTIAL PRESSURE LPCS / ≥ 6110 gpm / ≥ 128 psid LPCI / ≥ 7100 gpm / ≥ 24 psid HPCS / ≥ 6110 gpm / ≥ 200 psid	In accordance with the Inservice Testing Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.5	-------------------NOTE------------------- Vessel injection/spray may be excluded. -- Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.6	-------------------NOTE------------------- Valve actuation may be excluded. -- Verify the ADS actuates on an actual or simulated automatic initiation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.7	-------------------NOTE------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. -- Verify each ADS valve actuator strokes when manually actuated.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.8	-------------------NOTE------------------- ECCS actuation instrumentation is excluded. -- Verify the ECCS RESPONSE TIME for each ECCS injection/spray subsystem is within limits.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action C.2 and associated Completion Time not met.	D.1 Initiate action to restore primary containment to OPERABLE status.	Immediately
	<u>AND</u>	
	D.2 Initiate action to restore isolation capability in each required primary containment penetration flow path not isolated.	Immediately
	<u>AND</u>	
	D.3 -------NOTE------- Entry and exit is permissible under administrative control. ------------------ Initiate action to close one door in each primary containment air lock.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify, for each required low pressure ECCS injection/spray subsystem, the suppression pool water level is ≥ 16 ft 6 in.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.2	Verify, for the required High Pressure Core Spray (HPCS) System, the: a. Suppression pool water level is ≥ 16 ft 6 in; or b. Condensate storage tank water volume is ≥ 249,700 gal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.3	Verify, for each required ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.4	-------------------NOTE------------------- One low pressure coolant injection (LPCI) subsystem may be considered OPERABLE during alignment and operation for decay heat removal, if capable of being manually realigned and not otherwise inoperable. -- Verify each required ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.5.2.5	Verify each required ECCS pump develops the specified flow rate with sufficient pump total head to overcome the total system resistance which includes the specified reactor to containment wetwell differential pressure. SYSTEM / FLOW RATE / REACTOR TO CONTAINMENT WETWELL DIFFERENTIAL PRESSURE LPCS / ≥ 6110 gpm / ≥ 128 psid LPCI / ≥ 7100 gpm / ≥ 24 psid HPCS / ≥ 6110 gpm / ≥ 200 psid	In accordance with the Inservice Testing Program
SR 3.5.2.6	-------------------NOTE------------------- Vessel injection/spray may be excluded. -- Verify each required ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	In accordance with the Surveillance Frequency Control Program

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.3.1	Verify the RCIC System piping is filled with water from the pump discharge valve to the injection valve.	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.2	Verify each RCIC System manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.3	-------------------NOTE------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. -- Verify, with RCIC steam supply pressure ≥ 920 psig and ≤ 1045 psig, the RCIC pump can develop a flow rate ≥ 700 gpm against a system head corresponding to reactor pressure.	In accordance with the Surveillance Frequency Control Program
SR 3.5.3.4	-------------------NOTE------------------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. -- Verify, with RCIC steam supply pressure ≥ 150 psig and ≤ 165 psig, the RCIC pump can develop a flow rate ≥ 700 gpm against a system head corresponding to reactor pressure.	In accordance with the Surveillance Frequency Control Program

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.3.5	-------------------NOTE------------------- Vessel injection may be excluded. -- Verify the RCIC System actuates on an actual or simulated automatic initiation signal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.2.1	-------------------NOTES------------------ 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. During MODES 1, 2, and 3, results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1.1. --- Perform required primary containment air lock leakage rate testing in accordance with the Primary Containment Leakage Rate Testing Program.	In accordance with the Primary Containment Leakage Rate Testing Program
SR 3.6.1.2.2	Verify primary containment air lock seal air header pressure is ≥ 90 psig.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.6.1.2.3	-------------------NOTE------------------- Only required to be performed upon entry or exit through the primary containment air lock. -- Verify only one door in the primary containment air lock can be opened at a time.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.2.4	Verify, from an initial pressure of 90 psig, the primary containment air lock seal pneumatic system pressure does not decay at a rate equivalent to > 1.5 psig for a period of 24 hours.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.1	-------------------NOTE------------------- Only required to be met in MODES 1, 2, and 3. -- Verify each inboard 42 inch primary containment purge valve is sealed closed except for one purge valve in a penetration flow path while in Condition D of this LCO.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.3.2	-------------------NOTES------------------- 1. Only required to be met in MODES 1, 2, and 3. 2. Not required to be met when the 18 inch or outboard 42 inch primary containment purge valves are open for pressure control, ALARA or air quality considerations for personnel entry, or Surveillances or special testing on the purge system that require the valves to be open. -- Verify each 18 inch and outboard 42 inch primary containment purge valve is closed.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.3	------------------NOTES------------------ 1. Only required to be met in MODES 1, 2, and 3. 2. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 3. Not required to be met for PCIVs that are open under administrative controls. --- Verify each primary containment isolation manual valve and blind flange that is located outside primary containment, drywell, and steam tunnel and not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.5	Verify the isolation time of each power operated and each automatic PCIV, except MSIVs, is within limits.	In accordance with the Inservice Testing Program
SR 3.6.1.3.6	-------------------NOTE------------------- Only required to be met in MODES 1, 2, and 3. -- Perform leakage rate testing for each primary containment purge valve with resilient seals.	In accordance with the Surveillance Frequency Control Program <u>AND</u> Once within 92 days after opening the valve
SR 3.6.1.3.7	Verify the isolation time of each MSIV is $\geq$ 2.5 seconds, and $\leq$ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.6.1.3.8	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.11	------------------NOTES------------------ 1. Only required to be met in MODES 1, 2, and 3. 2. Feedwater lines are excluded. --- Verify combined leakage rate of 1 gpm times the total number of PCIVs through hydrostatically tested lines that penetrate the primary containment is not exceeded when these isolation valves are tested at ≥ 1.1 P_a.	In accordance with the Primary Containment Leakage Rate Testing Program
SR 3.6.1.3.12	------------------NOTE------------------ Only required to be met in MODES 1, 2, and 3. --- Verify each outboard 42 inch primary containment purge valve is blocked to restrict the valve from opening > 50°.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.3.13	------------------NOTE------------------ Not required to be met when the Backup Hydrogen Purge System isolation valves are open for pressure control, ALARA or air quality considerations for personnel entry, or Surveillances or special testing of the Backup hydrogen Purge System that require the valves to be open. --- Verify each 2 inch Backup Hydrogen Purge System isolation valve is closed.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.1.4 Primary Containment Pressure

LCO 3.6.1.4 Primary containment to secondary containment differential pressure shall be ≥ -0.1 psid and ≤ 1.0 psid.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary containment to secondary containment differential pressure not within limits.	A.1 Restore primary containment to secondary containment differential pressure to within limits.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.1.4.1 Verify primary containment to secondary containment differential pressure is within limits.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.1.5 Primary Containment Air Temperature

LCO 3.6.1.5 Primary containment average air temperature shall be ≤ 95°F.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Primary containment average air temperature not within limit.	A.1	Restore primary containment average air temperature to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	<u>AND</u>		
	B.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.5.1	Verify primary containment average air temperature is within limit.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.6.1	------------------NOTE------------------ Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. -- Verify each LLS valve actuator strokes when manually actuated.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.6.2	------------------NOTE------------------ Valve actuation may be excluded. -- Verify the LLS function of the six safety/relief valves actuates on an actual or simulated automatic initiation signal.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.7.1	-------------------NOTE------------------- RHR containment spray subsystems may be considered OPERABLE during alignment and operation for decay heat removal when below the RHR cut in permissive pressure in MODE 3 if capable of being manually realigned and not otherwise inoperable. -- Verify each RHR containment spray subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.7.2	Verify each RHR pump develops a flow rate of ≥ 5250 gpm on recirculation flow through the associated heat exchangers to the suppression pool.	In accordance with the Inservice Testing Program
SR 3.6.1.7.3	Verify each RHR containment spray subsystem automatic valve in the flow path actuates to its correct position on an actual or simulated automatic initiation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.7.4	Verify each spray nozzle is unobstructed.	Following maintenance which could result in nozzle blockage.

3.6 CONTAINMENT SYSTEMS

3.6.1.8 Feedwater Leakage Control System (FWLCS)

LCO 3.6.1.8 Two FWLCS subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One FWLCS subsystem inoperable.	A.1 Restore FWLCS subsystems to OPERABLE status.	30 days
B. Two FWLCS subsystems inoperable.	B.1 Restore one FWLCS subsystem to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.1.8.1 Verify associated ECCS water leg pump operates properly.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.10.1	-------------------NOTES------------------- 1. Not required to be met for pathways capable of being closed by OPERABLE primary containment automatic isolation valves. 2. Not required to be met for the Fire Protection System manual hose reel containment isolation valves. 3. Not required to be met for manual isolation valves open under administrative controls. --- Verify each penetration flow path, required to be closed during accident conditions, is closed.	In accordance with the Surveillance Frequency Control Program

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.11.1	-----------------NOTES----------------- 1. Not required to be met for vacuum breakers open during Surveillances. 2. Not required to be met for vacuum breakers open when performing their intended function. --------------------------------------- Verify each vacuum breaker is closed.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.11.2	Perform a functional test of each required vacuum breaker and its associated isolation valve.	In accordance with the Surveillance Frequency Control Program
SR 3.6.1.11.3	Verify the opening pressure differential of each required vacuum breaker is $\leq$ 0.1 psid, and the opening setpoint of the vacuum breaker isolation valve is $\geq$ 0.052 psid and $\leq$ 0.160 psid.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours
C. Required Action and associated Completion Time of Condition A not met during movement of recently irradiated fuel assemblies in the primary containment, or during OPDRVs.	C.1 Suspend movement of recently irradiated fuel assemblies in the primary containment. AND C.2 Initiate action to suspend OPDRVs.	Immediately Immediately

SURVEILLANCE REQUIREMENT

SURVEILLANCE		FREQUENCY
SR 3.6.1.12.1	Verify containment average temperature-to-relative humidity to be within limits.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. Suppression pool average temperature > 120°F.	E.1	Depressurize the reactor vessel to < 200 psig.	12 hours
	<u>AND</u>		
	E.2	Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.1.1	Verify suppression pool average temperature is within the applicable limits.	In accordance with the Surveillance Frequency Control Program <u>AND</u> 5 minutes when performing testing that adds heat to the suppression pool

3.6 CONTAINMENT SYSTEMS

3.6.2.2 Suppression Pool Water Level

LCO 3.6.2.2 Corrected suppression pool water level shall be ≥ 17 ft 9.5 inches and ≤ 18 ft 6 inches.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Suppression pool water level not within limits.	A.1 Restore suppression pool water level to within limits.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.2.2.1 Verify suppression pool water level is within limits.	In accordance with the Surveillance Frequency Control Program

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.3.1	Verify each RHR suppression pool cooling subsystem manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.3.2	Verify each RHR pump develops a flow rate ≥ 7100 gpm through the associated heat exchangers to the suppression pool.	In accordance with the Inservice Testing Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.4.1	Verify upper containment pool water level is: a. ≥ 22 ft 9 inches above the reactor pressure vessel (RPV) flange. <u>OR</u> b. ≥ 22 ft 5 inches above the RPV flange, and suppression pool water level ≥ 17 ft 11.7 inches.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.4.2	Verify upper containment pool water temperature is ≤ 110°F.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.4.3	Verify each SPMU subsystem manual, power operated, and automatic valve that is not locked, sealed, or otherwise secured in position is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.4.4	Verify all required upper containment pool gates are in the stored position or are otherwise removed from the upper containment pool.	In accordance with the Surveillance Frequency Control Program
SR 3.6.2.4.5	-----------------NOTE----------------- Actual makeup to the suppression pool may be excluded. -------------------------------------- Verify each SPMU subsystem automatic valve actuates to the correct position on an actual or simulated automatic initiation signal.	In accordance with the Surveillance Frequency Control Program

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ACTIONS (continued)

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 3.6.3.2.1	Energize each primary containment and drywell hydrogen igniter division and perform current versus voltage measurements to verify required igniters in service.	In accordance with the Surveillance Frequency Control Program
SR 3.6.3.2.2	-----------------NOTE------------------ Not required to be performed until 92 days after discovery of four or more igniters in the division inoperable. --------------------------------------- Energize each primary containment and drywell hydrogen igniter division and perform current versus voltage measurements to verify required igniters in service.	In accordance with the Surveillance Frequency Control Program
SR 3.6.3.2.3	Verify each required igniter in inaccessible areas develops sufficient current draw for a ≥ 1700°F surface temperature.	In accordance with the Surveillance Frequency Control Program

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.3.2.4	Verify each required igniter in accessible areas develops a surface temperature of ≥ 1700°F.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.3.1	Operate each combustible gas mixing subsystem for ≥ 15 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.6.3.3.2	Verify each combustible gas mixing subsystem flow rate is ≥ 500 scfm.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Secondary containment inoperable during movement of recently irradiated fuel assemblies in the primary containment, or during OPDRVs.	C.1 Suspend movement of recently irradiated fuel assemblies in the primary containment. AND C.2 Initiate action to suspend OPDRVs.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.1.1	Verify secondary containment vacuum is ≥ 0.66 inch of vacuum water gauge.	In accordance with the Surveillance Frequency Control Program
SR 3.6.4.1.2	Verify the primary containment equipment hatch is closed and sealed and the shield blocks are installed adjacent to the shield building.	In accordance with the Surveillance Frequency Control Program
SR 3.6.4.1.3	Verify each secondary containment access door is closed, except when the access opening is being used for entry and exit.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition A or B not met during movement of recently irradiated fuel assemblies in the primary containment, or during OPDRVs.	D.1	Suspend movement of recently irradiated fuel assemblies in the primary containment.	Immediately
	<u>AND</u>		
	D.2	Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.2.1	------------------NOTES------------------ 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for SCIVs that are open under administrative controls. --- Verify each secondary containment isolation manual valve and blind flange that is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each AEGT subsystem for ≥ 10 continuous hours with heaters operating.	In accordance with the Surveillance Frequency Control Program
SR 3.6.4.3.2	Perform required AEGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.4.3.3	Verify each AEGT subsystem actuates on an actual or simulated initiation signal.	In accordance with the Surveillance Frequency Control Program

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.1.1	Verify bypass leakage is less than or equal to the bypass leakage limit. However, during the first unit startup following bypass leakage testing performed in accordance with this SR, the acceptance criterion is ≤ 10% of the drywell bypass leakage limit.	24 months following 2 consecutive tests with bypass leakage greater than the bypass leakage limit AND 48 months following a test with bypass leakage greater than the bypass leakage limit AND ------NOTE----- SR 3.0.2 extensions are limited to 12 months. --------------- In accordance with the Surveillance Frequency Control Program
SR 3.6.5.1.2	Visually inspect the exposed accessible interior and exterior surfaces of the drywell.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.5.1.3	Quantify air lock door seal leakage rate when the gap between the door seals is pressurized to ≥ 2.5 psig.	Once within 72 hours after each drywell air lock door closing.
SR 3.6.5.1.4	-------------------NOTE------------------- An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. -- Quantify drywell air lock leakage by performing an air lock barrel leakage test at ≥ 2.5 psig.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.2.1	Deleted.	
SR 3.6.5.2.2	Verify drywell air lock seal air header pressure is ≥ 60 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.6.5.2.3	-----------------NOTE----------------- Only required to be performed upon entry into drywell. --------------------------------------- Verify only one door in the drywell air lock can be opened at a time.	In accordance with the Surveillance Frequency Control Program
SR 3.6.5.2.4	Deleted.	
SR 3.6.5.2.5	Verify, from an initial pressure of 60 psig, the drywell air lock seal pneumatic system pressure does not decay at a rate equivalent to > 3 psig for a period of 24 hours.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.3.1	Verify each 24 inch and 36 inch drywell purge supply and exhaust isolation valve is sealed closed.	In accordance with the Surveillance Frequency Control Program
SR 3.6.5.3.2	Deleted.	
SR 3.6.5.3.3	-------------------NOTES------------------ 1. Valves and blind flanges in high radiation areas may be verified by use of administrative means. 2. Not required to be met for drywell isolation valves that are open under administrative controls. -- Verify each drywell isolation manual valve and blind flange that is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed.	Prior to entering MODE 2 or 3 from MODE 4, if not performed in the previous 92 days
SR 3.6.5.3.4	Verify the isolation time of each power operated and each automatic drywell isolation valve is within limits.	In accordance with the Inservice Testing Program
SR 3.6.5.3.5	Verify each automatic drywell isolation valve actuates to the isolation position on an actual or simulated isolation signal.	In accordance with the Surveillance Frequency Control Program

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3.6 CONTAINMENT SYSTEMS

3.6.5.4 Drywell Pressure

LCO 3.6.5.4 Drywell-to-primary containment differential pressure shall be ≥ -0.5 psid and ≤ 2.0 psid.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell-to-primary containment differential pressure not within limits.	A.1 Restore drywell-to-primary containment differential pressure to within limits.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.5.4.1 Verify drywell-to-primary containment differential pressure is within limits.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.5.5 Drywell Air Temperature

LCO 3.6.5.5 Drywell average air temperature shall be ≤ 145°F.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell average air temperature not within limit.	A.1 Restore drywell average air temperature to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.5.5.1 Verify drywell average air temperature is within limit.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.6.1	-----NOTES----- 1. Not required to be met for drywell vacuum breakers open during Surveillances. 2. Not required to be met for drywell vacuum breakers open when performing their intended function. ----- Verify each drywell vacuum breaker and its associated isolation valve is closed.	In accordance with the Surveillance Frequency Control Program
SR 3.6.5.6.2	Perform a functional test of each drywell vacuum breaker and its associated isolation valve.	In accordance with the Surveillance Frequency Control Program
SR 3.6.5.6.3	Verify the opening pressure differential of each drywell vacuum breaker is $\leq$ 0.5 psid, and the allowable value of each associated isolation valve is $\leq$ 0.810 inches water gauge dp.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. OR Both ESW Division 1 and Division 2 subsystems inoperable.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	Verify each required Division 1 and 2 ESW subsystem manual, power operated, and automatic valve in the flow path servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.1.2	Verify each required Division 1 and 2 ESW subsystem actuates on an actual or simulated initiation signal.	In accordance with the Surveillance Frequency Control Program

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3.7 PLANT SYSTEMS

3.7.2 Emergency Service Water (ESW) System-Division 3

LCO 3.7.2 The Division 3 ESW subsystem shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ESW Division 3 subsystem inoperable.	A.1 Declare High Pressure Core Spray System inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.2.1	Verify each required Division 3 ESW subsystem manual, power operated, and automatic valve in the flow path servicing safety related systems or components, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.2.2	Verify the Division 3 ESW subsystem actuates on an actual or simulated initiation signal.	In accordance with the Surveillance Frequency Control Program

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ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. Two CRER subsystems inoperable during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs. OR One or more CRER subsystems inoperable due to inoperable CRE boundary during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.	F.1	Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building.	Immediately
	AND		
	F.2	Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Operate each CRER subsystem for ≥ 10 continuous hours with the heaters operating.	In accordance with the Surveillance Frequency Control Program
SR 3.7.3.2	Perform required CRER filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.3.3	Verify each CRER subsystem actuates on an actual or simulated initiation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.7.3.4	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition B not met during movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs.	------------NOTE------------ LCO 3.0.3 is not applicable. ---------------------------------- E.1 Suspend movement of recently irradiated fuel assemblies in the primary containment and fuel handling building. AND E.2 Initiate action to suspend OPDRVs.	 Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify each control room HVAC subsystem has the capability to remove the assumed heat load.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.5.1	Verify the release rate of the specified noble gases is ≤ 358 mCi/second after decay of 30 minutes.	Once within 4 hours after a ≥ 50% increase in the nominal steady state fission gas release rate after factoring out increases due to changes in THERMAL POWER level
SR 3.7.5.2	-------------------NOTE------------------- Not required to be performed until 31 days after any main steam line not isolated and SJAE in operation. --- Verify the release rate of the specified noble gases is ≤ 358 mCi/second after decay of 30 minutes.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.6 Main Turbine Bypass System

LCO 3.7.6 The Main Turbine Bypass System shall be OPERABLE.

APPLICABILITY: THERMAL POWER ≥ 23.8% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Main Turbine Bypass System inoperable.	A.1 Restore Main Turbine Bypass System to OPERABLE status.	2 hours
B. Required Action and associated Completion Time not met.	B.1 Reduce THERMAL POWER to < 23.8% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify one complete cycle of each main turbine bypass valve.	In accordance with the Surveillance Frequency Control Program
SR 3.7.6.2	Perform a system functional test.	In accordance with the Surveillance Frequency Control Program
SR 3.7.6.3	Verify the TURBINE BYPASS SYSTEM RESPONSE TIME is within limits.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.7 Fuel Pool Water Level

LCO 3.7.7 The fuel pool water level shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the fuel handling building (FHB) and upper containment fuel storage racks.

APPLICABILITY: During movement of irradiated fuel assemblies in the associated fuel storage pools.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel pool water level not within limit.	A.1 --------NOTE--------- LCO 3.0.3 is not applicable. --------------------- Suspend movement of irradiated fuel assemblies in the associated fuel storage pool(s).	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.7.1	Verify the fuel pool water level is ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.8 Fuel Handling Building

LCO 3.7.8 The fuel handling building (FHB) shall be OPERABLE.

APPLICABILITY: During movement of recently irradiated fuel assemblies in the FHB.

ACTIONS

-----------------------------------NOTE-----------------------------------
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. FHB inoperable.	A.1 Suspend movement of recently irradiated fuel assemblies in the FHB.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	Verify all FHB floor hatches and the shield blocks adjacent to the shield building are installed, and the FHB railroad track door is closed.	In accordance with the Surveillance Frequency Control Program
SR 3.7.8.2	Verify each FHB access door is closed, except when the access opening is being used for entry and exit.	In accordance with the Surveillance Frequency Control Program

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Operate each FHB ventilation exhaust subsystem for ≥ 10 continuous hours with heaters operating.	In accordance with the Surveillance Frequency Control Program
SR 3.7.9.2	Perform FHB ventilation exhaust filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.9.3	Perform a system functional test.	In accordance with the Surveillance Frequency Control Program
SR 3.7.9.4	Perform a CHANNEL FUNCTIONAL TEST of the FHB ventilation exhaust radiation monitor (noble gas)	In accordance with the Surveillance Frequency Control Program

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Verify each required ECCW subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position or can be aligned to the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.7.10.2	Verify each ECCW subsystem actuates on an actual or simulated initiation signal.	In accordance with the Surveillance Frequency Control Program

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each required offsite circuit.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.2	-------------------NOTES------------------- 1. Performance of SR 3.8.1.7 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. --- Verify each DG starts from standby conditions and achieves: Steady state voltage ≥ 3900 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	In accordance with the Surveillance Frequency Control Program

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.3	-------------------NOTES------------------ 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by, and immediately follow, without shutdown, a successful performance of SR 3.8.1.2 or SR 3.8.1.7. --- Verify each DG operates for ≥ 60 minutes at a load ≥ 5600 kW and ≤ 7000 kW for Division 1 and 2 DGs, and ≥ 2600 kW for Division 3 DG.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.4	Verify each day tank contains ≥ 316 gal of fuel oil for Divisions 1 and 2 and ≥ 279 gal for Division 3.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from the storage tank to the day tank.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.7	-------------------NOTE------------------- All DG starts may be preceded by an engine prelube period. -- Verify each DG starts from standby conditions and achieves: a. In ≤ 10 seconds for Division 1 and 2, and ≤ 13 seconds for Division 3, voltage ≥ 3900 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3900 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.8	---------------NOTE----------------------- This Surveillance shall not be performed in MODE 1 or 2 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. -- Verify manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.9	-----NOTES----- 1. This Surveillance shall not be performed in MODE 1 or 2 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. 2. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. ----- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load. Following load rejection, engine speed is maintained less than nominal plus 75% of the difference between nominal speed and the overspeed trip setpoint, or 15% above nominal, whichever is less.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.10	-----NOTE----- This Surveillance shall not be performed in MODE 1 or 2 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. ----- Verify each DG operating at a power factor ≤ 0.9 does not trip and voltage is maintained ≤ 4784 V for Division 1 and 2 DGs and ≤ 5000 V for Division 3 DG during and following a load rejection of a load ≥ 5600 kW for Division 1 and 2 DGs and ≥ 2600 kW for Division 3 DG.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	-------------------NOTES------------------ 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. --- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses for Divisions 1 and 2; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds for Division 1 and 2 DGs and ≤ 13 seconds for Division 3, 2. energizes auto-connected loads for Divisions 1 and 2, 3. maintains steady state voltage ≥ 3900 V and ≤ 4400 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected loads for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program ths

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	-------------------NOTES------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1 or 2 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. --- Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and: a. In ≤ 10 seconds for Division 1 and 2, and ≤ 13 seconds for Division 3, after auto-start and during tests, achieves voltage ≥ 3900 V and frequency ≥ 58.8 Hz; and b. Achieves steady state voltage ≥ 3900 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz; and c. Operates for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.13	-----------------NOTE--------------------- This Surveillance shall not be performed in MODE 1, 2, or 3 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. --- Verify each DG's automatic trips are bypassed on an actual or simulated ECCS initiation signal except: a. Engine overspeed; and b. Generator differential current	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.14	-------------------NOTES------------------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. Credit may be taken for unplanned events that satisfy this SR. --- Verify each DG operating at a power factor ≤ 0.9 operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 6800 kW and ≤ 7000 kW for Division 1 and 2 DGs, and ≥ 2860 kW for Division 3 DG; and b. For the remaining hours of the test loaded ≥ 5600 kW and ≤ 7000 kW for Division 1 and 2 DGs, and ≥ 2600 kW for Division 3 DG.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.15	------------------NOTES------------------ 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 1 hour loaded ≥ 5600 kW and ≤ 7000 kW for Division 1 and 2 DGs, and ≥ 2600 kW for Division 3 DG. Momentary transients outside of the load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. --- Verify each DG starts and achieves: a. In ≤ 10 seconds for Division 1 and 2, and ≤ 13 seconds for Division 3, voltage ≥ 3900 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3900 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.16	------------------NOTE------------------ This Surveillance shall not be performed in MODE 1, 2, or 3 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. --- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.17	------------------NOTE------------------ This Surveillance shall not be performed in MODE 1, 2, or 3 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. -- Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ECCS initiation signal overrides the test mode by: a. Returning DG to ready-to-load operation; and b. Automatically energizing the emergency loads from offsite power.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.18	------------------NOTE------------------ This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. -- Verify for Division 1 and 2 DGs, the sequence time is within ± 10% of design for each load sequence timer.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.19	-------------------NOTES------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3 (not applicable to Division 3). However, credit may be taken for unplanned events that satisfy this SR. --- Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses for Divisions 1 and 2; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds for Divisions 1 and 2 and ≤ 13 seconds for Division 3, 2. energizes auto-connected emergency loads (for Division 3, verify energization in ≤ 13 seconds), 3. achieves steady state voltage ≥ 3900 V and ≤ 4400 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	-------------------NOTE------------------- All DG starts may be preceded by an engine prelube period. -- Verify, when started simultaneously from standby condition, each DG achieves: a. In ≤ 10 seconds for Division 1 and 2, and ≤ 13 seconds for Division 3, voltage ≥ 3900 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3900 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	In accordance with the Surveillance Frequency Control Program

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	Verify each fuel oil storage tank contains: a. ≥ 73,700 gal of fuel for Div 1 DG and Div 2 DG; and b. ≥ 36,700 gal of fuel for Div 3 DG.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.2	Verify lube oil inventory is: a. ≥ 374 gal for Div 1 DG and Div 2 DG; and b. ≥ 260 gal for Div 3 DG.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.3	Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.4	Verify each required DG air start receiver pressure is ≥ 210 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.5	Check for and remove accumulated water from each fuel oil storage tank.	In accordance with the Surveillance Frequency Control Program
SR 3.8.3.6	For each fuel oil storage tank: a. Drain the fuel oil; b. Remove the sediment; and c. Clean the tank.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is ≥ 129 V on float charge.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. <u>OR</u> Verify battery connection resistance is ≤ 5.0 E-5 ohm for inter-cell connections, ≤ 5.0 E-5 ohm for inter-rack connections, ≤ 5.0 E-5 ohm for inter-tier connections, ≤ 5.0 E-5 ohm for terminal connections; for Div 1 and Div 2 and ≤ 1.0 E-4 ohm for inter-cell connections, ≤ 1.0 E-4 ohm for inter-rack connections, ≤ 1.0 E-4 ohm for inter-tier connections, ≤ 1.0 E-4 ohm for terminal connections. for Div 3.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration that could degrade battery performance.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.4	Remove visible corrosion, and verify battery cell to cell and terminal connections are coated with anti-corrosion material.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.5	Verify battery connection resistance is ≤ 5.0 E-5 ohm for inter-cell connections, ≤ 5.0 E-5 ohm for inter-rack connections, ≤ 5.0 E-5 ohm for inter-tier connections, ≤ 5.0 E-5 ohm for terminal connections; for Div 1 and Div 2 and ≤ 1.0 E-4 ohm for inter-cell connections, ≤ 1.0 E-4 ohm for inter-rack connections, ≤ 1.0 E-4 ohm for inter-tier connections, ≤ 1.0 E-4 ohm for terminal connections for Div 3.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.6	Verify each required Division 1 and 2 battery charger supplies ≥ 400 amps at ≥ 125 V for ≥ 8 hours; and each required Division 3 battery charger supplies ≥ 50 amps at ≥ 125 V for ≥ 8 hours.	In accordance with the Surveillance Frequency Control Program
SR 3.8.4.7	-------------------NOTE------------------- SR 3.8.4.8 may be performed in lieu of SR 3.8.4.7 once per 60 months. --- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.	In accordance with the Surveillance Frequency Control Program

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.8	Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test.	In accordance with the Surveillance Frequency Control Program AND ------NOTE----- Only applicable when battery shows degradation or has reached 85% of expected life. --------------- 18 months

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> One or more batteries with average electrolyte temperature of the representative cells < 72°F. <u>OR</u> One or more batteries with one or more battery cell parameters not within Table 3.8.6-1 Category C limits.	B.1 Declare associated battery inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.6.1	Verify battery cell parameters meet Table 3.8.6-1 Category A limits.	In accordance with the Surveillance Frequency Control Program

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.6.2	Verify battery cell parameters meet Table 3.8.6-1 Category B limits.	In accordance with the Surveillance Frequency Control Program AND Once within 72 hours after battery overcharge > 145 V
SR 3.8.6.3	Verify average electrolyte temperature of representative cells is ≥ 72°F.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours
D. One or more Division 3 AC or DC electrical power distribution subsystems inoperable.	D.1 Declare High Pressure Core Spray System inoperable.	Immediately
E. Two or more divisions with inoperable distribution subsystems that result in a loss of function.	E.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.	Immediately
	<u>AND</u>	
	A.2.4 Initiate actions to restore required AC and DC electrical power distribution subsystems to OPERABLE status.	Immediately
	<u>AND</u>	
	A.2.5 Declare associated required shutdown cooling subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.8.1	Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.1 Refueling Equipment Interlocks

LCO 3.9.1 The refueling equipment interlocks shall be OPERABLE.

APPLICABILITY: During in-vessel fuel movement with equipment associated with the interlocks.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required refueling equipment interlocks inoperable.	A.1	Suspend in-vessel fuel movement with equipment associated with the inoperable interlock(s).	Immediately
	<u>OR</u>		
	A.2.1	Insert a control rod withdrawal block.	Immediately
		<u>AND</u>	
	A.2.2	Verify all control rods are fully inserted.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.1.1	Perform CHANNEL FUNCTIONAL TEST on each of the following required refueling equipment interlock inputs: a. All-rods-in, b. Refuel platform position, and c. Refuel platform main hoist, fuel loaded.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.2 Refuel Position One-Rod-Out Interlock

LCO 3.9.2 The refuel position one-rod-out interlock shall be OPERABLE.

APPLICABILITY: MODE 5 with the reactor mode switch in the refuel position and any control rod withdrawn.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refuel position one-rod-out interlock inoperable.	A.1 Suspend control rod withdrawal. AND A.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.2.1 Verify reactor mode switch locked in refuel position.	In accordance with the Surveillance Frequency Control Program

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.9.2.2	-------------------NOTE------------------- Not required to be performed until 1 hour after any control rod is withdrawn. -- Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

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3.9 REFUELING OPERATIONS

3.9.3 Control Rod Position

LCO 3.9.3 All control rods shall be fully inserted.

APPLICABILITY: When loading fuel assemblies into the core.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more control rods not fully inserted.	A.1 Suspend loading fuel assemblies into the core.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Verify all control rods are fully inserted.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.5 Control Rod OPERABILITY-Refueling

LCO 3.9.5 Each withdrawn control rod shall be OPERABLE.

APPLICABILITY: MODE 5.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more withdrawn control rods inoperable.	A.1	Initiate action to fully insert inoperable withdrawn control rods.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.5.1	-------------------NOTE------------------- Not required to be performed until 7 days after the control rod is withdrawn. -- Insert each withdrawn control rod at least one notch.	In accordance with the Surveillance Frequency Control Program
SR 3.9.5.2	Verify each withdrawn control rod scram accumulator pressure is ≥ 1520 psig.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.6 Reactor Pressure Vessel (RPV) Water Level-Irradiated Fuel

LCO 3.9.6 RPV water level shall be ≥ 22 ft 9 inches above the top of the RPV flange.

APPLICABILITY: During movement of irradiated fuel assemblies within the RPV.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RPV water level not within limit.	A.1 Suspend movement of irradiated fuel assemblies within the RPV.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.6.1 Verify RPV water level is ≥ 22 ft 9 inches above the top of the RPV flange.	In accordance with the Surveillance Frequency Control Program

3.9 REFUELING OPERATIONS

3.9.7 Reactor Pressure Vessel (RPV) Water Level-New Fuel or Control Rods

LCO 3.9.7 RPV water level shall be ≥ 23 ft above the top of irradiated fuel assemblies seated within the RPV.

APPLICABILITY: During movement of new fuel assemblies or handling of control rods within the RPV when irradiated fuel assemblies are seated within the RPV.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RPV water level not within limit.	A.1 Suspend movement of new fuel assemblies and handling of control rods within the RPV.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.7.1 Verify RPV water level is ≥ 23 ft above the top of irradiated fuel assemblies seated within the RPV.	In accordance with the Surveillance Frequency Control Program

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify one RHR shutdown cooling subsystem is operating.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.9.1	Verify one RHR shutdown cooling subsystem is operating.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3.1 Place the reactor mode switch in the shutdown position.	1 hour
	<u>OR</u>	
	A.3.2 --------NOTE--------- Only applicable in MODE 5. ---------------------	
	Place the reactor mode switch in the refuel position.	1 hour

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.2.1	Verify all control rods are fully inserted in core cells containing one or more fuel assemblies.	In accordance with the Surveillance Frequency Control Program
SR 3.10.2.2	Verify no CORE ALTERATIONS are in progress.	In accordance with the Surveillance Frequency Control Program

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.3.1	Perform the applicable SRs for the required LCOs.	According to the applicable SRs
SR 3.10.3.2	-------------------NOTE------------------- Not required to be met if SR 3.10.3.1 is satisfied for LCO 3.10.3.d.1 requirements. -- Verify all control rods, other than the control rod being withdrawn, in a five by five array centered on the control rod being withdrawn, are disarmed.	In accordance with the Surveillance Frequency Control Program
SR 3.10.3.3	Verify all control rods, other than the control rod being withdrawn, are fully inserted.	In accordance with the Surveillance Frequency Control Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One or more of the above requirements not met with the affected control rod not insertable.	B.1	Suspend withdrawal of the control rod and removal of associated CRD.	Immediately
	AND		
	B.2.1	Initiate action to fully insert all control rods.	Immediately
	OR		
	B.2.2	Initiate action to satisfy the requirements of this LCO.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.4.1	Perform the applicable SRs for the required LCOs.	According to applicable SRs
SR 3.10.4.2	-------------------NOTE-------------------- Not required to be met if SR 3.10.4.1 is satisfied for LCO 3.10.4.c.1 requirements. --- Verify all control rods, other than the control rod being withdrawn, in a five by five array centered on the control rod being withdrawn, are disarmed.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.10.4.3	Verify all control rods, other than the control rod being withdrawn, are fully inserted.	In accordance with the Surveillance Frequency Control Program
SR 3.10.4.4	-------------------NOTE------------------- Not required to be met if SR 3.10.4.1 is satisfied for LCO 3.10.4.b.1 requirements. -- Verify a control rod withdrawal block is inserted.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.1 Initiate action to fully insert all control rods. OR A.2.2 Initiate action to satisfy the requirements of this LCO.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.10.5.1	Verify all controls rods, other than the control rod withdrawn for the removal of the associated CRD, are fully inserted.	In accordance with the Surveillance Frequency Control Program
SR 3.10.5.2	Verify all control rods, other than the control rod withdrawn for the removal of the associated CRD, in a five by five array centered on the control rod withdrawn for the removal of the associated CRD, are disarmed.	In accordance with the Surveillance Frequency Control Program
SR 3.10.5.3	Verify a control rod withdrawal block is inserted.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.10.5.4 Perform SR 3.1.1.1.	According to SR 3.1.1.1
SR 3.10.5.5 Verify no CORE ALTERATIONS are in progress.	In accordance with the Surveillance Frequency Control Program

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ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3.1 Initiate action to fully insert all control rods in core cells containing one or more fuel assemblies. OR A.3.2 Initiate action to satisfy the requirements of this LCO.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.10.6.1	Verify the four fuel assemblies are removed from core cells associated with each control rod or CRD removed.	In accordance with the Surveillance Frequency Control Program
SR 3.10.6.2	Verify all other control rods in core cells containing one or more fuel assemblies are fully inserted.	In accordance with the Surveillance Frequency Control Program
SR 3.10.6.3	-------------------NOTE------------------- Only required to be met during fuel loading. -- Verify fuel assemblies being loaded are in compliance with an approved spiral reload sequence.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.10.8.2	-------------------NOTE------------------- Not required to be met if SR 3.10.8.3 satisfied. -- Perform the MODE 2 applicable SRs for LCO 3.3.2.1, Function 1.b of Table 3.3.2.1-1.	According to the applicable SRs
SR 3.10.8.3	-------------------NOTE------------------- Not required to be met if SR 3.10.8.2 satisfied. -- Verify movement of control rods is in compliance with the approved control rod sequence for the SDM test by a second licensed operator or other qualified member of the technical staff.	During control rod movement
SR 3.10.8.4	Verify no other CORE ALTERATIONS are in progress.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.10.8.5	Verify each withdrawn control rod does not go to the withdrawn overtravel position.	Each time the control rod is withdrawn to "full out" position AND Prior to satisfying LCO 3.10.8.c requirement after work on control rod or CRD System that could affect coupling
SR 3.10.8.6	Verify CRD charging water header pressure ≥ 1520 psig.	In accordance with the Surveillance Frequency Control Program

5.5.14 Control Room Envelope Habitability Program (continued)

protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem Total Effective Dose Equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

a. The definition of the CRE and the CRE boundary.

b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.

c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

d. Measurement of leakage through the outside air intake and exhaust dampers at a Frequency of 24 months. The results shall be trended and used as part of the periodic assessment of the CRE boundary.

e. The quantitative limits on unfiltered air inleakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses of DBA consequences. Unfiltered air inleakage limits for hazardous chemicals must ensure that exposure of CRE occupants to these hazards will be within the assumptions in the licensing basis.

f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered inleakage, and measuring outside air intake and exhaust damper leakage, as required by paragraphs c and d, respectively.

(continued)

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5.5.15 Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

a. The Surveillance frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

Attachment 4

Perry Nuclear Power Plant, Unit No. 1

Proposed Technical Specification Bases Changes (Mark-Ups)

The following lists the pages included within Attachment 4:

B 3.1-19	B 3.3-41*	B 3.3-135	B 3.3-224
B 3.1-25*	B 3.3-41g	B 3.3-141	B 3.3-225
B 3.1-26	B 3.3.-41h	B 3.3-145	B 3.4-7
B 3.1-33	B 3.3-41i	B 3.3-146	B 3.4-11
B 3.1-37	B 3.3-41j	B 3.3-147	B 3.4-12
B 3.1-41	B 3.3-41k	B 3.3-149	B 3.4-15*
B 3.1-42	B 3.3-44	B 3.3-150	B 3.4-16*
B 3.1-43	B 3.3-44a	B 3.3-159a	B 3.4-17
B 3.1-44	B 3.3-48	B 3.3-160	B 3.4-21
B 3.1-48	B 3.3-49	B 3.3-162	B 3.4-21a*
B 3.1-49	B 3.3-50	B 3.3-170	B 3.4-22
B 3.2-4	B 3.3-61	B 3.3-171	B 3.4-27
B 3.2-9	B 3.3-62	B 3.3-172	B 3.4-38
B 3.2-12	B 3.3-66	B 3.3-173	B 3.4-39
B 3.3-24	B 3.3-67	B 3.3-173a	B 3.4-43
B 3.3-25	B 3.3-75	B 3.3-182	B 3.4-48
B 3.3-26	B 3.3-76	B 3.3-183	B 3.4-53
B 3.3-27	B 3.3-77	B 3.3-184	B 3.4-59
B 3.3-28	B 3.3-78	B 3.3-193	B 3.4-59a
B 3.3-29	B 3.3-85	B 3.3-194	B 3.4-61
B 3.3-30	B 3.3-86	B 3.3-195	B 3.4-61a*
B 3.3-31	B 3.3-87	B 3.3-200	B 3.4-65
B 3.3-32	B 3.3-121	B 3.3-201	B 3.5-9
B 3.3-37*	B 3.3-122	B 3.3-209	B 3.5-10
B 3.3-38	B 3.3-123	B 3.3-210	B 3.5-11
B 3.3-39	B 3.3-133	B 3.3-217	B 3.5-12
B 3.3-40	B 3.3-134	B 3.3-218	B 3.5-13*

* No Change. Included for Context.

Perry Nuclear Power Plant, Unit No. 1

Proposed Technical Specification Bases Changes (Mark-Ups)

The following lists the pages included within Attachment 4:

B 3.5-13a	B 3.6-47	B 3.6-135	B 3.8-14
B 3.5-14	B 3.6-50	B 3.6-141	B 3.8-15
B 3.5-18*	B 3.6-58	B 3.6-142	B 3.8-15a*
B 3.5-19	B 3.6-63	B 3.6-143	B 3.8-16
B 3.5-20	B 3.6-64	B 3.6-147	B 3.8-17
B 3.5-24	B 3.6-68	B 3.6-149*	B 3.8-18
B 3.5-25	B 3.6-74	B 3.6-150	B 3.8-18a*
B 3.5-26	B 3.6-78	B 3.6-153*	B 3.8-19*
B 3.6-15	B 3.6-81	B 3.6-154	B 3.8-19a*
B 3.6-16	B 3.6-87	B 3.6-155	B 3.8-20
B 3.6-25	B 3.6-88	B 3.7-4*	B 3.8-21*
B 3.6-25a	B 3.6-99	B 3.7-5	B 3.8-21a*
B 3.6-26*	B 3.6-100	B 3.7-8*	B 3.8-22
B 3.6-27	B 3.6-104	B 3.7-9	B 3.8-22a*
B 3.6-28*	B 3.6-105	B 3.7-14	B 3.8-23
B 3.6-29	B 3.6-109	B 3.7-15	B 3.8-23a*
B 3.6-30	B 3.6-110	B 3.7-21	B 3.8-24
B 3.6-32	B 3.6-115	B 3.7-24	B 3.8-24a
B 3.6-32a	B 3.6-116*	B 3.7-27	B 3.8-25
B 3.6-35	B 3.6-121	B 3.7-28	B 3.8-26
B 3.6-37*	B 3.6-122	B 3.7-30	B 3.8-27
B 3.6-38	B 3.6-125*	B 3.7-34	B 3.8-28*
B 3.6-41*	B 3.6-126	B 3.7-38	B 3.8-28a
B 3.6-41a	B 3.6-127	B 3.7-39	B 3.8-29*
B 3.6-42	B 3.6-127a	B 3.7-43*	B 3.8-29a
B 3.6-45	B 3.6-133	B 3.7-44	B 3.8-30*
B 3.6-46	B 3.6-134	B 3.8-13*	B 3.8-30a

* No Change. Included for Context.

Attachment 4

Perry Nuclear Power Plant, Unit No. 1

Proposed Technical Specification Bases Changes (Mark-Ups)

The following lists the pages included within Attachment 4:

B 3.8-31*	B 3.9-23*
B 3.8-31a	B 3.9-24
B 3.8-32*	B 3.9-29
B 3.8-33	B 3.9-34
B 3.8-45	B 3.10-9
B 3.8-46	B 3.10-10
B 3.8-48*	B 3.10-14*
B 3.8-49	B 3.10-15
B 3.8-50*	B 3.10-20
B 3.8-55	B 3.10-24
B 3.8-56	B 3.10-25
B 3.8-57	B 3.10-28
B 3.8-58	B 3.10-37
B 3.8-66	B 3.10-38
B 3.8-67	-END-
B 3.8-78	
B 3.8-84	
B 3.9-3a	
B 3.9-7	
B 3.9-8*	
B 3.9-10*	
B 3.9-11	
B 3.9-17*	
B 3.9-18	
B 3.9-20*	
B 3.9-21	

* No Change. Included for Context.

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BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.1.3.1

The position of each control rod must be determined, to ensure adequate information on control rod position is available to the operator for determining control rod OPERABILITY and controlling rod patterns. Control rod position may be determined by the use of at least one OPERABLE position indicator, by moving control rods to a position with an OPERABLE indicator, or by the use of other appropriate methods. ~~The 24 hour Frequency of this SR is based on operating experience related to expected changes in control rod position and the availability of control rod position indications in the control room.~~ Insert 2

SR 3.1.3.2

Control rod insertion capability is demonstrated by inserting each partially or fully withdrawn control rod at least one notch and observing that the control rod moves. The control rod may then be returned to its original position. Observation of changes in indicated control rod position provides evidence that the control rod position indication is OPERABLE. This ensures the control rod is not stuck and is free to insert on a scram signal. When plant procedures permit, this SR may also be met by rod scram. This Surveillance is not required when THERMAL POWER is less than or equal to the actual LPSP of the RPC since the notch insertions may not be compatible with the requirements of the BPWS (LCO 3.1.6) and the RPC (LCO 3.3.2.1). ~~The 31 day Frequency takes into account operating experience related to changes in CRD performance.~~ Insert 2 At any time, if a control rod is immovable, a determination of that control rod's trippability (OPERABILITY) must be made and appropriate action taken.

SR 3.1.3.3

Verifying the scram time for each control rod to notch position 13 is ≤ 7 seconds provides reasonable assurance that the control rod will insert when required during a DBA or transient, thereby completing its shutdown function.

(continued)

No Change - Included for Context

BASES (continued)

SURVEILLANCE REQUIREMENTS

The four SRs of this LCO are modified by a Note stating that during a single control rod scram time surveillance, the CRD pumps shall be isolated from the associated scram accumulator. With the CRD pump isolated (i.e., charging valve closed), the influence of the CRD pump head does not affect the single control rod scram times. During a full core scram, the CRD pump head would be seen by all control rods and would have a negligible effect on the scram insertion times.

SR 3.1.4.1

The scram reactivity used in DBA and transient analyses is based on assumed control rod scram time. Measurement of the scram times with reactor steam dome pressure ≥ 950 psig demonstrates acceptable scram times for the transients analyzed in References 3 and 4.

Scram insertion times increase with increasing reactor pressure because of the competing effects of reactor steam dome pressure and stored accumulator energy. Therefore, demonstration of adequate scram times at reactor steam dome pressure greater than 950 psig ensures that the scram times will be within the specified limits at higher pressures. Limits are specified as a function of reactor pressure to account for the sensitivity of the scram insertion times with pressure and to allow a range of pressures over which scram time testing can be performed. To ensure scram time testing is performed within a reasonable time following a shutdown ≥ 120 days, all control rods are required to be tested before exceeding 40% RTP. This Frequency is acceptable, considering the additional surveillances performed for control rod OPERABILITY, the frequent verification of adequate accumulator pressure, and the other required scram time tests of control rods (those performed on rods potentially affected either by fuel movement within their core cell or by work on control rods or the CRD System that could affect their scram time).

SR 3.1.4.2

Additional testing of a sample of control rods is required to verify the continued performance of the scram function during the cycle. A representative sample contains at least 10% of the control rods. The sample remains "representative" if no more than 7.5% of the control rods in

(continued)

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.4.2 (continued)

the tested sample are determined to be "slow." If more than 7.5% of the sample is declared to be "slow" per the criteria in Table 3.1.4-1, additional control rods are tested until this 7.5% criterion (e.g., 7.5% of the entire sample size) is satisfied, or until the total number of "slow" control rods (throughout the core, from all surveillances) exceeds the LCO limit. For planned testing, the control rods selected for the sample shall be different for each test in a cycle. Data from inadvertent scrams should be used whenever possible to avoid unnecessary testing at power, even if the control rods with data were previously tested in a sample. ~~The 200 day Frequency is based on operating experience that has shown control rod scram times do not significantly change over an operating cycle. This Frequency is also reasonable, based on the additional Surveillances done on the CRDs at more frequent intervals in accordance with LCO 3.1.3 and LCO 3.1.5, "Control Rod Scram Accumulators."~~

Insert 2

SR 3.1.4.3

When work that could affect the scram insertion time is performed on a control rod or the CRD System, testing must be done to demonstrate that each affected control rod retains adequate scram performance over the range of applicable reactor pressures from zero to the maximum permissible pressure. The scram testing must be performed once before declaring the control rod OPERABLE. The required scram time testing must demonstrate that the affected control rod is still within acceptable limits. For control rod drive scram time testing at less than 950 psig, the following scram times to notch position 13 shall be used as acceptance criteria:

0 psig - 0.94 seconds

600 psig - 1.13 seconds

950 psig - 1.40 seconds

(continued)

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BASES

ACTIONS (continued)

D.1

The reactor mode switch must be immediately placed in the shutdown position if either Required Action and associated Completion Time associated with the loss of the CRD pump (Required Actions B.1 and C.1) cannot be met. This ensures that all insertable control rods are inserted and that the reactor is in a condition that does not require the active function (i.e., scram) of the control rods. This Required Action is modified by a Note stating that the Required Action is not applicable if all control rods associated with the inoperable scram accumulators are fully inserted, since the function of the control rods has been performed.

SURVEILLANCE REQUIREMENTS

SR 3.1.5.1

SR 3.1.5.1 requires that the scram accumulator pressure be checked ~~every 7 days~~ periodically to ensure adequate accumulator pressure exists to provide sufficient scram force. The primary indicator of accumulator OPERABILITY is the accumulator pressure. A minimum accumulator pressure is specified, below which the capability of the accumulator to perform its intended function becomes degraded and the accumulator is considered inoperable. The minimum accumulator pressure of 1520 psig is well below the expected pressure of 1750 psig (Ref. 2). Declaring the accumulator inoperable when the minimum pressure is not maintained ensures that significant degradation in scram times does not occur. ~~The 7 day Frequency has been shown to be acceptable through operating experience and takes into account indications available in the control room.~~ Insert 2

REFERENCES

1. USAR, Section 4.3.2.5.5.
2. USAR, Section 4.6.1.1.2.5.3.
3. USAR, Section 5.2.2.2.2.3.
4. USAR, Section 15.4.1.

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BASES

ACTIONS

B.1 and B.2 (continued)

withdrawals have. Required Action B.1 is modified by a Note that allows the affected control rods to be bypassed in RACS in accordance with SR 3.3.2.1.9 to allow insertion only.

With nine or more OPERABLE control rods not in compliance with BPWS, the reactor mode switch must be placed in the shutdown position within 1 hour. With the reactor mode switch in shutdown, the reactor is shut down, and therefore does not meet the applicability requirements of this LCO. The allowed Completion Time of 1 hour is reasonable to allow insertion of control rods to restore compliance, and is appropriate relative to the low probability of a CRDA occurring with the control rods out of sequence.

SURVEILLANCE REQUIREMENTS

SR 3.1.6.1

periodically

The control rod pattern is verified to be in compliance with the BPWS ~~at a 24 hour Frequency~~, ensuring the assumptions of the CRDA analyses are met. ~~The 24 hour Frequency of this Surveillance was developed considering that the primary check of the control rod pattern compliance with the BPWS is performed by the RPC (LCO 3.3.2.1)~~. The RPC provides control rod blocks to enforce the required control rod sequence and is required to be OPERABLE when operating at ≤ 19.0% RTP.

Insert 2

REFERENCES

1. "Modifications to the Requirements for Control Rod Drop Accident Mitigating Systems," BWR Owners Group, July 1987.

2. USAR, Section 15.4.9.

3. NUREG-0979, "NRC Safety Evaluation Report Related to the Final Design Approval of the GESSAR II BWR/6 Nuclear Island Design, Docket No. 50-447," Section 4.2.1.3.2, April 1983.

4. NUREG-0800, "Standard Review Plan," Section 15.4.9, "Radiological Consequences of Control Rod Drop Accident (BWR)," Revision 2, July 1981.

(continued)

ACTIONS

A.1 (continued)

OPERABLE subsystem capable of performing the intended SLC System function and the low probability of a Design Basis Accident (DBA) or transient occurring concurrent with the failure of the Control Rod Drive System to shut down the reactor.

B.1

With two SLC subsystems inoperable, at least one subsystem must be restored to OPERABLE status within 8 hours. The allowed Completion Time of 8 hours is considered acceptable, based on the low probability of a DBA or transient occurring concurrent with the failure of the Control Rod Drive System to shut down the reactor.

C.1

If any Required Action and associated Completion Time 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 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 3.1.7.1, SR 3.1.7.2, and SR 3.1.7.3

SR 3.1.7.1 through SR 3.1.7.3 ~~are 24 hour Surveillances,~~ verify~~ing~~ certain characteristics of the SLC System (e.g., the volume and temperature of the borax-boric acid solution in the storage tank, and temperature of the pump suction piping), thereby ensuring the SLC System OPERABILITY without disturbing normal plant operation. These Surveillances ensure the proper borated solution and temperature, including the temperature of the pump suction piping, are maintained. Maintaining a minimum specified borated solution temperature is important in ensuring that the boron remains in solution and does not precipitate out in the storage tank or in the pump suction piping. ~~The 24 hour Frequency of these SRs is based on operating experience that has shown there are relatively slow variations in the measured parameters of volume and temperature.~~

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.1.7.4 and SR 3.1.7.6

SR 3.1.7.4 verifies the continuity of the explosive charges in the injection valves to ensure proper operation will occur if required. Other administrative controls, such as those that limit the shelf life of the explosive charges, must be followed. ~~The 31 day Frequency is based on operating experience that has demonstrated the reliability of the explosive charge continuity~~.

Insert 2

SR 3.1.7.6 verifies each valve in the system is in its correct position, but does not apply to the squib (i.e., explosive) valves. Verifying the correct alignment for manual, power operated, and automatic valves in the SLC System flow path ensures that the proper flow paths will exist for system operation. A valve is also allowed to be in the nonaccident position, provided it can be aligned to the accident position from the control room, or locally by a dedicated operator at the valve controls. This is acceptable since the SLC System is a manually initiated system. This Surveillance does not apply to valves that are locked, sealed, or otherwise secured in position, since they were verified to be in the correct position prior to locking, sealing, or securing. This verification of valve alignment does not apply to valves that cannot be inadvertently misaligned, such as check valves. 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 positions. ~~The 31 day Frequency is based on engineering judgment and is consistent with the procedural controls governing valve operation that ensure correct valve positions.~~

Insert 2

SR 3.1.7.5

This Surveillance requires an examination of the borax-boric acid solution by using chemical analysis to ensure the proper concentration of boron exists in the storage tank. SR 3.1.7.5 must be performed anytime boron or water is added to the storage tank solution to establish that the boron solution concentration is within the specified limits. This Surveillance must be performed anytime the solution temperature is restored to ≥ 70°F, to ensure no significant

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.7.5 (continued)

boron precipitation occurred. ~~The 31 day Frequency of this Surveillance is appropriate because of the relatively slow variation of boron concentration between surveillances~~.

Insert 2

SR 3.1.7.7

Demonstrating each SLC System pump develops a flow rate ≥ 32.4 gpm at a discharge pressure ≥ 1220 psig ensures that pump performance has not degraded during the fuel cycle. This minimum pump flow rate requirement ensures that, when combined with the borax-boric acid solution concentration requirements, the rate of negative reactivity insertion from the SLC System will adequately compensate for the positive reactivity effects encountered during power reduction, cooldown of the moderator, and xenon decay. This test confirms one point on the pump design curve, and is indicative of overall performance. Such inservice inspections confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this Surveillance is in accordance with the Inservice Testing Program.

SR 3.1.7.8 and SR 3.1.7.9

These Surveillances ensure that there is a functioning flow path from the boron solution storage tank to the RPV, including the firing of an explosive valve. The replacement charge for the explosive valve shall be from the same manufactured batch as the one fired or from another batch that has been certified by having one of that batch successfully fired. ~~The pump and explosive valve tested should be alternated such that both complete flow paths are tested every 48 months, at alternating 24 month intervals.~~ The Surveillance may be performed in separate steps to prevent injecting boron into the RPV. An acceptable method for verifying flow from the pump to the RPV is to pump demineralized water from a test tank through one SLC subsystem and into the RPV. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance was performed with the reactor at power. The 24 month Frequency~~

Insert 2

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.7.8 and SR 3.1.7.9 (continued)

~~is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Demonstrating that all heat traced piping between the boron solution storage tank and the suction inlet to the injection pumps is unblocked ensures that there is a functioning flow path for injecting the boron solution. An acceptable method for verifying that the suction piping is unblocked is to pump from the storage tank to the test tank and then draining and flushing the pipe with demineralized water. The test may be performed by any series of sequential, overlapping, or total flow path steps such that the entire flow path is included. ~~The 24 month Frequency is acceptable since there is a low probability that the subject piping will be blocked due to precipitation of the boron from solution in the heat traced piping. This is especially true in light of the daily temperature verification of this piping required by SR 3.1.7.3. However,~~ if, in performing SR 3.1.7.3, it is determined that the temperature of this piping has fallen below the specified minimum, SR 3.1.7.9 must be performed once within 24 hours after the piping temperature is restored to ≥ 70°F.

Insert 2

Capitalize "I"
delete comma

REFERENCES

1. 10 CFR 50.62.

2. USAR, Section 9.3.5.3.

Provided for Information Only

BASES

ACTIONS

C.1 (continued)

brought to 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 3.1.8.1

During normal operation, the SDV vent and drain valves should be in the open position (except when performing SR 3.1.8.2) to allow for drainage of the SDV piping. Verifying that each valve is in the open position ensures that the SDV vent and drain valves will perform their intended function during normal operation. This SR does not require any testing or valve manipulation; rather, it involves verification that the valves are in the correct position. ~~The 31 day Frequency is based on engineering judgment and is consistent with the procedural controls governing valve operation, which ensure correct valve positions. Improper valve position (closed) would not affect the isolation function.~~

Insert 2

SR 3.1.8.2

During a scram, the SDV vent and drain valves should close to contain the reactor water discharged to the SDV piping. Cycling each valve through its complete range of motion (closed and open) ensures that the valve will function properly during a scram. ~~The 92 day Frequency is based on operating experience and takes into account the level of redundancy in the system design.~~

Insert 2

SR 3.1.8.3

SR 3.1.8.3 is an integrated test of the SDV vent and drain valves to verify total system performance. After receipt of a simulated or actual scram signal, the closure of the SDV vent and drain valves is verified. The closure time of 30 seconds after a receipt of a scram signal is based on the

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.8.3 (continued)

bounding leakage case evaluated in the accident analysis. Similarly, after receipt of a simulated or actual scram reset signal, the opening of the SDV vent and drain valves is verified. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.1.1 and the scram time testing of control rods in LCO 3.1.3, "Control Rod OPERABILITY," overlap this Surveillance to provide complete testing of the assumed safety function. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power~~. ~~The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~.

Insert 2

REFERENCES

1. USAR, Section 4.6.1.1.2.4.2.5.
2. 10 CFR 100.
3. NUREG-0803, "Generic Safety Evaluation Report Regarding Integrity of BWR Scram System Piping," August 1981.
4. Amendment No. 103 to Facility Operating License No. NPF-58, Perry Nuclear Power Plant, Unit 1 (TAC No. M96931).

Provided for Information Only

BASES

ACTIONS (continued)

B.1

If the APLHGR cannot be restored to within its required limit within the associated Completion Time, the plant must be brought to a MODE or other specified condition in which the LCO does not apply. To achieve this status, THERMAL POWER must be reduced to < 23.8% RTP within 4 hours. The allowed Completion Time is reasonable, based on operating experience, to reduce THERMAL POWER to < 23.8% RTP in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.2.1.1

APLHGRs are required to be initially calculated within 12 hours after THERMAL POWER is ≥ 23.8% RTP and then ~~every 24 hours~~ periodically thereafter. They are compared to the specified limits in the COLR to ensure that the reactor is operating within the assumptions of the safety analysis. ~~The 24 hour Frequency is based on both engineering judgment and recognition of the slowness of changes in power distribution under normal conditions.~~ The 12 hour allowance after THERMAL POWER ≥ 23.8% RTP is achieved, is acceptable given the large inherent margin to operating limits at low power levels. Insert 2

REFERENCES

1. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel, GESTAR-II" (latest approved revision).
2. USAR, Chapter 15, Appendix 15B.
3. USAR, Chapter 15, Appendix 15F.
4. USAR, Chapter 15, Appendix 15E.
5. NEDE-30130-P-A, "Steady State Nuclear Methods," April 1985.

(continued)

Provided for Information Only

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.2.2.1

MCPRs are required to be initially calculated within 12 hours after THERMAL POWER is ≥ 23.8% RTP and then ~~every 24 hours~~ periodically thereafter. They are compared to the specified limits in the COLR to ensure that the reactor is operating within the assumptions of the safety analysis. ~~The 24 hour Frequency is based on both engineering judgment and recognition of the slowness of changes in power distribution during normal operation.~~ The 12 hour allowance after THERMAL POWER ≥ 23.8% RTP is achieved is acceptable given the large inherent margin to operating limits at low power levels. Insert 2

REFERENCES

1. NUREG-0562, "Fuel Rod Failures As A Consequence of Nucleate Boiling or Dryout," June 1979.

2. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel, GESTAR-II" (latest approved revision).

3. Supplemental Reload Licensing Report for Perry Nuclear Power Plant Unit 1, Reload 3 Cycle 4.

4. USAR, Chapter 15, Appendix 15B.

5. USAR, Chapter 15, Appendix 15C.

6. USAR, Chapter 15, Appendix 15D.

7. NEDE-30130-P-A, "Steady State Nuclear Methods," April 1985.

8. NEDE-24154, "Qualification of the One-Dimensional Core Transient Model for Boiling Water Reactors," October 1978.

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BASES

ACTIONS

B.1 (continued)

Completion Time is reasonable, based on operating experience, to reduce THERMAL POWER to < 23.8% RTP in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.2.3.1

The LHGRs are required to be initially calculated within 12 hours after THERMAL POWER is ≥ 23.8% RTP and then periodically ~~every 24 hours~~ thereafter. They are compared to the specified limits in the COLR to ensure that the reactor is operating within the assumptions of the safety analysis. ~~The 24 hour Frequency is based on both engineering judgment and recognition of the slowness of changes in power distribution under normal conditions~~. The 12 hour allowance after THERMAL POWER ≥ 23.8% RTP is achieved, is acceptable given the large inherent margin to operating limits at lower power levels. Insert 2

REFERENCES

1. NUREG-0800, "Standard Review Plan," Section 4.2, II.A.2(g), Revision 2, July 1981.
2. USAR, Chapter 15, Appendix 15B.
3. USAR, Chapter 15, Appendix 15F.
4. USAR, Chapter 15, Appendix 15E.
5. NEDE-30130-P-A, "Steady State Nuclear Methods," April 1985.

ACTIONS

I.1 (continued)

cells containing one or more fuel assemblies. Control rods in core cells containing no fuel assemblies do not affect the reactivity of the core and are, therefore, not required to be inserted. Action must continue until all insertable control rods in core cells containing one or more fuel assemblies are fully inserted. Additionally, for Function 12, Manual Scram, the mode switch shall be locked in the shutdown position.

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each RPS instrumentation Function are located in the SRs column of Table 3.3.1.1-1.

The Surveillances are modified by a 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 associated Function maintains trip capability. 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. This Note is based on the RPS reliability analysis (Ref. 9) assumption of the average time required to perform channel surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the RPS will trip when necessary.

SR 3.3.1.1.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that a gross failure of instrumentation 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 instrument channels could be an indication of excessive instrument drift on 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.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.1 (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 instrument has drifted outside its limit.

Insert 2

~~The Frequency is based upon operating experience that demonstrates 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 channels required by the LCO.

SR 3.3.1.1.2

To ensure that the APRMs are accurately indicating the true core average power, the APRMs are calibrated to the reactor power calculated from a heat balance. ~~The Frequency of once per 7 days is based on minor changes in LPRM sensitivity, which could affect the APRM reading between performances of SR 3.3.1.1.8~~. Insert 2

A restriction to satisfying this SR when < 23.8% RTP is provided that requires the SR to be met only at ≥ 23.8% RTP because it is difficult to accurately maintain APRM indication of core THERMAL POWER consistent with a heat balance when < 23.8% RTP. At low power levels, a high degree of accuracy is unnecessary because of the large inherent margin to thermal limits (MCPR and APLHGR). At ≥ 23.8% RTP, the Surveillance is required to have been satisfactorily performed ~~within the last 7 days~~ in accordance with SR 3.0.2. A Note is provided which allows an increase in THERMAL POWER above 23.8% if the ~~7 day~~ Frequency is not met per SR 3.0.2. In this event, the SR must be performed within 12 hours after reaching or exceeding 23.8 % RTP. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR.

SR 3.3.1.1.3

The Average Power Range Monitor Flow Biased Simulated Thermal Power-High Function uses the recirculation loop drive flows to vary the trip setpoint. This SR ensures that the total loop drive flow signals from the flow unit used to

(continued)

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.3 (continued)

vary the setpoint are appropriately compared to a calibrated flow signal and therefore the APRM Function accurately reflects the required setpoint as a function of flow. Each flow signal from the respective flow unit must be ≤ 105% of the calibrated flow signal. If the flow unit signal is not within the limit, the APRMs that receive an input from the inoperable flow unit must be declared inoperable.

~~The Frequency of 7 days is based on engineering judgment, operating experience, and the reliability of this instrumentation.~~

Insert 2

SR 3.3.1.1.4

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function.

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

As noted, SR 3.3.1.1.4 is not required to be performed when entering MODE 2 from MODE 1 since testing of the MODE 2 required IRM and APRM Functions cannot be performed in MODE 1 without utilizing jumpers, lifted leads, or movable links. This allows entry into MODE 2 if the ~~7 day~~ Frequency is not met per SR 3.0.2. In this event, the SR must be performed within 12 hours after entering MODE 2 from MODE 1. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR.

~~A Frequency of 7 days provides an acceptable level of system average availability over the Frequency interval and is based on reliability analysis (Ref. 9).~~

Insert 2

(continued)

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.1.5

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended Function. ~~A Frequency of 7 days provides an acceptable level of system average availability over the Frequency and is based on the reliability analysis of Reference 9. (The Manual Scram Function's CHANNEL FUNCTIONAL TEST Frequency was credited in the analysis to extend many automatic scram Functions' Frequencies.)~~

Insert 2

SR 3.3.1.1.6 and SR 3.3.1.1.7

These Surveillances are established to ensure that no gaps in neutron flux indication exist from subcritical to power operation for monitoring core reactivity status.

The overlap between SRMs and IRMs is required to be demonstrated to ensure that reactor power will not be increased into a region without adequate neutron flux indication. This is required prior to withdrawing SRMs from the fully inserted position since indication is being transitioned from the SRMs to the IRMs.

The overlap between IRMs and APRMs is of concern when reducing power into the IRM range. On power increases, the system design will prevent further increases (initiate a rod block) if adequate overlap is not maintained.

Overlap (nominally 1/2 decade) between IRMs and APRMs exists when sufficient IRMs and APRMs concurrently have onscale readings such that the transition between MODE 1 and MODE 2 can be made without either APRM downscale rod block, or IRM upscale rod block. Overlap (nominally 1/2 decade) between SRMs and IRMs similarly exists when, prior to withdrawing the SRMs from the fully inserted position, IRMs are above 10/125 on range 1 before SRMs have reached the upscale rod block.

As noted, SR 3.3.1.1.7 is only required to be met during entry into MODE 2 from MODE 1. That is, after the overlap requirement has been met and indication has transitioned to the IRMs, maintaining overlap is not required (APRMs may be reading downscale once in MODE 2).

(continued)

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SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.6 and SR 3.3.1.1.7 (continued)

If overlap for a group of channels is not demonstrated (e.g., IRM/APRM overlap), the reason for the failure of the Surveillance should be determined and the appropriate channel(s) declared inoperable. Only those appropriate channel(s) that are required in the current MODE or condition should be declared inoperable.

~~A Frequency of 7 days is reasonable based on engineering judgment and the reliability of the IRMs and APRMs.~~

Insert 2

SR 3.3.1.1.8

LPRM gain settings are determined from the local flux profiles measured by the Traversing Incore Probe (TIP) System. This establishes the relative local flux profile for appropriate representative input to the APRM System. ~~The 1000 MWD/T Frequency is based on operating experience with LPRM sensitivity changes.~~

Insert 2

SR 3.3.1.1.9 and SR 3.3.1.1.12

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology. ~~The 92 day Frequency of SR 3.3.1.1.9 is based on the reliability analysis of Reference 9.~~

~~The 24 month Frequency of SR 3.3.1.1.12 is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.1.10

The calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.1.1-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days for SR 3.3.1.1.10 is based on the reliability analysis of Reference 9~~.

Insert 2

SR 3.3.1.1.11, SR 3.3.1.1.13, and SR 3.3.1.1.17

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

Note 1 states that neutron detectors are excluded from CHANNEL CALIBRATION because of the difficulty of simulating a meaningful signal. Changes in neutron detector sensitivity are compensated for by performing the ~~7 day~~ calorimetric calibration (SR 3.3.1.1.2) and the ~~1000 MWD/T~~ LPRM calibration against the TIPs (SR 3.3.1.1.8). As also noted the flow reference transmitters are not calibrated in SR 3.3.1.1.11, but have a separate Surveillance (SR 3.3.1.1.17). A second note is provided in SR 3.3.1.1.11 and SR 3.3.1.1.13 that requires the APRM and IRM SRs to be performed within 12 hours of entering MODE 2 from MODE 1. Testing of the MODE 2 APRM and IRM Functions cannot be performed in MODE 1 without utilizing jumpers, lifted leads, or movable links. This note allows entry into MODE 2 from MODE 1 if the associated Frequency is not met per SR 3.0.2. Twelve hours is based on operating experience and in consideration of providing a reasonable time in which to complete the SR. ~~The Frequency of SR 3.3.1.1.11, SR 3.3.1.1.13, and SR 3.3.1.1.17 is based upon the assumption of the magnitude of equipment drift in the setpoint analysis.~~

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.1.14

The Average Power Range Monitor Flow Biased Simulated Thermal Power-High Function uses an electronic filter circuit to generate a signal proportional to the core THERMAL POWER from the APRM neutron flux signal. This filter circuit is representative of the fuel heat transfer dynamics that produce the relationship between the neutron flux and the core THERMAL POWER. The filter time constant is specified in the COLR and must be verified to ensure that the channel is accurately reflecting the desired parameter.

~~The Frequency of 24 months is based on engineering judgment and reliability of the components.~~

Insert 2

SR 3.3.1.1.15

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required trip logic upon the receipt of either actual or simulated automatic trip signals. The functional testing of control rods, in LCO 3.1.3, "Control Rod OPERABILITY," and SDV vent and drain valves, in LCO 3.1.8, "Scram Discharge Volume (SDV) Vent and Drain Valves," overlaps this Surveillance to provide complete testing of the assumed safety function.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

SR 3.3.1.1.16

This SR ensures that scrams initiated from the Turbine Stop Valve Closure and Turbine Control Valve Fast Closure, Trip Oil Pressure-Low Functions will not be inadvertently bypassed when THERMAL POWER is ≥ 38% RTP. This involves calibration of the bypass channels. Adequate margins for the instrument setpoint methodology are incorporated into the actual setpoint. Because main turbine bypass flow can affect this setpoint nonconservatively (THERMAL POWER is derived from turbine first stage pressure), the main turbine bypass valves must remain closed at THERMAL POWER ≥ 38% RTP to ensure that the calibration remains valid.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1.16 (continued)

If any bypass channel setpoint is nonconservative (i.e., the Functions are bypassed at ≥ 38% RTP, either due to open main turbine bypass valve(s) or other reasons), then the affected Turbine Stop Valve Closure and Turbine Control Valve Fast Closure, Trip Oil Pressure-Low Functions are considered inoperable. Alternatively, the bypass channel can be placed in the conservative condition (nonbypass). If placed in the nonbypass condition, this SR is met and the channel is considered OPERABLE.

~~The Frequency of 24 months is based on engineering judgment and reliability of the components.~~

Insert 2

SR 3.3.1.1.18

This SR ensures that the individual channel response times are less than or equal to the maximum values assumed in the accident analysis. The RPS RESPONSE TIME acceptance criteria are included in Reference 10.

As noted, neutron detectors are excluded from RPS RESPONSE TIME testing because the principles of detector operation virtually ensure an instantaneous response time. In addition, for Functions 3, 4 and 5, the associated sensors are not required to be response time tested. For these Functions, response time testing for the remaining channel components is required. This allowance is supported by Reference 11.

~~RPS RESPONSE TIME tests are conducted on a 24 month STAGGERED TEST BASIS. Note 2 requires STAGGERED TEST BASIS Frequency to be determined based on 4 channels per trip system, in lieu of the 8 channels specified in Table 3.3.1.1-1 for the MSIV Closure Function. This Frequency is based on the logic interrelationships of the various channels required to produce an RPS scram signal. Therefore, staggered testing results in response time verification of these devices every 24 months. This Frequency is consistent with the typical industry refueling cycle and is based upon plant operating experience, which shows that random failures of instrumentation components causing serious time degradation, but not channel failure, are infrequent.~~

Insert 2

(continued)

Provided for Information Only

SR 3.3.1.1.19

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended Function. ~~A Frequency of 31 days provides an acceptable level of system average availability over the Frequency and is based upon operating experience and the reliability of this instrumentation~~.

Insert 2

REFERENCES

1. USAR, Figure 7.2-1.
2. USAR, Section 5.2.2.
3. USAR, Section 6.3.3.
4. USAR, Chapter 15.
5. USAR, Section 15.4.1.
6. NEDO-23842, "Continuous Control Rod Withdrawal in the Startup Range," April 18, 1978.
7. USAR, Section 15.4.9.
8. Letter, P. Check (NRC) to G. Lainas (NRC), "BWR Scram Discharge System Safety Evaluation," December 1, 1980, as attached to NRC Generic Letter dated December 9, 1980.
9. NEDO-30851-P-A, "Technical Specification Improvement Analyses for BWR Reactor Protection System," March 1988.
10. GE DSDS 22A3771AJ.
11. NEDO-32291, "System Analyses for Elimination of Selected Response Time Testing Requirements," January 1994.

No Change - Included for Context

BASES

ACTIONS

D.1 and D.2 (continued)

control rods ensures that the reactor will be at its minimum reactivity level while no neutron monitoring capability is available. Placing the reactor mode switch in the shutdown position prevents subsequent control rod withdrawal by maintaining a control rod block. The allowed Completion Time of 1 hour is sufficient to accomplish the Required Action, and takes into account the low probability of an event requiring the SRM occurring during this time. Although not a Technical Specification requirement, to ensure that the mode switch remains in the shutdown position, the mode switch should be locked.

E.1 and E.2

With one or more required SRMs inoperable in MODE 5, the capability to detect local reactivity changes in the core during refueling is degraded. CORE ALTERATIONS must be immediately suspended, and action must be immediately initiated to fully insert all insertable control rods in core cells containing one or more fuel assemblies. Suspending CORE ALTERATIONS prevents the two most probable causes of reactivity changes, fuel loading and control rod withdrawal, from occurring. Inserting all insertable control rods ensures that the reactor will be at its minimum reactivity, given that fuel is present in the core. Suspension of CORE ALTERATIONS shall not preclude completion of the movement of a component to a safe, conservative position.

Action (once required to be initiated) to insert control rods must continue until all insertable rods in core cells containing one or more fuel assemblies are inserted.

SURVEILLANCE REQUIREMENTS

The SRs for each SRM Applicable MODE or other specified condition are found in the SRs column of Table 3.3.1.2-1.

SR 3.3.1.2.1 and SR 3.3.1.2.3

Performance of the CHANNEL CHECK ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to the same parameter indicated on other similar

(continued)

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SURVEILLANCE REQUIREMENTS

SR 3.3.1.2.1 and SR 3.3.1.2.3. (continued)

channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. During performance of the CHANNEL CHECK, the SRMs shall be verified to be inserted to the normal operating level. Significant deviations between the 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.

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 instrument has drifted outside its limit.

~~The Frequency of once every 12 hours for SR 3.3.1.2.1 is based on operating experience that demonstrates channel failure is rare. While in MODES 3 and 4, reactivity changes are not expected; therefore, the 12 hour Frequency is relaxed to 24 hours for SR 3.3.1.2.3.~~ Insert 2 The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.1.2.2

To provide adequate coverage of potential reactivity changes in the core, one SRM is required to be OPERABLE in the quadrant where CORE ALTERATIONS are being performed, and the other OPERABLE SRM must be in an adjacent quadrant containing fuel. OPERABLE SRMs must be inserted to the normal operating level. Note 1 states that this SR is required to be met only during CORE ALTERATIONS. It is not required to be met at other times in MODE 5 since core reactivity changes are not occurring. This Surveillance consists of a review of plant logs to ensure that SRMs required to be OPERABLE for given CORE ALTERATIONS are, in fact, OPERABLE. In the event that only one SRM is required to be OPERABLE, per Table 3.3.1.2-1, footnote (b), only the

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.2.2 (continued)

a. portion of this SR is required. Note 2 clarifies that more than one of the three requirements can be met by the same OPERABLE SRM. ~~The 12 hour Frequency is based upon operating experience and supplements operational controls over refueling activities, which include steps to ensure that the SRMs required by the LCO are in the proper quadrant~~.

Insert 2

SR 3.3.1.2.4

This Surveillance consists of a verification of the SRM instrument readout to ensure that the SRM reading is greater than a specified minimum count rate. This ensures that the detectors are indicating count rates indicative of neutron flux levels within the core. Verification of the signal to noise ratio also ensures that the detectors are inserted to a normal operating level. In a fully withdrawn condition, the detectors are sufficiently removed from the fueled region of the core to essentially eliminate neutrons from reaching the detector. Any count rate obtained while fully withdrawn is assumed to be "noise" only. With few fuel assemblies loaded, the SRMs will not have a high enough count rate to satisfy the SR. Therefore, allowances are made for loading sufficient "source" material, in the form of irradiated fuel assemblies, to establish the minimum count rate.

To accomplish this, the SR is modified by a Note that states that the count rate is not required to be met for an SRM that has less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies are in the associated core quadrant. With four or less fuel assemblies loaded around each SRM and no other fuel assemblies in the associated quadrant, even with a control rod withdrawn the configuration will not be critical.

~~The Frequency is based upon channel redundancy and other information available in the control room, and ensures that the required channels are frequently monitored while core reactivity changes are occurring. When no reactivity changes are in progress, the Frequency is relaxed from 12 hours to 24 hours~~.

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.2.5

Performance of a CHANNEL FUNCTIONAL TEST demonstrates the associated channel will function properly. ~~The 31 day Frequency is based on operating experience and on other Surveillances (such as CHANNEL CHECK) that ensure proper functioning between CHANNEL FUNCTIONAL TESTS~~. Insert 2

The Note to the Surveillance allows the Surveillance to be delayed until entry into the specified condition of the Applicability. The SR must be performed in MODE 2 within 12 hours of entering MODE 2 with IRMs on Range 2 or below. The allowance to enter the Applicability with the ~~31 day~~ Frequency not met is reasonable, based on the limited time of 12 hours allowed after entering the Applicability and the inability to perform the Surveillance while at higher power levels. Although the Surveillance could be performed while on IRM Range 3, the plant would not be expected to maintain steady state operation at this power level. In this event, the 12 hour ~~Frequency~~ is reasonable, based on the SRMs being otherwise verified to be OPERABLE (i.e., satisfactorily performing the CHANNEL CHECK) and the time required to perform the Surveillances.

insert "s" (hours)

SR 3.3.1.2.6

Performance of a CHANNEL CALIBRATION verifies the performance of the SRM detectors and associated circuitry. ~~The Frequency considers the plant conditions required to perform the test, the ease of performing the test, and the likelihood of a change in the system or component status.~~ Insert 2 The neutron detectors are excluded from the CHANNEL CALIBRATION because they cannot readily be adjusted. The detectors are fission chambers that are designed to have a relatively constant sensitivity over the range, and with an accuracy specified for a fixed useful life.

The Note to the Surveillance allows the Surveillance to be delayed until entry into the specified condition of the Applicability. The SR must be performed in MODE 2 within 12 hours of entering MODE 2 with IRMs on Range 2 or below. The allowance to enter the Applicability with the ~~24 month~~ Frequency not met is reasonable, based on the limited time of 12 hours allowed after entering the Applicability and the

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.2.6 (continued)

inability to perform the Surveillance while at higher power levels. Although the Surveillance could be performed while on IRM Range 3, the plant would not be expected to maintain steady state operation at this power level. In this event, the 12 hour ~~Frequency~~ insert "s" (hours) is reasonable, based on the SRMs being otherwise verified to be OPERABLE (i.e., satisfactorily performing the CHANNEL CHECK) and the time required to perform the Surveillances.

REFERENCES

None.

Provided for Information Only

BASES (continued)

SURVEILLANCE REQUIREMENTS

For the following OPRM instrumentation surveillances, both OPRM modules are tested, although only one is required to satisfy the surveillance requirement.

SR 3.3.1.3.1

A CHANNEL FUNCTIONAL TEST is performed to ensure that the channel will perform the intended function. ~~A Frequency of 184 days provides an acceptable level of system average availability over the Frequency and is based on the reliability of the channel (Ref. 7)~~.

Insert 2

SR 3.3.1.3.2

LPRM gain settings are determined from the local flux profiles measured by the Traversing Incore Probe (TIP) System. This establishes the relative local flux profile for appropriate representative input to the OPRM System. ~~The 1000 MWD/T Frequency is based on operating experience with LPRM sensitivity changes.~~

Insert 2

SR 3.3.1.3.3

The CHANNEL CALIBRATION verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations. Calibration of the channel provides a check of the internal reference voltage and the internal processor clock frequency. Since the OPRM is a digital system, the internal reference voltage and processor clock frequency are, in turn, used to automatically calibrate the internal analog to digital converters. The calibration also compares the desired trip setpoints with those in processor memory. The Allowable Values for the confirmation count setpoint (N_p) and the amplitude trip setpoint (S_p) are specified in the Core Operating Limits Report (COLR). As noted, neutron detectors are

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.1.3.3 (continued)

excluded from CHANNEL CALIBRATION because of the difficulty of simulating a meaningful signal. Changes in neutron detector sensitivity are compensated for by performing the ~~1000 MWD/T~~ LPRM calibration using the TIPs (SR 3.3.1.3.2).

Insert 2

~~The Frequency of 24 months is based upon the assumption of the magnitude of equipment drift provided by the equipment supplier (Ref. 9)~~.

SR 3.3.1.3.4

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required trip logic for a specific channel. The functional testing of control rods in LCO 3.1.3, "Control Rod OPERABILITY," and scram discharge volume (SDV) vent and drain valves in LCO 3.1.8, "Scram Discharge Volume (SDV) Vent and Drain Valves," overlaps this Surveillance to provide complete testing of the assumed safety function. The OPRM self-test function may be utilized to perform this testing for those components that it is designed to monitor.

Insert 2

~~The 24 month Frequency is based on engineering judgment~~, ~~high reliability of the components, and operating experience~~.

SR 3.3.1.3.5

This SR ensures that trips initiated from the OPRM System will not be inadvertently bypassed when THERMAL POWER is ≥ 23.8% RTP and recirculation drive flow is < the value corresponding to 60% of rated core flow.

(continued)

Provided for Information Only

SURVEILLANCE REQUIREMENTS

SR 3.3.1.3.5 (continued)

This normally involves verification of the OPRM bypass function, by ensuring the OPRM modules are enabled when the APRM input is ≥ 23.8% RTP and the recirculation drive flow input is < the value corresponding to 60% of rated core flow. The APRM and recirculation drive flow inputs are calibrated by surveillances in their respective Technical Specifications. Because the enabled region conservatively bounds the region where instabilities are actually expected, the above nominal values of power/flow are utilized for the bypass setpoints, without further allowance for instrument drift or uncertainty.

If any bypass channel setpoint is nonconservative (i.e., the OPRM module is bypassed at ≥ 23.8% RTP and recirculation drive flow < the value corresponding to 60% of rated core flow), then the affected OPRM module is considered inoperable. Alternatively, the bypass channel can be placed in the conservative condition (enabled). If placed in the enabled condition, this SR is met and the module is considered OPERABLE.

Insert 2 ~~The Frequency of 24 months is based on engineering judgment, high reliability of the components, and operating experience.~~

SR 3.3.1.3.6

This SR ensures that the individual channel response times are less than or equal to the maximum values assumed in the accident analysis (Ref. ~~10~~ 9). The OPRM self-test function may be utilized to perform this testing for those components it is designed to monitor. The LPRM amplifier cards inputting to the OPRM are excluded from the OPRM response time testing. The RPS RESPONSE TIME acceptance criteria are included in Reference ~~11~~ 10.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.1.3.6 (continued)

As noted, neutron detectors are excluded from RPS RESPONSE TIME testing because the principles of detector operation virtually ensure an instantaneous response time. ~~RPS RESPONSE TIME tests are conducted on a 24 month STAGGERED TEST BASIS. This Frequency is based upon operating experience, which shows that random failures of instrumentation components causing serious time degradation, but not channel failure, are infrequent.~~

Insert 2

REFERENCES

1. NEDO-31960-A, "BWR Owners Group Long-Term Stability Solutions Licensing Methodology," November 1995.

2. NEDO 31960-A, Supplement 1, "BWR Owners Group Long-Term Stability Solutions Licensing Methodology," November 1995.

3. NRC Letter, A. Thadani to L. A. England, "Acceptance for Referencing of Topical Reports NEDO-31960 and NEDO-31960 Supplement 1, 'BWR Owners Group Long-Term Stability Solutions Licensing Methodology'," July 12, 1993.

4. Generic Letter 94-02, "Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors," July 11, 1994.

5. USAR Section 15B.4.4 Thermal and Hydraulic Design.

6. NEDO-32465-A, "BWR Owners' Group Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology and Reload Applications," August 1996.

7. CENPD-400-P-A, Rev 01, "Generic Topical Report for the ABB Option III Oscillation Power Range Monitor (OPRM)," May 1995.

(continued)

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BASES

REFERENCES (continued)

8. NRC Letter, B. Boger to R. Pinelli, "Acceptance of Licensing Topical Report CENPD-400-P, 'Generic Topical Report for the ABB Option III Oscillation Power Range Monitor'," August 16, 1995.

~~9. 00000-ICE-3230, "ABB Combustion Engineering Nuclear Operations, LTSSS Requirements Specification."~~

9. ~~10.~~ GENE-A13-00381-14, "Licensing Basis Hot Bundle Oscillation Magnitude for Perry" (latest approved revision).

10. ~~11.~~ USAR Table 7.2-3 "Reactor Protection System Response Time Table".

11. ~~12.~~ BWROG-94078, "BWR Owner's Group Guidelines for Stability Interim Corrective Action," June 1994.

12. ~~13.~~ BWROG-02072, "Review of BWR Owner's Group Guidelines for Stability Interim Corrective Action," November 20, 2002.

13. ~~14.~~ OG 02-0119-260, GE to BWR Owner's Group Detect and Suppress II Committee, "Backup Stability Protection (BSP) for Inoperable Option III Solution," July 17, 2002.

14. ~~15.~~ Calculation FM-037, Latest Revision.

15. ~~16.~~ Calculation FM-012, Latest Revision.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.a. Rod Withdrawal Limiter (continued)

Nominal trip set points are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Values between successive CHANNEL CALIBRATIONS. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable. Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor power), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. The Allowable Values are derived from the analytic limits, corrected for calibration, process, and some of the instrument errors. The trip setpoints are then determined accounting for the remaining instrument errors (e.g., drift). The trip setpoints derived in this manner provide adequate protection because instrumentation uncertainties, process effects, calibration tolerances, instrument drive, and severe environment errors (for channels that must function in harsh environments as defined by 10 CFR 50.49) are accounted for.

The RWL is assumed to mitigate the consequences of an RWE event when operating > 33.3% RTP. Below this power level, the consequences of an RWE event will not exceed the MCPR, and therefore the RWL is not required to be OPERABLE (Ref. 3).

1.b. Rod Pattern Controller

The RPC enforces the banked position withdrawal sequence (BPWS) to ensure that the initial conditions of the CRDA analysis are not violated. The analytical methods and assumptions used in evaluating the CRDA are summarized in References 4, 5, and ~~7~~ 6. The standard BPWS (Ref. 4) requires that control rods be moved in groups, with all control rods assigned to a specific group required to be within specified banked positions. Requirements that the control rod sequence is in compliance with BPWS are specified in LCO 3.1.6, "Control Rod Pattern."

(continued)

6 7

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.b. Rod Pattern Controller (continued)

When performing a shutdown of the plant, an optional BPWS control rod sequence (Refs. 1, ~~7~~, and ~~8)~~ may be used provided that all withdrawn control rods have been confirmed to be coupled. The rods may be inserted without the need to stop at intermediate positions since the possibility of a CRDA is eliminated by the confirmation that withdrawn control rods are coupled. When using the Reference ~~7~~ control rod insertion process, the rod pattern controller may be bypassed as permitted by the Applicability Note for the Rod Pattern Controller in Table 3.3.2.1-1. No control rod withdrawals are permitted while using this process.

6

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.1.1, SR 3.3.2.1.2, SR 3.3.2.1.3, and SR 3.3.2.1.4

The CHANNEL FUNCTIONAL TESTS for the RPC are performed by attempting to withdraw a control rod not in compliance with the prescribed sequence and verifying that a control rod block occurs. The CHANNEL FUNCTIONAL TESTS for the RWL are performed by selecting and attempting to move a restricted control rod in excess of the allowable distance. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology. As noted, the SRs are not required to be performed until 1 hour after specified conditions are met (e.g., after any control rod is withdrawn in MODE 2). This allows entry into the appropriate conditions needed to perform the required SRs (e.g., during a power reduction for SR 3.3.2.1.4.) ~~The Frequencies are based on reliability analysis (Ref. 6).~~

Insert 2

SR 3.3.2.1.5

The LPSP is the point at which the RPCS makes the transition between the function of the RPC and the RWL. This transition point is automatically varied as a function of power. This power level is inferred from the first stage turbine pressure (one channel to each trip system). These power setpoints must be verified periodically to be within the Allowable Values. If any LPSP is nonconservative, then the affected Functions are considered inoperable. Since this channel has both upper and lower required limits, it is not allowed to be placed in a condition to enable either the RPC or RWL Function. Because main turbine bypass steam flow can affect the LPSP nonconservatively for the RWL, the RWL is considered inoperable with any main turbine bypass valves open. ~~The Frequency of 92 days is based on the setpoint methodology utilized for these channels.~~

Insert 2

SR 3.3.2.1.6

This SR ensures the high power function of the RWL is not bypassed when power is above the HPSP. The power level is inferred from turbine first stage pressure signals. Periodic testing of the HPSP channels is required to verify the setpoint to be less than or equal to the limit. Adequate margins in accordance with setpoint methodologies are included. If the HPSP is nonconservative, then the RWL is considered inoperable. Alternatively, the HPSP can be placed in the conservative condition (nonbypass). If

(continued)

Provided for Information Only

SURVEILLANCE REQUIREMENTS

SR 3.3.2.1.6 (continued)

placed in the nonbypassed condition, the SR is met and the RWL would not be considered inoperable. Because main turbine bypass steam flow can affect the HPSP nonconservatively for the RWL, the RWL is considered inoperable with any main turbine bypass valve open. ~~The Frequency of 92 days is based on the setpoint methodology utilized for these channels~~.

Insert 2

SR 3.3.2.1.7

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies that the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequency is based upon the assumption of the magnitude of equipment drift in the setpoint analysis.~~

Insert 2

SR 3.3.2.1.8

The CHANNEL FUNCTIONAL TEST for the Reactor Mode Switch-Shutdown Position Function is performed by attempting to withdraw any control rod with the reactor mode switch in the shutdown position and verifying a control rod block occurs.

As noted in the SR, the Surveillance is not required to be performed until 1 hour after the reactor mode switch is in the shutdown position, since testing of this interlock with the reactor mode switch in any other position cannot be performed without using jumpers, lifted leads, or movable links. This allows entry into MODES 3 and 4 if the ~~24 month~~ Frequency is not met per SR 3.0.2.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~.

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.1.9

LCO 3.1.3 and LCO 3.1.6 may require individual control rods to be bypassed in RACS to allow insertion of an inoperable control rod or correction of a control rod pattern not in compliance with BPWS. To ensure the proper bypassing and movement of those affected control rods, a second licensed operator or other qualified member of the technical staff must verify the bypassing and movement of these control rods. No additional analyses are required for the bypassing and movement of these control rods, since these evolutions are adequately controlled by LCO 3.1.3 and LCO 3.1.6.

Individual control rods may also be required to be bypassed to allow continuous withdrawal for determining the location of leaking fuel assemblies, adjustment of control rod speed, or control rod scram time testing. To ensure the proper bypassing and movement of those affected control rods, a second licensed operator or other qualified member of the technical staff must verify the bypassing and movement of these control rods is in conformance with specific analyses for these evolutions.

With the control rods bypassed in the RACS, the RPC will not control the movement of these bypassed control rods. Compliance with this SR allows the RPC and RWL to be OPERABLE with these control rods bypassed.

REFERENCES

1. USAR, Section 7.6.1.5.
2. USAR, Section 15.4.2.
3. NEDE-24011-P-A-US, "General Electric Standard Application for Reload Fuel" (latest approved revision).
4. NEDO-21231, "Banked Position Withdrawal Sequence," January 1977.
5. NRC SER, Acceptance of Referencing of Licensing Topical Report NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel, Revision 8, Amendment 17," December 27, 1987.
~~6. NEDC-30851-P-A, "Technical Specification Improvement Analysis for BWR Control Rod Block Instrumentation," October 1988.~~
6. ~~7~~. NEDO-33091-A, Revision 2, "Improved BPWS Control Rod Insertion Process," July 2004.
7. ~~8~~. USAR 4.3.2.5.2.

ACTIONS

F.1 (continued)

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. The special report shall be submitted in accordance with 10 CFR 50.4 within 14 days of entering Condition F.

SURVEILLANCE REQUIREMENTS

The following SRs apply to each PAM instrumentation Function in Table 3.3.3.1-1, except as noted below.

SR 3.3.3.1.1

For all Functions, 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 instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION. The Primary Containment and Drywell Gross Gamma Radiation Monitors 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.

(continued)

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.3.1.1 (continued)

~~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.~~ Insert 2 The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of those displays associated with the required channels of this LCO.

SR 3.3.3.1.2

Deleted.

SR 3.3.3.1.3

~~For all Functions a CHANNEL CALIBRATION is performed every 24 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 CHANNEL CALIBRATION for the Penetration Flow Path, PCIV Position consists of the Position Indicator Test (PIT), which is conducted in accordance with the ASME inservice inspection and testing program. The CHANNEL CALIBRATION for primary Containment/Drywell Area Gross Gamma Radiation Monitors shall consist of an electronic calibration of the channel, not including the detector, for range decades above 10 R/hr and a one point calibration check of the detector below 10 R/hr with an installed or portable gamma source. ~~The Frequency is based on operating experience and consistency with the typical industry refueling cycles~~. Insert 2

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. USAR, Table 7.1-4.

ACTIONS

A.1 (continued)

The Required Action is to restore the Function (both divisions, if applicable) to OPERABLE status within 30 days. The Completion Time is based on operating experience and the low probability of an event that would require evacuation of the control room.

B.1

If the Required Action and associated Completion Time of Condition A are 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 Time is reasonable, based on operating experience, to reach the required MODE from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.3.3.2.1

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 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 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.

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. As specified in the Surveillance, a CHANNEL CHECK is only required for those channels that are normally energized.

~~The Frequency is based upon plant operating experience that demonstrates channel failure is rare.~~

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.3.2.2

SR 3.3.3.2.2 verifies each required Remote Shutdown System control circuit and transfer switch performs the intended function. This verification is performed from the remote shutdown panel and locally, as appropriate. Operation of the equipment from the remote shutdown panel is not necessary. The Surveillance can be satisfied by performance of a continuity check. This will ensure that if the control room becomes inaccessible, the plant can be placed and maintained in MODE 3 from the remote shutdown panel and the local control stations. However, this Surveillance is not required to be performed only during a plant outage. ~~The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~.

Insert 2

SR 3.3.3.2.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. The test verifies the channel responds to measured parameter values with the necessary range and accuracy. Valve position Functions are excluded since channel performance is adequately determined during performance of other valve Surveillances.

~~The 24 month Frequency is based upon operating experience and is consistent with a typical industry refueling cycle~~.

Insert 2

REFERENCES

1. 10 CFR 50, Appendix A, GDC 19.

SURVEILLANCE REQUIREMENTS

The Surveillances are modified by a 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 associated Function maintains EOC-RPT trip capability. 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.

4

This Note is based on the reliability analysis (Ref. ~~5)~~ assumption of the average time required to perform channel surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the recirculation pumps will trip when necessary.

SR 3.3.4.1.1

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 92 days is based on reliability analysis (Ref. 4)~~.

Insert 2

SR 3.3.4.1.2

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequency is based upon the assumption of the magnitude of equipment drift in the setpoint analysis.~~

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.4.1.3

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required trip logic for a specific channel. The system functional test of the pump breakers is included as a part of this test, overlapping the LOGIC SYSTEM FUNCTIONAL TEST, to provide complete testing of the associated safety function. Therefore, if a breaker is incapable of operating, the associated instrument channel(s) would also be inoperable.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

SR 3.3.4.1.4

This SR ensures that an EOC-RPT initiated from the TSV Closure and TCV Fast Closure, Trip Oil Pressure-Low Functions will not be inadvertently bypassed when THERMAL POWER is ≥ 38% RTP. This involves calibration of the bypass channels. Adequate margins for the instrument setpoint methodologies are incorporated into the actual setpoint. Because main turbine bypass flow can affect this setpoint nonconservatively (THERMAL POWER is derived from first stage pressure), the main turbine bypass valves must remain closed at THERMAL POWER ≥ 38% RTP to ensure that the calibration remains valid. If any bypass channel's setpoint is nonconservative (i.e., the Functions are bypassed at ≥ 38% RTP either due to open main turbine bypass valves or other reasons), the affected TSV Closure and TCV Fast Closure, Trip Oil Pressure-Low Functions are considered inoperable. Alternatively, the bypass channel can be placed in the conservative condition (nonbypass). If placed in the nonbypass condition, this SR is met and the channel considered OPERABLE.

~~The Frequency of 24 months is acceptable since it has been shown that channel bypass failures between successive tests are rare.~~

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.4.1.5

EOC-RPT SYSTEM RESPONSE TIME

This SR ensures that the individual times are less than or equal to the maximum values assumed in the accident analysis. The EOC-RPT SYSTEM RESPONSE TIME acceptance criteria are included in Reference ~~5~~. 4

A Note to the Surveillance states that breaker arc suppression time may be assumed from the most recent performance of SR 3.3.4.1.6. This is allowed since the arc suppression time is short and does not appreciably change.

~~EOC-RPT SYSTEM RESPONSE TIME tests are conducted on a 24 month STAGGERED TEST BASIS~~. Each test shall include at least the logic of one type of channel input, turbine control valve fast closure or turbine stop valve closure, such that both types of channel inputs are tested at ~~least once per 24 months~~. ~~The frequency is based upon plant operating experience, which shows that random failures of instrumentation components that cause serious response time degradation, but not channel failure, are infrequent occurrences~~.

the frequency specified in the Surveillance Frequency Control Program.

Insert 2

SR 3.3.4.1.6

This SR ensures that the RPT breaker arc suppression time is provided to the EOC-RPT SYSTEM RESPONSE TIME test. ~~The 60 month Frequency of the testing is based on the difficulty of performing the test and the reliability of the circuit breakers~~.

Insert 2

REFERENCES

1. USAR, Section 7.6.1.6.
2. USAR, Section 5.2.2.
3. USAR, Sections 15.1.1, 15.1.2, and 15.1.3.

(continued)

Provided for Information Only

BASES

REFERENCES (continued)

~~4. GENE-770-06-1, "Bases for Changes To Surveillance Test Intervals And Allowed Out-Of-Service Times For Selected Instrumentation Technical Specifica~~tions," ~~February 1991.~~

4. ~~5.~~ GE DSDS 22A6083.

ACTIONS

D.1 and D.2 (continued)

performs the intended Function of the instrumentation (Required Action D.1). The allowed Completion Time of 6 hours is reasonable, based on operating experience, both to reach MODE 2 from full power conditions and to remove a recirculation pump from service in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

The Surveillances are modified by a 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 associated Function maintains ATWS-RPT trip capability. 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. This Note is based on the reliability analysis (Ref. 2) assumption of the average time required to perform channel surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the recirculation pumps will trip when necessary.

SR 3.3.4.2.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that gross failure of instrumentation 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 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 that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

(continued)

Provided for Information Only

SURVEILLANCE REQUIREMENTS

SR 3.3.4.2.1 (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 instrument has drifted outside its limit.

~~The Frequency is based upon operating experience that demonstrates channel failure is rare.~~ Insert 2 The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the required channels of this LCO.

SR 3.3.4.2.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function.

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 2.~~

Insert 2

SR 3.3.4.2.3

Calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in SR 3.3.4.2.4. If the trip setting is discovered to be less conservative than the setting accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 2.~~

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.4.2.4

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies that the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequency is based upon the assumption of the magnitude of equipment drift in the setpoint analysis.~~

Insert 2

SR 3.3.4.2.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required trip logic for a specific channel. The system functional test of the pump breakers, included as part of this Surveillance, overlaps the LOGIC SYSTEM FUNCTIONAL TEST to provide complete testing of the assumed safety function. Therefore, if a breaker is incapable of operating, the associated instrument channel(s) would be also inoperable.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

REFERENCES

1. USAR, Section 7.6.1.12.

2. GENE-770-06-1, "Bases For Changes To Surveillance Test Intervals and Allowed Out-of-Service Times For Selected Instrumentation Technical Specifications," February 1991.

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.1.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that a gross failure of instrumentation 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 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.

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 instrument has drifted outside its limit.

~~The Frequency is based upon operating experience that demonstrates channel failure is rare.~~ Insert 2 The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.5.1.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function.

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 92 days is based on the reliability analyses of Reference 4.~~ Insert 2

SR 3.3.5.1.3

The calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be not within its required

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1.3 (continued)

Allowable Value specified in Table 3.3.5.1-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analyses. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than the setting accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 4.~~

Insert 2

SR 3.3.5.1.4, SR 3.3.5.1.5 and SR 3.3.5.1.7

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequencies of SR 3.3.5.1.4, SR 3.3.5.1.5 and SR 3.3.5.1.7 are based upon the assumption of the magnitude of equipment drift in the setpoint analysis.~~

Insert 2

SR 3.3.5.1.6

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required initiation logic for a specific channel. The system functional testing performed in LCO 3.5.1, LCO 3.5.2, LCO 3.8.1, and LCO 3.8.2 overlaps this Surveillance to provide complete testing of the assumed safety function.

The HPCS LOGIC SYSTEM FUNCTIONAL TEST Surveillance may be performed in any mode. ~~The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

~~With exception of the HPCS LOGIC SYSTEM FUNCTIONAL TEST, the 24 month Frequency is based on the need to perform this~~

(continued)

Insert 2

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1.6 (continued)

~~Surveillance under the conditions that apply during a plant outage and the potential for unplanned transients if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

REFERENCES

1. USAR, Section 5.2.
2. USAR, Section 6.3.
3. USAR, Chapter 15.
4. NEDC-30936-P-A, "BWR Owners' Group Technical Specification Improvement Analyses for ECCS Actuation Instrumentation, Part 2," December 1988.
5. Plant Data Book, Tab R, Section 6.2.9.

SURVEILLANCE REQUIREMENTS (continued)

Function maintains trip capability. 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. This Note is based on the reliability analysis (Ref. 1) assumption of the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the RCIC will initiate when necessary.

SR 3.3.5.2.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that a gross failure of instrumentation 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 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 that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

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 instrument has drifted outside its limit.

~~The Frequency is based upon operating experience that demonstrates channel failure is rare.~~ Insert 2 The CHANNEL CHECK supplements less formal, but more frequent, checks of channel status during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.5.2.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.5.2.2 (continued)

~~The Frequency of 92 days is based on the reliability analysis of Reference 1.~~

Insert 2

SR 3.3.5.2.3

The calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.5.2-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be re-adjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 1.~~

Insert 2

SR 3.3.5.2.4 and SR 3.3.5.2.6

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter with the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequencies are based on the assumption of the magnitude of equipment drift in the setpoint analysis.~~

Insert 2

SR 3.3.5.2.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required initiation logic for a specific channel. The system functional testing performed in LCO 3.5.3 overlaps this Surveillance to provide complete testing of the safety function.

(continued)

SURVEILLANCE

SR 3.3.5.2.5 (continued)

Insert 2

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

REFERENCES

1. GENE-770-06-2, "Addendum to Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," February 1991.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

applicable. Functions that have different Applicabilities are discussed below in the individual Functions discussion.

The specific Applicable Safety Analyses, LCO, and Applicability discussions are listed below on a Function by Function basis.

1. Main Steam Line Isolation

1.a. Reactor Vessel Water Level-Low Low Low, Level 1

Low reactor pressure vessel (RPV) water level indicates that the capability to cool the fuel may be threatened. Should RPV water level decrease too far, fuel damage could result. Therefore, isolation of the MSIVs and other interfaces with the reactor vessel occurs to prevent offsite dose limits from being exceeded. The Reactor Vessel Water Level-Low Low Low, Level 1 Function is one of the many Functions assumed to be OPERABLE and capable of providing isolation signals. The Reactor Vessel Water Level-Low Low Low, Level 1 Function associated with isolation is assumed in the analysis of the recirculation line break (Ref. 1). The isolation of the MSL on Level 1 supports actions to ensure that offsite dose limits are not exceeded for a DBA.

Reactor vessel water level signals are initiated from four level transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. Four channels of Reactor Vessel Water Level-Low Low Low, Level 1 Function are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function.

The Reactor Vessel Water Level-Low Low Low, Level 1 Allowable Value is chosen to be the same as the ECCS Level 1 Allowable Value (LCO 3.3.5.1) to ensure that the MSLs isolate on a potential loss of coolant accident (LOCA) to prevent offsite doses from exceeding 10 CFR 100 limits (for the design-basis Revised Accident Source Term (RAST) LOCA analysis, the licensing basis offsite dose limit is 25 rem TEDE (Ref. ~~11~~ 10)).

This Function isolates ~~the~~ Group 6 valves.

(continued)

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.h. Manual Initiation (continued)

There are four push buttons for the logic, two manual initiation push buttons per trip system. There is no Allowable Value for this Function since the channels are mechanically actuated based solely on the position of the push buttons.

Four channels of Manual Initiation Function are required to be OPERABLE.

2. Primary Containment and Drywell Isolation

2.a, 2.e. Reactor Vessel Water Level-Low Low, Level 2

Low RPV water level indicates the capability to cool the fuel may be threatened. The valves whose penetrations communicate with the primary containment are isolated to limit the release of fission products. The isolation of the primary containment on Level 2 supports actions to ensure that offsite dose limits of 10 CFR 100 are not exceeded (for the design-basis Revised Accident Source Term (RAST) LOCA analysis, the licensing basis offsite dose limit is 25 rem TEDE (Ref. ~~11~~ 10)). The Reactor Vessel Water Level-Low Low, Level 2 Function associated with isolation is implicitly assumed in the USAR analysis as these leakage paths are assumed to be isolated post LOCA. In addition, Function 2.a provides an isolation signal to certain drywell isolation valves. The isolation of drywell isolation valves, in combination with other accident mitigation systems, functions to ensure that steam and water releases to the drywell are channeled to the suppression pool to maintain the pressure suppression function of the drywell.

Reactor Vessel Water Level-Low Low, Level 2 signals are initiated from four level transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. Four channels of Reactor Vessel Water Level-Low Low, Level 2 Function are required to be OPERABLE to ensure no single instrument failure can preclude the isolation function. Function 2.e (Division 3) has only one trip system consisting of four channels logically combined in a one-out-of-two twice configuration.

The Reactor Vessel Water Level-Low Low, Level 2 Allowable Value was chosen to be the same as the ECCS Reactor Vessel Water Level-Low Low, Level 2 Allowable Value (LCO 3.3.5.1),

(continued)

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY	<u>2.a, 2.e. Reactor Vessel Water Level-Low Low, Level 2</u> (continued)

since isolation of these valves is not critical to orderly plant shutdown.

This Function is required to be OPERABLE during operations with a potential for draining the reactor vessel (OPDRVs) because the capability of isolating potential sources of leakage must be provided to ensure that offsite dose limits are not exceeded if core damage occurs. However, OPDRVs assume that one or more fuel assemblies are loaded into the core. Therefore, if the fuel is fully off-loaded from the reactor vessel, this Function is not required to be OPERABLE.

This Function isolates the 1E22-F023 Valve (Function 2.e), and the Group 1, 5, 7, and 8 valves (Function 2.a).

<u>2.b, 2.d, 2.f Drywell Pressure-High</u>

High drywell pressure can indicate a break in the RCPB. The isolation of some of the PCIVs on high drywell pressure supports actions to ensure that offsite dose limits of 10 CFR 100 are not exceeded (for the design-basis Revised Accident Source Term (RAST) LOCA analysis, the licensing basis offsite dose limit is 25 rem TEDE (Ref. ~~11~~ 10)). The Drywell Pressure-High Function associated with isolation of the primary containment is implicitly assumed in the USAR accident analysis as these leakage paths are assumed to be isolated post LOCA. In addition, Functions 2.b and 2.d provide isolation signals to certain drywell isolation valves. The isolation of drywell isolation valves, in combination with other accident mitigation systems, functions to ensure that steam and water releases to the drywell are channeled to the suppression pool to maintain the pressure suppression function of the drywell.

High drywell pressure signals are initiated from four pressure transmitters that sense the pressure in the drywell. Four channels of Drywell Pressure-High per Function are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function. Function 2.f (Division 3) has only one trip system consisting of four channels logically combined in a one-out-of-two twice configuration.

The Allowable Value was selected to be the same as the ECCS Drywell Pressure-High Allowable Value (LCO 3.3.5.1), since

(continued)

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

2.b, 2.d, 2.f Drywell Pressure-High (continued)

this may be indicative of a LOCA inside primary containment.

These Functions isolate the Group 1, 5, and 8 valves (Function 2.b), Group 2 and, in conjunction with Function 3.c, the 1E51-F068, the 1E51-F077, and the 1E51-F078 valves from Group 9 (Function 2.d), and the 1E22-F023 valve (Function 2.f).

2.c. Reactor Vessel Water Level-Low Low Low, Level 1

Low RPV water level indicates the capability to cool the fuel may be threatened. Should RPV water level decrease too far, fuel damage could result. Therefore, isolation of the primary containment occurs to prevent offsite dose limits from being exceeded. The Reactor Vessel Water Level-Low Low Low, Level 1 Function is one of the many Functions assumed to be OPERABLE and capable of providing isolation signals. The Reactor Vessel Water Level-Low Low Low, Level 1 Function associated with isolation is implicitly assumed in the USAR analysis as these leakage paths are assumed to be isolated post LOCA. In addition, this Function provides an isolation signal to certain drywell isolation valves. The isolation of drywell isolation valves, in combination with other accident mitigation systems, functions to ensure that steam and water releases to the drywell are channeled to the suppression pool to maintain the pressure suppression function of the drywell.

Reactor vessel water level signals are initiated from four level transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. Four channels of Reactor Vessel Water Level Low- Low-Low, Level 1 Function are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function.

The Reactor Vessel Water Level-Low Low Low, Level 1 Allowable Value is chosen to be the same as the ECCS Reactor Vessel Water Level-Low Low Low, Level 1 Allowable Value (LCO 3.3.5.1) to ensure the valves are isolated to prevent offsite doses from exceeding 10 CFR 100 limits (for the design-basis Revised Accident Source Term (RAST) LOCA analysis, the licensing basis offsite dose limit is 25 rem TEDE (Ref. ~~11~~)).

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(continued)

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

<u>2.g Containment and Drywell Purge Exhaust-Plenum Radiation - High</u> (continued)

Four channels of Containment and Drywell Purge Exhaust-Plenum Radiation-High Function are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function. Containment and Drywell Purge System inboard and outboard isolation valves each use a separate two-out-of-two isolation logic.

The Allowable Values are chosen to promptly detect gross failure of the fuel cladding and to ensure offsite doses remain below 10 CFR 20 and 10 CFR 100 limits (for the design-basis Alternative Source Term (AST) LOCA and fuel handling accident analyses, the licensing basis offsite dose limits are 25 rem TEDE and 6.3 rem TEDE, respectively (Ref. ~~11~~ 10 and ~~13~~ 12)).

The Function is required to be OPERABLE during operations with a potential for draining the reactor vessel (OPDRVs) because the capability of detecting radiation releases due to fuel failures (due to fuel uncovery) must be provided to ensure offsite dose limits are not exceeded. However, OPDRVs assume that one or more fuel assemblies are loaded into the core. Therefore, if the fuel is fully off-loaded from the reactor vessel, this Function is not required to be OPERABLE. Due to radioactive decay, handling of fuel only requires OPERABILITY of this Function when the fuel being handled is recently irradiated, i.e., fuel that has occupied part of a critical reactor core within the previous 24 hours. Although this Function retains APPLICABILITY during “movement of recently irradiated fuel”, which could be interpreted to permit fuel handling before 24 hours of radiological decay if certain buildings and filtration systems are OPERABLE, this is not the case. Fuel handling during that period is prohibited since no dose calculations exist to address a fuel handling accident within the first 24 hours after the reactor core is sub-critical (Ref. ~~12~~ 11).

These Functions isolate the Group 8 valves.

<u>2.h. Manual Initiation</u>

The Manual Initiation push button channels introduce signals into the primary containment and drywell isolation logic that

(continued)

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

2.h. Manual Initiation (continued)

are redundant to the automatic protective instrumentation and provide manual isolation capability. There is no specific USAR safety analysis that takes credit for this Function. It is retained for the isolation function as required by the NRC in the plant licensing basis.

There are four push buttons for the logic, two manual initiation push buttons per trip system. There is no Allowable Value for this Function since the channels are mechanically actuated based solely on the position of the push buttons.

Four channels of the Manual Initiation Function are required to be OPERABLE in MODES 1, 2, and 3, and during OPDRVs or movement of recently irradiated fuel assemblies in primary containment, since these are the MODES in which the Primary Containment and Drywell Isolation automatic Functions are required to be OPERABLE. OPDRVs assume that one or more fuel assemblies are loaded into the core. Therefore, if the fuel is fully off-loaded from the reactor vessel, this Function is not required to be OPERABLE. Due to radioactive decay, handling of fuel only requires OPERABILITY of this Function when the fuel being handled is recently irradiated, i.e., fuel that has occupied part of a critical reactor core within the previous 24 hours. Although this Function retains APPLICABILITY during “movement of recently irradiated fuel”, which could be interpreted to permit fuel handling before 24 hours of radiological decay if certain buildings and filtration systems are OPERABLE, this is not the case. Fuel handling during that period is prohibited since no dose calculations exist to address a fuel handling accident within the first 24 hours after the reactor core is sub-critical (Ref. ~~12~~ 11).

The manual initiation channels for the RCIC System is discussed in Section 3.k below, and for the HPCS System is discussed in the Bases description for ECCS Instrumentation (LCO 3.3.5.1).

(continued)

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

5.a. Ambient Temperature-High (continued)

instruments for detecting a leak from RHR system piping which connects to the Reactor Coolant Pressure Boundary (RCPB) (Ref 13 ~~14~~). When a small or large leak is detected, the function also initiates an automatic RHR isolation to terminate further leakage from the RCPB. If a small leak is allowed to continue without isolation, offsite dose limits may be reached. This Function is not assumed in any USAR transient or accident analysis, since bounding analyses are performed for large breaks such as MSLBs.

Ambient Temperature-High signals are initiated from thermocouples that are appropriately located to protect the system that is being monitored. Two instruments monitor each RHR equipment area. Four channels for RHR Ambient Temperature-High

(continued)

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

<u>5.a. Ambient Temperature-High</u> (continued)

Function are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function.

The RHR System Isolation Ambient Temperature - High Function is only required to be OPERABLE in MODES 2 and 3 when the reactor vessel steam dome pressure is less than the RHR cut in permissive pressure. This is the only period when the valves in Valve Groups 3 and 4 which serve to isolate the RCPB (i.e., 1E12-F008, F009, F023, F053A and B) can be open, since in MODE 1 and in MODES 2 and 3 when the reactor vessel pressure is above the RHR cut in permissive pressure, a diverse signal from the Reactor Steam Dome Pressure-High Function will maintain the RHR RCPB isolation valves in these groups isolated. There are additional valves other than the five RCPB isolation valves listed above which were assigned at PNPP to RHR Valve Groups 3 and 4. Because these other non-RCPB valves were assigned to Valve Groups 3 and 4, in addition to receiving Loss Of Coolant Accident (LOCA) isolation(s), they also receive an isolation from the Ambient Temperature instruments. Although some of these non-RCPB RHR system valves are not maintained closed by the high RPV pressure signal, the Ambient Temperature instruments providing Function 5.a are not required by the TS to be OPERABLE when RPV pressure is above the cut in permissive pressure. Although these non-RCPB RHR system valves do receive an isolation signal upon a high temperature, that is not the specified safety function of the Ambient Temperature portion of the Leak Detection System, since as described in Ref. ~~14~~ 13, the Leak Detection System is designed to detect leakage from the RCPB, in piping which is in direct communication with the reactor vessel.

In MODES 4 and 5, high temperature leakage is not a concern, and significant water leakage is isolated by the Reactor Vessel Water Level - Low, Level 3 Function.

The Allowable Value is set low enough to detect a leak equivalent to 25 gpm.

This Function isolates the Group 3 and 4 valves.

<u>5.b. Reactor Vessel Water Level-Low, Level 3</u>

Low RPV water level indicates the capability to cool the fuel may be threatened. Should RPV water level decrease too far, fuel damage could result. Therefore, isolation of

(continued)

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

5.c. Reactor Vessel Steam Dome Pressure-High (continued)

The Reactor Vessel Steam Dome-High pressure signals are initiated from four transmitters. Four channels of Reactor Vessel Steam Dome Pressure-High Function are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function. The Allowable Value was chosen to be low enough to protect the system equipment from overpressurization.

This Function isolates the Group 4 valves.

5.d. Drywell Pressure-High

High drywell pressure can indicate a break in the RCPB. The isolation of some of the PCIVs on high drywell pressure supports actions to ensure that offsite dose limits of 10 CFR 100 are not exceeded (for the design-basis Revised Accident Source Term (RAST) LOCA analysis, the licensing basis offsite dose limit is 25 rem TEDE (Ref. ~~11~~ 10)). The Drywell Pressure-High Function associated with isolation of the RHR System is not modeled in any USAR accident or transient analysis because other leakage paths (e.g., MSIVs) are more limiting.

High drywell pressure signals are initiated from four pressure transmitters that sense the pressure in the drywell. Four channels of Drywell Pressure-High Function are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function.

The Allowable Value was selected to be the same as the ECCS Drywell Pressure-High Allowable Value (LCO 3.3.5.1), since this may be indicative of a LOCA inside primary containment.

This Function isolates the Group 3 valves.

5.e. Manual Initiation

The Manual Initiation push button channels introduce signals into the RHR System isolation logic that are redundant to the automatic protective instrumentation and provide manual isolation capability. There is no specific USAR safety analysis that takes credit for this Function. It is retained for the isolation function as required by the NRC in the plant licensing basis.

(continued)

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BASES

SURVEILLANCE REQUIREMENTS (continued)

This Note is based on the reliability analysis (Refs. 5 and 6) assumption of the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the automatic isolation valves will isolate the penetration flow path(s) when necessary.

SR 3.3.6.1.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that a gross failure of instrumentation 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 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.

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 instrument has drifted outside its limit. ~~The Frequency is based on operating experience that demonstrates channel failure is rare.~~

Insert 2

The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.6.1.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function.

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.6.1.2 (continued)

~~The quarterly Frequency is based on reliability analysis described in References 5 and 6.~~

Insert 2

For Function 1.e, "Main Steam Line Pipe Tunnel Temperature - High", this SR is applicable only to the Division 3 and 4 ambient temperature channels. Divisions 1 and 2 are monitored by digital instrument channels, which are functionally tested on semiannual basis by SR 3.3.6.1.7.

SR 3.3.6.1.3

The calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.6.1-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of References 5 and 6.~~

Insert 2

SR 3.3.6.1.4

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequency of SR 3.3.6.1.4 is based on the assumption of the magnitude of equipment drift in the setpoint analysis.~~

Insert 2

SR 3.3.6.1.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required isolation logic for a specific channel. The system functional testing performed on PCIVs

(continued)

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.6.1.5 (continued)

in LCO 3.6.1.3 and on drywell isolation valves in LCO 3.6.5.3 overlaps this Surveillance to provide complete testing of the assumed safety function. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~.

Insert 2

SR 3.3.6.1.6

This SR ensures that the individual channel response times are less than or equal to the maximum values assumed in the accident analysis. Testing is performed only on channels where the assumed response time does not correspond to the diesel generator (DG) start time. For channels assumed to respond within the DG start time, sufficient margin exists in the 10 second start time when compared to the typical channel response time (milliseconds) so as to assure adequate response without a specific measurement test. The instrument response times must be added to the PCIV closure times to obtain the ISOLATION SYSTEM RESPONSE TIME. ISOLATION SYSTEM RESPONSE TIME acceptance criteria are included in References 7 and 8. The Note to SR 3.3.6.1.6 states that channel sensors are excluded from response time testing requirements. Response time testing for the remaining channel components is required. This is supported by Reference 9.

~~ISOLATION SYSTEM RESPONSE TIME tests are conducted on a 24 month STAGGERED TEST BASIS. This test Frequency is consistent with the typical industry refueling cycle and is based upon plant operating experience that shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent~~.

Insert 2

SR 3.3.6.1.7

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function.

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.6.1.7 (continued)

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The semiannual Frequency is based on the reduced drift and the design features inherent in digital systems (Ref. 10).~~

Insert 2

For Function 1.e, "Main Steam Line Pipe Tunnel Temperature High", this SR is applicable only to the Division 1 and 2 ambient temperature channels. Divisions 3 and 4 are monitored by analog instrument channels, which are functionally tested ~~on a quarterly basis~~ by SR 3.3.6.1.2.

REFERENCES

1. USAR, Section 6.3.
2. USAR, Chapter 15.
3. NEDO-31466, "Technical Specification Screening Criteria Application and Risk Assessment," November 1987.
4. USAR, Section 9.3.5.
5. NEDC-31677-P-A, "Technical Specification Improvement Analysis for BWR Isolation Actuation Instrumentation," June 1989.
6. NEDC-30851-P-A, Supplement 2, "Technical Specifications Improvement Analysis for BWR Isolation Instrumentation Common to RPS and ECCS Instrumentation," March 1989.
7. USAR, Section 15.1.3.
8. USAR, Section 15.6.
9. NEDO-32291, "System Analyses for Elimination of Selected Response Time Testing Requirements," January 1994.
10. ~~Letter PY-CEI/NRR-1654L, "License Amendment Request: Replacement of Selected Analog Leak Detection System Instruments with GE NUMAC Leak Detection Monitors," November 22, 1993~~.

(continued)

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BASES

REFERENCES (continued)

10 ~~11~~. Amendment No. 103 to Facility Operating License No. NPF-58, Perry Nuclear Power Plant, Unit 1.

11 ~~12~~. USAR, Section 15.7.6

12 ~~13~~. Amendment No. 122 to Facility Operating License No. NPF-58, Perry Nuclear Power Plant, Unit 1.

13 ~~14~~. USAR, Section 7.6.1.3

SURVEILLANCE REQUIREMENTS (continued)

The Surveillances are also modified by a 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 associated Function maintains RHR containment spray initiation capability. 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. This Note is based on the reliability analysis (Ref. 3) assumption of the average time required to perform channel surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the RHR containment spray will initiate when necessary.

SR 3.3.6.2.1

Performance of the CHANNEL CHECK once ~~every 12 hours~~ ensures that a gross failure of instrumentation 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 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.

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 instrument has drifted outside its limit.

Insert 2

~~The Frequency is based upon operating experience that demonstrates 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 channels required by the LCO.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.2.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure the entire channel will perform the intended function.

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 92 days is based upon the reliability analysis of Reference 3.~~

Insert 2

SR 3.3.6.2.3

The calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.6.2-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based upon the reliability analysis of Reference 3.~~

Insert 2

SR 3.3.6.2.4 and SR 3.3.6.2.6

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies that the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequency of SR 3.3.6.2.4 and SR 3.3.6.2.6 is based on the assumption of the magnitude of equipment drift in the setpoint analysis~~.

Insert 2

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.2.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required initiation logic for a specific channel. The system functional testing performed in LCO 3.6.1.7, "Residual Heat Removal (RHR) Containment Spray," overlaps this Surveillance to provide complete testing of the assumed safety function.

Insert 2

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~.

REFERENCES

1. USAR, Section 7.3.1.1.4.

2. USAR, Section 6.2.1.1.5.

3. GENE-770-06-1, "Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," February 1991.

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BASES (continued)

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each SPMU System Function are located in the SRs column of Table 3.3.6.3-1.

The Surveillances are also modified by a 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 associated Function maintains suppression pool makeup initiation capability. 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. This Note is based on the reliability analysis (Ref. 3) assumption of the average time required to perform channel surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the SPMU will initiate when necessary.

SR 3.3.6.3.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that a gross failure of instrumentation 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 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.

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 instrument has drifted outside its limit.

~~The Frequency is based upon operating experience that demonstrates channel failure is rare.~~ Insert 2 The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the required channels of the LCO.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.3.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure the entire channel will perform the intended function.

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 3.~~

Insert 2

SR 3.3.6.3.3

The calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.6.3-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 3.~~

Insert 2

SR 3.3.6.3.4 and SR 3.3.6.3.5

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies that the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequencies of SR 3.3.6.3.4 and SR 3.3.6.3.5 are based on the assumption of the magnitude of equipment drift in the setpoint analysis.~~

Insert 2

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.3.6

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required initiation logic for a specific channel. The system functional testing performed in LCO 3.6.2.4, "Suppression Pool Makeup (SPMU) System," overlaps this Surveillance to provide complete testing of the assumed safety function.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~.

Insert 2

REFERENCES

1. USAR, Section 7.3.1.1.12.

2. USAR, Section 6.2.7.

3. GENE-770-06-1, "Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," February 1991.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

6 hours, provided the associated Function maintains relief or LLS initiation capability, as applicable. 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. This Note is based on the reliability analysis (Ref. 2) assumption of the average time required to perform channel surveillance. That analysis demonstrated the 6 hour testing allowance does not significantly reduce the probability that the relief and LLS valves will initiate when necessary.

SR 3.3.6.4.1

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 2.~~ Insert 2

SR 3.3.6.4.2

The calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in SR 3.3.6.4.3. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analysis of Reference 2.~~ Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.6.4.3

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequency is based upon the assumption of the magnitude of equipment drift in the setpoint analysis.~~

Insert 2

SR 3.3.6.4.4

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required actuation logic for a specific channel. The system functional testing performed for S/RVs in LCO 3.4.4 and LCO 3.6.1.6 overlaps this Surveillance to provide complete testing of the assumed safety function.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

REFERENCES

1. USAR, Section 5.2.2.

2. GENE-770-06-1, "Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," February 1991.

SURVEILLANCE REQUIREMENTS (continued)

to perform channel surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the CRER System will initiate when necessary.

SR 3.3.7.1.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the indicated parameter for one instrument 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 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.

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 instrument has drifted outside its limit.

~~The Frequency is based upon operating experience that demonstrates channel failure is rare.~~ Insert 2 The CHANNEL CHECK supplements less formal, but more frequent, checks of channel status during normal operational use of the displays associated with channels required by the LCO.

SR 3.3.7.1.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 92 days is based on the reliability analyses of References 4, 5, and 6.~~ Insert 2

(continued)

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.7.1.3

The calibration of trip units provides a check of the actual trip setpoints. The channel must be declared inoperable if the trip setting is discovered to be less conservative than the Allowable Value specified in Table 3.3.7.1-1. If the trip setting is discovered to be less conservative than accounted for in the appropriate setpoint methodology, but is not beyond the Allowable Value, the channel performance is still within the requirements of the plant safety analysis. Under these conditions, the setpoint must be readjusted to be equal to or more conservative than accounted for in the appropriate setpoint methodology.

~~The Frequency of 92 days is based on the reliability analyses of References 4, 5, and 6.~~ Insert 2

SR 3.3.7.1.4

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequency is based on the assumption of the magnitude of equipment drift in the setpoint analysis~~. Insert 2

SR 3.3.7.1.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required initiation logic for a specific channel. The system functional testing performed in LCO 3.7.3, "Control Room Emergency Recirculation (CRER) System," overlaps this Surveillance to provide complete testing of the assumed safety function.

~~The 24 month Frequency is based on the need to perform some of the Surveillance tests which satisfy this SR under the conditions that apply during a plant outage, and the potential for an unplanned transient if those particular tests were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~. Insert 2

(continued)

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.1.1

Performance of the CHANNEL CHECK ~~once every 12 hours~~ ensures that a gross failure of instrumentation 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 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.

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 instrument has drifted outside its limit.

~~The Frequency is based on operating experience that demonstrates channel failure is rare.~~ Insert 2 The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the required channels of the LCO.

SR 3.3.8.1.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the entire channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

~~The Frequency of 31 days is based on plant operating experience with regard to channel OPERABILITY and drift that demonstrates that failure of more than one channel of a given Function in any 31 day interval is rare.~~ Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.1.3

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

~~The Frequency is based on the assumption of the magnitude of equipment drift in the setpoint analysis~~. Insert 2

SR 3.3.8.1.4

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required actuation logic upon the receipt of actuation signals. The system functional testing performed in LCO 3.8.1 and LCO 3.8.2 overlaps this Surveillance to provide complete testing of the assumed safety functions.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~ Insert 2

REFERENCES

1. USAR, Section 8.3.1.1.2.9.a.2.
2. USAR, Section 5.2.
3. USAR, Section 6.3.
4. USAR, Chapter 15.

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BASES

ACTIONS (continued)

E.1 and E.2

If any Required Action and associated Completion Time of Condition A or B are not met in MODE 4 or 5, with the RHR Shutdown Cooling System not isolated, the operator must immediately initiate action to isolate the RHR Shutdown Cooling System (i.e., provide alternate decay heat removal capabilities so the penetration flow path can be isolated).

Alternately, action must be immediately initiated to either restore one electric power monitoring assembly to OPERABLE status for the inservice power source supplying the required instrumentation powered from the RPS bus (Required Action E.2). Required Action E.2 is provided because the RHR Shutdown Cooling System may be needed to provide core cooling. All actions must continue until the applicable Required Actions are completed.

SURVEILLANCE REQUIREMENTS

SR 3.3.8.2.1

A CHANNEL FUNCTIONAL TEST is performed on each overvoltage, undervoltage, and underfrequency channel to ensure that the entire channel will perform the intended function. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

As noted in the Surveillance, the CHANNEL FUNCTIONAL TEST is only required to be performed while the plant is in a condition in which the loss of the RPS bus will not jeopardize steady state power operation (the design of the system is such that the power source must be removed from service to conduct the Surveillance). The 24 hours is intended to indicate an outage of sufficient duration to allow for scheduling and proper performance of the Surveillance. ~~The 184 day Frequency and~~ the Note in the Surveillance ~~are~~ based on guidance provided in Generic Letter 91-09 (Ref. 2). This surveillance can be performed under other plant conditions provided that the risk is evaluated pursuant to 10 CFR 50.65(a)(4) (Ref. 3).

Capitalize the "T"

is

Insert 2

SR 3.3.8.2.2

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies that the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.8.2.2 (continued)

~~The Frequency is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.~~ Insert 2

SR 3.3.8.2.3

Performance of a system functional test demonstrates a required system actuation (simulated or actual) signal. The logic of the system will automatically trip open the associated power monitoring assembly circuit breaker. Only one signal per power monitoring assembly is required to be tested. This Surveillance overlaps with the CHANNEL CALIBRATION to provide complete testing of the safety function. The system functional test of the Class 1E circuit breakers is included as part of this test to provide complete testing of the safety function. If the breakers are incapable of operating, the associated electric power monitoring assembly would be inoperable.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~. Insert 2

REFERENCES

1. USAR, Section 8.3.1.1.5.

2. NRC Generic Letter 91-09, "Modification of Surveillance Interval for the Electric Protective Assemblies in Power Supplies for the Reactor Protection System."

3. 10 CFR 50.65(a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants."

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BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.1.1

This SR ensures the recirculation loop flows are within the allowable limits for mismatch. At low core flow (i.e., < 70% of rated core flow), the MCPR requirements provide larger margins to the fuel cladding integrity Safety Limit such that the potential adverse effect of early boiling transition during a LOCA is reduced. A larger flow mismatch can therefore be allowed when core flow is < 70% of rated core flow. The recirculation loop jet pump flow, as used in this Surveillance, is the summation of the flows from all of the jet pumps associated with a single recirculation loop.

The mismatch is measured in terms of percent of rated core flow. This SR is not required when both loops are not in operation since the mismatch limits are meaningless during single loop or natural circulation operation. The Surveillance must be performed within 24 hours after both loops are in operation. ~~The 24 hour Frequency is consistent with the Frequency for jet pump OPERABILITY verification and has been shown by operating experience to be adequate to detect off normal jet pump loop flows in a timely manner~~.

Insert 2

(continued)

BASES

ACTIONS (continued)

B.1

If the FCV(s) are not deactivated (locked up) and cannot be restored to OPERABLE status within the associated Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours. This brings the unit to a condition where the flow coastdown characteristics of the recirculation loop are not important. 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 unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.2.1

Hydraulic power unit pilot operated lock out valves (pilot operated check valves) located between the flow control valve (FCV) actuator and the pilot operated isolation valves (POIV) are required to close on a loss of hydraulic pressure. When closed, these valves inhibit FCV motion by blocking hydraulic pressure from the POIV valve to the FCV actuator. This surveillance verifies the FCV fails "as-is" on a loss of hydraulic pressure.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~.

Insert 2

SR 3.4.2.2

This SR ensures the overall average rate of FCV movement at all positions is maintained within the analyzed limits.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the~~

(continued)

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.2.2 (continued)

~~Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~.

Insert 2

REFERENCES

1. USAR, Section 15.3.2.
2. USAR, Section 15.4.5.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.3.1

This SR is designed to detect significant degradation in jet pump performance that precedes jet pump failure (Ref. 2). This SR is required to be performed only when the loop has forced recirculation flow since surveillance checks and measurements can only be performed during jet pump operation. The jet pump failure of concern is a complete mixer displacement due to jet pump beam failure. Jet pump plugging is also of concern since it adds flow resistance to the recirculation loop. Significant degradation is indicated if the specified criteria confirm unacceptable deviations from established patterns or relationships. The allowable deviations from the established patterns have been developed based on the variations experienced at plants during normal operation and with jet pump assembly failures (Refs. 2 and 3). Since refueling activities (e.g., fuel assembly replacement or shuffle, as well as any modifications to fuel support orifice size or core plate bypass flow) can affect the relationship between core flow, jet pump flow, and recirculation loop flow, these relationships may need to be re-established each cycle. Jet pump OPERABILITY is considered acceptable prior to startup of the plant following a refueling outage due to acceptable results obtained during the last cycle, or by visual inspection of the jet pumps. Similarly, initial entry into extended single loop recirculation loop operation may also require establishment of these relationships. During the initial weeks of OPERATING under such circumstances, while baselining new "established patterns," engineering judgment of the daily surveillance results is used to detect significant abnormalities which could indicate a jet pump failure.

An inoperable jet pump is not, in itself, a sufficient reason to declare a recirculation loop inoperable, but it does, in case of a design basis accident, increase the blowdown area and reduce the capability of reflooding the core. Thus, the requirement for shutdown of the plant exists with a jet pump inoperable. Jet pump failure can be detected by monitoring jet pump performance on a prescribed schedule for significant degradation. During single loop operation, the jet pump OPERABILITY surveillance is only performed for the jet pumps on the operating recirculation loop, as the loads on the jet pumps on the inactive loop have been demonstrated through operating experience at

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.3.1 (continued)

other BWRs to be very low due to the low flow in the reverse direction through them. The jet pumps in the non-operating recirculation loop during single loop operation (SLO) are considered OPERABLE based on this low expected loading, acceptable surveillance results obtained during two recirculation loop operation prior to entering SLO, or by visual inspection of the jet pumps during outages. Upon startup of an idle recirculation loop when THERMAL POWER is greater than 25% of RATED THERMAL POWER, the specified jet pump surveillances are required to be performed for the previous idle loop within four hours as specified in SR 3.4.3.1.

The recirculation flow control valve (FCV) operating characteristics (loop flow versus FCV position) are determined by the flow resistance from the loop suction through the jet pump nozzles. A change in the relationship indicates a flow restriction, loss in pump hydraulic performance, leak, or new flow path between the recirculation pump discharge and jet pump nozzle. For this criterion, the loop flow versus FCV position relationship must be verified.

Total core flow can be determined from measurements of the recirculation loop drive flows. Once this relationship has been established, increased or reduced recirculation loop drive flow for the same total core flow may be an indication of failures in one or several jet pumps.

Recirculation loop drive flow is the discharge flow from the recirculation pumps. Recirculation loop jet pump flow is the summation of all the individual jet pump flows for a particular recirculation loop. Total core flow for two recirculation loop operation is the sum of the recirculation loop jet pump flows for both loops. Total core flow for single recirculation loop operation is the recirculation loop jet pump flow for the operating loop minus the reverse flow through the non-operating loop. Rated core flow as used in the Specification corresponds to the rated (100%) core flow value for two recirculation loop operation (i.e., 104 Mlb/hr).

(continued)

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.3.1 (continued)

Individual jet pumps in a recirculation loop typically do not have the same flow. The unequal flow is due to the drive flow manifold, which does not distribute flow equally to all risers. The flow (or jet pump diffuser to lower plenum differential pressure) pattern or relationship of one jet pump to the loop average is repeatable. An appreciable change in this relationship is an indication that increased (or reduced) resistance has occurred in one of the jet pumps. This may be indicated by an increase in the relative flow for a jet pump that has experienced beam cracks.

The deviations from normal are considered indicative of a potential problem in the recirculation drive flow or jet pump system (Ref. 2). Normal flow ranges and established jet pump flow and differential pressure patterns are established by plotting historical data as discussed in Reference 2.

~~The 24 hour Frequency has been shown by operating experience to be adequate to verify jet pump OPERABILITY and is consistent with the Frequency for recirculation loop OPERABILITY verification.~~

Insert 2

This SR is modified by two Notes. Note 1 allows this Surveillance not to be performed until 4 hours after the associated recirculation loop is in operation, since these checks can only be performed during jet pump operation. The 4 hours is an acceptable time to establish conditions appropriate for data collection and evaluation.

Note 2 allows this SR not to be performed when THERMAL POWER is ≤ 25% RTP. During low flow conditions, jet pump noise approaches the threshold response of the associated flow instrumentation and precludes the collection of repeatable and meaningful data.

REFERENCES

1. USAR, Section 6.3.

2. GE Service Information Letter No. 330, "Jet Pump Beam Cracks," June 9, 1990.

3. NUREG/CR-3052, "Closeout of IE Bulletin 80-07: BWR Jet Pump Assembly Failure," November 1984.

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BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.4.1

This Surveillance demonstrates that the required S/RVs will open at the pressures assumed in the safety analysis of Reference 2. The demonstration of the S/RV safety function lift settings must be performed during shutdown, since this is a bench test, and in accordance with the Inservice Testing Program. The lift setting pressure shall correspond to ambient conditions of the valves at nominal operating temperatures and pressures.

The Frequency was selected because this Surveillance must be performed during shutdown conditions and is based on the time between refuelings. The safety lift setpoints will still be set within a tolerance of ± 1%, but the setpoints will be tested to within ± 3% to determine acceptance or failure of the as-found valve lift setpoint (Reference 4).

SR 3.4.4.2

The required relief function S/RVs are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to verify that the mechanical portions i.e., solenoids of the automatic relief function operate as designed when initiated either by an actual or simulated initiation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.4.4 overlaps this SR to provide complete testing of the safety function.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

This SR is modified by a Note that excludes valve actuation. This prevents an RPV pressure blowdown.

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.4.3

A manual actuation of each required S/RV is performed to verify that the valve is functioning properly. This SR can be demonstrated by one of two methods, which are described below. If performed by Method 1, plant startup is allowed prior to performing this test because valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME requirements (Ref. 5), prior to valve installation. Therefore, this SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for manual actuation after the required pressure is reached is sufficient to achieve stable conditions for testing and provides a reasonable time to complete the SR. If performed by Method 2, valve OPERABILITY has been demonstrated for all installed S/RVs based upon successful offsite testing of the required test population.

Method 1:

Manual actuation of the S/RV with verification by the response of the turbine control valves or bypass valves, by a change in the measured steam flow, or any other method suitable to verify steam flow (e.g., tailpipe temperature or acoustic monitoring). Adequate reactor steam pressure must be available to perform this test to avoid damaging the valve. Also, adequate flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the S/RVs divert steam flow upon opening. Sufficient time is therefore allowed after the required pressure and flow is achieved to perform this test. Adequate pressure at which this test is performed is consistent with the pressure recommended by the valve manufacturer.

Method 2:

The required population of S/RVs tested will be stroked in the relief mode during testing at a qualified offsite facility to verify proper operation of the S/RV.

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.4.3 (continued)

The successful performance of the S/RVs tested provides reasonable assurance that the remaining installed S/RVs will perform in a similar fashion. After the S/RVs are replaced, the power-operated actuator of all 19 S/RVs will be uncoupled from the S/RV stem, and cycled to ensure proper operation of the control circuit and actuator. Following cycling, the power-operated actuator is recoupled and the proper positioning of the stem nut is independently verified. This verifies that each S/RV will properly perform its intended function. If the valve actuator fails to operate due only to the failure of the solenoid but is capable of opening the valve on overpressure, the safety function of the S/RV is considered OPERABLE.

When removing and replacing the S/RVs, Foreign Material Exclusion controls will be in place to minimize the potential for unwanted materials from entering into any S/RV opening or the piping discharge lines.

SR 3.4.4.2 and the LOGIC SYSTEM FUNCTIONAL TEST performed in SR 3.3.6.4.4 overlap this surveillance to provide complete testing of the assumed safety function

~~The 24 months on a STAGGERED TEST BASIS Frequency ensures that each solenoid for each S/RV is alternately tested. The 24 month Frequency was developed based on the S/RV tests required by the ASME Code (Ref. 5). The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

REFERENCES

1. ASME, Boiler and Pressure Vessel Code, Section III.
2. USAR, Chapter 15, Appendix 15B.
3. USAR, Section 15.
4. NRC Safety Evaluation to NEDC-31753P, March 8, 1993.
5. ASME Code for Operation and Maintenance of Nuclear Power Plants.

ACTIONS

C.1 and C.2 (continued)

36 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.

SURVEILLANCE REQUIREMENTS

SR 3.4.5.1

The RCS LEAKAGE is monitored by a variety of instruments designed to quantify the various types of LEAKAGE. Leakage detection instrumentation is discussed in more detail in the Bases for LCO 3.4.7, "RCS Leakage Detection Instrumentation." Sump level and flow rate are typically monitored to determine actual LEAKAGE rates. However, any method may be used to quantify LEAKAGE within the guidelines of Reference 7. ~~In conjunction with alarms and other administrative controls, such as monitoring the reactor vessel head flange leak detection system at least once per 24 hours, a 12 hour Frequency for this Surveillance is appropriate for identifying changes in LEAKAGE and for tracking required trends (Ref. 8).~~ Insert 2

REFERENCES

1. 10 CFR 50.2.
2. 10 CFR 50.55a(c).
3. 10 CFR 50, Appendix A, GDC 55.
4. GEAP-5620, "Failure Behavior in ASTM A106B Pipes Containing Axial Through-Wall Flaws," April 1968.
5. NUREG-75/067, "Investigation and Evaluation of Cracking in Austenitic Stainless Steel Piping of Boiling Water Reactor Plants," October 1975.
6. USAR, Section 5.2.5.5.3.
7. Regulatory Guide 1.45, May 1973.
8. ~~Generic Letter 88-01, Supplement 1, "NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping," February 1992.~~

BASES

ACTIONS (continued)

F.1 and F.2

If any Required Action of Condition A, B, C, D, or E cannot be met within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions in an orderly manner and without challenging plant systems.

G.1

With all required leakage detection systems inoperable, no required automatic means of monitoring LEAKAGE are available, and immediate plant shutdown in accordance with LCO 3.0.3 is required.

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This SR requires the performance of a CHANNEL CHECK of the required drywell atmospheric monitoring system. The check gives reasonable confidence that the channel is operating properly. ~~The Frequency of 12 hours is based on instrument reliability and is reasonable for detecting off normal conditions.~~

Insert 2

SR 3.4.7.2

This SR requires the performance of a CHANNEL FUNCTIONAL TEST of the required RCS leakage detection instrumentation. The test ensures that the monitors can perform their function in the desired manner. The test also verifies the relative accuracy of the instrumentation. ~~The Frequency of 31 days considers instrument reliability, and operating experience has shown it proper for detecting degradation.~~

(continued) Insert 2

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.7.3

This SR requires the performance of a CHANNEL CALIBRATION of the required RCS leakage detection instrumentation channels. The calibration verifies the accuracy of the instrumentation, including the instruments located inside the drywell. ~~The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

REFERENCES

1. 10 CFR 50, Appendix A, GDC 30.

2. Regulatory Guide 1.45, Revision 0, "REACTOR COOLANT PRESSURE BOUNDARY LEAKAGE DETECTION SYSTEMS," May 1973.

3. GEAP-5620, "Failure Behavior in ASTM A106B Pipes Containing Axial Through-Wall Flaws," April 1968.

4. NUREG-75/067, "Investigation and Evaluation of Cracking in Austenitic Stainless Steel Piping of Boiling Water Reactor Plants," October 1975.

5. USAR, Section 5.2.5.5.3.

6. USAR, Section 5.2.5.2.

Provided for Information Only

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This Surveillance is performed to ensure iodine remains within limit during normal operation. ~~The 7 day Frequency is adequate to trend changes in the iodine activity level~~.

Insert 2

This SR is modified by a Note that requires this Surveillance to be performed only in MODE 1 because the level of fission products generated in other MODES is much less.

REFERENCES

1. 10 CFR 100.11.
2. USAR, Section 15.6.4.

BASES

ACTIONS

B.1, B.2, and B.3 (continued)

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem or recirculation pump), the reactor coolant temperature and pressure must be periodically monitored to ensure the proper functioning of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. ~~The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR shutdown cooling subsystem in the control room~~.

Insert 2

This Surveillance is modified by a Note allowing sufficient time to align the RHR System for shutdown cooling operation after clearing the pressure interlock that isolates the system, or for placing a recirculation pump in operation.

REFERENCES

None.

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1

This Surveillance verifies that one RHR shutdown cooling subsystem or recirculation pump is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. ~~The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR shutdown cooling subsystem in the control room~~. Insert 2

REFERENCES

None.

Provided for Information Only

BASES

ACTIONS (continued)

C.1 and C.2

Operation outside the P/T limits in other than MODES 1, 2, and 3 (including defueled conditions) must be corrected so that the RCPB is returned to a condition that has been verified by stress analyses. The Required Action must be initiated without delay and continued until the limits are restored.

Besides restoring the P/T limit parameters to within limits, an evaluation is required to determine if RCS operation is allowed. This evaluation must verify that the RCPB integrity is acceptable and must be completed before approaching criticality or heating up to > 200°F. Several methods may be used, including comparison with pre-analyzed transients, new analyses, or inspection of the components. ASME Section XI, Appendix E (Ref. 6), may be used to support the evaluation; however, its use is restricted to evaluation of the beltline.

SURVEILLANCE REQUIREMENTS

The limits imposed by this Specification are required to be met at all times, including periods when the vessel is defueled (except for limits that have an associated Note in a Surveillance Requirement specifically stating "Only required to be met…"). However, the Surveillance Requirements are not required to be performed at all times; rather, the SRs are required to be specifically performed during plant conditions or planned evolutions that are of primary concern for specific vessel components; see the Notes that state "Only required to be performed…" and "Not required to be performed until…"

SR 3.4.11.1

Verification that operation is within limits (i.e., to the right of the appropriate limit line, and within the applicable rate of temperature change limit) is required ~~every 30 minutes~~, even when defueled, when RCS pressure or temperature conditions are undergoing planned changes (when operator actions, inclusive of maintenance activities, can directly influence vessel pressures or temperatures). To reflect this requirement for when this SR verification must be performed, the SR has been modified by a Note that only requires this Surveillance to be performed during system heatup and cooldown operations and inservice leakage and hydrostatic testing. ~~The 30 minute Frequency is considered~~

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.11.1 (continued)

~~reasonable in view of the control room indication available to monitor RCS status. Also, since temperature rate of change limits are specified in hourly increments, 30 minutes permits assessment and correction of minor deviations.~~

Insert 2

As noted on the Curve A figures, a maximum temperature change of less than or equal to 20°F in any one hour period has been established during inservice hydrostatic and leak testing operations above the pressure test curve (i.e., when operating to the right of curve A). If temperatures are changing faster than 20°F per hour before, during, or after a pressure test, Curve B must be applied.

Surveillance for heatup, cooldown, or inservice leakage and hydrostatic testing may be discontinued when the criteria given in the relevant plant procedure for ending the activity are satisfied.

(continued)

Provided for Information Only

SURVEILLANCE REQUIREMENTS

SR 3.4.11.3 and SR 3.4.11.4 (continued)

SR 3.4.11.3 and SR 3.4.11.4 have been modified by a Note that requires the Surveillance to be met only in MODES 1, 2, 3, and 4 during recirculation pump start. In addition, SR 3.4.11.3 is only required to be met when reactor steam dome pressure ≥ 25 psig. In MODE 5, the overall stress on limiting components is lower; therefore, ΔT limits are not required.

SR 3.4.11.5, SR 3.4.11.6, and SR 3.4.11.7

Limits on the reactor vessel flange and head flange temperatures are generally bounded by the other P/T limits during system heatups and cooldowns. However, in order to ensure the minimum temperature of 70°F is met before (and while) the flange is stressed by the full intended bolt preload (see USAR Section 5.3.2.1.1; Ref. 10), specific monitoring of flange temperature must be performed during operations

- approaching MODE 4 from MODE 5 (i.e., tensioning the head bolting studs when fuel is in the vessel),
- tensioning the head bolting studs when no fuel is in the vessel (no defined MODE), or
- in MODE 4 with RCS temperature less than or equal to certain specified values (100°F and 80°F).

Performance of these SRs provides additional assurance that the flange temperatures meet the LCO limits.

Regardless of the plant MODE, flange temperatures must be verified to be above the limits ~~within 30 minutes~~ before and while tensioning the reactor vessel head bolting studs to ensure that once the head is tensioned the limits are satisfied. When in MODE 4 with RCS temperature ≤ 80°F, ~~30 minute~~ checks of the flange temperatures are required because of the reduced margin to the limits. When in MODE 4 with RCS temperature ≤ 100°F, monitoring of the flange temperature is required ~~every 12 hours~~ to ensure the temperatures are within limits.

~~The 30 minute Frequencies reflect the urgency of maintaining the temperatures within limits, and also limit the time that the temperature limits could be exceeded. The 12 hour Frequency is reasonable based on the rate of temperature change possible at these temperatures~~.

Insert 2

(continued)

No Change - Included for Context

SURVEILLANCE REQUIREMENTS

SR 3.4.11.5, SR 3.4.11.6, and SR 3.4.11.7 (continued)

The applicable P/T limits are required to be met at all times, however the flange-specific SRs 3.4.11.6 and 3.4.11.7 are not required to be performed except in MODE 4 (head bolts fully tensioned) because:

1) as noted in the USAR (Ref. 10), the minimum temperature shown on the P/T figures is the fully preloaded boltup limit, and during the detensioning process, stresses on the flanges are being reduced, so the margin to brittle failure is increasing, and

2) when detensioning is complete, the bolting stresses on the studs and flange are relieved, so flange-specific SRs are not necessary until SR 3.4.11.5 becomes required again prior to and during tensioning of the head bolt studs.

During periods when these three flange SRs are not required to be performed, SR 3.4.11.1 remains in effect (regardless of fueled or defueled status), continuing to require monitoring of vessel temperatures when temperature conditions are undergoing planned changes (when operator actions, inclusive of maintenance activities, can directly influence vessel pressures or temperatures).

SR 3.4.11.8 and SR 3.4.11.9

Differential temperatures within the applicable limits ensure that thermal stresses resulting from increases in THERMAL POWER or recirculation loop flow during single recirculation loop operation will not exceed design allowances. Performing the Surveillance within 15 minutes before beginning such an increase in THERMAL POWER or

(continued)

BASES

APPLICABILITY (continued)

In MODES 3, 4, and 5, the limit is not applicable because the reactor is shut down. In these MODES, the reactor pressure is well below the required limit, and no anticipated events will challenge the overpressure limits.

ACTIONS

A.1

With the reactor steam dome pressure greater than the limit, prompt action should be taken to reduce pressure to below the limit and return the reactor to operation within the bounds of the analyses. The 15 minute Completion Time is reasonable considering the importance of maintaining the pressure within limits. This Completion Time also ensures that the probability of an accident while pressure is greater than the limit is minimal.

B.1

If the reactor steam dome pressure cannot be restored to within the limit within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 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 3.4.12.1

Verification that reactor steam dome pressure is ≤ 1045 psig ensures that the initial conditions of the vessel overpressure protection analysis are met. ~~Operating experience has shown the 12 hour Frequency to be sufficient for identifying trends and verifying operation within safety analyses assumptions~~. Insert 2

REFERENCES

1. USAR, Section 5.2.2.2.2.
2. USAR, Section 15.

Provided for Information Only

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.5.1.1

The flow path piping has the potential to develop voids and pockets of entrained air. Maintaining the pump discharge lines of the HPCS System, LPCS System, and LPCI subsystems full of water ensures that the systems will perform properly, injecting their full capacity into the RCS upon demand. This will also prevent a water hammer following an ECCS initiation signal. One acceptable method of ensuring the lines are full is to vent at the high points. ~~The 31 day Frequency is based on operating experience, on the procedural controls governing system operation, and on the gradual nature of void buildup in the ECCS piping~~. Insert 2

SR 3.5.1.2

Verifying the correct alignment for each manual, power operated, and automatic valves in the ECCS flow paths provides assurance that the proper flow paths exist for ECCS 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 that receives an initiation signal is allowed to be in a nonaccident position provided the valve will automatically reposition in the proper system response time. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves potentially 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 of this SR was derived from the Inservice Testing Program requirements for performing valve testing at least once every 92 days. The Frequency of 31 days is further justified because the valves are operated under procedural control and because improper valve alignment would only affect a single subsystem. This Frequency has been shown to be acceptable through operating experience~~. Insert 2

This SR is modified by a Note that allows LPCI subsystems to be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the RHR cut in permissive pressure in MODE 3, if

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.2 (continued)

capable of being manually realigned (remote or local) to the LPCI mode and not otherwise inoperable. This allows operation in the RHR shutdown cooling mode during MODE 3 if necessary.

SR 3.5.1.3

Verification ~~every 31 days~~ that ADS accumulator supply pressure is ≥ 150 psig assures adequate air pressure for reliable ADS operation. The accumulator on each ADS valve provides pneumatic pressure for valve actuation. The designed pneumatic supply pressure requirements for the accumulator are such that, following a failure of the pneumatic supply to the accumulator, at least two valve actuations can occur with the drywell at 70% of design pressure (Ref. 13). The ECCS safety analysis assumes only one actuation to achieve the depressurization required for operation of the low pressure ECCS. This minimum required pressure of 150 psig is provided by the Safety Related Instrument Air System. ~~The 31 day Frequency takes into consideration administrative control over operation of the Safety Related Instrument Air System and alarms for low air pressure.~~

Insert 2

SR 3.5.1.4

The performance requirements of the ECCS pumps are determined through application of the 10 CFR 50, Appendix K, criteria (Ref. 8). This periodic Surveillance is performed (in accordance with the ASME Code, Section XI, requirements for the ECCS pumps) to verify that the ECCS pumps will develop the flow rates required by the respective analyses. The ECCS pump flow rates ensure that adequate core cooling is provided to satisfy the acceptance criteria of 10 CFR 50.46 (Ref. 10).

The differential pressure for each listed system in the Surveillance Requirements (SRs) 3.5.1.4 and 3.5.2.5, is the difference between the containment wetwell pressure and the RPV pressure assumed in the LOCA analyses at the time of injection/spray. In addition to this listed differential pressure, the ECCS pumps also need to overcome

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.5.1.4 (continued)

elevation head loss and piping system friction loss at the required flow rate. This safety analysis value is determined by engineering calculation. In addition, pump operability may be limited by the ASME "required action" range value for these pumps. The Frequency for this Surveillance is in accordance with the Inservice Testing Program requirements.

SR 3.5.1.5

The ECCS subsystems are required to actuate automatically to perform their design functions. This Surveillance test verifies that, with a required system initiation signal (actual or simulated), the automatic initiation logic of HPCS, LPCS, and LPCI will cause the systems or subsystems to operate as designed, including actuation of the system throughout its emergency operating sequence, automatic pump startup, and actuation of all automatic valves to their required positions. This Surveillance also ensures that the HPCS System will automatically restart on an RPV low water level (Level 2) signal received subsequent to an RPV high water level (Level 8) trip and that the suction is automatically transferred from the CST to the suppression pool on a condensate storage tank low water level signal and on a suppression pool high water level signal. The LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," overlaps this Surveillance to provide complete testing of the assumed safety function.

HPCS testing may be performed in any MODE. ~~The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~.

Insert 2

~~With the exception of the HPCS LOGIC SYSTEM FUNCTIONAL TEST, the 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~.

(continued)

Provided for Information Only

SURVEILLANCE REQUIREMENTS

SR 3.5.1.5 (continued)

This SR is modified by a Note that excludes vessel injection/spray during the Surveillance. Since all active components are testable and full flow can be demonstrated by recirculation through the full flow test line, coolant injection into the RPV is not required during the Surveillance.

SR 3.5.1.6

The ADS designated S/RVs are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to verify that the mechanical portions (i.e., solenoids) of the ADS function operate as designed when initiated either by an actual or simulated initiation signal. SR 3.5.1.7 and the LOGIC SYSTEM FUNCTIONAL TEST performed in SR 3.3.5.1.6 overlap this Surveillance to provide complete testing of the assumed safety function.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~ Insert 2

This SR is modified by a Note that excludes valve actuation. This prevents an RPV pressure blowdown.

SR 3.5.1.7

A manual actuation of each required ADS valve is performed to verify that the valve is functioning properly. This SR can be demonstrated by one of two methods, which are described below. If performed by Method 1, plant startup is allowed prior to performing this test because valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME requirements (Ref. 17), prior to valve installation. Therefore, this SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for manual actuation after the required pressure is reached is sufficient to achieve stable conditions for testing and provides a reasonable time to complete the SR. If performed by Method 2, valve OPERABILITY has been demonstrated for all installed ADS valves based upon the successful offsite testing of the required test population.

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.7 (continued)

Method 1:

Manual actuation of the ADS valve with verification by the response of the turbine control valves or bypass valves, by a change in the measured steam flow, or any other method suitable to verify steam flow (e.g., tailpipe temperature or acoustic monitoring). Adequate reactor steam pressure must be available to perform this test to avoid damaging the valve. Also, adequate flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the ADS valves divert steam flow upon opening. Sufficient time is therefore allowed after the required pressure and flow is achieved to perform this test. Adequate pressure at which this test is performed is consistent with the pressure recommended by the valve manufacturer.

Method 2:

The required population of ADS S/RVs tested will be stroked in the relief mode during testing at a qualified offsite facility to verify proper operation of the S/RV. The successful performance of the S/RVs tested provides reasonable assurance that the remaining installed S/RVs will perform in a similar fashion. After the S/RVs are replaced, the power-operated actuator of all 19 S/RVs will be uncoupled from the S/RV stem, and cycled to ensure proper operation of the control circuit and actuator. Following cycling, the power-operated actuator is recoupled and the proper positioning of the stem nut is independently verified. This verifies that each S/RV will properly perform its intended function. If the valve actuator fails to operate due only to the failure of the solenoid but is capable of opening the valve on overpressure, the safety mode of the S/RV is considered OPERABLE.

When removing and replacing the S/RVs, Foreign Material Exclusion controls will be in place to minimize the potential for unwanted materials from entering into any S/RV opening or the piping discharge lines.

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.7 (continued)

SR 3.5.1.6 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1.6 overlap this Surveillance to provide complete testing of the safety function. ~~The Frequency of 24 months on a STAGGERED TEST BASIS Frequency ensures that both solenoids for each ADS valve power-operated actuator are alternately tested. The Frequency of the required power-operated actuator testing is based on the tests required by the ASME Code as implemented by the Inservice Testing Program of Specification 5.5.6. The testing Frequency required by the Inservice Testing Program is based on operating experience and valve performance. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint~~.

Insert 2

SR 3.5.1.8

This SR ensures that the ECCS RESPONSE TIMES are within limits for each of the ECCS injection and spray subsystems. This SR is modified by a note which identifies that the associated ECCS actuation instrumentation is not required to be response time tested. Response time testing of the remaining subsystem components is required. This is supported by Reference 15. Response time testing acceptance criteria are included in Reference 16.

~~ECCS RESPONSE TIME tests are conducted every 24 months. The 24 month Frequency is based on the need to perform this~~

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.8 (continued)

~~Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~ Insert 2

REFERENCES

1. USAR, Section 6.3.2.2.3.
2. USAR, Section 6.3.2.2.4.
3. USAR, Section 6.3.2.2.1.
4. USAR, Section 6.3.2.2.2.
5. USAR, Section 15.6.6.
6. USAR, Section 15.6.4.
7. USAR, Section 15.6.5.
8. 10 CFR 50, Appendix K.
9. USAR, Section 6.3.3.
10. 10 CFR 50.46.
11. USAR, Section 6.3.3.3.
12. Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCO's for ECCS Components," December 1, 1975.
13. USAR, Section 5.2.2.4.1.
14. ASME Code for Operation and Maintenance of Nuclear Power Plants.
15. NEDO-32291, "System Analyses for Elimination of Selected Response Time Testing Requirements," January 1994.
16. USAR, Section 6.3, Table 6.3-1.

ACTIONS

C.1, C.2, D.1, D.2, and D.3 (continued)

expected to result in the immediate release of appreciable fission products to the containment atmosphere. Actions must continue until all requirements of this Condition are satisfied.

The 4 hour Completion Time to restore at least one ECCS injection/spray subsystem to OPERABLE status ensures that prompt action will be taken to provide the required cooling capacity or to initiate actions to place the plant in a condition that minimizes any potential fission product release to the environment.

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1 and SR 3.5.2.2

The minimum water level of 16 ft 6 inches required for the suppression pool is periodically verified to ensure that the suppression pool will provide adequate net positive suction head (NPSH) for the ECCS pumps, recirculation volume, and vortex prevention. With the suppression pool water level less than the required limit, all ECCS injection/spray subsystems are inoperable unless they are aligned to an OPERABLE CST.

In order to account for positive drywell-to-containment differential pressures which affect indicated suppression pool water levels (but not volumes), a Suppression Pool Level Adjustment Table is contained in the Plant Data Book. This table lists water level adjustment for various drywell-to-containment differential pressures. The table adjustment factors are used to modify the indicated suppression pool water level to account for the positive drywell-to-containment differential pressures. Negative differential pressures are not required to be adjusted since these differential pressures were directly accounted for in the short-term analyses.

When the suppression pool level is < 16 ft 6 inches, the HPCS System is considered OPERABLE only if it can take suction from the CST and the CST volume is sufficient to provide the required NPSH for the HPCS pump. Therefore, a verification that either the suppression pool water level is

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1 and SR 3.5.2.2 (continued)

≥ 16 ft 6 inches or the HPCS System is aligned to take suction from the CST and the CST contains ≥ 249,700 gallons of water, assuring 150,000 gallons of water available for HPCS, equivalent to a volume of 53%, ensures that the HPCS System can supply makeup water to the RPV.

~~The 12 hour Frequency of these SRs was developed considering operating experience related to suppression pool and CST water level variations during the applicable MODES.~~

~~Furthermore, the 12 hour Frequency is considered adequate in view of other indications in the control room, including alarms, to alert the operator to an abnormal suppression pool or CST water level condition~~. Insert 2

SR 3.5.2.3

The Bases provided for SR 3.5.1.1 is applicable to SR 3.5.2.3.

SR 3.5.2.4

Verifying the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths provides assurance that the proper flow paths will exist for ECCS 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 that receives an initiation signal is allowed to be in a nonaccident position provided the valve will automatically reposition in the proper system response time. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves potentially 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 of this SR was derived from the Inservice Testing Program requirements for~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.2.4 (continued)

~~performing valve testing at least once every 92 days. The Frequency of 31 days is further justified because the valves are operated under procedural control and because improper valve alignment would only affect a single subsystem. This Frequency has been shown to be acceptable through operating experience~~.

Insert 2

In MODES 4 and 5, the RHR System may operate in the shutdown cooling mode to remove decay heat and sensible heat from the reactor. Therefore, RHR valves that are required for LPCI subsystem operation may be aligned for decay heat removal. This SR is modified by a Note that allows one LPCI subsystem to be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned (remote or local) to the LPCI mode and not otherwise inoperable. This will ensure adequate core cooling if an inadvertent vessel draindown should occur.

SR 3.5.2.5 and SR 3.5.2.6

The Bases provided for SR 3.5.1.4 and SR 3.5.1.5 are applicable to SR 3.5.2.5 and SR 3.5.2.6, respectively.

REFERENCES

1. USAR, Section 6.3.3.

SURVEILLANCE REQUIREMENTS

SR 3.5.3.1

The flow path piping has the potential to develop voids and pockets of entrained air. Maintaining the pump discharge line of the RCIC System full of water ensures that the system will perform properly, injecting its full capacity into the Reactor Coolant System upon demand. This will also prevent a water hammer following an initiation signal. One acceptable method of ensuring the line is full is to vent at the high points. ~~The 31 day Frequency is based on the gradual nature of void buildup in the RCIC piping, the procedural controls governing system operation, and operating experience.~~ Insert 2

SR 3.5.3.2

Verifying the correct alignment for manual, power operated, and automatic valves in the RCIC flow path provides assurance that the proper flow path will exist for RCIC operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since these were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an initiation signal is allowed to be in a nonaccident position provided the valve will automatically reposition in the proper system response time. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves. For the RCIC System, this SR also includes the steam flow path for the turbine and the flow controller position.

~~The 31 day Frequency of this SR was derived from the Inservice Testing Program requirements for performing valve testing at least every 92 days. The Frequency of 31 days is further justified because the valves are operated under procedural control and because improper valve position would affect only the RCIC System. This Frequency has been shown to be acceptable through operating experience.~~ Insert 2

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.3.3 and SR 3.5.3.4

The RCIC pump flow rates ensure that the system can maintain reactor coolant inventory during pressurized conditions with the RPV isolated. The flow tests for the RCIC System are performed at two different pressure ranges such that system capability to provide rated flow is tested both at the higher and lower operating ranges of the system. Additionally, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the RCIC System diverts steam flow. Since the required reactor steam pressure must be available to perform SR 3.5.3.3 and SR 3.5.3.4, sufficient time is allowed after adequate pressure and flow are achieved to perform these SRs. Reactor startup is allowed prior to performing the low pressure Surveillance because the reactor pressure is low and the time to satisfactorily perform the Surveillance is short. The reactor pressure is allowed to be increased to normal operating pressure since it is assumed that the low pressure test has been satisfactorily completed and there is no indication or reason to believe that RCIC is inoperable. Therefore, these SRs are modified by Notes that state the Surveillance are not required to be performed until 12 hours after the reactor steam pressure and flow are adequate to perform the test.

~~A 92 day Frequency for SR 3.5.3.3 is consistent with the Inservice Testing Program requirements. The 24 month Frequency for SR 3.5.3.4 is based on the need to perform this Surveillance under the conditions that apply just prior to or during startup from a plant outage. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

SR 3.5.3.5

The RCIC System is required to actuate automatically to perform its design function. This Surveillance verifies that with a required system initiation signal (actual or simulated) the automatic initiation logic of RCIC will cause the system to operate as designed, including actuation of the system throughout its emergency operating sequence,

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.5.3.5 (continued)

automatic pump startup and actuation of all automatic valves to their required positions. This Surveillance test also ensures that the RCIC System will automatically restart on an RPV low water level (Level 2) signal received subsequent to an RPV high water level (Level 8) trip and that the suction is automatically transferred from the CST to the suppression pool on a condensate storage tank low water level signal and on a suppression pool high water level signal. The LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.2, "Reactor Core Isolation Cooling (RCIC) System Instrumentation," overlaps this Surveillance to provide complete testing of the assumed safety function.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~ Insert 2

This SR is modified by a Note that excludes vessel injection during the Surveillance. Since all active components are testable and full flow can be demonstrated by recirculation through the full flow test line, coolant injection into the RPV is not required during the Surveillance.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 33.

2. USAR, Section 5.4.6.

3. Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCO's for ECCS Components," December 1, 1975.

BASES

SURVEILLANCE

SR 3.6.1.2.1 (continued)

leakage rate. The Frequency is required by the Primary Containment Leakage Rate Testing Program.

The Appendix J exemption related to air lock testing approved to date for PNPP is:

> Section III.D.2(b)(ii) - The air lock seal leakage test of Section III.D.2(b)(iii) of Appendix J may be substituted (following normal air lock door opening) for the full-pressure test provided that no maintenance has been performed that would affect the air lock's sealing capability (Reference 5)

The SR has been modified by two Notes. Note 1 states that an inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. This is considered reasonable since either air lock door is capable of providing a fission product barrier in the event of a DBA. Note 2 has been added to this SR, requiring the results to be evaluated against the acceptance criteria applicable to SR 3.6.1.1.1 during operation in MODES 1, 2, and 3. This ensures that air lock leakage is properly accounted for in determining the combined Type B and C primary containment leakage rate. Since the combined Type B and C primary containment leakage rate is only applicable in MODES 1, 2, and 3, the Note 2 requirement is imposed only during these MODES.

SR 3.6.1.2.2

The Service and Instrument Air System pressure in the header to the primary containment air lock is verified to be at ≥ 90 psig ~~every 7 days~~ to ensure that the seal system remains viable. It must be checked because it could bleed down during or following access through the air lock, which occurs regularly. ~~The 7 day Frequency has been shown to be acceptable through operating experience and is considered adequate in view of the other indications available to operations personnel that the seal pressure is low~~. Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.2.3

The air lock interlock mechanism is designed to prevent simultaneous opening of both doors in the air lock. Since both the inner and outer doors of an air lock are designed to withstand the maximum expected post accident primary containment pressure (Ref. 3), closure of either door will support primary containment OPERABILITY. Thus, the interlock feature supports primary containment OPERABILITY while the air lock is being used for personnel transit in and out of the containment. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous inner and outer door opening will not inadvertently occur. Due to the nature of this interlock, and given that the interlock mechanism is only challenged when the primary containment air lock door is opened, this test is only required to be performed upon entering or exiting a primary containment air lock, ~~but is not required more frequently than once per 184 days. The 184 day Frequency is based on engineering judgment and is considered adequate in view of other administrative controls such as indications of air lock door status available to operations personnel~~. Add period Insert 2

SR 3.6.1.2.4

A seal pneumatic system test to ensure that pressure does not decay at a rate equivalent to > 1.5 psig for a period of 24 hours from an initial pressure of 90 psig is an effective leakage rate test to verify system performance. ~~The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~ Insert 2

REFERENCES

1. USAR, Section 3.8.

2. 10 CFR 50, Appendix J, Option B.

3. USAR, Table 6.2-1.

4. USAR, Section 15.7.6.

5. PNPP Safety Evaluation Report Supplement 7, Section 6.2.6 "Containment Leakage Testing," November 1985.

ACTIONS (continued)

F.1, G.1, and G.2

If any Required Action and associated Completion Time cannot be met, action is required to suspend activities that represent a potential for releasing significant amounts of radioactive material, thus placing the unit in a condition that minimizes risk. If applicable, movement of recently irradiated fuel assemblies in the primary containment must be immediately suspended (Required Action F.1). Suspension of these activities shall not preclude completion of movement of a component to a safe condition.

Also, if operations with a potential for draining the reactor vessel (OPDRVs) are ongoing, action must be immediately initiated to suspend OPDRVs (Required Action G.1) to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended. If suspending the OPDRVs would result in isolating a required residual heat removal (RHR) shutdown cooling pathway, alternative Required Action G.2 may be taken in lieu of G.1, to immediately initiate action to restore the valves to OPERABLE status. This allows RHR to remain in service while actions are being taken to restore the valves.

In addition, in MODE 4 or 5, one of the RHR shutdown cooling suction penetration isolation valves (1E12-F008 or 1E12-F009) is required to be OPERABLE since LCO 3.3.6.1, "Primary Containment and Drywell Isolation Instrumentation" requires one trip system of the Reactor Vessel Water Level-Low Level 3 instrumentation to be OPERABLE. Therefore, if Condition G becomes applicable due to inoperability of the required 1E12-F008 or 1E12-F009 valve, Required Action G.2 must be taken, in order to restore the ability to isolate the RPV during a vessel draindown event such as an inadvertent valve opening in the RHR Shutdown Cooling system, as described in the Bases for Table 3.3.6.1-1 Function 5.b.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.1

Each inboard 42 inch (1M14-F045 and 1M14-F085) primary containment purge supply and exhaust isolation valve is required to be verified sealed closed ~~at 31 day intervals~~ because the primary containment purge valves are not fully qualified to close under accident conditions. This SR is designed to ensure that a gross breach of primary containment is not caused by an inadvertent opening of a

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.1 (continued)

primary containment purge valve. Detailed analysis of these purge supply and exhaust isolation valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Primary containment purge valves that are sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power, removing the air supply to the valve operator, or providing administrative control of the valve control switches. In this application, the term "sealed" has no connotation of leak tightness. ~~The 31 day Frequency is based on primary containment purge valve use during unit operations~~. Insert 2

This SR allows a valve that is open under administrative controls to not meet the SR during the time the valve is open. Opening a purge valve under administrative controls

(continued)

SURVEILLANCE REQUIREMENT

SR 3.6.1.3.1 (continued)

is restricted to one valve in a penetration flow path at a given time (refer to discussion for Note 1 of the ACTIONS) in order to effect repairs to that valve. This allows one purge valve to be opened without resulting in a failure of the Surveillance and resultant entry into the ACTIONS for this purge valve, provided the stated restrictions are met. Condition D must be entered during this allowance, and the valve opened only as necessary for effecting repairs. Each purge valve in the penetration flow path may be alternately opened, provided one remains sealed closed, if necessary, to complete repairs on the penetration.

The SR is modified by a Note stating that the inboard 42 inch primary containment purge supply and exhaust isolation valves are only required to be sealed closed in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, the purge valves may not be capable of closing before the pressure pulse affects systems downstream of the purge valves and the subsequent release of radioactive material will exceed limits prior to the closing of the purge valves. At other times when the purge valves are required to be capable of closing (e.g., during OPDRVs), pressurization concerns are not present and the purge valves are allowed to be open.

SR 3.6.1.3.2

This SR verifies that the 18 inch (1M14-F190, 1M14-F195, 1M14-F200, and 1M14-F205) and outboard 42 inch (1M14-F040 and 1M14-F090) primary containment purge supply and exhaust isolation valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have purge valve leakage outside the limits (Condition D).

The SR is also modified by a Note (Note 1) stating that primary containment purge valves are only required to be closed in MODES 1, 2, and 3. At times other than MODE 1, 2, or 3 when the purge valves are required to be capable of closing (e.g., during OPDRVs) pressurization concerns are not present and the purge valves are allowed to be open (automatic isolation capability would be required by SR 3.6.1.3.5, SR 3.6.1.3.7, and SR 3.6.1.3.8).

(continued)

SURVEILLANCE REQUIREMENT

SR 3.6.1.3.2 (continued)

The SR is modified by a Note (Note 2) stating that the SR is not required to be met when the purge valves are open for the stated reasons. The Note states that these valves may be opened for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances or special testing on the purge system (e.g., testing of the containment and drywell ventilation radiation monitors) that require the valves to be open. These primary containment purge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. ~~The 31 day Frequency is consistent with other PCIV requirements.~~

Insert 2

SR 3.6.1.3.3

This SR verifies that each primary containment isolation manual valve and blind flange that is located outside primary containment, drywell, and steam tunnel and not locked, sealed, or otherwise secured, and is required to be closed during accident conditions, is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the primary containment boundary is within design limits. This SR does not require any testing or isolation device manipulation. Rather, it involves verification that those devices outside primary containment, drywell, and steam tunnel, and capable of being mispositioned, are in the correct position. ~~Since verification of isolation device position for devices outside primary containment, drywell, and steam tunnel is relatively easy, the 31 day Frequency was chosen to provide added assurance that the devices are in the correct positions. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.~~

Insert 2

Three Notes are added to this SR. Note 1 provides an exception to meeting this SR in MODES other than MODES 1, 2, and 3. When not operating in MODES 1, 2, or 3, the primary containment boundary, including verification that required penetration flow paths are isolated, is addressed by LCO 3.6.1.10, "Primary Containment-Shutdown" (SR 3.6.1.10.1). The second Note applies to valves and blind flanges located in high radiation areas and allows them to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these isolation devices, once they have been

(continued)

No Change - Included for Context

SURVEILLANCE REQUIREMENT

SR 3.6.1.3.3 (continued)

verified to be in the proper position, is low. A third Note is included to clarify that PCIVs open under administrative controls are not required to meet the SR during the time the PCIVs are open.

SR 3.6.1.3.4

This SR verifies that each primary containment isolation manual valve and blind flange located inside primary containment, drywell, or steam tunnel, and not locked, sealed, or otherwise secured and required to be closed during accident conditions, is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside the primary containment boundary is within design limits. For devices inside primary containment, drywell, or steam tunnel, the Frequency of "prior to entering MODE 2 or 3 from MODE 4, if not performed within the previous 92 days," is appropriate since these devices are operated under administrative controls and the probability of their misalignment is low. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

Four Notes are added to this SR. Note 1 provides an exception to meeting this SR in MODES other than MODES 1, 2, and 3. When not operating in MODES 1, 2, or 3, the primary containment boundary, including verification that required penetration flow paths are isolated, is addressed by LCO 3.6.1.10, "Primary Containment- Shutdown" (SR 3.6.1.10.1). The second Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these isolation devices, once they have been verified to be in their proper position, is low. A third Note is included to clarify that PCIVs that are open under administrative controls are not required to meet the SR during the time that the PCIVs are open.

A fourth Note addresses removal of the Inclined Fuel Transfer System (IFTS) blind flange in MODES 1, 2, and 3 for up to 60 days per cycle. The 60 days per operating cycle is

(continued)

Provided for Information Only

SURVEILLANCE REQUIREMENT

SR 3.6.1.3.5 (continued)

full closure isolation time is demonstrated by SR 3.6.1.3.7. The isolation time test ensures that the valve will isolate in a time period less than or equal to that assumed in the safety analysis. The isolation time and Frequency of this SR are in accordance with the Inservice Testing Program.

SR 3.6.1.3.6

For primary containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J (Ref. 4), is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. ~~Based on this observation, and the importance of maintaining this penetration leak tight (due to the direct path between primary containment and the environment), a Frequency of 184 days was established.~~ Additionally, this SR must be performed within 92 days after opening the valve. The 92 day ~~Frequency~~ was chosen recognizing that cycling the valve could introduce additional seal degradation (beyond that which occurs to a valve that has not been opened). Thus, decreasing the interval ~~(from 184 days)~~ is a prudent measure after a valve has been opened. Additionally, a leak rate acceptance criteria of 0.05 L_a has been assigned to these valves.

Insert 2

insert "s" (days)

Start new paragraph here

The SR is modified by a Note stating that the primary containment purge valves are only required to meet leakage rate testing requirements in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, purge valve leakage must be minimized to ensure offsite radiological release is within limits. At other times when the purge valves are required to be capable of closing (e.g., during OPDRVs), pressurization concerns are not present and the purge valves are not required to meet any specific leakage criteria.

SR 3.6.1.3.7

Verifying that the full closure isolation time of each MSIV is within the specified limits is required to demonstrate

(continued)

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SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.7 (continued)

OPERABILITY. The full closure isolation time test ensures that the MSIV will isolate in a time period that does not exceed the times assumed in the DBA analyses. The Frequency of this SR is in accordance with the Inservice Testing Program. Additionally, the MSIVs must meet an average stroke time. This average stroke time shall be calculated using the stroke times of the fastest valve in each main steam line, and this average shall be ≥ 3 seconds.

SR 3.6.1.3.8

Automatic PCIVs close on a primary containment isolation signal to prevent leakage of radioactive material from primary containment following a DBA or other accidents. This SR ensures that each automatic PCIV will actuate to its isolation position on a primary containment isolation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.1.5 overlaps this SR to provide complete testing of the safety function. HPCS Injection Valve, 1E22-F004 and HPCS Test Valve to Supr Pool, 1E22-F023 may be tested in any MODE. ~~With exception of 1E22-F004 and 1E22-F023, the 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

SR 3.6.1.3.9

This SR ensures that the leakage rate of secondary containment bypass leakage paths is less than the specified leakage rate. This provides assurance that the assumptions in the radiological evaluations of Reference 1 are met. The leakage rate of each bypass leakage path is assumed to be the maximum pathway leakage (leakage through the worse of the two isolation valves) unless the penetration is isolated by use of a closed manual valve, a closed and de-activated automatic valve, or a blind flange. In this case, the leakage rate of the isolated bypass leakage path is assumed to be the actual pathway leakage through the isolation

(continued)

Provided for Information Only

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.11 (continued)

demonstrated at the frequency of the leakage test requirements of the Primary Containment Leakage Rate Testing Program.

This SR is modified by a Note that states these valves are only required to meet the combined leakage rate in MODES 1, 2, and 3 since this is when the Reactor Coolant System is pressurized and primary containment is required. In some instances, the valves are required to be capable of automatically closing during MODES other than MODES 1, 2, and 3. However, specific leakage rate limits are not applicable in these other MODES or conditions.

A second Note states that the Feedwater lines are excluded from this particular hydrostatic (water) testing program. This is because water leakage from the stem, bonnet and seat of the third, high integrity valves in the feedwater lines (the gate valves) is controlled by the Primary Coolant Sources Outside Containment Program (Technical Specification 5.5.2). The acceptance criteria for the Primary Coolant Sources Outside Containment Program is 7.5 gallons per hour.

SR 3.6.1.3.12

Verifying that each outboard 42 inch (1M14-F040 and 1M14-F090) primary containment purge supply and exhaust isolation valve is blocked to restrict opening to ≤ 50° is required to ensure that the valves can close under DBA conditions within the time limits assumed in the analyses of References 2 and 3.

The SR is modified by a Note stating that this SR is only required to be met in MODES 1, 2, and 3. If a LOCA inside primary containment occurs in these MODES, the purge valves must close to maintain containment leakage within the values assumed in the accident analysis. At other times when the purge valves are required to be capable of closing (e.g., during OPDRVs), pressurization concerns are not present, thus the purge valves can be fully open. ~~The 24 month Frequency is appropriate because the blocking devices are typically removed only during a refueling outage.~~ Insert 2

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.1.3.13

This SR ensures that the 2 inch Backup Hydrogen Purge System isolation valves are closed as required, or, if open, open for an allowable reason. These backup hydrogen purge isolation valves are fully qualified to close under accident conditions; therefore, these valves are allowed to be open for limited periods of time. This SR has been modified by a Note indicating the SR is not required to be met when the backup hydrogen purge valves are open for pressure control, ALARA or air quality considerations for personnel entry, or surveillances or special testing of the Backup Hydrogen Purge System (e.g., testing of the containment and drywell ventilation radiation monitors) that require the valves to be open. ~~The 31 day Frequency is consistent with other drywell purge valve requirements.~~ Insert 2

REFERENCES

1. USAR, Chapter 15.
2. USAR, Section 6.2.
3. Plant Data Book, Tab G.
4. 10 CFR 50, Appendix J, Option B.
5. USAR, Section 15.7.6

BASES

ACTIONS

B.1 and B.2 (continued)

which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.4.1

Verifying that primary containment to secondary containment differential pressure is within limits ensures that operation remains within the limits assumed in the primary containment analysis. ~~The 12 hour Frequency of this SR was developed based on operating experience related to trending primary containment pressure variations during the applicable MODES. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal primary containment pressure condition.~~ Insert 2

REFERENCES

1. USAR, Section 6.2.1.
2. USAR, Section 6.2.1.1.4.2.
3. USAR, Section 6.2.

APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause a release of radioactive material to primary containment. In MODES 4 and 5, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining primary containment average air temperature within the limit is not required in MODE 4 or 5.

ACTIONS

A.1

When primary containment average air temperature is not within the limit of the LCO, it must be restored within 8 hours. This Required Action is necessary to return operation to within the bounds of the primary containment analysis. The 8 hour Completion Time is acceptable, considering the sensitivity of the analysis to variations in this parameter, and provides sufficient time to correct minor problems.

B.1 and B.2

If the primary containment average air temperature cannot be restored to within limit within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.5.1

Verifying that the primary containment average air temperature is within the LCO limit ensures that operation remains within the limits assumed for the primary containment analyses. In order to determine the primary containment average air temperature, an arithmetic average is calculated, using measurements taken at locations within the primary containment selected to provide a representative sample of the overall primary containment atmosphere.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.5.1 (continued)

	Elevation	Azimuth
a.	720'-6"	280°
b.	720'-6"	100°
c.	689'-4"	40°
d.	689'-4"	210°
e.	647'-0"	54°
f.	645'-6"	251°
g.	613'-0"	69°
h.	613'-0"	251°

Use at least one reading from each elevation for an arithmetical average. However, all available instruments should be used in calculating the arithmetical average.

~~The 24 hour Frequency of this SR is considered acceptable based on observed slow rates of temperature increase within primary containment as a result of environmental heat sources (due to large volume of the primary containment). Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal primary containment air temperature condition.~~

Insert 2

REFERENCES

1. USAR, Section 6.2.

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SURVEILLANCE REQUIREMENTS

SR 3.6.1.6.1

A manual actuation of each required LLS valve is performed to verify that the valve is functioning properly. This SR can be demonstrated by one of two methods, which is described below. If performed by Method 1, plant startup is allowed prior to performing this test because valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME requirements (Ref. 4), prior to valve installation. Therefore, this SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for manual actuation after the required pressure is reached is sufficient to achieve stable conditions for testing and provides a reasonable time to complete the SR. If performed by Method 2, valve OPERABILITY has been demonstrated for all installed LLS valves based upon successful offsite testing of the required test population.

Method 1:

Manual actuation of the LLS valve with verification by the response of the turbine control valves or bypass valves, by a change in the measured steam flow, or any other method suitable to verify steam flow (e.g., tailpipe temperature or acoustic monitoring). Adequate reactor steam pressure must be available to perform this test to avoid damaging the valve. Also, adequate flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the LLS valves divert steam flow upon opening. Sufficient time is therefore allowed after the required pressure and flow are achieved to perform this test. Adequate pressure at which this test is performed is consistent with the pressure recommended by the valve manufacturer.

(continued)

Provided for Information Only

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.1.6.1

Method 2:

The required population of LLS S/RVs tested will be stroked in the relief mode during testing at a qualified offsite facility to verify proper operation of the S/RV. The successful performance of the S/RVs tested provides reasonable assurance that the remaining installed S/RVs will perform in a similar fashion. After the S/RVs are replaced, the power-operated actuator of all 19 S/RVs will be uncoupled from the S/RV stem, and cycled to ensure proper operation of the control circuit and actuator. Following cycling, the power-operated actuator is recoupled and the proper positioning of the stem nut is independently verified. This verifies that each S/RV will properly perform its intended function. If the valve actuator fails to operate due only to the failure of the solenoid but is capable of opening the valve on overpressure, the safety mode of the S/RV is considered OPERABLE.

When removing and replacing the S/RVs, Foreign Material Exclusion controls will be in place to minimize the potential for unwanted materials from entering into any S/RV opening or the piping discharge lines.

~~The STAGGERED TEST BASIS Frequency ensures that both solenoids for each LLS valve power-operated actuator are alternately tested. The 24 Month Frequency of the required power operated actuator testing is based on the tests required by the ASME Code (Ref. 3) as implemented by the Inservice Testing Program of Specification 5.5.6. The testing Frequency required by the Inservice Testing Program is based on operating experience and valve performance. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

Insert 2

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENT (continued)

SR 3.6.1.6.2

The LLS function S/RVs are required to actuate automatically upon receipt of specific initiation signals. A functional test is performed to verify that the mechanical portions (i.e., solenoids) of the automatic LLS function operate as designed when initiated either by an actual or simulated automatic initiation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.4.4 overlaps this SR to provide complete testing of the safety function.

~~The 24 month Frequency is based on the need to perform this Surveillance during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~. Insert 2

This SR is modified by a Note that excludes valve actuation. This prevents a reactor pressure vessel pressure blowdown.

REFERENCES

1. GESSAR-II, Appendix 3B, Attachment A, Section 3BA.8.

2. USAR, Section 7.6.1.11.

3. ASME Code for Operation and Maintenance of Nuclear Power Plants.

ACTIONS (continued)

B.1

With two RHR containment spray subsystems inoperable, one subsystem must be restored to OPERABLE status within 8 hours. In this Condition, there is a substantial loss of the primary containment bypass leakage mitigation function. The 8 hour Completion Time is based on this loss of function and is considered acceptable due to the low probability of a DBA and because alternative methods to remove heat from primary containment are available.

C.1 and C.2

If the inoperable RHR containment spray subsystem cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.7.1

Verifying the correct alignment for manual, power operated, and automatic valves in the RHR containment spray mode flow path provides assurance that the proper flow paths will exist for system operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these were verified to be in the correct position prior to locking, sealing, or securing. 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 of this SR is justified because the valves are operated under procedural control and because improper valve position would affect only a single subsystem. This Frequency has been shown to be acceptable based on operating experience.~~

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.1.7.1 (continued)

A Note has been added to this SR that allows RHR containment spray subsystems to be considered OPERABLE during alignment and operation for decay heat removal with reactor steam pressure less than the RHR cut in permissive pressure in MODE 3, if capable of being manually realigned (remote or local) and not otherwise inoperable. This allows operation in the RHR shutdown cooling mode during MODE 3 if necessary.

SR 3.6.1.7.2

Verifying each RHR pump develops a flow rate ≥ 5250 gpm with flow through the associated heat exchangers ensures that pump performance has not degraded below the required flow rate during the cycle. It is tested in the suppression pool cooling mode to demonstrate pump OPERABILITY without spraying down equipment in primary containment. Flow is a normal test of centrifugal pump performance required by the ASME Code (Ref. 2). This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice inspections confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this SR is in accordance with the Inservice Testing Program.

SR 3.6.1.7.3

This SR verifies that each RHR containment spray subsystem automatic valve actuates to its correct position upon receipt of an actual or simulated automatic initiation signal. Actual spray initiation is not required to meet this SR. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.3.5 overlaps this SR to provide complete testing of the safety function. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on~~

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.7.3 (continued)

~~operating experience, and is consistent with a typical industry refueling cycle~~.

Insert 2

SR 3.6.1.7.4

This Surveillance is performed following maintenance which could result in nozzle blockage using an inspection of the nozzle or an air or smoke flow test to verify that the spray nozzles are not obstructed and that flow will be provided when required. The frequency is adequate to detect degradation in performance due to the passive nozzle design and its normally dry state and has been shown to be acceptable through operating experience.

REFERENCES

1. USAR, Section 6.2.1.1.5.

2. ASME Code for Operation and Maintenance of Nuclear Power Plants.

Provided for Information Only

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.1.8.1

Proper operation of the ECCS water leg pump is required to verify the capability of the FWLCS to provide sufficient sealing water to each feedwater motor-operated containment isolation valve to initiate and maintain the fluid seal for long term leakage control. ~~The 31 day frequency is considered adequate based on operating experience, on the procedural controls governing ECCS operation, and on the low probability of major changes in the water leg pump capability during the period.~~ Insert 2

REFERENCES

1. USAR, Section 15.6.5.

Provided for Information Only

BASES

ACTIONS

A.1 and A.2 (continued)

immediately initiated to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Action must continue until OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.10.1

This SR verifies that each primary containment penetration that could communicate gaseous fission products to the environment during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive gases outside of the primary containment boundary is within design limits. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed manual valve, a closed and de-activated automatic valve, and a blind flange. This SR does not require any testing or isolation device manipulation. Rather, it involves verification that these isolation devices capable of being mispositioned are in the correct position. ~~The 31 day Frequency was chosen to provide added assurance that the isolation devices remain in the correct positions.~~

Insert 2

This SR is modified by three Notes. The first Note does not require this SR to be met for pathways capable of being isolated by OPERABLE primary containment automatic isolation valves. The second Note permits the Fire Protection System manual hose reel containment isolation valves (1P54-F726 and 1P54-F727) to be open during shutdown conditions to supply fire mains. The third Note is included to clarify that manual valves opened under administrative controls are not required to meet the SR during the time the manual valves are open.

REFERENCES

1. Deleted.
2. USAR, Section 15.7.6.

Provided for Information Only

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.1.11.1

Each vacuum breaker is verified to be closed to ensure that this potential large leakage path is not present. This Surveillance is performed by observing the vacuum breaker position indication. ~~The 24 hour Frequency is based on engineering judgement, is considered adequate in view of other indications of vacuum breaker status available to the plant personnel, and has been shown to be acceptable through operating experience.~~ Insert 2

Two Notes have been added to this Surveillance Requirement. The first Note states that the Surveillance is not required to be met when the vacuum breakers are open during other surveillance tests. Both SR 3.6.1.11.2 and SR 3.6.1.11.3 require the vacuum breakers to cycle open and closed. Therefore, the Note is added to clarify that the vacuum breakers do not have to be closed during these Surveillances. Note 2 states that the Surveillance is not required to be met when the vacuum breakers are performing their intended function (i.e., relieving a differential pressure condition between the containment atmosphere and the atmosphere outside containment). Small differential pressure conditions can exist during normal plant operation which could cause one or more of the vacuum breakers to open. Since these occurrences are normal, and are within the containment breakers' intended function, the Note is added to provide this clarification.

SR 3.6.1.11.2

Each required vacuum breaker and its associated isolation valve must be cycled through at least one complete cycle of full travel. This provides assurance that the safety analysis assumptions are valid. Performance of this SR includes a CHANNEL FUNCTIONAL TEST of the isolation valve actuation instrumentation. ~~A 31 day Frequency was chosen to provide additional assurance that the required vacuum breakers and their associated isolation valves are OPERABLE.~~

Insert 2

SR 3.6.1.11.3

Verification of each required vacuum breaker opening pressure differential is necessary to ensure that the safety analysis assumption that the vacuum breaker will begin to open at a differential pressure $\leq$ 0.1 psid and to be fully

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.11.3 (continued)

open at a differential pressure of ≤ 0.2 psid (outside containment to containment) is valid. Verification that the vacuum breaker isolation valves will open assures that the vacuum breakers are available to perform their intended function. Two of the vacuum breaker isolation valves have an opening allowable value of ≥0.052 psid and ≤0.148 psid, while the other two vacuum breaker isolation valves have an opening allowable of ≥0.064 psid and ≤0.160 psid (containment to outside containment).

Performance of this SR includes a CHANNEL CALIBRATION of the isolation valve actuation instrumentation. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~ Insert 2

REFERENCES

1. USAR, Section 6.2.1.1.4.2.

2. USAR, Section 15.7.6.

Provided for Information Only

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.1.12.1

Verifying that the primary containment average temperature and relative humidity are within limits ensures that operation remains within limits assumed in the primary containment analyses for initiation of RHR containment spray (Ref. 1).

~~The 24 hour Frequency of this SR is considered acceptable based on the observed slow rates of temperature and relative humidity changes within the primary containment due to the large volume of the primary containment~~.

Insert 2

REFERENCES

1. USAR, Section 6.2.1.1.4.2.
2. USAR, Section 15.7.6.

Provided for Information Only

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.2.1.1

The suppression pool average temperature is regularly monitored to ensure that the required limits are satisfied. Average temperature is determined by taking an average of the functional suppression pool water temperature channels. ~~The 24 hour Frequency has been shown to be acceptable based on operating experience.~~ Insert 2 When heat is being added to the suppression pool by testing, however, it is necessary to monitor suppression pool temperature more frequently. The 5 minute Frequency during testing is justified by the rates at which testing will heat up the suppression pool, has been shown to be acceptable based on operating experience, and provides assurance that allowable pool temperatures are not exceeded. The ~~Frequencies are~~ Frequency is further justified in view of other indications available in the control room, including alarms, to alert the operator to an abnormal suppression pool average temperature condition.

REFERENCES

1. USAR, Section 6.2.
2. USAR, Section 15.2.

BASES

ACTIONS

B.1 and B.2 (continued)

power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.2.2.1

Verification of the suppression pool water level is to ensure that the required limits are satisfied. ~~The 24 hour Frequency of this SR was developed considering operating experience related to water level variations during the applicable MODES and to assessing the proximity to the specified LCO level limits. Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal suppression pool water level condition.~~ Insert 2

REFERENCES

1. USAR, Section 6.2.

Provided for Information Only

BASES

ACTIONS (continued)

B.1 and B.2

If the Required Action and associated Completion Time of Condition A cannot be met or if two RHR suppression pool cooling subsystems are inoperable, 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 and to MODE 4 within 36 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.2.3.1

Verifying the correct alignment for manual, power operated, and automatic valves, in the RHR suppression pool cooling mode flow path provides assurance that the proper flow path exists for system 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 being locked, sealed, or secured. A valve that receives an initiation signal is allowed to be in the nonaccident position, provided the valve will automatically reposition in the proper stroke time. This is acceptable, since the RHR suppression pool cooling mode is manually initiated. 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 Frequency of 31 days is justified because the valves are operated under procedural control, improper valve position would affect only a single subsystem, the probability of an event requiring initiation of the system is low, and the subsystem is a manually initiated system. This Frequency has been shown to be acceptable, based on operating experience.~~

Insert 2

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.2.4.1

The upper containment pool water level and if, applicable, the suppression pool water level, is regularly monitored to ensure that the required limits are satisfied. ~~The 24 hour Frequency of this SR was developed considering operating experience related to water level variations during the applicable MODES and considering the low probability of a DBA occurring between surveillances. Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to abnormal water level conditions.~~

Insert 2

SR 3.6.2.4.2

The upper containment pool water temperature is regularly monitored to ensure that the required limit is satisfied. ~~The 24 hour Frequency was developed based on operating experience related to upper containment pool temperature variations during the applicable MODES.~~

Insert 2

SR 3.6.2.4.3

Verifying the correct alignment for manual, power operated, and automatic valves in the SPMU System flow path provides assurance that the proper flow paths will exist for system operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves are verified to be in the correct position prior to being locked, sealed, or secured. This SR does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

~~The Frequency of 31 days is justified because the valves are operated under procedural control and because improper valve position would affect only a single subsystem. This Frequency has been shown to be acceptable through operating experience.~~

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.2.4.4

The upper containment pool has two gates used to separate the pool into distinct sections to facilitate fuel transfer and maintenance during refueling operations which, when installed, limit personnel exposure and ensure adequate water submergence of the separator when the separator is stored in the pool. The SPMU System dump line penetrations are located in the steam separator storage section of the pool. To provide the required SPMU System dump volume to the suppression pool, the steam dryer storage/reactor well pool gate must be removed (or placed in its stored position) to allow communication between the various pool sections. The fuel transfer pool gate may be in place, removed, or placed in its stored position, since the volume of water in the fuel transfer pool is not required for SPMU. ~~The 31 day Frequency is appropriate because the gates are moved under procedural control and only the infrequent movement of these gates is required in MODES 1, 2, and 3.~~ Insert 2

SR 3.6.2.4.5

This SR verifies that each SPMU subsystem automatic valve actuates to its correct position on receipt of an actual or simulated automatic initiation signal. This includes verification of the correct automatic positioning of the valves and of the operation of each interlock and timer. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.4.6 overlaps this SR to provide complete testing of the safety function. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~ Insert 2

This SR is modified by a NOTE that excludes makeup to the suppression pool. Since all active components are testable, makeup to the suppression pool is not required.

(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 3.6.3.2.1 and SR 3.6.3.2.2

These SRs verify that there are no physical problems that could affect the hydrogen igniter operation. Since the hydrogen igniters are mechanically passive, they are not subject to mechanical failure. The only credible failures are loss of power or burnout. The verification that each required hydrogen igniter is energized is performed by circuit current versus voltage measurement.

~~The Frequency of 184 days has been shown to be acceptable through operating experience because of the low failure occurrence, and provides assurance that hydrogen burn capability exists between the more rigorous 24 month Surveillances. Operating experience has shown these components usually pass the Surveillance when performed at a 184 day Frequency. Additionally, the Surveillance must be performed every 92 days if four or more hydrogen igniters in any division are inoperable. The 92 day Frequency was chosen, recognizing that the failure occurrence is higher than normal. Thus, decreasing the Frequency from 184 days to 92 days is a prudent measure, since only two more inoperable hydrogen igniters (for a total of six) will result in an inoperable igniter division. SR 3.6.3.2.2 is modified by a Note that indicates that the Surveillance is not required to be performed until 92 days after four or more hydrogen igniters in the division are discovered to be inoperable.~~

Insert 2

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.2.3 and SR 3.6.3.2.4

These functional tests are performed ~~every 24 months~~ to verify system OPERABILITY. The current draw to develop a surface temperature of ≥ 1700°F is verified for hydrogen igniters in inaccessible areas, e.g., in a high radiation area. Additionally, the surface temperature of each accessible hydrogen igniter is measured to be ≥ 1700°F to demonstrate that a temperature sufficient for ignition is achieved. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~. Insert 2

REFERENCES

1. 10 CFR 50.44.
2. 10 CFR 50, Appendix A, GDC 41.
3. USAR, Section 6.2.8.

Provided for Information Only

BASES

ACTIONS

B.1 and B.2 (continued)

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 capabilities. It does not mean to perform the surveillances needed to demonstrate OPERABILITY of the alternate hydrogen control capabilities. If the ability to perform the hydrogen control function is maintained, continued operation is permitted with two combustible gas mixing subsystems inoperable for up to 7 days. Seven days is a reasonable time to allow two combustible gas mixing subsystems 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 amounts capable of exceeding the flammability limit.

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 3.6.3.3.1

Operating each combustible gas mixing subsystem for ≥ 15 minutes after starting from the control room ensures that each subsystem is OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, compressor failure, or excessive vibration can be detected for corrective action. ~~The 92 day Frequency is consistent with Inservice Testing Program Frequencies, operating experience, the known reliability of the compressor and controls, and the two redundant subsystems available~~. Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.3.2

Verifying that each combustible gas mixing subsystem flow rate is ≥ 500 scfm ensures that each subsystem is capable of maintaining drywell hydrogen concentrations below the flammability limit. Analysis has shown that satisfying this surveillance requirement also verifies that the compressor can deliver ≥500 scfm under post-LOCA conditions. ~~The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~ Insert 2

REFERENCES

1. Regulatory Guide 1.7, Revision 2.
2. USAR, Section 6.2.5.

ACTIONS (continued)

C.1 and C.2

Movement of recently irradiated fuel assemblies in the primary containment and OPDRVs can be postulated to cause significant fission product releases. In such cases, the secondary containment is one of the barriers to release of fission products to the environment. If applicable, movement of recently irradiated fuel assemblies in the primary containment must be immediately suspended if the secondary containment is inoperable. Suspension of these activities shall not preclude completing an action that involves moving a component to a safe position. Also, if applicable, action must be immediately initiated to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1.1

This SR ensures that the secondary containment boundary is sufficiently leak tight to preclude exfiltration under expected wind conditions. ~~The 24 hour Frequency of this SR was developed based on operating experience related to secondary containment vacuum variations during the applicable MODES and the low probability of a DBA occurring between surveillances.~~

~~Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal secondary containment vacuum condition.~~

Insert 2

SR 3.6.4.1.2 and SR 3.6.4.1.3

Verifying that the primary containment equipment hatch is closed and the shield blocks are installed adjacent to the shield building, and secondary containment access doors are closed ensures that the infiltration of outside air of such a magnitude as to prevent maintaining the desired negative pressure does not occur. In this application, the term "sealed" has no connotation of leak tightness. Verifying that all such openings are closed provides adequate

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1.2 and SR 3.6.4.1.3 (continued)

assurance that exfiltration from the secondary containment will not occur. Maintaining secondary containment OPERABILITY requires verifying each door in both access openings are closed, except when the access opening is being used for entry and exit. ~~The 31 day Frequency for these SRs has been shown to be adequate based on operating experience, and is considered adequate in view of the other controls on secondary containment access openings~~. Insert 2

REFERENCES

1. USAR, Section 15.6.5.
2. USAR, Section 15.7.6.

Provided for Information Only

BASES

ACTIONS

D.1 and D.2 (continued)

or during OPDRVs, the plant must be placed in a condition in which the LCO does not apply. If applicable, movement of recently irradiated fuel assemblies in the primary containment must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, action must be immediately initiated to suspend OPDRVs in order to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.2.1

This SR verifies that each secondary containment isolation manual valve and blind flange that is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the secondary containment boundary is within design limits. This SR does not require any testing or isolation device manipulation. Rather, it involves verification that those isolation devices in secondary containment that are capable of being mispositioned are in the correct position.

~~Since these isolation devices are readily accessible to personnel during normal unit operation and verification of their position is relatively easy, the 31 day Frequency was chosen to provide added assurance that the isolation devices are in the correct positions~~. Insert 2 This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

Two Notes have been added to this SR. The first Note applies to valves and blind flanges located in high radiation areas and allows them to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, and 3 for ALARA reasons. Therefore, the probability of misalignment of these isolation devices once they have been verified to be in the proper position, is low. A second Note has been included to clarify that

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.4.2.1 (continued)

that SCIVs that are open under administrative controls are not required to meet the SR during the time the SCIVs are open.

REFERENCES

1. USAR, Section 15.6.5.
2. USAR, Section 6.2.3.
3. USAR, Section 15.7.6.

ACTIONS

C.1, C.2.1 and C.2.2 (continued)

failures that could prevent automatic actuation have occurred, and that any other failure would be readily detected. An alternative to Required Action C.1 is to immediately suspend activities that represent a potential for releasing significant amounts of radioactive material, thus placing the unit in a Condition that minimizes risk. If applicable, movement of recently irradiated fuel assemblies in the primary containment must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, actions must be immediately initiated to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

D.1

If both AEGT subsystems are inoperable in MODE 1, 2, or 3, the AEGT System may not be capable of supporting the required radioactivity release control function. Therefore, LCO 3.0.3 must be entered immediately.

E.1 and E.2

When two AEGT subsystems are inoperable, if applicable, movement of recently irradiated fuel assemblies in the primary containment must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, actions must be immediately initiated to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.3.1

Operating each AEGT subsystem from the control room for ≥ 10 continuous hours ensures that both subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Operation with the heaters on for ≥ 10 continuous hours ~~every 31 days~~ eliminates moisture on the adsorbers and HEPA

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.4.3.1 (continued)

filters. ~~The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.~~ Insert 2

SR 3.6.4.3.2

This SR verifies that the required AEGT filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The AEGT System filter tests are in accordance with Regulatory Guide 1.52 (Ref. 4). The VFTP includes testing HEPA filter efficiency, charcoal adsorber efficiency and bypass leakage, system flow rate, and general operating parameters of the filtration system. (Note: Values identified in the VFTP are Surveillance Requirement values.) Specified test frequencies and additional information are discussed in detail in the VFTP.

SR 3.6.4.3.3

This SR verifies that each AEGT subsystem starts and isolation dampers open upon receipt of a manual initiation signal from the control room and an actual or simulated initiation and operates throughout its emergency operating sequence for the LOCA signal.

The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.5.1.6 overlaps this SR to provide complete testing of the safety function. This Surveillance can be performed with the reactor at power. ~~The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~. Insert 2

REFERENCES

1. 10 CFR 50, Appendix A, GDC 41.
2. USAR, Section 6.5.3.
3. USAR, Section 15.6.5.
4. Regulatory Guide 1.52, Rev. 2.
5. USAR, Section 15.7.6.

APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause a release of radioactive material to the primary containment. In MODES 4 and 5, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the drywell is not required to be OPERABLE in MODES 4 and 5.

ACTIONS

A.1

In the event the drywell is inoperable, it must be restored to OPERABLE status within 1 hour. The 1 hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining the drywell OPERABLE during MODES 1, 2, and 3. This time period also ensures that the probability of an accident (requiring drywell OPERABILITY) occurring during periods when the drywell is inoperable is minimal. Also, the Completion Time is the same as that applied to inoperability of the primary containment in LCO 3.6.1.1, "Primary Containment - Operating."

B.1 and B.2

If the drywell cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1.1

The analyses in Reference 1 are based on a maximum drywell bypass leakage. Testing shall be conducted at an initial differential pressure of 2.5 psi and the $A/\sqrt{k}$ shall be calculated from the measured leakage. One drywell air lock door shall remain open during the drywell leakage test such that each drywell air lock door is leak tested during at least every other leakage rate test.

(continued)

Provided for Information Only

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1.1 (continued)

This Surveillance ensures that the actual drywell bypass leakage is less than or equal to the acceptable $A/\sqrt{k}$ design value of 1.68 ft^2 assumed in the safety analysis. As left drywell bypass leakage, prior to the first startup after performing a required drywell bypass leakage test, is required to be ≤ 10% of the drywell bypass leakage limit. At all other times between required drywell leakage rate tests, the acceptance criteria is based on design $A/\sqrt{k}$. At the design $A/\sqrt{k}$ the containment temperature and pressurization response are bounded by the assumptions of the safety analysis. ~~This surveillance is performed at least once every 10 years (120 months) on a performance based frequency~~. ~~The Frequency is consistent with the difficulty of performing the test, risk of high radiation exposure, and the remote possibility that sufficient component failures will occur such that the drywell bypass leakage limit will be exceeded.~~ If during the performance of this required Surveillance the drywell bypass leakage is greater than the leakage limit, the Surveillance Frequency is increased to every 48 months. If during the performance of the subsequent consecutive Surveillance the drywell bypass leakage is less than or equal to the drywell bypass leakage limit, the ~~10 year~~ Frequency may be resumed. If during the performance of the subsequent consecutive Surveillance the drywell bypass leakage is greater than the drywell bypass leakage limit, the Surveillance Frequency is increased to at least once every 24 months. The 24 month Frequency will be maintained until during the performance of two consecutive Surveillances the drywell bypass leakage is less than or equal to the leakage limit, at which time the ~~10 year~~ Frequency may be resumed. For two Surveillances to be considered consecutive, the Surveillances must be performed at least 12 months apart.

Insert 2

specified in the Surveillance Frequency Control Program

specified in the Surveillance Frequency Control Program

~~Since the Frequency is performance based, the Frequency was concluded to be acceptable from a reliability standpoint.~~

SR 3.6.5.1.2

The exposed accessible drywell interior and exterior surfaces are inspected to ensure there are no apparent physical defects that would prevent the drywell from performing its intended function. This SR ensures that

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1.2 (continued)

drywell structural integrity is maintained. ~~The Frequency was originally chosen so that the interior and exterior surfaces of the drywell could be inspected in conjunction with the inspections of the primary containment required by 10 CFR 50, Appendix J (the version currently identified as "Option A"). When the primary containment inspections were placed onto a performance-based frequency, the drywell inspections were retained at a frequency of 3 times in a 10-year inservice inspection period. The retention of this frequency was a commitment made to facilitate the placement of the Drywell Bypass Leak Rate Test onto a performance-based frequency. Due to the passive nature of the drywell structure, the specified Frequency is sufficient to identify component degradation that may affect drywell structural integrity.~~

Insert 2

SR 3.6.5.1.3

This SR requires a test to be performed to quantify seal leakage of the drywell air lock doors at pressures ≥ 2.5 psig. An administrative seal leakage rate limit has been established in plant procedures to ensure the integrity of the seals.

The Surveillance is only required to be performed once within 72 hours after each closing. The Frequency of 72 hours is based on operating experience and is considered adequate in view of the other indications available to plant operations personnel that the seal is intact.

SR 3.6.5.1.4

This SR requires a test to be performed to quantify air lock barrel leakage at pressures ≥ 2.5 psig. An administrative barrel leakage rate limit has been established in plant procedures to ensure the integrity of the air lock.

~~The 24 month Frequency is based on the need to perform this Surveillance under conditions that apply during a plant outage. Operating experience has shown that these components usually pass the Surveillance when performed~~.

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1.4 (continued)

~~Therefore, the Frequency was concluded to be acceptable from a reliability standpoint~~. Insert 2

This SR has been modified by a Note indicating that an inoperable air lock door does not invalidate the previous successful performance of an overall (barrel) air lock leakage test. This is considered reasonable, since either air lock door is capable of providing a fission product barrier in the event of a DBA.

REFERENCES

1. USAR, Chapter 6 and Chapter 15.

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BASES

ACTIONS

C.1 and C.2 (continued)

Additionally, the air lock must be restored to OPERABLE status within 24 hours. The 24 hour Completion Time is reasonable for restoring an inoperable air lock to OPERABLE status, considering that at least one door is maintained closed in the air lock.

D.1 and D.2

If the inoperable drywell air lock cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.5.2.1

Deleted

SR 3.6.5.2.2

The periodically

~~Every 7 days the~~ Service and Instrument Air System pressure in the header to the drywell air lock is verified to be ≥ 60 psig to ensure that the seal system remains viable. It must be checked because it could bleed down during or following access through the air lock, which occurs regularly. ~~The 7 day Frequency has been shown to be acceptable, based on operating experience, and is considered adequate in view of the other indications to the plant operations personnel that the seal pressure is low.~~ Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.5.2.3

The air lock door interlock mechanism is designed to prevent simultaneous opening of both doors in the air lock. Since both the inner and outer doors of the air lock are designed to withstand the maximum expected post accident drywell pressure, closure of either door will support drywell OPERABILITY. Thus, the door interlock feature supports drywell OPERABILITY while the air lock is being used for personnel transit in and out of the drywell. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous inner and outer door opening will not inadvertently occur. ~~Due to the nature of this interlock, and given that the interlock mechanism is only challenged when a drywell air lock door is opened, this test is only required to be performed once every 24 months. The 24 month Frequency is based on the need to perform this Surveillance under the reduced reactivity conditions that apply during a plant outage and the potential for violating the drywell boundary. Operating experience has shown these components usually pass the Surveillance, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ Insert 2

The Surveillance is modified by a Note requiring the Surveillance to be performed only upon entry into the drywell.

SR 3.6.5.2.4

Deleted

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.5.2.5

A seal pneumatic system test to ensure that pressure does not decay at a rate equivalent to > 3 psig for a period of 24 hours from an initial pressure of 60 psig is an effective leakage rate test to verify system performance. The 24 hour interval is based on engineering judgment, considering that there is no postulated DBA where the drywell is still pressurized 24 hours after the event. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage when the air lock OPERABILITY is not required. 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.~~

Insert 2

REFERENCES

1. 10 CFR 50, Appendix J.
2. USAR, Chapters 6 and 15.

Provided for Information Only

BASES

ACTIONS (continued)

C.1 and C.2

If any Required Action and associated Completion Time cannot be met, the plant must be placed in 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 and to MODE 4 within 36 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.5.3.1

periodically

Each 24 (1M14-F055 A (B) and 1M14-F060 A (B)) and 36 inch (1M14-F065 and 1M14-F070) drywell purge supply and exhaust isolation valve is required to be verified sealed closed ~~at 31 day intervals~~ because the drywell purge supply and exhaust isolation valves are not qualified to fully close under accident conditions. This SR is designed to ensure that a gross breach of drywell is not caused by an inadvertent drywell purge supply or exhaust isolation valve opening. Detailed analysis of these 24 and 36 inch drywell purge supply and exhaust isolation valves failed to conclusively demonstrate their ability to close during a LOCA in time to support drywell OPERABILITY. Therefore, these valves are required to be in the sealed closed position during MODES 1, 2, and 3. These 24 and 36 inch drywell purge supply and exhaust isolation valves that are sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power, removing the air supply to the valve operator, or providing administrative control of the valve control switches. In this application, the term "sealed" has no connotation of leak tightness. ~~The 31 day Frequency is based on drywell purge supply and exhaust valve use during unit operations~~.

Insert 2

SR 3.6.5.3.2

Deleted

SR 3.6.5.3.3

This SR verifies that each drywell isolation manual valve and blind flange that is not locked, sealed, or otherwise secured and is required to be closed during accident conditions is closed. The SR helps to ensure that drywell bypass leakage is maintained to a minimum. Due to

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.5.3.3 (continued)

the location of these isolation devices, the Frequency specified as "prior to entering MODE 2 or 3 from MODE 4, if not performed in the previous 92 days," is appropriate because of the inaccessibility of the devices and because these devices are operated under administrative controls and the probability of their misalignment is low. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

Two Notes are added to this SR. The first Note allows valves and blind flanges located in high radiation areas to be verified by use of administrative controls. Allowing verification by administrative controls is considered acceptable since access to these areas is typically restricted during MODES 1, 2, and 3. Therefore, the probability of misalignment of these isolation devices, once they have been verified to be in their proper position, is low. A second Note is included to clarify that the drywell isolation valves that are open under administrative controls are not required to meet the SR during the time that the drywell isolation valves are open.

SR 3.6.5.3.4

Verifying that the isolation time of each power operated and each automatic drywell isolation valve is within limits is required to demonstrate OPERABILITY. The isolation time test ensures the drywell isolation valve will isolate in a time period less than or equal to that assumed in the safety analysis. The isolation time and Frequency of this SR are in accordance with the Inservice Testing Program.

SR 3.6.5.3.5

Verifying that each automatic drywell isolation valve closes on a drywell isolation signal is required to prevent bypass leakage from the drywell following a DBA. This SR ensures each automatic drywell isolation valve will actuate to its isolation position on a drywell isolation signal. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.1.5 overlaps this SR to provide complete testing of the safety function. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power, since isolation of penetrations would eliminate cooling water flow~~

(continued)

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BASES

SURVEILLANCE REQUIREMENT

SR 3.6.5.3.5 (continued)

~~and disrupt the normal operation of many critical components. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

REFERENCES

1. USAR, Section 6.2.1.1.5.

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BASES

ACTIONS	B.1 and B.2 (continued) to MODE 4 within 36 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.
SURVEILLANCE REQUIREMENTS	SR 3.6.5.4.1 This SR provides assurance that the limitations on drywell-to-primary containment differential pressure stated in the LCO are met. ~~The 12 hour Frequency of this SR was developed, based on operating experience related to trending of drywell pressure variations during the applicable MODES. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal drywell pressure condition.~~ Insert 2
REFERENCES	1. USAR, Section 6.2.1. 2. USAR, Section 3.8. 3. USAR, Section 6.2.1.1.6. 4. USAR, Section 6.2.7.

LCO (continued)

temperature during a DBA. This ensures the ability of the drywell to perform its design function.

APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause a release of radioactive material to the primary containment. In MODES 4 and 5, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining drywell average air temperature within the limit is not required in MODE 4 or 5.

ACTIONS

A.1

When the drywell average air temperature is not within the limit of the LCO, it must be restored within 8 hours. The Required Action is necessary to return operation to within the bounds of the safety analyses. The 8 hour Completion Time is acceptable, considering the sensitivity of the analyses to variations in this parameter, and provides sufficient time to correct minor problems.

B.1 and B.2

If drywell average air temperature cannot be restored to within limit within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.5.5.1

Verifying that the drywell average air temperature is within the LCO limit ensures that operation remains within the limits assumed for the drywell analysis. In order to determine the drywell average air temperature, an arithmetic average is calculated, using measurements taken at locations within the drywell selected to provide a representative sample of the overall drywell atmosphere.

(continued)

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.5.5.1 (continued)

	Elevation	Azimuth
a.	653'-8"	315°, 220°, 135°, 34°
b.	634'-0" - 640'-0"	340°, 308°, 215°, 145°, 30°, 20°
c.	604'-6" - 609'-8"	310°, 308°, 253°, 212°, 150°, 140°, 80°

Use at least one reading from each elevation for an arithmetical average. The temperature at each elevation shall be the arithmetical average of the temperatures obtained from all available instruments at that elevation.

~~The 24 hour Frequency of the SR was developed based on operating experience related to variations in drywell average air temperature variations during the applicable MODES. Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal drywell air temperature condition.~~

Insert 2

REFERENCES

1. USAR, Section 6.2.

No Change - Included for Context

ACTIONS

B.1 (continued)

must be restored to OPERABLE status within 30 days. The 30 day Completion Time takes into account a reasonable time for repairs, the low probability of an event requiring the drywell vacuum relief subsystems to function occurring during this period, and the fact that the only safety function of the Drywell Vacuum Relief System is to provide for drywell to containment isolation.

C.1

With two drywell vacuum relief subsystems inoperable, for reasons other than Condition A, at least one inoperable subsystem must be restored to OPERABLE status within 72 hours. The 72 hour Completion Time takes into account at least one vacuum relief subsystem is still OPERABLE, a reasonable time for repairs, and the low probability of an event requiring the vacuum relief subsystems to function occurring during this period.

D.1 and D.2

If the inoperable drywell vacuum relief subsystem(s) cannot be closed or restored to OPERABLE status within the required Completion Time of Condition A, B, or C, 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 and to MODE 4 within 36 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.5.6.1

Each drywell vacuum breaker and its associated isolation valve is verified to be closed (except when being tested in accordance with SR 3.6.5.6.2 and SR 3.6.5.6.3 or when the vacuum breakers are performing their intended design function) to ensure that this potential large bypass leakage path is not present. This Surveillance is performed by observing the vacuum breaker or associated isolation valve

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.6.5.6.1 (continued)

position indication. ~~The 7 day Frequency is based on engineering judgment, is considered adequate in view of other indications of vacuum breaker or isolation valve status available to the plant personnel, and has been shown to be acceptable through operating experience~~. Insert 2

Two Notes are added to this SR. The first Note allows drywell vacuum breakers or isolation valves opened in conjunction with the performance of a Surveillance to not be considered as failing this SR. These periods are controlled by plant procedures and do not represent inoperable drywell vacuum breakers or isolation valves. A second Note is included to clarify that vacuum breakers or isolation valves open due to an actual differential pressure, are not considered as failing this SR.

SR 3.6.5.6.2

Each vacuum breaker and its associated isolation valve must be cycled to ensure that it opens adequately to perform its design function and returns to the fully closed position. This provides assurance that the safety analysis assumptions are valid. Performance of this SR includes a CHANNEL FUNCTIONAL TEST of the isolation valve actuation instrumentation. The Frequency of the SR is in accordance with the In-Service Testing Program.

SR 3.6.5.6.3

Verification of vacuum breaker differential pressure and associated isolation valve opening setpoint is necessary to ensure that the safety analysis assumption that the vacuum breaker will open fully at a differential pressure of 0.5 psid (containment to drywell) and that the isolation valve differential pressure actuation instrumentation opens the valve at ≤ -.810 inches water gauge dp (containment to drywell) is valid.

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.5.6.3 (continued)

Performance of this SR includes a CHANNEL CALIBRATION of the isolation valve actuation instrumentation. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for violating the drywell boundary. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~ Insert 2

REFERENCES

1. USAR, Section 6.2.
2. USAR, Section 7.7.1.12.

No Change - Included for Context

ACTIONS

A.1 (continued)

The 72 hour Completion Time was developed taking into account the redundant capabilities afforded by the OPERABLE subsystem and the low probability of a DBA occurring during this period.

The Required Action is modified by two Notes indicating that the applicable Conditions of LCO 3.8.1, "AC Sources—Operating," and LCO 3.4.9, "Residual Heat Removal (RHR) Shutdown Cooling System—Hot Shutdown," be entered and the Required Actions taken if the inoperable ESW subsystem results in an inoperable DG or RHR shutdown cooling subsystem, respectively. This is in accordance with LCO 3.0.6 and ensures the proper actions are taken for these components.

B.1 and B.2

If the Division 1 or Division 2 ESW subsystem cannot be restored to OPERABLE status within the associated Completion Time of Condition A, or both Division 1 and Division 2 ESW subsystems are inoperable, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.1.1

Verifying the correct alignment for each manual, power operated, and automatic valve in each Division 1 and 2 ESW subsystem flow path provides assurance that the proper flow paths exist for ESW 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 that receives an initiation signal is allowed to be in a nonaccident position provided the valve will automatically reposition in the proper stroke time. This SR does not require any testing or valve manipulation;

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.1.1 (continued)

rather, it involves verification that those valves potentially 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.

Isolation of the ESW subsystem to components or systems does not necessarily affect the OPERABILITY of the associated ESW subsystem. As such, when the ESW subsystem pump, valves, and piping are OPERABLE, but a branch connection off the main header is isolated, the associated ESW subsystem needs to be evaluated to determine if it is still OPERABLE.

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

Insert 2

SR 3.7.1.2

This SR verifies that the automatic isolation valves of the Division 1 and Division 2 ESW subsystems will automatically realign to the safety or emergency position to provide cooling water exclusively to the safety related equipment during an accident event. This is demonstrated by use of an actual or simulated initiation signal. This SR also verifies the automatic start capability of the ESW pump in each subsystem. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.5.1.6 overlaps this SR to provide complete testing of the safety function.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

REFERENCES

1. Regulatory Guide 1.27, Revision 2, January 1976.
2. USAR, Section 9.2.1.
3. USAR, Table 9.2-7.

(continued)

No Change - Included for Context

APPLICABILITY

In MODES 1, 2, and 3, the Division 3 ESW subsystem is required to be OPERABLE to support OPERABILITY of the HPCS System since it is required to be OPERABLE in these MODES.

In MODES 4 and 5, the requirements of the Division 3 ESW subsystem are determined by the HPCS System.

ACTIONS

A.1

When the Division 3 ESW subsystem is inoperable, the capability of the HPCS System to perform its intended function cannot be ensured. Therefore, if the Division 3 ESW subsystem is inoperable, the HPCS System must be declared inoperable immediately and the applicable Condition(s) of LCO 3.5.1, "ECCS—Operating" entered.

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1

Verifying the correct alignment for each manual, power operated, and automatic valve in the Division 3 ESW subsystem flow path provides assurance that the proper flow paths will exist for Division 3 ESW 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 that receives an initiation signal is also allowed to be in a nonaccident position provided the valve will automatically reposition in the proper stroke time. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves potentially 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.

Isolation of the Division 3 ESW subsystem to components or systems does not necessarily affect the OPERABILITY of the Division 3 ESW subsystem. As such, when the Division 3 ESW pump, valves, and piping are OPERABLE, but a branch connection off the main header is isolated, the Division 3 ESW subsystem needs to be evaluated to determine if it is still OPERABLE.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1 (continued)

~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions~~. Insert 2

SR 3.7.2.2

This SR verifies that the automatic isolation valve of the Division 3 ESW subsystem will automatically realign to the safety or emergency position to provide cooling water exclusively to the safety related equipment during an accident event. This is demonstrated by use of an actual or simulated initiation signal. This SR also verifies the automatic start capability of the Division 3 ESW pump. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.5.1.6 overlaps this SR to provide complete testing of the safety function.

~~The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~. Insert 2

REFERENCES

1. USAR, Section 9.2.1.
2. USAR, Chapter 6.
3. USAR, Chapter 15.

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BASES

ACTIONS (continued)

F.1 and F.2

During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs, with two CRER subsystems inoperable or with one or more CRER subsystems inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that present a potential for releasing significant amounts of radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk.

If applicable, movement of recently irradiated fuel assemblies in the primary containment and fuel handling building must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also if applicable, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.7.3.1

Operating each CRER subsystem for ≥ 10 continuous hours after initiating from the control room and ensuring flow through the HEPA filters and charcoal adsorbers ensures that both subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Operation with the heaters on for ≥ 10 continuous hours ~~every 31 days~~ eliminates moisture on the adsorbers and HEPA filters. ~~The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.~~

Insert 2

SR 3.7.3.2

This SR verifies that the required CRER testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter efficiency, charcoal adsorber efficiency and bypass leakage, system flow rate, and general operating parameters of the filtration system. (Note: Values identified in the VFTP are Surveillance Requirement values.) Specific test Frequencies and additional information are discussed in detail in the VFTP.

(continued)

Provided for Information Only

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.3.3

This SR verifies that each CRER subsystem starts and operates on an actual or simulated initiation signal, and the isolation dampers that establish a portion of the CRE boundary close within 10 seconds. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.7.1.5 overlaps this SR to provide complete testing of the safety function. ~~The 24 month Frequency is based on industry operating experience, and is consistent with a typical industry refueling cycle~~.

Insert 2

SR 3.7.3.4

This SR verifies the OPERABILITY of the CRE boundary by testing for unfiltered air inleakage past the CRE boundary and into the CRE. The details of the testing are specified in the Control Room Envelope Habitability Program.

The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more than 5 rem TEDE and the CRE occupants are protected from hazardous chemicals and smoke. This SR verifies that the unfiltered air inleakage into the CRE is no greater than the flow rate assumed in the licensing basis analyses of DBA consequences. When unfiltered air inleakage is greater than the assumed flow rate, Condition B must be entered. Required Action B.3 allows time to restore the CRE boundary to OPERABLE status provided mitigating actions can ensure that the CRE remains within the licensing basis habitability limits for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section C.2.7.3, (Ref. 7), which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 10). These compensatory measures may be used as mitigating actions as required by Required Action B.2.

Options for restoring the CRE boundary to OPERABLE status include changing the licensing basis DBA consequence analysis, repairing the CRE boundary, or a combination of these actions (Ref. 11). Depending upon the nature of the problem and the corrective action, a full scope inleakage test may not be necessary to establish that the CRE boundary has been restored to OPERABLE status.

(continued)

Provided for Information Only

ACTIONS (continued)

E.1 and E.2

The Required Actions of Condition E.1 are modified by a Note indicating that LCO 3.0.3 does not apply. If moving recently irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of recently irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building, or during OPDRVs if the Required Action and associated Completion Time of Condition B is not met, action must be taken to immediately suspend activities that present a potential for releasing significant amounts of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk.

If applicable, handling of recently irradiated fuel in the primary containment or fuel handling building must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

This SR verifies that the heat removal capability of the system is sufficient to remove the control room heat load assumed in the safety analysis. The SR consists of a combination of testing and calculation. ~~The 24 month Frequency is appropriate since significant degradation of the Control Room HVAC System is not expected over this time period.~~

Insert 2

REFERENCES

1. USAR, Section 6.4.
2. USAR, Section 9.4.1.
3. USAR, Section 15.7.6.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.5.1

This SR requires an isotopic analysis within 4 hours of noting a significant increase as indicated by the Offgas Pretreatment Radiation Monitor in the measured release rate of radioactivity. The analysis is performed on a representative sample of gases taken at the discharge (i.e. prior to dilution or discharge) of the steam jet air ejector. A significant increase is defined as an increase in release rate greater than or equal to 50% after correcting for expected increases due to changes in THERMAL POWER. This SR is to ensure that the increase is not indicative of a sustained increase in the radioactive release rate.

SR 3.7.5.2

a periodic

This SR~~, on a 31 day Frequency,~~ requires ~~an~~ isotopic analysis of a representative off gas sample to ensure that the required limits are satisfied. The analysis is performed on a representative sample of gases taken at the discharge (i.e. prior to dilution or discharge) of the steam jet air ejector. The noble gases to be sampled are Xe-133, Xe-135, Xe-138, Kr-85m, Kr-87, and Kr-88. ~~The 31 day Frequency is adequate in view of other instrumentation that continuously monitor the offgas, and is acceptable based on operating experience~~.

Insert 2

This SR is modified by a Note indicating that the SR is not required to be performed until 31 days after any main steam line is not isolated and the SJAE is in operation. Only in this condition can radioactive fission gases be in the Main Condenser Offgas System at significant rates.

REFERENCES

1. USAR, Section 15.7.1.
2. NUREG-0800.
3. 10 CFR 100.

ACTIONS

B.1 (continued)

based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.6.1

Cycling each main turbine bypass valve through one complete cycle of full travel demonstrates that the valves are mechanically OPERABLE and will function when required. ~~The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions. Therefore, the Frequency is acceptable from a reliability standpoint.~~

Insert 2

SR 3.7.6.2

The Main Turbine Bypass System is required to actuate automatically to perform its design function. This SR demonstrates that, with the required system initiation signals, the valves will actuate to their required position. ~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and because of the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

SR 3.7.6.3

This SR ensures that the TURBINE BYPASS SYSTEM RESPONSE TIME is in compliance with the assumptions of the appropriate safety analysis. The TURBINE BYPASS SYSTEM RESPONSE TIME must comply with the following requirements when measured from the initial movement of the main turbine stop or control valve:

a. 80% of turbine bypass system capacity shall be established in less than or equal to 0.3 seconds.

b. Bypass valve opening shall start in less than or equal to 0.1 seconds.

(continued)

BASES

SURVEILLANCE REQUIREMENTS	SR 3.7.6.3 (continued)
	~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and because of the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~ Insert 2
REFERENCES	1. USAR, Section 7.7.1.5.
	2. USAR, Section 15.1.2.

BASES (continued)

LCO	The specified water level preserves the assumption of the fuel handling accident analysis (Refs. 2 and 3). As such, it is the minimum required for fuel movement within the FHB spent fuel storage pools and upper containment fuel storage pool.
APPLICABILITY	This LCO applies whenever movement of irradiated fuel assemblies occurs in the associated fuel storage racks since the potential for a release of fission products exists.
ACTIONS	<u>A.1</u> Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not a sufficient reason to require a reactor shutdown. When the initial conditions for an accident cannot be met, steps should be taken to preclude the accident from occurring. With either fuel storage pool level less than required, the movement of irradiated fuel assemblies in the associated fuel storage pool is suspended immediately. Suspension of this activity shall not preclude completion of movement of an irradiated fuel assembly to a safe position. This effectively precludes a spent fuel handling accident from occurring.
SURVEILLANCE REQUIREMENTS	<u>SR 3.7.7.1</u> This SR verifies that sufficient water is available in the event of a fuel handling accident. The water level in the FHB spent fuel storage pools and upper containment fuel storage pool must be checked periodically. ~~The 7 day Frequency is acceptable, based on operating experience, considering that the water volume in the pools is normally stable and water level changes are controlled by unit procedures.~~ Insert 2

(continued)

Provided for Information Only

BASES (continued)

ACTIONS

The Required Actions have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving recently irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving recently irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of recently irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown.

A.1

With the FHB inoperable, the plant must be brought to a condition in which the LCO does not apply since the FHB is incapable of performing its required accident mitigation function. To achieve this, handling of recently irradiated fuel must be suspended immediately. Suspension shall not preclude completion of fuel movement to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.7.8.1 and SR 3.7.8.2

Verifying that FHB floor hatches and access doors are closed, that the shield blocks are in place adjacent to the shield building, and that the FHB railroad track door is closed ensures that proper air flow patterns will exist in the FHB, and that any release following a FHA involving handling of recently irradiated fuel in the FHB will be filtered prior to release. Verifying that all such openings are closed provides adequate assurance that exfiltration from the FHB will not occur. Maintaining FHB OPERABILITY requires verifying each door in the access opening is closed, except when the access opening is being used for entry and exit.

~~The 24 hour Frequency for these SRs has been shown to be adequate based on operating experience.~~ Insert 2

REFERENCES

1. USAR, Section 15.7.4 and 15.7.6.

BASES

ACTIONS (continued)

D.1 and D.1

With the FHB ventilation exhaust radiation monitor inoperable, grab samples must be taken and analyzed for the FHB ventilation exhaust system, and since the FHB ventilation exhaust system exhausts to the plant vent, the plant vent noble gas monitor must be verified to be operable. These compensatory measures assure that the radiation levels in the FHB are monitored. The 24 hours is based on operating experience, and the probability of a FHB fuel drop accident occurring with the monitor inoperable. If the FHB ventilation exhaust radiation monitor (noble gas) is inoperable and the Unit 1 vent radiation noble gas monitor becomes inoperable, then actions must be taken to assure that the FHB ventilation system is aligned to its required condition. Placing the FHB ventilation exhaust radiation monitor (noble gas) in the tripped condition will cause the FHB ventilation supply fans to trip which will increase the differential pressure between the FHB and outside atmosphere, which aids in assuring that any exchange of the FHB atmosphere exhaust will be through the FHB exhaust filters. The 24 hours is based on operating experience and the probability of a FHB fuel drop accident occurring during this time period.

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1

Operating each FHB ventilation exhaust subsystem for ≥ 10 continuous hours after initiating from the control room and ensuring flow through the HEPA filters and charcoal adsorbers ensures that all subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Operation with the heaters on for ≥ 10 continuous hours ~~every 31 days~~ eliminates moisture on the adsorbers and HEPA filters. ~~The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.~~

Insert 2

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.9.2

This SR verifies that the required FHB ventilation exhaust filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The FHB Ventilation Exhaust System filter tests are in accordance with Regulatory Guide 1.52 (Ref. 4) whenever recently irradiated fuel is going to be handled. The VFTP includes testing HEPA filter efficiency, charcoal adsorber efficiency and bypass leakage, system flow rate, and general operating parameters of the filtration system. (Note: Values identified in the VFTP are Surveillance Requirement values.) Specified test frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.9.3

This SR requires verification that each FHB ventilation exhaust subsystem can be started from the control room, and that the FHB ventilation exhaust system performs satisfactorily during an actual or simulated actuation of the FHA instrumentation. This SR will include calibration of the FHB ventilation exhaust radiation monitor (noble gas). This Surveillance can be performed with the reactor at power. ~~The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

SR 3.7.9.4

This SR requires the performance of a CHANNEL FUNCTIONAL TEST on the FHB ventilation exhaust radiation monitor (noble gas) to ensure the entire channel will perform its intended function.

~~The Frequency is based on plant operating experience with regard to channel operability and the recommendations of Generic Letter 93-05~~.

Insert 2

(continued)

No Change - Included for Context

BASES (continued)

ACTIONS

A.1

With one or both ECCW subsystems inoperable, all the associated subsystem(s) or component(s) must immediately be declared inoperable.

B.1 and B.2

If the Required Action and associated Completion Time of Condition A are not met, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours.

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

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1

Verifying the correct alignment for each manual, power operated, and automatic valve in the ECCW subsystem flow path provides assurance that the proper flow paths exist for ECCW 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 that receives an initiation signal is allowed to be in a non-accident position provided the valve will automatically reposition in the proper stroke time. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves potentially capable of being mispositioned are in the correct position.

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1 (continued)

Isolation of the ECCW subsystem to components or systems does not necessarily affect the OPERABILITY of the ECCW subsystem. As such, when the ECCW subsystem pump, valves, and piping are OPERABLE, but a branch connection off the main header is isolated, the associated ECCW subsystem needs to be evaluated to determine if it is still OPERABLE.

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

Insert 2

SR 3.7.10.2

This SR verifies that each Unit 1 Division 1 and 2 ECCW subsystem actuates on an actual or simulated initiation signal, including verification of the automatic start capability of the ECCW pump in each subsystem. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.5.1.6 overlaps this Surveillance to provide complete testing of the safety function.

~~The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

REFERENCES

1. USAR, Section 9.2.2.
2. Plant Data Book, Tab R, Section 6.4.9.

No Change - Included for Context

BASES

ACTIONS (continued)

G.1

Condition G corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, GDC 18 (Ref. 8). Periodic component tests are supplemented by extensive functional tests during refueling outages under simulated accident conditions. The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Ref. 3), Regulatory Guide 1.108 (Ref. 9), and Regulatory Guide 1.137 (Ref. 10).

Where the SRs discussed herein specify voltage and frequency tolerances, the minimum and maximum steady state output voltages are 3900 V and 4400 V, respectively. The minimum allowable DG voltage provides an acceptable margin above the maximum allowable degraded voltage relay reset value. The maximum allowable DG voltage is based on the maximum safety bus voltage which will result in a worst case over-excitation level of 111% at the terminals of any device connected to the bus. The specified minimum and maximum frequencies of the DG of 58.8 Hz and 61.2 Hz, respectively, are equal to ± 2% of the 60 Hz nominal frequency. The specified steady state voltage and frequency ranges are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3).

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.1 (continued)

position to ensure that distribution buses and loads are connected to their preferred power source and that appropriate independence of offsite circuits is maintained. ~~The 7 day Frequency is adequate since breaker position is not likely to change without the operator being aware of it and because its status is displayed in the control room.~~

Insert 2

SR 3.8.1.2 and SR 3.8.1.7

These SRs help to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and maintain the unit in a safe shutdown condition.

To minimize the wear on moving parts that do not get lubricated when the engine is not running, these SRs have been modified by Notes (Note 2 for SR 3.8.1.2 and Note 1 for SR 3.8.1.7) to indicate that all DG starts for these Surveillances may be preceded by an engine prelube period and followed by a warmup period prior to loading.

For the purposes of this testing, the DGs are started from standby conditions. Standby conditions for a DG mean that the diesel engine coolant and oil are being continuously circulated and temperature is being maintained consistent with manufacturer recommendations for Division 1 and 2 DGs. For the Division 3 DG, standby conditions mean that the lube oil is heated by the jacket water and continuously circulated through a portion of the system as recommended by the vendor. Engine jacket water is heated by an immersion heater and circulates through the system by natural circulation.

In order to reduce stress and wear on diesel engines, some manufacturers recommend that the starting speed of DGs be limited, that warmup be limited to this lower speed, and that DGs be gradually accelerated to synchronous speed prior to loading. These start procedures are the intent of Note 3. This capability is not yet available on the Perry Division 3 DG. The Division 1 and 2 Slow/Fast switches are maintained in ‘fast’ until slow start switch position and associated circuit is fully tested and functional.

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.2 and SR 3.8.1.7 (continued)

SR 3.8.1.7 requires that~~, at a 184 day Frequency,~~ the Division 1 and 2 DGs start from standby conditions and achieve required voltage and frequency within 10 seconds. Also, this SR requires that the Division 3 DG starts from standby conditions and achieves required voltage and frequency within 13 seconds. The start time requirements support the assumptions in the design basis LOCA analysis (Ref. 5). The start time requirements are not applicable to SR 3.8.1.2 (see Note 3 of SR 3.8.1.2). Since SR 3.8.1.7 does require timed starts, it is more restrictive than SR 3.8.1.2, and it may be performed in lieu of SR 3.8.1.2. This procedure is the intent of Note 1 of SR 3.8.1.2. Similarly, the performance of SR 3.8.1.12 or SR 3.8.1.19 also satisfies the requirements of SR 3.8.1.2 and SR 3.8.1.7.

In addition to the SR requirements, the time for the DG to reach steady state operation, unless the modified DG start method is employed, is periodically monitored and the trend evaluated to identify degradation of governor and voltage regulator performance.

Insert 2

~~The 31 day Frequency for SR 3.8.1.2 is consistent with the industry guidelines for assessment of diesel generator performance (Ref. 14). The 184 day Frequency for SR 3.8.1.7 is a reduction in cold testing consistent with Generic Letter 84-15 (Ref. 7). These Frequencies provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.~~

SR 3.8.1.3

This Surveillance demonstrates that the DGs are capable of synchronizing and accepting greater than or equal to the equivalent of the maximum expected accident loads. The load band for the Division 1 and 2 DGs is provided to avoid routine overloading of these DGs. While this Surveillance allows operation of the Division 1 and 2 DGs in the band of 5600 kW to 7000 kW, a range of 5600 kW to 5800 kW will normally be used in order to minimize wear on the DGs. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the DG is connected to the offsite source.

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.3 (continued)

Although no power factor requirements are established by this SR, the DG is normally operated at a power factor between 0.8 lagging and 1.0. The 0.8 value is the design rating of the machine, while 1.0 is an operational limitation to ensure circulating currents are minimized.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.1.3 (continued)

~~The 31 day Frequency for this Surveillance is consistent with the industry guidelines for assessment of diesel generator performance (Ref. 14)~~.

Insert 2

Note 1 modifies this Surveillance to indicate that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized.

Note 2 modifies this Surveillance by stating that momentary transients because of changing bus loads do not invalidate this test.

Note 3 indicates that this Surveillance shall be conducted on only one DG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations.

Note 4 stipulates a prerequisite requirement for performance of this SR. A successful DG start must precede this test to credit satisfactory performance.

SR 3.8.1.4

This SR provides verification that the level of fuel oil in the day tank is at or above the level that will ensure transfer pump operation and availability. This level is expressed as an equivalent volume in gallons, and will ensure fuel oil transfer pump suction requirements are satisfied for all pump operating transients, including normal tank draw down during a secondary pump start.

~~The 31 day frequency is adequate to ensure that a sufficient supply of fuel oil is available.~~ Subsequent to receipt of a diesel generator auto-initiation alarm, plant operators would be able to verify proper primary and secondary

Insert 2

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.4 (continued)

transfer pump operation using the day tank low level alarm during diesel operation. The low level alarm is set above the minimum day tank level requirements needed to support secondary pump operation.

Actuation of this alarm prior to or after auto-initiation of the diesel generator would indicate that primary pump operation has failed and that initiation of the secondary transfer pump should have occurred. Subsequent to secondary pump actuation, plant operators will observe that the low level alarm will be activated during the normal draw down process in the day tank, and that the alarm will reset indicating proper operation of the secondary transfer pump.

SR 3.8.1.5

Periodic removal

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. ~~Removal~~ of water from the fuel oil day tanks ~~once every 31 days~~ eliminates the necessary environment for bacterial survival. This is an effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. ~~The Surveillance Frequency is established by Regulatory Guide 1.137 (Ref. 10). This SR is for preventive maintenance. The presence of water does not necessarily represent a failure of this SR provided that accumulated water is removed during performance of this Surveillance.~~

Insert 2

SR 3.8.1.6

This Surveillance demonstrates that each required fuel oil transfer pump operates to automatically transfer fuel oil from its associated storage tank to its associated day tank. Only one transfer pump is required to be OPERABLE for the DG to be OPERABLE. The transfer pump is required to support the continuous operation of

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.6 (continued)

standby power sources. This Surveillance provides assurance that each fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer systems are OPERABLE.

The design of the fuel transfer systems is such that pumps operate automatically in order to maintain an adequate volume of fuel oil in the day tanks during or following DG testing. ~~Therefore, a 31 day Frequency is specified to correspond to the maximum interval for DG testing~~. Insert 2

SR 3.8.1.7

See SR 3.8.1.2.

SR 3.8.1.8

Transfer of each 4.16 kV ESF bus power supply from the normal offsite circuit to the alternate offsite circuit demonstrates the OPERABILITY of the alternate circuit. ~~The 24 month Frequency of the Surveillance is based on engineering judgment taking into consideration the plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

This SR has been modified by a Note. This Note is not applicable to Division 3. The reason for the Note is that during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, plant safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1) Maintenance; and

2) Post maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to reestablish OPERABILITY (e.g. post work testing following corrective maintenance, corrective

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.8 (continued)

modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns). Performance of this Surveillance is allowed provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.9

Each DG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the DG load response characteristics and capability to reject the largest single load while maintaining a specified margin to the overspeed trip. The referenced load for the Division 1 DG is the 1400 kW low pressure core spray pump; for the Division 2 DG, the 729 kW residual heat removal (RHR) pump; and for the Division 3 DG the 2400 kW HPCS pump. This surveillance may be accomplished by: 1) tripping the DG output breaker with the associated single largest load while paralleled to offsite power, or while solely supplying the bus, or 2) tripping its associated single largest load with the DG solely supplying the bus. As required by IEEE-308 (Ref. 13), the load rejection test is acceptable if the increase in diesel speed does not exceed 75% of the difference between synchronous speed and the overspeed trip setpoint, or 15% above synchronous speed, whichever is lower.

This SR has been modified by two Notes. Note 1 is not applicable to Division 3. The reason for Note 1 is that during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, plant safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1) Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2) Post maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to reestablish OPERABILITY (e.g. post work testing following corrective maintenance, corrective

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.9 (continued)

modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns). Performance of this Surveillance is allowed provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.1.9 (continued)

In order to ensure that the DG is tested under load conditions that are as close to design basis conditions as possible, Note 2 requires that, if synchronized to offsite power, testing be performed using a power factor ≤ 0.9. This power factor is chosen to be representative of the actual design basis inductive loading that the DG could experience. ~~The 24 month Frequency takes into consideration unit conditions required to perform the surveillance, and is consistent with the intent of Regulatory Guide 1.108 (Ref. 9) Section C.2.a.~~

Insert 2

SR 3.8.1.10

This Surveillance demonstrates the DG capability to reject a full load, i.e., maximum expected accident load, without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker tripping. This Surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of total connected load that the DG experiences following a full load rejection and verifies that the DG does not trip upon loss of the load. These acceptance criteria provide DG damage protection. While the DG is not expected to experience this transient during an event and continue to be available, this response ensures that the DG is not degraded for future application, including reconnection to the bus if the trip initiator can be corrected or isolated.

In order to ensure that the DG is tested under load conditions that are as close to design basis conditions as possible, testing must be performed using a power factor ≤ .9. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience.

~~The 24 month Frequency takes into consideration unit conditions required to perform the surveillance, and is consistent with the intent of Regulatory Guide 1.108 (Ref. 9) to perform this test at refueling intervals~~.

Insert 2

This SR has been modified by a Note. This Note is not applicable to Division 3. The reason for the Note is that during operation with the reactor critical, performance of this SR could cause perturbation to the electrical distribution

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.10 (continued)

systems that could challenge continued steady state operation and, as a result, plant safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1) Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2) Post maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to reestablish OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns). Performance of this Surveillance is allowed provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.

SR 3.8.1.11

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1), this Surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions encountered from the loss of offsite power, including shedding of the Division 1 and 2 nonessential loads and energization of the emergency buses and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time.

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.11 (continued)

The DG auto-start times are derived from requirements of the accident analysis to respond to a design basis large break LOCA. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability has been achieved.

The requirement to verify the connection and energization of permanent and auto-connected loads through the load sequence (individual load timers) is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, ECCS injection valves are not desired to be stroked open, systems are not

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.11 (continued)

capable of being operated at full flow, or RHR subsystems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of the connection and energization of these loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

~~The 24 month Frequency takes into consideration unit conditions required to perform the surveillance, and is consistent with the intent of Regulatory Guide 1.108 (Ref. 9) paragraph C.2.a to perform this test at refueling intervals.~~

Insert 2

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil being continuously circulated and temperature maintained consistent with manufacturer recommendations for Division 1 and 2 DGs. For the Division 3 DG, standby conditions mean that the lube oil is heated by the jacket water and continuously circulated through a portion of the system as recommended by the vendor. Engine jacket water is heated by an immersion heater and circulates through the system by natural circulation. Note 2 is not applicable to Division 3. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge plant safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1) Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2) Post maintenance testing that requires performance of portions of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to reestablish OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.11 (continued)

testing, and other unanticipated OPERABILITY concerns). Performance of portions of this Surveillance is allowed provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.12

This Surveillance demonstrates that the DG automatically starts and achieves the required voltage and frequency within the specified time (10 seconds for Divisions 1 and 2 and 13 seconds for Division 3) from the design basis actuation signal (LOCA signal) and operates for ≥ 5 minutes. The 5 minute period provides sufficient time to demonstrate stability.

~~The Frequency of 24 months takes into consideration plant conditions required to perform the Surveillance and is intended to be consistent with the expected fuel cycle lengths. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~.

Insert 2

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil being continuously circulated and temperature maintained consistent with manufacturer recommendations for Division 1 and 2 DGs. For the Division 3 DG, standby conditions mean that the lube oil is heated by the jacket water and continuously circulated through a portion of the system as recommended by the vendor. Engine jacket water is heated by an immersion heater and circulates through the system by natural circulation. Note 2 is not applicable to Division 3. The reason for Note 2 is that during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, plant safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1) Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2) Post maintenance testing that requires performance of portions of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to reestablish OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.12 (continued)

testing, and other unanticipated OPERABILITY concerns). Performance of portions of this Surveillance is allowed provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.13

This Surveillance demonstrates that DG non-critical protective functions (e.g., high jacket water temperature) are bypassed on an ECCS initiation test signal and critical protective functions trip the DG to avert substantial damage to the DG unit. The non-critical trips are bypassed during DBAs and provide alarms on abnormal engine conditions. These alarms provide the operator with necessary information to react appropriately. The DG availability to mitigate the DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

~~The 24 month Frequency is based on engineering judgment, taking into consideration plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

The SR is modified by a Note. This Note is not applicable to Division 3. The reason for the Note is that performing the Surveillance removes a required DG from service. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1) Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

3) Post maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to reestablish OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns). Performance of this Surveillance is allowed provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.13 (continued)

or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.

SR 3.8.1.14

Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(3), requires demonstration ~~once per 18 months~~ that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours - 22 hours of which is at a load equivalent to the continuous rating of the DG, and 2 hours

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.14 (continued)

of which is at a load equivalent to 110% of the continuous duty rating of the DG. An exception to the loading requirements is made for Division 1 and 2 DGs since the load carrying capability testing of the Transamerica Delaval Inc. (TDI) diesel generators (Division 1 and 2) has been limited. Division 1 and 2 DGs are operated for 24 hours at a load greater than or equal to the maximum expected post accident load; the first 2 hours of which is at the continuous rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelube and warmup, discussed in SR 3.8.1.2, and for gradual loading, discussed in SR 3.8.1.3, are applicable to this SR.

In order to ensure that the DG is tested under load conditions that are as close to design conditions as possible, testing must be performed using a power factor ≤ 0.9. This power factor is chosen to be representative of the actual design basis inductive loading that the DG could experience. Limits on the frequency and voltage during the 24 hour run are unnecessary because this test is performed with the DG connected in parallel to offsite power, and the power factor which is to be maintained is specified.

Insert 2

~~The 24 month Frequency takes into consideration unit conditions required to perform the surveillance, and is consistent with the intent of Regulatory Guide 1.108 (Ref. 9) paragraph C.2.a to perform this test at refueling intervals~~.

This Surveillance is modified by two Notes. Note 1 states that momentary transients due to changing bus loads do not invalidate this test. The load band for the Division 1 and 2 DGs is provided to avoid routine overloading of these DGs. While this Surveillance allows operation of the Division 1 and 2 DGs in the band of 5600 kW to 7000 kW, a range of 5600 kW to 5800 kW will normally be used in order to minimize wear on the DGs. This is the load range referred to in Note 1. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. Similarly, momentary power factor transients above the limit do not invalidate the test.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.14 (continued)

The reason for Note 2 is that credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1) Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2) Post maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to maintain OPERABILITY or reliability.

SR 3.8.1.15

This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within 10 seconds for Divisions 1 and 2 and 13 seconds for Division 3. The times are derived from the requirements of the accident analysis to respond to a design basis large break LOCA.

~~The 24 month Frequency takes into consideration unit conditions required to perform the surveillance, and is consistent with the intent of Regulatory Guide 1.108 (Ref. 9) paragraph C.2.a.~~

Insert 2

This SR has been modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The requirement that the diesel has operated for at least 1 hour at full load conditions prior to performance of this Surveillance is based on manufacturer recommendations for achieving hot conditions. The load band for the Division 1 and 2 DGs is provided to avoid routine overloading of these DGs. While this Surveillance allows operation of the Division 1 and 2 DGs in the band of 5600 kW to 7000 kW, a range of 5600 kW to 5800 kW will normally be used in order to minimize wear on the DGs. This is the load range

(continued)

Provided for Information Only

SURVEILLANCE REQUIREMENTS

SR 3.8.1.15 (continued)

referred to in Note 1. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. Momentary transients due to changing bus loads do not invalidate this test. Note 2 allows all DG starts to be preceded by an engine prelube period to minimize wear and tear on the diesel during testing.

SR 3.8.1.16

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), this Surveillance ensures that the manual synchronization and load transfer from the DG to each required offsite power can be made and that the DG can be returned to ready-to-load status when offsite power is restored. It also ensures that the undervoltage logic is reset to allow the DG to reload if a subsequent loss of offsite power occurs. The DG is considered to be in ready-to-load status when the DG is at rated speed and voltage, the output breaker is open and can receive an auto-close signal on bus undervoltage. Portions of the synchronization circuit are associated with the DG and portions with each offsite circuit. If a failure in the synchronization requirement of the Surveillance occurs, depending on the specific affected portion of the synchronization circuit, either the DG or an associated offsite circuit is declared inoperable.

~~The 24 month Frequency takes into consideration unit conditions required to perform the surveillance, and is consistent with the intent of Regulatory Guide 1.108 (Ref. 9) paragraph C.2.a to perform this test at refueling intervals.~~

Insert 2

This SR is modified by a Note. This Note is not applicable to Division 3. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1) Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.16 (continued)

2) Post maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to reestablish OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns). Performance of this Surveillance is allowed provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.

SR 3.8.1.17

Demonstration of the test mode override ensures that the DG availability under accident conditions is not compromised as the result of testing. Interlocks to the LOCA sensing circuits cause the DG to automatically reset to ready-to-load operation if an ECCS initiation signal is received during operation in the test mode. Ready-to-load operation is defined as the DG running at rated speed and voltage with the DG output breaker open. These provisions for automatic switchover are required by IEEE-308 (Ref. 13), paragraph 6.2.6(2).

The requirement to automatically energize the emergency loads with offsite power is essentially identical to that of SR 3.8.1.12. The intent in the requirement associated with SR 3.8.1.17.b is to show that the emergency loading is not affected by the DG operation in test mode. In lieu of actual demonstration of connection and energization of loads, testing that adequately shows the capability of the emergency loads to perform these functions is acceptable.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.17 (continued)

This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

~~The 24 month Frequency takes into consideration unit conditions required to perform the surveillance, and is consistent with the intent of Regulatory Guide 1.108 (Ref. 9) paragraph C.2.a to perform this test at refueling intervals.~~

Insert 2

This SR has been modified by a Note. This Note is not applicable to Division 3. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

(continued)

No Change - Included for Context

SURVEILLANCE REQUIREMENTS

SR 3.8.1.17 (continued)

1) Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2) Post maintenance testing that requires performance of portions of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to reestablish OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns). Performance of portions of this Surveillance is allowed provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment

SR 3.8.1.18

Under accident conditions, loads are sequentially connected to the bus by the time delay relays. The time delay relays control the permissive and starting signals to motor breakers to prevent overloading of the bus power supply due to high motor starting currents. The 10% load sequence time tolerance ensures that sufficient time exists for the bus power supply to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. Reference 2 provides a summary of the automatic loading of ESF buses.

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.18 (continued)

~~The 24 month Frequency takes into consideration unit conditions required to perform the surveillance, and is consistent with the intent of Regulatory Guide 1.108 (Ref. 9) paragraph C.2.a to perform this test at refueling intervals.~~

Insert 2

This SR is modified by a Note. The reason for the Note is that performing the Surveillance during these MODES would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge plant safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.1.18 (continued)

1. Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2. Post maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to reestablish OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns). Performance of this Surveillance is allowed provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed Surveillance, a successful Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the Surveillance is performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.

SR 3.8.1.19

In the event of a DBA coincident with a loss of offsite power, the DGs are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded.

This Surveillance demonstrates the DG operation, as discussed in the Bases for SR 3.8.1.11, during a loss of offsite power actuation test signal in conjunction with an ECCS initiation signal. In lieu of actual demonstration of connection and energization of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.19 (continued)

the entire connection and loading sequence is verified. The verification for assuring that the auto-connected emergency loads are energized has a timing requirement associated with Division 3. Thus verification for Division 1 or 2 is simply a check that the auto-connected loads are energized, whereas the verification for Division 3 includes a check that the auto-connected loads are energized in ≤ 13 seconds.

Insert 2

~~The Frequency of 24 months takes into consideration plant conditions required to perform the Surveillance and is intended to be consistent with an expected fuel cycle length of 24 months.~~

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil being continuously circulated and temperature maintained

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.19 (continued)

consistent with manufacturer recommendations for Division 1 and 2 DGs. For the Division 3 DG, standby conditions mean that the lube oil is heated by the jacket water and continuously circulated through a portion of the system as recommended by the vendor. Engine jacket water is heated by an immersion heater and circulates through the system by natural circulation. Note 2 is not applicable to Division 3. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge plant safety systems. Credit may be taken for unplanned events that satisfy this SR. Examples of unplanned events may include:

1) Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2) Post maintenance testing that requires performance of portions of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to reestablish OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns). Performance of portions of this Surveillance is allowed provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for this assessment.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.20

This Surveillance demonstrates that the DG starting independence has not been compromised. Also, this Surveillance demonstrates that each engine can achieve proper speed within the specified time when the DGs are started simultaneously.

Insert 2

~~The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9).~~ During operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation, and as a result, plant safety systems. Therefore, this Surveillance shall only be performed during shutdown.

This SR is modified by a Note. The reason for the Note is to minimize wear on the DG during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.20 (continued)

continuously circulated and temperature maintained consistent with manufacturer recommendations for Division 1 and 2 DGs. For the Division 3 DG, standby conditions mean that the lube oil is heated by the jacket water and continuously circulated through a portion of the system as recommended by the vendor. Engine jacket water is heated by an immersion heater and circulates through the system by natural circulation.

(continued)

BASES (continued)

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. USAR, Chapter 8.
3. Regulatory Guide 1.9.
4. USAR, Chapter 6.
5. USAR, Chapter 15.
6. Regulatory Guide 1.93.
7. Generic Letter 84-15, July 2, 1984.
8. 10 CFR 50, Appendix A, GDC 18.
9. Regulatory Guide 1.108.
10. Regulatory Guide 1.137.
11. ANSI C84.1, 1982.
12. ASME, Boiler and Pressure Vessel Code, Section XI.
13. IEEE Standard 308.
14. ~~NUMARC 87-00, Revision 1, August 1991~~.

Provided for Information Only

BASES

ACTIONS (continued)

E.1

With the required starting air receiver pressure < 210 psig, sufficient capacity for five successive DG start attempts may not exist. However, as long as the receiver pressure is ≥ 165 psig for Division 1, 2, and 3, there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit.

A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period.

F.1

With a Required Action and associated Completion Time not met, or the stored diesel fuel oil, lube oil, or starting air subsystem not within limits for reasons other than addressed by Conditions A through E, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable.

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for 7 days at maximum expected post LOCA loading. The 7 day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

~~The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.~~

Insert 2

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.3.2

This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of maximum expected post LOCA load operation for each DG. This requirement is based on the DG manufacturer's consumption values for the run time of the DG. The 7 day lube oil inventory for the Division 1 and 2 diesel engines represents the minimum volume of lube oil required to safely sustain engine operation (sump tank oil level above the lube oil pump suction foot valve) plus the volume of lube oil that would be consumed during 7 days of continuous operation. The 7 day lube oil inventory limit for the Division 3 diesel engine represents the minimum volume of lube oil required to safely sustain engine operation (sump tank oil level at dipstick low level) plus the volume of lube oil that would be consumed during 7 days of continuous operation.

The lube oil sump inventories identified herein correspond to the following lube oil sump tank dipstick readings:

Division 1 and 2
374 Gallons - 3 1/2" above the dipstick LOW mark
350 Gallons - 1 1/2" above the dipstick LOW mark

Division 3
260 Gallons - 4 3/8" below dipstick HIGH mark
236 Gallons - 5 1/2" below dipstick HIGH mark

~~A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run times are closely monitored by the plant staff.~~

Insert 2

SR 3.8.3.3

The tests of fuel oil prior to addition to the storage tanks are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate detrimental impact on diesel engine combustion and operation. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.3.3 (continued)

intended to assure: 1) that the sample taken is not more than 31 days old at the time of adding the fuel oil to the storage tank, and 2) that the results of a new fuel oil sample (sample obtained prior to addition but not more than 31 days prior to) are obtained within 31 days after addition. The 31 day period is acceptable because the fuel oil properties of interest, even if not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs.

Fuel oil degradation during long term storage shows up as an increase in particulate, mostly due to oxidation. The presence of particulate does not mean that the fuel oil will not burn properly in a diesel engine. However, the particulate can cause fouling of filters and fuel oil injection equipment, which can cause engine failure.

Particulate concentration should be determined in accordance with ASTM D2276-88, Method A (Ref. 6). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing.

The Frequency of this Surveillance takes into consideration fuel oil degradation trends indicating that particulate concentration is unlikely to change between Frequency intervals.

SR 3.8.3.4

This Surveillance ensures that, without the aid of the air compressor, sufficient air start capacity for each DG is available. The system design provides for a minimum of five engine starts without recharging. The pressure specified in this SR reflects the value at which the five starts can be accomplished, but is not so high as to result in failing the limit due to normal cycling of the air compressor. Division 1, 2, and 3 DGs have two independent air start subsystems per DG. For Division 1 and 2 DGs, this Surveillance is met provided one air start receiver for an engine is pressurized

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.4 (continued)

≥ 210 psig. For Division 3 DG, this Surveillance is met provided two air start receivers are pressurized ≥ 210 psig. ~~The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure~~.

Insert 2

SR 3.8.3.5

Periodic removal

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. ~~Removal~~ of water from the storage tanks ~~once every 92 days~~ eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. ~~The Surveillance Frequencies are established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent a failure of this SR provided that accumulated water is removed during performance of the Surveillance~~.

Insert 2

SR 3.8.3.6

Draining of the fuel oil stored in the supply tanks, removal of accumulated sediment, and tank cleaning are required ~~at 10 year intervals by Regulatory Guide 1.137 (Ref. 2), paragraph 2.f~~. This SR is typically performed in conjunction with the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 7), examinations of the tanks. At this time, a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code in accordance with ASME Code Section 11 Article IWD-5000 will be performed. To preclude the introduction of surfactants in the fuel oil system, the cleaning should be accomplished using sodium hypochlorite solutions, or their equivalent, rather than soap or detergents. This SR is for

. Insert 2

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.6 (continued)

preventive maintenance. The presence of sediment does not necessarily represent a failure of this SR provided that accumulated sediment is removed during performance of the Surveillance.

REFERENCES

1. USAR, Section 9.5.4.
2. Regulatory Guide 1.137.
3. ANSI N195, Appendix B, 1976.
4. USAR, Chapter 6.
5. USAR, Chapter 15.
6. ASTM Standards: D4057-95 (Reapproved 2000); D1298-85; D975-89; D4176-86; D2276-88.
7. ASME, Boiler and Pressure Vessel Code, Section XI.

Provided for Information Only

BASES

ACTIONS (continued)

C.1 and C.2

If the DC electrical power subsystem cannot be restored to OPERABLE status within the associated Completion Time, the unit 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 and to MODE 4 within 36 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. The Completion Time to bring the unit to MODE 4 is consistent with the time required in Regulatory Guide 1.93 (Ref. 7).

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge helps to ensure the effectiveness of the charging system and the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery (or battery cell) and maintain the battery (or battery cell) in a fully charged state. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the initial voltages assumed in the battery sizing calculations. ~~The 7 day Frequency is consistent with manufacturer's recommendations and IEEE-450 (Ref. 8)~~.

Insert 2

SR 3.8.4.2

Visual inspection to detect corrosion of the battery connections, or measurement of the resistance of each inter-cell, inter-rack, inter-tier, and terminal connection, provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance.

~~The Surveillance Frequency for these inspections, which can detect conditions that can cause power losses due to resistance heating, is 92 days. This Frequency is considered acceptable based on operating experience related to detecting corrosion trends.~~

Insert 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.3

Visual inspection of the battery cells, cell plates, and battery racks provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance. The presence of physical damage or deterioration does not necessarily represent a failure of this SR, provided an evaluation determines that the physical damage or deterioration does not affect the OPERABILITY of the battery (its ability to perform its design function).

~~The 24 month Frequency of the Surveillance is based on engineering judgement, taking into consideration the desired unit conditions to perform the Surveillance. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle.~~

Insert 2

SR 3.8.4.4 and SR 3.8.4.5

Visual inspection and resistance measurements of inter-cell, inter-rack, inter-tier, and terminal connections provides an indication of physical damage or abnormal deterioration that could indicate degraded battery condition. The anti-corrosion material is used to ensure good electrical connections and to reduce terminal deterioration. The visual inspection for corrosion is not intended to require removal of and inspection under each terminal connection.

The removal of visible corrosion is a preventive maintenance SR. The presence of visible corrosion does not necessarily represent a failure of this SR, provided visible corrosion is removed during performance of this Surveillance.

~~The 24 month Frequency of the Surveillance is based on engineering judgement, taking into consideration the desired unit conditions to perform the Surveillance. The 24 month Frequency is based on operating experience, and is consistent with a typical industry refueling cycle~~.

Insert 2

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.6

Battery charger capability requirements are based on the design capacity of the chargers (Ref. 4). According to Regulatory Guide 1.32 (Ref. 9), the battery charger supply is required to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensure that these requirements can be satisfied.

Insert 2

~~The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these 24 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.~~

SR 3.8.4.7

A battery service test is a special test of the battery's capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length correspond to the design duty cycle requirements as specified in Reference 4.

Insert 2

~~The 24 month Frequency takes into consideration unit conditions required to perform the surveillance and is consistent with the intent of Regulatory Guide 1.32 (Ref. 9) and Regulatory Guide 1.129 (Ref. 10) to perform this test at refueling intervals.~~

This SR is modified by a Note. The Note allows the ~~once per 60 months~~ periodic performance of SR 3.8.4.8 in lieu of SR 3.8.4.7. This substitution is acceptable because SR 3.8.4.8 represents a more severe test of battery capacity than SR 3.8.4.7.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.8

A battery performance test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

The acceptance criteria for this Surveillance is consistent with IEEE-450 (Ref. 8) and IEEE-485 (Ref. 11). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements.

performed in accordance with the Surveillance Frequency Control Program

The Surveillance Frequency for this test is normally ~~60 months~~, or every 18 months if the battery shows degradation, or if the battery has reached 85% of its expected life. Degradation is indicated, according to IEEE-450 (Ref. 8), when the battery capacity drops more than 10% of rated capacity from its previous performance test, or is below 90% of the manufacturer's rating. These Frequencies are based on the recommendations in IEEE-450 (Ref. 8). ~~The 60 month test is taken directly from the IEEE recommended surveillance interval.~~ The 18 month interval has been the approved interval since initial licensing and meets the intent of the IEEE to perform the test at a reduced test interval when battery degradation or battery aging reaches the predetermined limits discussed above.

Insert 2

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. Regulatory Guide 1.6, March 10, 1971.
3. IEEE Standard 308, 1978.
4. USAR, Section 8.3.2.
5. USAR, Chapter 6.
6. USAR, Chapter 15.
7. Regulatory Guide 1.93, December 1974.
8. IEEE Standard 450, 1995.

(continued)

Provided for Information Only

BASES

ACTIONS

A.1, A.2, and A.3 (continued)

must be obtained for each connected cell. Taking into consideration both the time required to perform the required verification and the assurance that the battery cell parameters are not severely degraded, this time is considered reasonable. The verification is repeated at 7 day intervals until the parameters are restored to Category A and B limits. This periodic verification is consistent with the normal Frequency of pilot cell surveillances.

Continued operation is only permitted for 31 days before battery cell parameters must be restored to within Category A and B limits. Taking into consideration that while battery capacity is degraded, sufficient capacity exists to perform the intended function and to allow time to fully restore the battery cell parameters to normal limits, this time is acceptable for operation prior to declaring the DC batteries inoperable.

B.1

When any battery parameter is outside the Category C limits for any connected cell, sufficient capacity to supply the maximum expected load requirement is not assured and the associated battery must be declared inoperable. Additionally, other potentially extreme conditions, such as not completing the Required Actions of Condition A within the required Completion Time or average electrolyte temperature of representative cells falling below 72°F, also are cause for immediately declaring the associated battery inoperable.

SURVEILLANCE REQUIREMENTS

SR 3.8.6.1

The SR verifies that Category A battery cell parameters are consistent with IEEE-450 (Ref. 3), which recommends regular battery inspections including electrolyte level, float voltage, and specific gravity of pilot cells. ~~The 7 day frequency ensures that these inspections are performed within the frequency recommended by IEEE-450 (Ref. 3).~~

Insert 2

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.6.2

~~The quarterly inspection of specific gravity and voltage is consistent with IEEE-450 (Ref. 3)~~. Insert 2 In addition, within 72 hours of a battery overcharge > 145 V, the battery must be demonstrated to meet Category B limits. This inspection is also consistent with IEEE-450 (Ref. 3), which recommends special inspections following a severe overcharge, to ensure that no significant degradation of the battery occurs as a consequence of such overcharge.

SR 3.8.6.3

This Surveillance verifies that the average temperature of representative cells is ≥ 72°F is consistent with a recommendation of IEEE-450 (Ref. 3)~~, which states that the temperature of electrolytes in representative cells should be determined on a quarterly basis~~. Insert 2 Ten connected cells shall be sampled during this Surveillance.

Lower than normal temperatures act to inhibit or reduce battery capacity. This SR ensures that the operating temperatures remain within an acceptable operating range. This limit is based on manufacturer's recommendations.

Table 3.8.6-1

This table delineates the limits on electrolyte level, float voltage, and specific gravity for three different categories. The meaning of each category is discussed below.

Category A defines the normal parameter limit for each designated pilot cell in each battery. The cells selected as pilot cells are those whose electrolyte level, float voltage, and specific gravity approximate the state of charge of the entire battery.

The Category A limits specified for electrolyte level are based on manufacturer's recommendations and are consistent with the guidance in IEEE-450 (Ref. 3), with the extra 1/4 inch allowance above the maximum level indication mark for operating margin to account for temperature and charge effects. In addition to this allowance, footnote (a) to Table 3.8.6-1 permits the electrolyte level to be above the specified maximum level during equalizing charge, provided

(continued)

Provided for Information Only

BASES

ACTIONS (continued)

D.1

With one or more Division 3 AC or DC electrical power distribution subsystems inoperable, the Division 3 powered systems are not capable of performing their intended functions. Immediately declaring the HPCS System inoperable allows the ACTIONS of LCO 3.5.1, "ECCS – Operating," to apply appropriate limitations on continued reactor operation.

E.1

Condition E corresponds to a level of degradation in the electrical distribution system that causes a required safety function to be lost. When more than one Condition is entered, and this results in the loss of a required function, the plant is in a condition outside the accident analysis. Therefore, no additional time is justified for continued operation. LCO 3.0.3 must be entered immediately to commence a controlled shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

Meeting this Surveillance verifies that the AC and DC electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical divisions is maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. Additionally, when the Fuel Handling Building Ventilation Exhaust System is not required to be OPERABLE per LCO 3.7.9, "Fuel Handling Building Ventilation Exhaust System," 480 V MCC EF-2-D-11 is not required to be energized to satisfy the requirements of this Surveillance. ~~The 7 day Frequency takes into account the redundant capability of the AC and DC electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~

Insert 2

(continued)

Provided for Information Only

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, A.2.4, and A.2.5 (continued)

would not be entered. Therefore, Required Action A.2.5 is provided to direct declaring the associated required shutdown cooling subsystems inoperable, and not in operation, which results in taking the appropriate RHR-SDC ACTIONS.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required AC and DC electrical power distribution subsystems should be completed as quickly as possible in order to minimize the time the plant safety systems may be without power.

SURVEILLANCE REQUIREMENTS

SR 3.8.8.1

This Surveillance verifies that the required AC and DC electrical power distribution subsystems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures that the appropriate separation and independence of the electrical divisions is maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the required buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. Additionally, when the Fuel Handling Building Ventilation Exhaust System is not required to be OPERABLE per LCO 3.7.9, "Fuel Handling Building Ventilation Exhaust System," 480 MCC EF-2-D-11 is not required to be energized to satisfy the requirements of this Surveillance. ~~The 7 day Frequency takes into account the redundant capability of the AC and DC electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~

Insert 2

REFERENCES

1. USAR, Chapter 6.
2. USAR, Chapter 15.

Provided for Information Only

BASES

ACTIONS

A.1, A.2.1, and A.2.2 (continued)

Like Required Action A.1, Required Actions A.2.1 and A.2.2 ensure that unacceptable operations are blocked (e.g., loading fuel into a cell with the control rod withdrawn). One use for the A.2 Required Actions is to permit performance of SR 3.9.1.1 once, prior to fuel movement, without the need for subsequent performance if the fuel movement period extends longer than the ~~7 day~~ periodic Frequency of the SR. This permits continued fuel movement under the protection of the continuous rod block inserted by the Actions.

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

Performance of a CHANNEL FUNCTIONAL TEST demonstrates each required refueling equipment interlock will function properly when a simulated or actual signal indicative of a required condition is injected into the logic. The CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps so that the entire channel is tested.

~~The 7 day Frequency is based on engineering judgment and is considered adequate in view of other indications of refueling equipment interlocks and their associated input status that are available to unit operations personnel~~.

Insert 2

(continued)

Provided for Information Only

BASES

ACTIONS

A.1 and A.2 (continued)

fuel assemblies. Action must continue until all such control rods are fully inserted. Control rods in core cells containing no fuel assemblies do not affect the reactivity of the core and, therefore, do not have to be inserted.

SURVEILLANCE REQUIREMENTS

SR 3.9.2.1

Proper functioning of the refuel position one-rod-out interlock requires the reactor mode switch to be in refuel. During control rod withdrawal in MODE 5, improper positioning of the reactor mode switch could, in some instances, allow improper bypassing of required interlocks. Therefore, this Surveillance imposes an additional level of assurance that the refuel position one-rod-out interlock will be OPERABLE when required. By "locking" the reactor mode switch in the proper position (i.e., removing the reactor mode switch key from the console while the reactor mode switch is positioned in refuel), an additional administrative control is in place to preclude operator errors from resulting in unanalyzed operation.

Insert 2

~~The Frequency of 12 hours is sufficient in view of other administrative controls utilized during refueling operations to ensure safe operation~~.

SR 3.9.2.2

Performance of a CHANNEL FUNCTIONAL TEST on each channel demonstrates the associated refuel position one-rod-out interlock will function properly when a simulated or actual signal indicative of a required condition is injected into the logic. The CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps so that the entire channel is tested. ~~The 7 day Frequency is considered adequate because of demonstrated circuit reliability, procedural controls on control rod withdrawals, and indications available in the control room to alert the operator of control rods not fully inserted.~~ Insert 2
To perform the required testing, the applicable condition must be entered (i.e., a control rod must be withdrawn from its full-in position). Therefore, this SR has been modified

(continued)

No Change - Included for Context

BASES

SURVEILLANCE REQUIREMENTS	<u>SR 3.9.2.2</u> (continued) by a Note that states the CHANNEL FUNCTIONAL TEST is not required to be performed until 1 hour after any control rod is withdrawn.	
REFERENCES	1. 10 CFR 50, Appendix A, GDC 26. 2. USAR, Section 7.7.1.6. 3. USAR, Section 15.4.1.1.	

No Change - Included for Context

BASES

APPLICABLE SAFETY ANALYSES (continued)	Additionally, prior to fuel reload, all control rods must be fully inserted to minimize the probability of an inadvertent criticality. Control rod position satisfies Criterion 3 of the NRC Final Policy Statement on Technical Specification Improvements (58 FR 39132).
LCO	All control rods must be fully inserted during applicable refueling conditions to minimize the probability of an inadvertent criticality during refueling.
APPLICABILITY	During MODE 5, loading fuel into core cells with control rods withdrawn may result in inadvertent criticality. Therefore, the control rods must be inserted before loading fuel into a core cell. All control rods must be inserted before loading fuel to ensure that a fuel loading error does not result in loading fuel into a core cell with the control rod withdrawn. In MODES 1, 2, 3, and 4, the reactor pressure vessel head is installed, and no fuel loading activities are possible. Therefore, this Specification is not applicable in these MODES.
ACTIONS	<u>A.1</u> With all control rods not fully inserted when loading fuel assemblies into the core, an inadvertent criticality could occur that is not analyzed in the USAR. All in-core fuel loading operations must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position.
SURVEILLANCE REQUIREMENTS	<u>SR 3.9.3.1</u> During refueling, to ensure that the reactor remains subcritical, all control rods must be fully inserted prior to and during fuel loading. Periodic checks of the control rod position ensure this condition is maintained.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1 (continued)

~~The 12 hour Frequency takes into consideration the procedural controls on control rod movement during refueling as well as the redundant functions of the refueling interlocks.~~ Insert 2

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.

2. USAR Section 15.4.1.1.

BASES (continued)

LCO

Each withdrawn control rod must be OPERABLE. The withdrawn control rod is considered OPERABLE if the scram accumulator pressure is ≥ 1520 psig and the control rod is capable of being automatically inserted upon receipt of a scram signal. Inserted control rods have already completed their reactivity control function, and therefore are not required to be OPERABLE.

APPLICABILITY

During MODE 5, withdrawn control rods must be OPERABLE to ensure that in a scram the control rods will insert and provide the required negative reactivity to maintain the reactor subcritical.

For MODES 1 and 2, control rod requirements are found in LCO 3.1.2, "Reactivity Anomalies," LCO 3.1.3, "Control Rod OPERABILITY," LCO 3.1.4, "Control Rod Scram Times," and LCO 3.1.5, "Control Rod Scram Accumulators." In MODES 3 and 4, with the reactor mode switch in the shutdown position a control rod block (LCO 3.3.2.1) ensures all control rods are inserted, thereby preventing criticality during shutdown conditions. This provides adequate requirements for control rod OPERABILITY during these conditions.

ACTIONS

A.1

With one or more withdrawn control rods inoperable, action must be immediately initiated to fully insert the inoperable withdrawn control rod(s). Inserting the control rod(s) ensures that the shutdown and scram capabilities are not adversely affected. Actions must continue until the inoperable withdrawn control rod(s) is fully inserted.

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1 and SR 3.9.5.2

During MODE 5, the OPERABILITY of control rods is primarily required to ensure that a withdrawn control rod will automatically insert if a signal requiring a reactor shutdown occurs. Because no explicit analysis exists for automatic shutdown during refueling, the shutdown function is satisfied if the withdrawn control rod is capable of automatic insertion and the associated CRD scram accumulator pressure is ≥ 1520 psig.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1 and SR 3.9.5.2 (continued)

~~The 7 day Frequency takes into consideration equipment reliability, procedural controls over the scram accumulators, and control room alarms and indicating lights that indicate low accumulator charge pressures~~.

Insert 2

SR 3.9.5.1 is modified by a Note that allows 7 days after withdrawal of the control rod to perform the Surveillance. This acknowledges that the control rod must first be withdrawn before performance of the Surveillance.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.

2. USAR, Section 15.4.1.1.

No Change - Included for Context

BASES

APPLICABLE SAFETY ANALYSES (continued)	assembly, dropping an assembly on the RPV flange will result in reduced releases of fission gases. Based on this judgment, and the physical dimensions which preclude normal operation with water level 23 feet above the flange, a slight reduction in this water level is acceptable. RPV water level satisfies Criterion 2 of the NRC Final Policy Statement on Technical Specification Improvements (58 FR 39132).
LCO	A minimum water level of 22 ft 9 inches above the top of the RPV flange is required to ensure that the radiological consequences of a postulated fuel handling accident are within acceptable limits, as provided by the guidance of Reference 1.
APPLICABILITY	LCO 3.9.6 is applicable during movement of irradiated fuel assemblies within the RPV. The LCO minimizes the possibility of a fuel handling accident in containment that is beyond the assumptions of the safety analysis. Requirements for handling of new fuel assemblies or control rods (where water depth to the RPV flange is not of concern) are covered by LCO 3.9.7, "RPV Water - New Fuel or Control Rods." Requirements for fuel handling accidents in the spent fuel storage pools and upper fuel storage pool are covered by LCO 3.7.7, "Fuel Pool Water Level."
ACTIONS	<u>A.1</u> If the water level is < 22 ft 9 inches above the top of the RPV flange, all operations involving movement of irradiated fuel assemblies within the RPV shall be suspended immediately to ensure that a fuel handling accident cannot occur. The suspension of irradiated fuel movement shall not preclude completion of movement of a component to a safe position.
SURVEILLANCE REQUIREMENTS	<u>SR 3.9.6.1</u> Verification of a minimum water level of 22 ft 9 inches above the top of the RPV flange ensures that the design basis for the postulated fuel handling accident analysis

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1 (continued)

during refueling operations is met. Water at the required level limits the consequences of damaged fuel rods, which are postulated to result from a fuel handling accident in containment (Ref. 2).

~~The Frequency of 24 hours is based on engineering judgment and is considered adequate in view of the large volume of water and the normal procedural controls on valve positions, which make significant unplanned level changes unlikely.~~

Insert 2

REFERENCES

1. Regulatory Guide 1.183, July 2000.
2. USAR, Section 15.7.6.
3. Deleted
4. 10 CFR 50.67.

No Change - Included for Context

BASES

APPLICABLE SAFETY ANALYSES (continued)	RPV water level satisfies Criterion 2 of the NRC Final Policy Statement on Technical Specification Improvements (58 FR 39132).
LCO	A minimum water level of 23 ft above the top of irradiated fuel assemblies seated within the RPV is required to ensure that the radiological consequences of a postulated fuel handling accident are within acceptable limits, as provided by the guidance of Reference 1.
APPLICABILITY	LCO 3.9.7 is applicable when moving new fuel assemblies or handling control rods (i.e., movement with other than the normal control rod drive) over irradiated fuel assemblies seated within the RPV. The LCO minimizes the possibility of a fuel handling accident in containment that is beyond the assumptions of the safety analysis. If irradiated fuel is not present within the RPV, there can be no significant radioactivity release as a result of a postulated fuel handling accident. Requirements for fuel handling accidents in the spent fuel storage pools and upper fuel storage pool are covered by LCO 3.7.7, "Fuel Pool Water Level." Requirements for handling irradiated fuel over the RPV are covered by LCO 3.9.6, "Reactor Pressure Vessel (RPV) Water Level-Irradiated Fuel."
ACTIONS	<u>A.1</u> If the water level is < 23 ft above the top of irradiated fuel assemblies seated within the RPV, all operations involving movement of new fuel assemblies and handling of control rods within the RPV shall be suspended immediately to ensure that a fuel handling accident cannot occur. The suspension of fuel movement and control rod handling shall not preclude completion of movement of a component to a safe position.
SURVEILLANCE REQUIREMENTS	<u>SR 3.9.7.1</u> Verification of a minimum water level of 23 ft above the top of the irradiated fuel assemblies seated within the RPV ensures that the design basis for the postulated fuel handling accident analysis during refueling operations is

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.7.1 (continued)

met. Water at the required level limits the consequences of damaged fuel rods, which are postulated to result from a fuel handling accident in containment (Ref. 2).

Insert 2

~~The Frequency of 24 hours is based on engineering judgment and is considered adequate in view of the large volume of water and the normal procedural controls on valve positions, which make significant unplanned level changes unlikely.~~

REFERENCES

1. Regulatory Guide 1.183, July 2000.
2. USAR, Section 15.7.6.
3. Deleted
4. 10 CFR 50.67.

Provided for Information Only

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.9.8.1

This Surveillance verifies that one RHR shutdown cooling subsystem is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. ~~The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR shutdown cooling subsystem in the control room.~~

Insert 2

REFERENCES

None.

Provided for Information Only

BASES

ACTIONS

C.1 and C.2 (continued)

During the period when the reactor coolant is being circulated by an alternate method (other than by the required RHR shutdown cooling subsystem), the reactor coolant temperature must be periodically monitored to ensure proper functioning of the alternate method. The once per hour Completion Time is deemed appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.9.9.1

This Surveillance verifies that one RHR shutdown cooling subsystem is in operation and circulating reactor coolant. The required flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability. ~~The Frequency of 12 hours is sufficient in view of other visual and audible indications available to the operator for monitoring the RHR shutdown cooling subsystem in the control room.~~

Insert 2

REFERENCES

None.

BASES (continued)

ACTIONS

A.1, A.2, A.3.1, and A.3.2

These Required Actions are provided to restore compliance with the Technical Specifications overridden by this Special Operations LCO. Restoring compliance will also result in exiting the Applicability of this Special Operations LCO.

All CORE ALTERATIONS except control rod insertion, if in progress, are immediately suspended in accordance with Required Action A.1, and all insertable control rods in core cells that contain one or more fuel assemblies are fully inserted within 1 hour, in accordance with Required Action A.2. This will preclude potential mechanisms that could lead to criticality. Suspension of CORE ALTERATIONS shall not preclude the completion of movement of a component to a safe condition. Placing the reactor mode switch in the shutdown position will ensure that all inserted control rods remain inserted and result in operation in accordance with Table 1.1-1. Alternatively, if in MODE 5, the reactor mode switch may be placed in the refuel position, which will also result in operating in accordance with Table 1.1-1. A Note is added to Required Action A.3.2 to indicate that this Required Action is not applicable in MODES 3 and 4, since only the shutdown position is allowed in these MODES. The allowed Completion Time of 1 hour for Required Actions A.2, A.3.1, and A.3.2 provides sufficient time to normally insert the control rods and place the reactor mode switch in the required position, based on operating experience, and is acceptable given that all operations that could increase core reactivity have been suspended.

SURVEILLANCE REQUIREMENTS

SR 3.10.2.1 and SR 3.10.2.2

Meeting the requirements of this Special Operations LCO maintains operation consistent with or conservative to operating with the reactor mode switch in the shutdown position (or the refuel position for MODE 5). The functions of the reactor mode switch interlocks that are not in effect, due to the testing in progress, are adequately compensated for by the Special Operations LCO requirements. The administrative controls are to be periodically verified to ensure that the operational requirements continue to be met. ~~The Surveillances performed at the 12 hour and 24 hour~~

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.10.2.1 and SR 3.10.2.2 (continued)

~~Frequencies are intended to provide appropriate assurance that each operating shift is aware of and verify compliance with these Special Operations LCO requirements~~.

Insert 2

REFERENCES

1. USAR, Section 7.2.1.1.

2. USAR, Section 15.4.1.1.

No Change - Included for Context

BASES

ACTIONS (continued)

A.1

If one or more of the requirements specified in this Special Operations LCO are not met, the ACTIONS applicable to the stated requirements of the affected LCOs are immediately entered as directed by Required Action A.1. This Required Action has been modified by a Note that clarifies the intent of any other LCO's Required Action to fully insert all insertable control rods. This Required Action includes exiting this Special Operations LCO's Applicability by returning the reactor mode switch to the shutdown position. A second Note has been added, which clarifies that this Required Action is only applicable if the requirements not met are for a required LCO.

A.2.1 and A.2.2

Required Actions A.2.1 and A.2.2 are alternative Required Actions that can be taken instead of Required Action A.1 to restore compliance with the normal MODE 3 requirements, thereby exiting this Special Operations LCO's Applicability. Actions must be initiated immediately to fully insert all insertable control rods. Actions must continue until all such control rods are fully inserted. Placing the reactor mode switch in the shutdown position will ensure that all inserted rods remain inserted and restore operation in accordance with Table 1.1-1. The allowed Completion Time of 1 hour to place the reactor mode switch in the shutdown position provides sufficient time to normally insert the control rods.

SURVEILLANCE REQUIREMENTS

SR 3.10.3.1, SR 3.10.3.2, and SR 3.10.3.3

The other LCOs made applicable in this Special Operations LCO are required to have their Surveillances met to establish that this Special Operations LCO is being met. If the local array of control rods is inserted and disarmed while the scram function for the withdrawn rod is not available, periodic verification in accordance with SR 3.10.3.2 is required to preclude the possibility of criticality. SR 3.10.3.2 has been modified by a Note, which clarifies that this SR is not required to be met if SR 3.10.3.1 is satisfied for LCO 3.10.3.d.1 requirements, since SR 3.10.3.2 demonstrates that the alternative

(continued)

Provided for Information Only

BASES

SURVEILLANCE REQUIREMENTS

SR 3.10.3.1, SR 3.10.3.2, and SR 3.10.3.3 (continued)

LCO 3.10.3.d.2 requirements are satisfied. Also, SR 3.10.3.3 verifies that all control rods other than the control rod being withdrawn are fully inserted. ~~The 24 hour Frequency is acceptable because of the administrative controls on control rod withdrawals, the protection afforded by the LCOs involved, and hardware interlocks that preclude additional control rod withdrawals.~~ Insert 2

REFERENCES

1. USAR, Section 15.4.1.1.

BASES (continued)

ACTIONS

B.1, B.2.1, and B.2.2 (continued)

expeditious action be taken to either initiate action to restore the CRD and fully insert its control rod, or restore compliance with this Special Operations LCO.

SURVEILLANCE REQUIREMENTS

SR 3.10.4.1, SR 3.10.4.2, SR 3.10.4.3, and SR 3.10.4.4

The other LCOs made applicable by this Special Operations LCO are required to have their associated Surveillances met to establish that this Special Operations LCO is being met. If the local array of control rods is inserted and disarmed while the scram function for the withdrawn rod is not available, periodic verification in accordance with SR 3.10.4.2 is required to preclude the possibility of criticality. SR 3.10.4.3 verifies that all the other control rods other than the control rod being withdrawn are fully inserted. Also SR 3.10.4.4 verifies that a control rod withdrawal block has been inserted ensures that no other control rods can be inadvertently withdrawn under conditions when position indication instrumentation is inoperable for the affected control rod. ~~The 24 hour Frequency is acceptable because of the administrative controls on control rod withdrawals, the protection afforded by the LCOs involved, and hardware interlocks to preclude an additional control rod withdrawal~~.

Insert 2

SR 3.10.4.2 and SR 3.10.4.4 have been modified by Notes, which clarify that these SRs are not required to be met if the alternative requirements demonstrated by SR 3.10.4.1 are satisfied.

REFERENCES

1. USAR, Section 15.4.1.1.

BASES (continued)

ACTIONS

A.1, A.2.1, and A.2.2

If one or more of the requirements of this Special Operations LCO are not met, the immediate implementation of these Required Actions commences activities which will restore operation consistent with the normal requirements for failure to meet LCO 3.3.1.1, LCO 3.3.8.2, LCO 3.9.1, LCO 3.9.2, LCO 3.9.4, and LCO 3.9.5 (i.e., all control rods fully inserted) or with the exceptions granted by this Special Operations LCO. The Completion Times for Required Action A.1, Required Action A.2.1, and Required Action A.2.2 are intended to require that these Required Actions be implemented in a very short time and carried through in an expeditious manner to either initiate action to restore the CRD and insert its control rod, or initiate action to restore compliance with this Special Operations LCO. Actions must continue until either Required Action A.2.1 or Required Action A.2.2 is satisfied.

SURVEILLANCE REQUIREMENTS

SR 3.10.5.1, SR 3.10.5.2, SR 3.10.5.3, SR 3.10.5.4, and SR 3.10.5.5

SR 3.10.5.1 verifies that all the control rods, other than the control rod withdrawn for the removal of the associated CRD, are fully inserted. This is required to ensure the SDM is within limits. SR 3.10.5.2 verifies that the local five by five array of control rods, other than the control rod withdrawn for the removal of the associated CRD, is disarmed, while the scram function for the withdrawn rod is not available. This is required to preclude the possibility of criticality. SR 3.10.5.3 verifies that a control rod withdrawal block has been inserted. This ensures that no other control rods can be inadvertently withdrawn under conditions when position indication instrumentation is inoperable for the withdrawn control rod. The Surveillance for LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," which is made applicable by this Special Operations LCO, is required in order to establish that this Special Operations LCO is being met. Also, SR 3.10.5.5 verifies that no other CORE ALTERATIONS are being made. This is required to ensure the assumptions of the safety analysis are satisfied.

Periodic verification of the administrative controls established by this Special Operations LCO is prudent to preclude the possibility of an inadvertent criticality. ~~The~~

(continued)

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.10.5.1, SR 3.10.5.2, SR 3.10.5.3, SR 3.10.5.4, and SR 3.10.5.5 (continued)

~~24 hour Frequency is acceptable, given the administrative controls on control rod removal and hardware interlocks to block an additional control rod withdrawal~~. Insert 2

REFERENCES

1. USAR, Section 15.4.1.1.

Provided for Information Only

BASES (continued)

APPLICABILITY

Operation in MODE 5 is controlled by existing LCOs. The allowance to comply with this Special Operations LCO in lieu of the ACTIONS of LCO 3.9.3, LCO 3.9.4 or LCO 3.9.5 is appropriately controlled by requiring all fuel to be removed from cells whose "full in" indicators are allowed to be bypassed.

ACTIONS

A.1, A.2, A.3.1, and A.3.2

If one or more of the requirements of this Special Operations LCO are not met, the immediate implementation of these Required Actions commences activities which will restore operation consistent with the normal requirements for refueling (i.e., all control rods inserted in core cells containing one or more fuel assemblies) or with the exceptions granted by this Special Operations LCO. The Completion Times are intended to require that these Required Actions be implemented in a very short time and carried through in an expeditious manner.

SURVEILLANCE REQUIREMENTS

SR 3.10.6.1, SR 3.10.6.2, and SR 3.10.6.3

Periodic verification of the administrative controls established by this Special Operations LCO is prudent to preclude the possibility of an inadvertent criticality. ~~The 24 hour Frequency is acceptable, given the administrative controls on fuel assembly and control rod removal, and takes into account other indications of control rod status available in the control room.~~

Insert 2

REFERENCES

1. USAR, Section 15.4.1.1.

Provided for Information Only

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.10.8.1, SR 3.10.8.2 and SR 3.10.8.3

The other LCOs made applicable in this Special Operations LCO are required to have applicable Surveillances met to establish that this Special Operations LCO is being met. However, the control rod withdrawal sequences during the SDM tests may be enforced by the RPC (LCO 3.3.2.1, Function 1b, MODE 2 requirements) or by a second licensed operator or other qualified member of the technical staff. As noted, either the applicable SRs for the RPC (LCO 3.3.2.1) must be satisfied according to the applicable Frequencies (SR 3.10.8.2), or the proper movement of control rods must be verified (SR 3.10.8.3). This latter verification (i.e., SR 3.10.8.3) must be performed during control rod movement to prevent deviations from the specified sequence. These surveillances provide adequate assurance that the specified test sequence is being followed.

SR 3.10.8.4

Periodic verification of the administrative controls established by this LCO will ensure that the reactor is operated within the bounds of the safety analysis. ~~The 12 hour Frequency is intended to provide appropriate assurance that each operating shift is aware of and verifies compliance with these Special Operations LCO requirements.~~

Insert 2

SR 3.10.8.5

Coupling verification is performed to ensure the control rod is connected to the control rod drive mechanism and will perform its intended function when necessary. The Surveillance requires verifying that a control rod does not go to the withdrawn overtravel position when it is fully withdrawn. The overtravel position feature provides a positive check on the coupling integrity, since only an uncoupled CRD can reach the overtravel position. The verification is required to be performed any time a control rod is withdrawn to the "full out" notch position or prior to declaring the control rod OPERABLE after work on the control rod or CRD System that could affect coupling. Until the control rod reaches the "full out" position where coupling can be verified, the nuclear instrumentation is observed for any indicated response during withdrawal. This Frequency is acceptable, considering the low probability that a control rod will become uncoupled when it is not being moved and operating experience related to uncoupling events.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.10.8.6

CRD charging water header pressure verification is performed to ensure the motive force is available to scram the control rods in the event of a scram signal. A minimum scram accumulator pressure is specified, below which the capability of the accumulator to perform its intended function becomes degraded and the accumulator is considered inoperable. The minimum accumulator pressure of 1520 psig is well below the expected pressure of 1750 psig. ~~The 7 day Frequency has been shown to be acceptable through operating experience and takes into account indications available in the control room.~~

Insert 2

REFERENCES

1. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel, GESTAR II" (latest approved revision).

2. Letter, T.A. Pickens (BWROG) to G.C. Lainas (NRC), "Amendment 17 to General Electric Licensing Topical Report NEDE-24011-P-A," August 15, 1986.

ENCLOSURE B

DOCUMENTATION OF PNPP PRA TECHNICAL ADEQUACY

DOCUMENTATION OF PNPP PRA TECHNICAL ADEQUACY

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DOCUMENTATION OF PNPP PRA TECHNICAL ADEQUACY

1.0 OVERVIEW

The implementation of the Surveillance Frequency Control Program (also referred to as Technical Specifications Initiative 5b) at the Perry Nuclear Power Plant, (PNPP) will follow the guidance provided by Nuclear Energy Institute (NEI) in NEI 04-10, Revision 1 [Ref. 1] in evaluating proposed surveillance test interval (STI; also referred to as "surveillance frequency") changes. The following steps of the risk-informed STI revision process are common to proposed changes to all STIs within the proposed licensee-controlled program.

- Each proposed STI revision is reviewed to determine whether there are any commitments made to the NRC that may prohibit changing the interval. If there are no related commitments, or the commitments may be changed using a commitment change process based on NRC endorsed guidance, then evaluation of the STI revision would proceed. If a commitment exists and the commitment change process does not permit the change without NRC approval, then the proposed STI revision cannot be implemented. Only after receiving NRC approval to change the commitment could the proposed STI revision proceed.

- A qualitative analysis is performed for each proposed STI revision that involves several considerations as explained in NEI 04-10, Revision 1.

- Each proposed STI revision is reviewed by an expert panel, referred to as the Integrated Decisionmaking Panel (IDP), which is normally the same panel as is used for Maintenance Rule implementation, but with the addition of specialists with experience in surveillance tests and system or component reliability. If the IDP approves the STI revision, the change is documented, implemented, and available for future audits by the NRC. If the IDP does not approve the STI revision, the STI value is left unchanged.

- Performance monitoring is conducted as recommended by the IDP. In some cases, no additional monitoring may be necessary beyond that already conducted under the Maintenance Rule. The performance monitoring helps to confirm that no failure mechanisms related to the revised test interval become important enough to alter the information provided for the justification of the interval changes.

- The IDP is responsible for periodic review of performance monitoring results. If it is determined that the time interval between successive performances of a surveillance test is a factor in the unsatisfactory performances of the surveillance, the IDP will adjust the STI as needed to provide reasonable assurance of continued satisfactory performance.

- In addition to the above steps, the Probabilistic Risk Assessment (PRA) is used, when possible, to quantify the effect of a proposed individual STI revision compared to acceptance criteria in NEI 04-10, Revision 1. Neither the current PNPP PRA model nor the industry generic failure data, for which they are based upon, distinguish between the time-related failure contribution (i.e.; the standby time-related failure rate) and the cyclic demand-related failure contribution (i.e., the demand stress failure probability) for standby component failure modes (e.g., NUREG/CR-6928 [Ref. 2] assumes these failures are on a demand basis). Since this distinction is not made, FENOC, in accordance with NEI 04-10, Revision 1, will assume that all failures are time-related in calculating the risk impact of a proposed STI adjustment, to obtain the maximum test-limited risk contribution. If a further breakdown of failure probability is required to remove conservatism from the risk impact calculation of a proposed surveillance frequency change, it shall be justified through data and/or engineering analyses. Furthermore, FENOC will abide by the cautionary sentence in NEI 04-10, Revision 1, Step 8, third paragraph, which states, "...caution should be taken in dividing the failure probability into time-related and cyclic demand-related contributions because the test-limited risk can be underestimated when only part of the failure rate is considered as being time-related while this may not be the case." Also, the cumulative impact of all risk-informed STI revisions on all applicable PRA evaluations (i.e., internal events, external events and shutdown) is compared to the risk acceptance criteria as delineated in NEI 04-10, Revision 1. For those cases where the STI can not be modeled in the plant PRA (or where a particular PRA model does not exist for a given hazard group), a qualitative or bounding analysis is performed to provide justification for the acceptability of the proposed test interval change.

The NEI 04-10, Revision 1 methodology endorses the guidance provided in Regulatory Guide (RG) 1.200, Revision 1 [Ref. 3], “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities.” The guidance in RG 1.200, Revision 1 indicates that the following steps should be followed when performing PRA assessments:

1. Identify the parts of the PRA used to support the application.
    - Identify structures, systems, and components (SSCs), operational characteristics affected by the application and how these are implemented in the PRA model.
    - A definition of the acceptance criteria used for the application.

2. Identify the scope of risk contributors addressed by the PRA model.
   - If not full scope (i.e., internal events, external events, all modes), identify appropriate compensatory measures or provide bounding arguments to address the risk contributors not addressed by the PRA model.

3. Summarize the risk assessment methodology used to assess the risk of the application.
   - Include how the PRA model was modified to appropriately model the risk impact of the change request.

4. Demonstrate the Technical Adequacy of the PRA.
   - Identify plant changes (design or operational practices) that have been incorporated at the site, but are not yet in the PRA model and justify why the change does not impact the PRA results used to support the application.
   - Document peer review findings and observations that are applicable to the parts of the PRA required for the application, and for those that have not yet been addressed justify why the significant contributors would not be impacted.
   - Document that the parts of the PRA used in the decision are consistent with applicable standards endorsed by the Regulatory Guide (currently, RG 1.200, Revision 1, which includes only the internal events PRA standard). Provide justification to show that where specific requirements in the standard are not adequately met, it will not unduly impact the results.
   - Identify key assumptions and approximations relevant to the results used in the decision-making process.

Item 1 satisfies the requirements of RG 1.200, Revision 1, Section 3.1 Identification of Parts of a PRA Used to Support the Application. Item 2 satisfies the requirements of RG 1.200, Revision 1, Section 3.2 Scope of Risk Contributors Addressed by the PRA Model. Item 3 satisfies one of the requirements of RG 1.200, Revision 1, Section 4.2 Licensee Submittal Documentation. Item 4 satisfies the requirements of RG 1.200, Revision 1, Section 3.3 Demonstration of Technical Adequacy of the PRA, and the remaining requirements of RG 1.200, Revision 1, Section 4.2.

Because of the broad scope of potential Technical Specifications Initiative 5b applications and the fact that the risk assessment details will differ from application to application, each of the issues encompassed in Items 1 through 3 above will be covered with the preparation of each individual PRA assessment made in support of the individual STI interval requests. The purpose of the remaining portion of this attachment is to address the requirements identified in Item 4 above.

2.0 TECHNICAL ADEQUACY OF THE PRA MODEL

The PNPP PRA model of record, PRA-PY1-FP-R0c [Ref. 4], and supporting documentation have been maintained as a living program, with updates directed every other refueling cycle (approximately every four years) to reflect the as-built, as-operated plant. Interim updates may be prepared and issued in between regularly scheduled model updates on an as needed basis. Typically, an interim revision would be used for an update that would cause a change in Core Damage Frequency of greater than 10 percent, a change in Large Early Release Frequency of greater than 20 percent, or for changes that could significantly impact a risk informed application. Interim models are also released following focused peer reviews once the associated findings and suggestions have been addressed. (Note that under the FirstEnergy Nuclear Operating Company (FENOC) PRA Program, if a portion of the model has been upgraded to satisfy the PRA Standard, (Large Early Release Frequency and Internal Flooding models at PNPP for example), that portion of the model will not be released until after a focused peer review has been conducted and any findings and suggestions have been addressed.)

The PNPP model is highly detailed and includes a wide variety of initiating events, modeled systems, operator actions, and common cause events. The PRA quantification process used is based on the large linked fault tree methodology, which is a well-known and accepted methodology in the industry. The model is maintained and quantified using the EPRI Risk & Reliability suite of software programs.

FENOC employs a multi-faceted, structured approach in establishing and maintaining the technical adequacy and plant fidelity of the PRA models for all FENOC nuclear generation sites. This approach includes a proceduralized PRA maintenance and update process, as well as the use of self assessments and independent peer reviews. The following information describes this approach as it applies to the PNPP PRA.

2.1 PRA Maintenance and Update

The PNPP PRA model and supporting documentation have been maintained as a living program, which is routinely updated in order to reflect the current plant configuration and to reflect the accumulation of additional plant operating history and component data. The latest update to the PNPP PRA occurred in June 2013 with the effective reference model, PRA-PY1-FP-R0c [Ref. 4], being released at that time. Since the release of the updated model PRA-PY1-FP-R0 in February 2011, there have been three interim updates. Large Early Release Frequency (LERF) modeling was incorporated per PRA-PY1-FP-R0a, Internal Flooding modeling was incorporated per PRA-PY1-FP-R0b, and PRA-PY1-FP-R0c was an administrative interim release to update results presentation.

The interim revisions (Large Early Release and Internal Flooding) were performed to align the PNPP PRA model such that it conforms to the technical requirements of RG 1.200, Revision 1 [Ref. 3], and the ASME/ANS PRA Standard [Ref. 5], and is capable of being used to support current and future risk-informed licensing applications and risk management activities. The PRA-PY1-FP-R0c PRA model currently includes internal events and internal flooding. Level 1 and Level 2 results are provided via this model.

The FENOC risk management process ensures that the applicable PRA model is an accurate reflection of the as-built and as-operated plant. This process is defined in the FENOC PRA Program, which consists of a governing procedure (NOPM-CC-6000 [Ref. 6], “Probabilistic Risk Assessment Program”) and subordinate implementation procedures.

Procedure NOPM-CC-6000, serves as the higher tier procedure and establishes the FENOC PRA Program and provides administrative requirements for the maintenance and upgrade of the FENOC PRA models and risk-informed applications. The overall objective of the PRA Program is to provide technically adequate PRA models such that the requirements set forth in RG 1.200 are satisfied for use in risk-informed applications. Working in conjunction with the above procedure, NOBP-CC-6001 [Ref. 7], “Probabilistic Risk Assessment Model Management,” establishes the administrative and technical requirements for the maintenance and upgrade of the FENOC PRA models. PRA related documentation is maintained within the records capture process.

2.2 Plant Changes Not Yet Incorporated into the PRA Model

A procedurally controlled process is used to maintain configuration control of the PNPP PRA model, data, and software. In addition to model control, administrative mechanisms are in place to assure that changes from plant modifications, procedure changes, changes to calculations, and industry operating experiences (OEs) are appropriately screened, dispositioned, and tracked for incorporation into the PRA model if that change would impact the model. As part of this process, if any proposed changes are identified, which are perceived to significantly increase or decrease risk, they are incorporated into a working model (given their known level of detail at the time), and the results are compared to the effective model of record to identify if the proposed change should be pursued. These processes help to assure that the PNPP PRA reflects the as-built, as-operated plant within the limitations of the PRA methodology, and that the significance of future expected changes or enhancements are understood and managed.

An "interfacing" process exists that involves an ongoing solicitation of review of any changes that may have an impact upon the PRA model. Any changes to the PRA model and/or its supporting documentation are captured within a tracking database for PRA implementation tracking and future disposition. The PNPP PRA staff observes Licensed Operator Requalification (LOR) simulator training to facilitate operator action response development and modeling and to ensure current human reliability modeling reflects actual expected response. Additionally, PRA modeling of initiating events are provided to the Operations for their review and comment.

As part of the PRA evaluation for each STI change request, a review of open items in the tracking database will be performed for applicability and an assessment of the impact on the results of the application will be made prior to presenting the results of the risk analysis to the IDP. If a nontrivial impact is expected, then performance of additional sensitivity studies or PRA model changes to confirm the impact on the risk analysis will be included.

2.3 Applicability of Peer Review Findings and Observations (F&Os)

The Level 1 and Level 2 PNPP PRA analyses were originally developed in support of Generic Letter 88-20 [Ref. 8], "Individual Plant Examination for Severe Accident Vulnerabilities – 10 CFR 50.54(f)." The PNPP Individual Plant Examination (IPE) and the Individual Plant Examination of External Events (IPEEE) were submitted to the NRC under separate letters in July 1992 and June 1996, respectively. The conclusions of these evaluations did not identify any vulnerabilities, however, a number of insights were gained. Since the inception of these studies, the PRA model has evolved and continues to evolve. Extensive efforts have been applied since the 2008 timeframe to ensure the PRA model satisfies RG 1.200 quality requirements. A summary of the PNPP PRA history is listed below.

Date	PRA Related Event
07/1992	Individual Plant Examination (IPE) NRC submittal
06/1996	Individual Plant Examination – External Events (IPEEE) NRC submittal
07/1996	Re-submittal of Individual Plant Examination – External Events due to identified reproduction errors
05/1997	BWROG PSA Peer Review Certification
05/2008	ASME RA-Sb-2005 PRA Standard Gap Analysis Self Assessment with contractor support

02/2011	Model update including CAFTA conversion. (Model PRA-PY1-FP-R0)
11/2011	Level 2 \ Large Early Release Frequency RG 1.200 Focused Peer Review
08/2012	Interim model update to include Level 2 \ LERF with Focused RG 1.200 Peer Review comments addressed. (Model PRA-PY1-FP-R0a)
07/2012	Internal Flooding Focused RG 1.200 Peer Review
01/2013	Interim model update to include Internal Flooding with Focused RG 1.200 Peer Review comments addressed. (Model PRA-PY1-FP-R0b)
06/2013	Interim model (Model PRA-PY1-FP-R0c) release (administrative release)
2014 (future)	Expected release of model PRA-PY1-FP-R1 (data updates, identified gaps, enhancements, etc. and seismic modeling incorporation)

The PNPP PRA model has benefited from a number of PRA peer reviews and self assessments to establish the technical adequacy of the PRA. As part of the supporting documentation structure for the PRA model, a Documentation Roadmap Notebook [Ref. 9] is maintained that captures the below reviews, their associated gaps, findings, and suggestions and the response to each as to how they have been dispositioned, and where within the associated documentation the item is addressed. This notebook also captures internal items (notifications) that may have been identified as requiring correction/resolution throughout the process. Reviews have included the following:

- 1997 – Perry Nuclear Power Plant PSA Peer Review Certification
- 2008 – PRA Standard (2005 revision) Gap Analysis Self Assessment
- 2011 – Focused Large Early Release Frequency Peer Review
- 2012 – Focused Internal Flooding Peer Review

These reviews are discussed below.

2.3.1 Perry Nuclear Power Plant PSA Peer Review Certification

Under the auspices of the BWR Owner's Group (BWROG), a PSA Peer Review Certification Process was performed on the PNPP PRA model in May 1997. The purpose of the peer review process was to provide a method for establishing the technical quality of a PRA for the spectrum of potential risk-informed plant licensing applications for which the PRA model may be used. The PRA peer review process used a seven person team composed of industry PRA and system analysts, each with significant expertise in both PRA development and applications. This team provided both an objective review of the PRA technical elements and a subjective assessment, based on their PRA experience, regarding the acceptability of the PRA elements. The team used a set of checklists as a framework within which to evaluate the scope, comprehensiveness, completeness, and fidelity of the PRA model.

The general scope of the implementation of the PRA peer review included a review of eleven main technical elements, using checklist tables (to cover the elements and sub-elements), for an at-power PRA including internal events, internal flooding, and containment performance, with focus on LERF.

The findings and observations (F&Os) from this process were prioritized into four categories (A through D) based upon importance to the completeness of the model. F&Os identified during this process have been addressed as part of the update processes and are documented in the Documentation Roadmap Notebook [Ref. 9].

2.3.2 2008 PRA Standard (2005 revision) Gap Analysis Self Assessment

In May 2008, an independent review of the model of record (PRACY11R2) was conducted by PRA vendor to determine any gaps that were present between this model and the 2005 version of the ASME PRA Standard Addendum "B", as amplified by Regulatory Guide 1.200 (RG 1.200) Rev. 1 [Ref. 3] for the purpose of determining model quality in satisfying Category II Supporting Requirements [Ref. 10]. The independent review involved gap indication for all supporting requirements with the exception of Internal Flooding and Large Early Release Frequency. These two supporting requirements were internally determined to be in need of a complete upgrade and thus were determined to not be of the quality required to support review. The intent at the time this review was to completely upgrade these portions of the model individually and have focused peer reviews conducted against these upgrades at a later time.

For the purpose of the review, significance levels were defined as:

Significance Level	Definition
A	Expected impact to be significantly nonconservative
B	Affects results of PRA. Expected impact to be nonconservative but small.
C	Affects results of PRA. Expected impact to be conservative/very small.
D	Documentation issue.

Gaps as a result of this review were binned as follows:

PRA Technical Area	**A**	**B**	**C**	**D**
Initiating Events	1	6	2	5
Accident Sequences Evaluation			2	4
Success Criteria		1		6
Systems Analysis		8	4	6
Human Reliability Analysis		3	3	13
Data Analysis		2	3	14
Internal Flooding (not reviewed)				
Quantification and Results Interpretation		2	2	18
LERF Analysis (not reviewed)	5		6	16
Maintenance and Update	1	1		5
Totals	6	17	20	82

As part of an effort to convert the PRA model to CAFTA, the above gaps in conjunction with previously identified PSA Peer Certification were incorporated into the model. The Documentation Roadmap Notebook [Ref. 9] previously mentioned was created to capture disposition of these items.

2.3.3 Perry 2011 Focused Large Early Release Frequency Peer Review

In September 2011, the PNPP model underwent a focused peer review for the Large Early Release Frequency (LERF) portion of the model. This review was conducted as an independent assessment outside of the BWROG RG 1.200 PRA Peer Review Process. The LERF model was upgraded for the purpose of gaining compliance with the ASME/ANS PRA Standard (RA-Sa-2009) and US Nuclear Regulatory Guide 1.200, Revision 2 [Ref. 11] for Category II Supporting Requirements [Ref 12].

As a result of this peer review, a total of five (5) unique findings and 15 unique suggestions were identified. In accordance with the FENOC PRA model management process as discussed previously, an interim model was released (PRA-PY1-FP-R0a) following peer review finding/suggestion incorporation to include the LERF portion of the model into the full power PRA model. Interim model PRA-PY1-FP-R0a became the effective reference model in August 2012. All findings and suggestions associated with this peer review were captured in the Documentation Roadmap Notebook [Ref. 9] via reference to Appendix E of the Level 2 Notebook [Ref. 23].

2.3.4 2012 Focused Internal Flooding Peer Review

In July 2012, the PNPP model underwent a focused peer review for the Internal Flooding portion of the model. This review was conducted under the BWROG RG 1.200 PRA Peer Review Process. The Internal Flooding model was upgraded for the purpose of gaining compliance with the ASME/ANS PRA standard (along with the NRC clarifications provided in Regulatory Guide 1.200 revision 2 [Ref. 12]) for Category II Supporting Requirements [Ref. 14].

As a result of the peer review, a total of nine (9) unique findings and 6 unique suggestions were identified. In accordance with the FENOC PRA model management process as discussed previously, an interim model was released (PRA-PY1-FP-R0b) following peer review finding/suggestion incorporation to include the Internal Flooding portion of the model into the full power PRA model. PRA-PY1-FP-R0b became effective in January 2013 and has currently been superseded by PRA-PY1-FP-R0c, which was an administrative interim model release. All findings and suggestions associated with this peer review were captured in the Documentation Roadmap Notebook [Ref. 9].

2.4 Consistency with Applicable PRA Standards

The PNPP PRA model has addressed all of the applicable F&Os identified in the previous 1997 PNPP PSA PRA Peer Review Certification, the 2008 PRA Standard (2005 revision) Gap Analysis Self-Assessment, the 2011

Focused Large Early Release Frequency Peer Review, and the 2012 Focused Internal Flood PRA Peer Review. The PRA model is considered to be fundamentally compliant with RG 1.200, Revision 1 for the scope of this application, and meets Capability Category II or above in the ASME PRA Standard (RA-Sb-2005). The PRA-PY1-FP-R0c PRA model [Ref. 4] is capable of supporting all risk-informed applications requiring Capability Category I or II.

A summary of the PNPP final resolutions to the above reviews and assessments are documented in the Documentation Roadmap Notebook [Ref. 9]. This notebook is maintained under the PRA records capture process and is maintained with every revision of the model. As the notebook is auditable, it is not reproduced within this enclosure.

2.5 Identification of Key Assumptions

The overall Technical Specifications Initiative 5b process is a risk-informed process with the PRA model results providing one of the inputs to the IDP to determine if an STI change is acceptable. The NEI 04-10 methodology recognizes that a key area of uncertainty for this application is the standby failure rate utilized in the determination of the STI extension impact. Therefore, the methodology requires the performance of selected sensitivity studies on the standby failure rate of the component(s) of interest for the STI assessment.

The results of the standby failure rate sensitivity study plus the results of any additional sensitivity studies identified during the performance of the reviews as outlined in Section 2.2 above, including a review of the identified key sources of uncertainty and insights that were developed for the PNPP PRA model for their potential impacts, for each STI change assessment will be documented and included in the results of the risk analysis that goes to the IDP.

3.0 EXTERNAL EVENTS CONSIDERATIONS

The NEI 04-10, Revision 1, methodology allows for STI change evaluations to be performed in the absence of quantifiable PRA models for all external hazards. For those cases where the STI cannot be modeled in the plant PRA (or where a particular PRA model does not exist for a given hazard group), a qualitative or bounding analysis is performed to provide justification for the acceptability of the proposed STI change.

External hazards were evaluated in the PNPP Individual Plant Examination of External Events (IPEEE) submittal in response to the NRC IPEEE Program (Generic Letter 88-20, Supplement 4) [Ref. 15]. The IPEEE Program was a one-time review of external hazard risk and was limited in its purpose for the identification of potential plant vulnerabilities and the understanding of associated severe accident risks.

The results of the PNPP IPEEE study are documented in the PNPP Individual Plant Examination of External Events for Severe Accident Vulnerabilities Report submitted to the NRC [Ref. 16, 17, and 18]. Each of the PNPP external event evaluations were reviewed by the NRC and compared to the requirements of NUREG-1407 [Ref. 19]. The NRC transmitted to FENOC on March 9, 2001 their Staff Evaluation Report of the PNPP IPEEE Submittal [Ref. 20].

The PNPP PRA is a Level 1 and 2 model that includes internal events and internal floods. For external events such as fire, seismic, extreme winds and other external events, the risk assessments from the IPEEE [Ref. 18] can be used for insights on changes to surveillance intervals.

Fire Risk

The PNPP PRA does not include a fire model. Therefore, the results of the fire risk assessment performed for the IPEEE must be qualitatively assessed for impact of the STI extension on fire risk. The IPEEE fire risk analysis quantified a CDF impact by combining the frequency of fires and the probability of detection/suppression failure with the remaining safety function unavailabilities. A systematic approach was used to identify critical fire areas where fires could fail safety functions and pose an increased risk of core damage if other safety functions are unavailable. The CDF due to fires is 3.1E-05/yr, with the dominant risk being fires in the control room, switchgear rooms, and specific elevations of the Control Complex, Fuel Handling, and Turbine Building. [Ref 17]

Seismic Risk

The PNPP PRA does not currently include a seismic model at the time of this submittal, however, efforts are currently ongoing in the development of this seismic risk model (expected release in 2014). Therefore, the results of the seismic risk assessment performed for the IPEEE must be qualitatively assessed for impact of the STI extension on seismic risk until the Seismic PRA model becomes effective. The IPEEE seismic risk analysis did not quantify a CDF impact, but performed a seismic margin assessment that showed that PNPP is capable of attaining shutdown conditions and maintaining these conditions for 72 hours following a review level earthquake (RLE) of 0.3g. [Ref. 17]

High Winds, Floods, and Other External Events

The risk of other external events such as high winds, floods, aircraft accidents, hazardous materials and turbine missiles was assessed in the

PNPP IPEEE. The IPEEE assessments concluded that the impact on PNPP from these events leads to the conclusions that there are no significant events of concern. [Ref. 17]

4.0 SHUTDOWN EVENTS CONSIDERATIONS

PNPP has a defense-in-depth shutdown safety program based on the principles contained in NUMARC 91-06 [Ref. 21]. Since a PRA model has not been developed for shutdown conditions at PNPP, STI change evaluations involving Systems, Structures, or Components (SSCs) required to function while shutdown will include qualitative information using the NUMARC 91-06 principles. This approach is consistent with the accepted NEI 04-10, Revision 1 [Ref. 1] methodology.

5.0 SUMMARY

The PNPP technical capability evaluations, in combination with the maintenance and update processes described above, provide a robust basis for concluding that the full power internal events PRA model is suitable for use in risk-informed processes such as that proposed for the implementation of a Surveillance Frequency Control Program.

In performing the assessments for the other hazard groups, the qualitative or bounding approach will be utilized. Also, in addition to the standard set of sensitivity studies required per the NEI 04-10, Revision 1, methodology, open items for changes at the site and remaining gaps to specific requirements in the ASME/ANS PRA Standard will be reviewed to determine which, if any, would merit application specific sensitivity studies in the presentation of the application results.

6.0 REFERENCES

1. NEI 04-10, “Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies, Industry Guidance Document,” Nuclear Energy Institute, Revision 1, April 2007.
2. NUREG/CR-6928, Industry-Average Performance for Components and Initiating Events at U.S. Commercial Nuclear Power Plants, February 2007.
3. Regulatory Guide 1.200, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities,” Revision 1, US Nuclear Regulatory Commission, January 2007.
4. PNPP PRA model of record (effective reference model) PRA-PY1-FP-R0c, effective 1/10/2013.
5. ASME/ANS RA-Sa-2009, “Addenda to ASME/ANS RA-S-2008 Standard for Level 1/Large Early Release Frequency Probabilistic Risk

Assessment for Nuclear Power Plant Applications," American Society of Mechanical Engineers and American Nuclear Society, February 2009.

6. NOPM-CC-6000 "Probabilistic Risk Assessment Program," revision 4
7. NOBP-CC-6001 "Probabilistic Risk Assessment Model Management," revision 5
8. U.S. Nuclear Regulatory Commission, Generic Letter 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities – 10 CFR 50.54(f)," December 1988.
9. PRA-PY1-FP-R0c, DR-001, Documentation Roadmap Notebook
10. Scientech PRA GAP Assessment "RG 1.200 vs PRA for Perry Nuclear Power Plant," revision 0, dated July 30,2008
11. Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities," Revision 2, US Nuclear Regulatory Commission, March 2009.
12. "Perry Nuclear Power Plant Evaluation of LERF Model Against RG 1.200 and ASME PRA Standard," revision 0, dated November 2011 prepared by Maracor Software & Engineering, Inc.
13. PRA-PY1-FP-R0b, L2-001, Level 2 Notebook
14. "Perry Nuclear Power Plant Internal Flood PRA Peer Review Report Using ASME PRA Standard Requirements," Final Report, dated August 2012.
15. Letter PY-CEI/NRR-1517L "PNPP Level 2 PRA Submittal," dated July 15, 1992.
16. Letter PY-CEI/NRR-2065L "Submittal of the Individual Plant Examination – External Events," dated June 28, 1996.
17. Letter PY-CEI/NRR-2077L "Re-submittal of the Individual Plant Examination – External Events," dated July 22, 1996.
18. "Individual Plant Examination for Severe Accident Vulnerabilities," Perry Nuclear Power Plant, dated June 1996
19. NUREG-1407, Procedural and Submittal Guidance for the Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities, June 1991.
20. Letter form Douglas V. Pickett (USNRC) to Mr. John K. Wood, FirstEnergy Nuclear Operating Company subject "Perry Nuclear Power Plant, Unit 1 – Review of Individual Plant Examination of External Events (IPEEE) Submittal (TAC NO. M83659)" dated March 9, 2001. Docket No. 50-440
21. NUMARC 91-06, "Guidelines for Industry Actions to Address Shutdown Management," December 1991.

22. NEI 00-02, “Probabilistic Risk Assessment (PRA) Peer Review Process Guidance,” Nuclear Energy Institute, Revision A3, March 2000.

23. NEI 05-04, “Process for Performing Follow-On PRA Peer Reviews Using the ASME PRA Standard (Internal Events),” Nuclear Energy Institute, Revision 2, November 2008.

24. U.S. Nuclear Regulatory Commission, Generic Letter 88-20, “Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities - 10 CFR 50.54(f),” Supplement 4, June 28, 1991.

TSTF-425 (NUREG-1434) Versus
Perry Nuclear Power Plant (PNPP) Cross-Reference

Technical Specification Section Title/Surveillance Description	TSTF-425	PNPP
Definitions	**1.1**	**1.1**
Control Rod Operability	**3.1.3**	**3.1.3**
Control rod position	3.1.3.1	3.1.3.1
Notch test - fully withdrawn control rod one notch	3.1.3.2	---------
Notch test - partially withdrawn control rod one notch	3.1.3.3	3.1.3.2
Control Rod Scram Times	**3.1.4**	**3.1.4**
Scram time testing	3.1.4.2	3.1.4.2
Control Rod Scram Accumulators	**3.1.5**	**3.1.5**
Control rod scram accumulator pressure	3.1.5.1	3.1.5.1
Rod Pattern Control	**3.1.6**	**3.1.6**
Verify rod position sequence	3.1.6.1	3.1.6.1
Standby Liquid Control (SLC) System	**3.1.7**	**3.1.7**
Volume of sodium pentaborate	3.1.7.1	3.1.7.1
Temperature of sodium pentaborate solution	3.1.7.2	3.1.7.2
Temperature of pump suction piping	3.1.7.3	3.1.7.3
Continuity of explosive charge	3.1.7.4	3.1.7.4
Concentration of boron solution	3.1.7.5	3.1.7.5
Manual/power operated valve position	3.1.7.6	3.1.7.6
Pump flow rate	3.1.7.7	3.1.7.7**
Flow through one SLC subsystem	3.1.7.8	3.1.7.8
Heat traced piping is unblocked	3.1.7.9	3.1.7.9
Sodium pentaborate enrichment	3.1.7.10	---------
Scram Discharge Volume (SDV) Vent and Drain Valves	**3.1.8**	**3.1.8**
Each SDV vent and drain valve open	3.1.8.1	3.1.8.1
Cycle each SDV vent and drain valve fully closed/fully open position	3.1.8.2	3.1.8.2
Each SDV vent and drain valve closes on receipt of scram	3.1.8.3	3.1.8.3
Average Planar Linear Heat Generation Rate (APLHGR)	**3.2.1**	**3.2.1**
APLHGR less than or equal to limits	3.2.1.1	3.2.1.1
Minimum Critical Power Ratio (MCPR)	**3.2.2**	**3.2.2**
MCPR greater than or equal to limits	3.2.2.1	3.2.2.1
Linear Heat Generation Rate (LHGR)	**3.2.3**	**3.2.3**
LHGR less than or equal to limits	3.2.3.1	3.2.3.1
Average Power Range Monitor (APRM) Gain and Setpoints	**3.2.4**	**---------**
MFLPD is within limits	3.2.4.1	---------
APRM setpoints or gain are adjusted for calculated MFLPD	3.2.4.2	---------
Reactor Protection System (RPS) Instrumentation	**3.3.1.1**	**3.3.1.1**
Channel Check	3.3.1.1.1	3.3.1.1.1
Absolute diff. between APRM channels and calculated power	3.3.1.1.2	3.3.1.1.2
Adjust channel to conform to calibrated flow	3.3.1.1.3	3.3.1.1.3
Channel Functional Test (after entering Mode 2)	3.3.1.1.4	3.3.1.1.4
Channel Functional Test (weekly)	3.3.1.1.5	3.3.1.1.5
Calibrate local power range monitors	3.3.1.1.6	3.3.1.1.8
Channel Functional Test (quarterly)	3.3.1.1.7	3.3.1.1.9
Verify source range monitor (SRM) and intermediate range monitor channels overlap	---------	3.3.1.1.6**
IRM/APRM channel overlap	---------	3.3.1.1.7
Calibrate trip units (quarterly)	3.3.1.1.8	3.3.1.1.10
Channel Calibration	3.3.1.1.9	3.3.1.1.11
Channel Functional Test	3.3.1.1.10	3.3.1.1.12

Technical Specification Section Title/Surveillance Description	TSTF-425	PNPP
Channel Calibration	3.3.1.1.11	3.3.1.1.13
Verify APRM Flow Biased STP – High time constant	3.3.1.1.12	3.3.1.1.14
Logic System Functional Test	3.3.1.1.13	3.3.1.1.15
Verify TSV/TCV closure/Trip Oil Press-Low Not Bypassed	3.3.1.1.14	3.3.1.1.16
Calibrate Flow Reference Transmitters	---------	3.3.1.1.17
Verify RPS Response Time	3.3.1.1.15	3.3.1.1.18
Perform Channel Functional Test	---------	3.3.1.1.19
Source Range Monitor (SRM) Instrumentation	**3.3.1.2**	**3.3.1.2**
Channel Check	3.3.1.2.1	3.3.1.2.1
Verify Operable SRM Detector	3.3.1.2.2	3.3.1.2.2
Channel Check	3.3.1.2.3	3.3.1.2.3
Verify count rate	3.3.1.2.4	3.3.1.2.4
Channel Functional Test (Mode 5) (7 days)	3.3.1.2.5	---------
Channel Functional Test (Modes 2, 3, 4) (31 days)	3.3.1.2.6	3.3.1.2.5
Channel Calibration	3.3.1.2.7	3.3.1.2.6
Oscillation Power Range Monitor (OPRM)Instrumentation	**---------**	**3.3.1.3**
Channel Functional Test	---------	3.3.1.3.1
Calibrate LPRMs	---------	3.3.1.3.2
Channel Calibration	---------	3.3.1.3.3
Logic System Functional Test	---------	3.3.1.3.4
Verify OPRM not bypassed	---------	3.3.1.3.5
Verify RPS Response Time	---------	3.3.1.3.6
Control Rod Block Instrumentation	**3.3.2.1**	**3.3.2.1**
Channel Functional Test (>70% RTP)	3.3.2.1.1	3.3.2.1.1
Channel Functional Test (>35% RTP, ≤70% RTP)	3.3.2.1.2	3.3.2.1.2
Channel Functional Test (≤10% RTP in MODE 2)	3.3.2.1.3	3.3.2.1.3
Channel Functional Test (≤10% RTP in MODE 1)	3.3.2.1.4	3.3.2.1.4
Calibrate trip unit	3.3.2.1.5	3.3.2.1.5
Verify RWL high power Function not bypassed	3.3.2.1.6	3.3.2.1.6
Channel Calibration	3.3.2.1.7	3.3.2.1.7
Channel Functional Test	3.3.2.1.8	3.3.2.1.8
Post Accident Monitor (PAM) Instrumentation	**3.3.3.1**	**3.3.3.1**
Channel Check	3.3.3.1.1	3.3.3.1.1
Calibration	3.3.3.1.2	3.3.3.1.3
Remote Shutdown System	**3.3.3.2**	**3.3.3.2**
Channel Check	3.3.3.2.1	3.3.3.2.1
Verify control circuit and transfer switch capable of function	3.3.3.2.2	3.3.3.2.2
Channel Calibration	3.3.3.2.3	3.3.3.2.3
End of Cycle (EOC) - Recirculation Pump Trip (RPT) Instrumentation	**3.3.4.1**	**3.3.4.1**
Channel Functional Test	3.3.4.1.1	3.3.4.1.1
Calibrate trip unit	3.3.4.1.2	---------
Channel Calibration	3.3.4.1.3	3.3.4.1.2
Logic System Functional Test	3.3.4.1.4	3.3.4.1.3
Verify TSV/TCV Closure/Trip Oil Press-Low Not Bypassed	3.3.4.1.5	3.3.4.1.4
Verify EOC-RPT System Response Time	3.3.4.1.6	3.3.4.1.5
Determine RPT breaker interruption time	3.3.4.1.7	3.3.4.1.6

Technical Specification Section Title/Surveillance Description	TSTF-425	PNPP
Anticipated Trip Without Scram - RPT Instrumentation	**3.3.4.2**	**3.3.4.2**
Channel Check	3.3.4.2.1	3.3.4.2.1
Channel Functional Test	3.3.4.2.2	3.3.4.2.2
Calibrate trip unit	3.3.4.2.3	3.3.4.2.3
Channel Calibration	3.3.4.2.4	3.3.4.2.4
Logic System Functional Test	3.3.4.2.5	3.3.4.2.5
Emergency Core Cooling System (ECCS) Instrumentation	**3.3.5.1**	**3.3.5.1**
Channel Check	3.3.5.1.1	3.3.5.1.1
Channel Functional Test	3.3.5.1.2	3.3.5.1.2
Calibrate trip unit	3.3.5.1.3	3.3.5.1.3
Channel Calibration	3.3.5.1.4	3.3.5.1.4
Channel Calibration	3.3.5.1.5	3.3.5.1.5
Logic System Functional Test	3.3.5.1.6	3.3.5.1.6
Verify ECCS Response Time	3.3.5.1.7	---------
Channel Calibration	---------	3.3.5.1.7
Reactor Core Isolation Cooling (RCIC) System Instrumentation	**3.3.5.2**	**3.3.5.2**
Channel Check	3.3.5.2.1	3.3.5.2.1
Channel Functional Test	3.3.5.2.2	3.3.5.2.2
Calibrate trip unit	3.3.5.2.3	3.3.5.2.3
Channel Calibration	3.3.5.2.4	3.3.5.2.4
Logic System Functional Test	3.3.5.2.5	3.3.5.2.5
Channel Calibration	---------	3.3.5.2.6
Primary Containment [and Drywell] Isolation Instrumentation	**3.3.6.1**	**3.3.6.1**
Channel Check	3.3.6.1.1	3.3.6.1.1
Channel Functional Test	3.3.6.1.2	3.3.6.1.2
Calibrate trip unit	3.3.6.1.3	3.3.6.1.3
Channel Calibration	3.3.6.1.4	---------
Channel Calibration	3.3.6.1.5	3.3.6.1.4
Logic System Functional Test	3.3.6.1.6	3.3.6.1.5
Verify Isolation Response Time	3.3.6.1.7	3.3.6.1.6
Channel Functional Test	---------	3.3.6.1.7
Secondary Containment Isolation Instrumentation	**3.3.6.2**	**---------**
Channel Check	3.3.6.2.1	---------
Channel Functional Test	3.3.6.2.2	---------
Calibrate trip unit	3.3.6.2.3	---------
Channel Calibration	3.3.6.2.4	---------
Logic System Functional Test	3.3.6.2.5	---------
Verify Isolation Response Time	3.3.6.2.6	---------
Residual Heat Removal (RHR) Containment Spray System Instrumentation	**3.3.6.3**	**3.3.6.2**
Channel Check	3.3.6.3.1	3.3.6.2.1
Channel Functional Test	3.3.6.3.2	3.3.6.2.2
Calibrate trip unit	3.3.6.3.3	3.3.6.2.3
Channel Calibration	3.3.6.3.4	3.3.6.2.6
Channel Calibration	3.3.6.3.5	3.3.6.2.4
Logic System Functional Test	3.3.6.3.6	3.3.6.2.5

Technical Specification Section Title/Surveillance Description	TSTF-425	PNPP
Suppression Pool Makeup (SPMU) System Instrumentation	**3.3.6.4**	**3.3.6.3**
Channel Check	3.3.6.4.1	3.3.6.3.1
Channel Functional Test	3.3.6.4.2	3.3.6.3.2
Calibrate trip unit	3.3.6.4.3	3.3.6.3.3
Channel Calibration - Quarterly	3.3.6.4.4	3.3.6.3.4
Channel Calibration	3.3.6.4.5	3.3.6.3.5
Logic System Functional Test	3.3.6.4.6	3.3.6.3.6
Relief and Low-Low Set (LLS) Instrumentation	**3.3.6.5**	**3.3.6.4**
Channel Functional Test	3.3.6.5.1	3.3.6.4.1
Calibrate trip unit	3.3.6.5.2	3.3.6.4.2
Channel Calibration	3.3.6.5.3	3.3.6.4.3
Logic System Functional Test	3.3.6.5.4	3.3.6.4.4
CRFA (Control Room Fresh Air) [PNPP – Control Room Emergency Circulation (CRER)] System Instrumentation	**3.3.7.1**	**3.3.7.1**
Channel Check	3.3.7.1.1	3.3.7.1.1
Channel Functional Test	3.3.7.1.2	3.3.7.1.2
Calibrate trip unit	3.3.7.1.3	3.3.7.1.3
Channel Calibration	3.3.7.1.4	3.3.7.1.4
Logic System Functional Test	3.3.7.1.5	3.3.7.1.5
Loss of Power (LOP) Instrumentation	**3.3.8.1**	**3.3.8.1**
Channel Check	3.3.8.1.1	3.3.8.1.1
Channel Functional Test	3.3.8.1.2	3.3.8.1.2
Channel Calibration	3.3.8.1.3	3.3.8.1.3
Logic System Functional Test	3.3.8.1.4	3.3.8.1.4
RPS Electric Power Monitoring	**3.3.8.2**	**3.3.8.2**
Channel Functional Test	3.3.8.2.1	3.3.8.2.1
Channel Calibration	3.3.8.2.2	3.3.8.2.2
System functional test	3.3.8.2.3	3.3.8.2.3
Recirculation Loops Operating	**3.4.1**	**3.4.1**
Recirc loop jet pump flow mismatch with both loops operating	3.4.1.1	3.4.1.1
Flow Control Valves	**3.4.2**	**3.4.2**
Verify FCV fails "as is"	3.4.2.1	3.4.2.1
Verify average rate of movement	3.4.2.2	3.4.2.2
Jet Pumps	**3.4.3**	**3.4.3**
Criteria satisfied for each operating recirc loop	3.4.3.1	3.4.3.1
Safety/Relief Valves (SRVs)	**3.4.4**	**3.4.4**
Safety function lift setpoints	3.4.4.1	3.4.4.1**
Verify relief function SRVs actuate automatically	3.4.4.2	3.4.4.2
Verify SRVs open when manually acturated	3.4.4.3	3.4.4.3
Reactor Coolant System (RCS) Operational Leakage	**3.4.5**	**3.4.5**
RCS unidentified and total leakage increase within limits	3.4.5.1	3.4.5.1
RCS Pressure Isolation Valve (PIV) Leakage	**3.4.6**	**3.4.6**
Equivalent leakage of each PIV	3.4.6.1	3.4.6.1**
RCS Leakage Detection Instrumentation	**3.4.7**	**3.4.7**
Channel Check	3.4.7.1	3.4.7.1
Channel Functional Test	3.4.7.2	3.4.7.2
Channel Calibration	3.4.7.3	3.4.7.3
RCS Specific Activity	**3.4.8**	**3.4.8**
Dose Equivalent I-131 specific activity	3.4.8.1	3.4.8.1

Technical Specification Section Title/Surveillance Description	TSTF-425	PNPP
RHR Shutdown Cooling – Hot Shutdown	**3.4.9**	**3.4.9**
One subsystem operating	3.4.9.1	3.4.9.1
RHR Shutdown Cooling - Cold Shutdown	**3.4.10**	**3.4.10**
One subsystem operating	3.4.10.1	3.4.10.1
RCS Pressure/Temperature Limit	**3.4.11**	**3.4.11**
RCS pressure, temperature, heatup and cooldown rates	3.4.11.1	3.4.11.1
RPV flange/head flange temperatures (tensioning head bolt stud)	3.4.11.7	3.4.11.5
RPV flange/head flange temperatures (after RCS temp $\leq$ 80°F)	3.4.11.8	3.4.11.6
RPV flange/head flange temperatures (after RCS temp $\leq$ 100°F)	3.4.11.9	3.4.11.7
Reactor Steam Dome Pressure	**3.4.12**	**3.4.12**
Verify reactor steam dome pressure	3.4.12.1	3.4.12.1
ECCS - Operating	**3.5.1**	**3.5.1**
Verify injection/spray piping filled with water	3.5.1.1	3.5.1.1
Verify each valve in flow path is in correct position	3.5.1.2	3.5.1.2
Verify ADS header pressure	3.5.1.3	3.5.1.3
Verify ECCS pump flow rate	3.5.1.4	3.5.1.4**
Verify ECCS injection/spray valves actuate automatically	3.5.1.5	3.5.1.5
Verify ADS actuates on initiation signal	3.5.1.6	3.5.1.6
Verify each ADS valve opens when manually actuated	3.5.1.7	3.5.1.7
Verify ECCS response time	---------	3.5.1.8
ECCS - Shutdown	**3.5.2**	**3.5.2**
Verify suppression pool water level	3.5.2.1	3.5.2.1
Verify, for HPCS, suppression pool and CST water level	3.5.2.2	3.5.2.2
Verify ECCS piping filled with water	3.5.2.3	3.5.2.3
Verify each valve in flow path is in correct position	3.5.2.4	3.5.2.4
Verify each ECCS pump develops flow	3.5.2.5	3.5.2.5**
Verify ECCS actuates on initiation signal	3.5.2.6	3.5.2.6
RCIC System	**3.5.3**	**3.5.3**
Verify RCIC piping filled with water	3.5.3.1	3.5.3.1
Verify each valve in flow path is in correct position	3.5.3.2	3.5.3.2
Verify RCIC flow rate (Rx press ≥ 920 and ≤ 1045)	3.5.3.3	3.5.3.3
Verify RCIC flow rate (Rx press ≥ 150 and ≤ 165)	3.5.3.4	3.5.3.4
Verify RCIC actuates on initiation signal	3.5.3.5	3.5.3.5
Primary Containment Air Lock	**3.6.1.2**	**3.6.1.2**
Verify air lock seal air flask [header] pressure	3.6.1.2.2	3.6.1.2.2
Verify only one door can be opened	3.6.1.2.3	3.6.1.2.3
Verify air lock seal pneumatic system pressure decay rate	3.6.1.2.4	3.6.1.2.4
Primary Containment Isolation Valves (PCIVs)	**3.6.1.3**	**3.6.1.3**
Verify purge valve is closed except one valve in a penetration	3.6.1.3.1	3.6.1.3.1
Verify each [20] inch purge valve is closed	3.6.1.3.2	3.6.1.3.2
Verify each manual PCIV outside containment is closed	3.6.1.3.3	3.6.1.3.3
Verify isolation time of each power operated PCIV	3.6.1.3.5	3.6.1.3.5**
Perform leakage rate testing on each PC purge valve	3.6.1.3.6	3.6.1.3.6
Verify isolation time of MSIVs	3.6.1.3.7	3.6.1.3.7**
Verify automatic PCIV actuates to isolation position	3.6.1.3.8	3.6.1.3.8
Verify each purge valve is blocked	3.6.1.3.12	3.6.1.3.12
Verify each backup hydrogen purge system isolation valve is closed	---------	3.6.1.3.13

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Primary Containment Pressure	**3.6.1.4**	**3.6.1.4**
Verify primary containment to secondary containment differential pressure	3.6.1.4.1	3.6.1.4.1
Primary Containment Air Temperature	**3.6.1.5**	**3.6.1.5**
Verify average air temperature is within limit	3.6.1.5.1	3.6.1.5.1
LLS Valves	**3.6.1.6**	**3.6.1.6**
Verify each LLS valve opens when manually actuated	3.6.1.6.1	3.6.1.6.1
Verify LLS system actuates on initiation signal	3.6.1.6.2	3.6.1.6.2
RHR Containment Spray	**3.6.1.7**	**3.6.1.7**
Verify each system manual valve position	3.6.1.7.1	3.6.1.7.1
Verify pump flow rate	3.6.1.7.2	3.6.1.7.2**
Verify automatic valves actuate on initiation signal	3.6.1.7.3	3.6.1.7.3
Verify spray nozzles unobstructed	3.6.1.7.4	3.6.1.7.4**
Penetration Valve Leakage Control System (PVLCS)	**3.6.1.8**	**---------**
Verify air pressure	3.6.1.8.1	---------
Perform system functional test	3.6.1.8.2	---------
Main Steam Isolation Valve (MSIV) Leakage Control System (LCS) [Main Steam Shutoff Valves]	**3.6.1.9**	**----------**
Operate each MSIV LCS blower	3.6.1.9.1	---------
Verify continuity of inboard MSIV LCS heater element	3.6.1.9.2	---------
Perform functional test of each MSIV LCS subsystem	3.6.1.9.3	---------
Feedwater Leakage Control System (FWLCS)	**---------**	**3.6.1.8**
Perform system functional test	---------	3.6.1.8.1
Primary Containment - Shutdown	**---------**	**3.6.1.10**
Verify penetration flow paths closed	---------	3.6.1.10.1
Containment Vacuum Breakers	**---------**	**3.6.1.11**
Verify each breaker is closed	---------	3.6.1.11.1
Perform system functional test	---------	3.6.1.11.2
Verify differential pressure and opening setpoint	---------	3.6.1.11.3
Containment Humidity Control	**---------**	**3.6.1.12**
Verify average temperature-to-relative humidity within limits	---------	3.6.1.12.1
Suppression Pool Average Temperature	**3.6.2.1**	**3.6.2.1**
Verify suppression pool average temperature within limits	3.6.2.1.1	3.6.2.1.1
Suppression Pool Water Level	**3.6.2.2**	**3.6.2.2**
Verify suppression pool water level within limits	3.6.2.2.1	3.6.2.2.1
RHR Suppression Pool Cooling	**3.6.2.3**	**3.6.2.3**
Verify each valve in flow path is in correct position	3.6.2.3.1	3.6.2.3.1
Verify each RHR pump develops flow rate	3.6.2.3.2	3.6.2.3.2**
Suppression Pool Makeup (SPMU) System	**3.6.2.4**	**3.6.2.4**
Verify upper containment pool water level	3.6.2.4.1	3.6.2.4.1
Verify upper containment pool water temperature	3.6.2.4.2	3.6.2.4.2
Verify each system manual valve position	3.6.2.4.3	3.6.2.4.3
Verify upper containment pool gates in place or removed	3.6.2.4.4	3.6.2.4.4
Verify automatic valves actuate on initiation signal	3.6.2.4.5	3.6.2.4.5
Primary Containment and Drywell Hydrogen Igniters	**3.6.3.1**	**3.6.3.2**
Energize each hydrogen igniter division	3.6.3.1.1	3.6.3.2.1
Energize each hydrogen igniter division (4 or more igniters inoperable)	3.6.3.1.2	3.6.3.2.2
Verify igniter current draw	3.6.3.1.3	3.6.3.2.3
Verify igniter current draw	3.6.3.1.4	3.6.3.2.4

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Drywell Purge System [PNPP – Combustible Gas Mixing System]	**3.6.3.2**	**3.6.3.3**
Operate each system	3.6.3.2.1	3.6.3.3.1
Verify flow rate	3.6.3.2.2	3.6.3.3.2
Secondary Containment	**3.6.4.1**	**3.6.4.1**
Verify SC vacuum is > 0.25 inch of vacuum water gauge	3.6.4.1.1	3.6.4.1.1
Verify all SC equipment hatches closed and sealed	3.6.4.1.2	3.6.4.1.2
Verify one SC access door in each opening is closed	3.6.4.1.3	3.6.4.1.3
Verify SC drawn down using one SGTS	3.6.4.1.4	---------
Verify SC can be maintained using one SGTS	3.6.4.1.5	---------
Secondary Containment Isolation Valves (SCIVs)	**3.6.4.2**	**3.6.4.2**
Verify each SC isolation manual valve is closed	3.6.4.2.1	3.6.4.2.1
Verify isolation time of each SCIV	3.6.4.2.2	---------
Verify each automatic SCIV actuates to isolation position	3.6.4.2.3	---------
Standby Gas Treatment (SGT) [Annulus Exhaust Gas Treatment (AEGT)] System	**3.6.4.3**	**3.6.4.3**
Operate each SGT subsystem with heaters operating	3.6.4.3.1	3.6.4.3.1
Verify each SGT subsystem actuates on initiation signal	3.6.4.3.3	3.6.4.3.3
Verify each SGT filter cooler bypass damper can be opened	3.6.4.3.4	---------
Drywell	**3.6.5.1**	**3.6.5.1**
Verify bypass leakage	3.6.5.1.1	3.6.5.1.1
Visually inspect drywell surfaces	3.6.5.1.2	3.6.5.1.2
Perform drywell air lock leakage rate test	---------	3.6.5.1.4
Drywell Air Lock	**3.6.5.2**	**3.6.5.2**
Verify seal leakage rate	3.6.5.2.1	---------
Verify seal air flask [header] pressure	3.6.5.2.2	3.6.5.2.2
Verify only one door can be opened at a time	3.6.5.2.3	3.6.5.2.3
Verify drywell air lock leakage rate	3.6.5.2.4	---------
Verify seal pneumatic pressure decay rate	3.6.5.2.5	3.6.5.2.5
Drywell Isolation Valves	**3.6.5.3**	**3.6.5.3**
Verify purge isolation valve sealed closed	3.6.5.3.1	3.6.5.3.1
Verify purge isolation valve closed	3.6.5.3.2	---------
Verify automatic isolation valve time limit	3.6.5.3.4	3.6.5.3.4**
Verify automatic isolation valves actuate on isolation signal	3.6.5.3.5	3.6.5.3.5
Verify purge isolation valves blocked	3.6.5.3.6	---------
Drywell Pressure	**3.6.5.4**	**3.6.5.4**
Verify drywell-to-primary containment differential pressure	3.6.5.4.1	3.6.5.4.1
Drywell Air Temperature	**3.6.5.5**	**3.6.5.5**
Verify average air temperature	3.6.5.5.1	3.6.5.5.1
Drywell Vacuum Relief System [PNPP – Drywell Post-LOCA Vacuum Relief Valve]	**3.6.5.6**	**3.6.5.6**
Verify vacuum breakers and isolation valves closed	3.6.5.6.1	3.6.5.6.1
Perform functional test	3.6.5.6.2	3.6.5.6.2
Verify opening setpoint	3.6.5.6.3	3.6.5.6.3

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Standby Service Water (SSW) [PNPP – Division 1 and 2 Emergency Service Water (ESW)] System and Ultimate Heat Sink (UHS)	**3.7.1**	**3.7.1**
Verify water level in cooling tower basin	3.7.1.1	---------
Verify water level in pump well of pump structure	3.7.1.2	---------
Verify average water temperature of heat sink	3.7.1.3	---------
Operate each cooling tower fan	3.7.1.4	---------
Verify each SSW valve in flow path is in correct position	3.7.1.5	3.7.1.1
Verify SSW actuates on initiation signal	3.7.1.6	3.7.1.2
HPCS Service Water System [PNPP – Division 3 ESW Subsystem]	**3.7.2**	**3.7.2**
Verify water level	3.7.2.1	---------
Verify each valve in flow path is in correct position	3.7.2.2	3.7.2.1
Verify system actuates on initiation signal	3.7.2.3	3.7.2.2
CRFA [PNPP – Control Room Emergency Recirculation (CRER)] System	**3.7.3**	**3.7.3**
Operate each subsystem	3.7.3.1	3.7.3.1
Verify each subsystem actuates on initiation signal	3.7.3.3	3.7.3.3
Verify each subsystem can maintain positive pressure	3.7.3.4	3.7.3.4**
Control Room AC [PNPP – HVAC] System	**3.7.4**	**3.7.4**
Verify each subsystem has capability to remove heat load	3.7.4.1	3.7.4.1
Main Condenser Offgas	**3.7.5**	**3.7.5**
Verify gross gamma activity rate of the noble gases [PNPP – verify release rate of specified noble gases]	3.7.5.1	3.7.5.1
Verify release rate of specified noble gases	3.7.5.1	3.7.5.2
Main Turbine Bypass System	**3.7.6**	**3.7.6**
Verify one complete cycle of each main turbine bypass valve	3.7.6.1	3.7.6.1
Perform system functional test	3.7.6.2	3.7.6.2
Verify Turbine Bypass System Response Time within limits	3.7.6.3	3.7.6.3
Fuel Storage Pool Water Level	**3.7.7**	**3.7.7**
Verify spent fuel storage pool water level	3.7.7.1	3.7.7.1
Fuel Handling Building (FHB)	**---------**	**3.7.8**
Verify FHB hatches and blocks installed	---------	3.7.8.1
Verify each FHB access door closed	---------	3.7.8.2
FHB Ventilation Exhaust System	**---------**	**3.7.9**
Operate each FHB ventilation exhaust	---------	3.7.9.1
Perform system functional test	---------	3.7.9.3
Perform channel functional test of FHB radiation monitor	---------	3.7.9.4
Emergency Closed Cooling Water (ECCW) System	**---------**	**3.7.10**
Verify required ECCW subsystem valves are in correct position	---------	3.7.10.1
Verify ECCW subsystem actuates on initiation signal	---------	3.7.10.2

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AC Sources - Operating	**3.8.1**	**3.8.1**
Verify correct breaker alignment	3.8.1.1	3.8.1.1
Verify each DG starts from standby conditions/steady state	3.8.1.2	3.8.1.2
Verify each DG is synchronized and loaded	3.8.1.3	3.8.1.3
Verify each day tank level	3.8.1.4	3.8.1.4
Check for and remove accumulated water from day tank	3.8.1.5	3.8.1.5
Verify fuel oil transfer system operates	3.8.1.6	3.8.1.6
Verify each DG starts from standby conditions/quick start	3.8.1.7	3.8.1.7
Verify transfer of power from offsite circuit to alternate circuit	3.8.1.8	3.8.1.8
Verify DG rejects load greater than single largest load	3.8.1.9	3.8.1.9
Verify DG maintains load following load reject	3.8.1.10	3.8.1.10
Verify on loss of offsite power signal	3.8.1.11	3.8.1.11
Verify DG starts on ECCS initiation signal	3.8.1.12	3.8.1.12
Verify DG automatic trips bypassed on ECCS initiation signal	3.8.1.13	3.8.1.13
Verify each DG operates for > 24 hours	3.8.1.14	3.8.1.14
Verify each DG starts from standby conditions/quick restart	3.8.1.15	3.8.1.15
Verify each DG synchronizes with offsite power	3.8.1.16	3.8.1.16
Verify ECCS initiation signal overrides test mode	3.8.1.17	3.8.1.17
Verify interval between each timed load block	3.8.1.18	3.8.1.18
Verify on LOOP in conjunction with ECCS initiation signal	3.8.1.19	3.8.1.19
Verify simultaneous DG starts	3.8.1.20	3.8.1.20
Diesel Fuel Oil, Lube Oil, and Starting Air	**3.8.3**	**3.8.3**
Verify fuel oil storage tank volume	3.8.3.1	3.8.3.1
Verify lube oil inventory	3.8.3.2	3.8.3.2
Verify each DG air start receiver pressure	3.8.3.4	3.8.3.4
Check/remove accumulated water from fuel oil storage tank	3.8.3.5	3.8.3.5
Drain, remove sediment, clean tank	---------	3.8.3.6
DC Sources – Operating	**3.8.4**	**3.8.4**
Verify battery terminal voltage	3.8.4.1	3.8.4.1
Verify each battery charger supplies amperage	3.8.4.2	3.8.4.6
Verify battery capacity is adequate to maintain emergency loads	3.8.4.3	3.8.4.7
Verify no visible corrosion OR verify battery resistance	---------	3.8.4.2
Verify no visual indication of physical deterioration	---------	3.8.4.3
Remove visible corrosion and verify anti-corrosion connections	---------	3.8.4.4
Verify battery resistance	---------	3.8.4.5
Verify battery capacity	---------	3.8.4.8
Battery [Cell] Parameters	**3.8.6**	**3.8.6**
Verify battery float current	3.8.6.1	--------
Verify battery pilot cell voltage	3.8.6.2	--------
Verify battery connected cell electrolyte level	3.8.6.3	--------
Verify battery pilot cell temperature	3.8.6.4	--------
Verify battery connected cell voltage	3.8.6.5	--------
Verify battery capacity during performance discharge test	3.8.6.6	3.8.4.8
Verify battery cell parameters	--------	3.8.6.1
Verify battery cell parameters	--------	3.8.6.2
Verify electrolyte temperature	--------	3.8.6.3
Inverters - Operating	**3.8.7**	**---------**
Verify correct inverter voltage, frequency and alignment	3.8.7.1	---------
Inverters - Shutdown	**3.8.8**	**---------**
Verify correct inverter voltage, frequency and alignment	3.8.8.1	---------

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Distribution System - Operating	**3.8.9**	**3.8.7**
Verify correct breaker alignment/power to distribution subsystems	3.8.9.1	3.8.7.1
Distribution System - Shutdown	**3.8.10**	**3.8.8**
Verify correct breaker alignment/power to distribution subsystems	3.8.10.1	3.8.8.1
Refueling Equipment Interlocks	**3.9.1**	**3.9.1**
Channel Functional Test of refueling equip interlock inputs	3.9.1.1	3.9.1.1
Refuel Position One-Rod-Out Interlock	**3.9.2**	**3.9.2**
Verify reactor mode switch locked in refuel position	3.9.2.1	3.9.2.1
Perform Channel Functional Test	3.9.2.2	3.9.2.2
Control Rod Position	**3.9.3**	**3.9.3**
Verify all control rods fully inserted	3.9.3.1	3.9.3.1
Control Rod Operability - Refuel	**3.9.5**	**3.9.5**
Insert each withdrawn control rod one notch	3.9.5.1	3.9.5.1
Verify each withdrawn control rod scram accumulator press	3.9.5.2	3.9.5.2
Reactor Pressure Vessel (RPV) Water Level - Irradiated Fuel	**3.9.6**	**3.9.6**
Verify RPV water level	3.9.6.1	3.9.6.1
Reactor Pressure Vessel (RPV) Water Level - New Fuel	**3.9.7**	**3.9.7**
Verify RPV water level	3.9.7.1	3.9.7.1
RHR - High Water Level	**3.9.8**	**3.9.8**
Verify one RHR shutdown cooling subsystem operating	3.9.8.1	3.9.8.1
RHR - Low Water Level	**3.9.9**	**3.9.9**
Verify one RHR shutdown cooling subsystem operating	3.9.9.1	3.9.9.1
Reactor Mode Switch Interlock Testing	**3.10.2**	**3.10.2**
Verify all control rods fully inserted in core cells	3.10.2.1	3.10.2.1
Verify no core alterations in progress	3.10.2.2	3.10.2.2
Single Control Rod Withdrawal - Hot Shutdown	**3.10.3**	**3.10.3**
Verify all control rods in five-by-five array are disarmed	3.10.3.2	3.10.3.2
Verify all control rods other than withdrawn rod are fully inserted	3.10.3.3	3.10.3.3
Single Control Rod Withdrawal - Cold Shutdown	**3.10.4**	**3.10.4**
Verify all control rods in five-by-five array are disarmed	3.10.4.2	3.10.4.2
Verify all control rods other than withdrawn rod are fully inserted	3.10.4.3	3.10.4.3
Verify a control rod withdrawal block is inserted	3.10.4.4	3.10.4.4
Single Control Rod Drive (CRD) Removal - Refueling	**3.10.5**	**3.10.5**
Verify all control rods other than withdrawn rod are fully inserted	3.10.5.1	3.10.5.1
Verify all control rods in five-by-five array are disarmed	3.10.5.2	3.10.5.2
Verify a control rod withdrawal block is inserted	3.10.5.3	3.10.5.3
Verify no core alterations in progress	3.10.5.5	3.10.5.5
Multiple CRD Removal-Refuel	**3.10.6**	**3.10.6**
Verify four fuel assemblies removed from core cells	3.10.6.1	3.10.6.1
Verify all other rods in core cells inserted	3.10.6.2	3.10.6.2
Verify fuel assemblies being loaded comply with reload sequence	3.10.6.3	3.10.6.3
Shutdown Margin Test - Refueling	**3.10.8**	**3.10.8**
Verify no other core alterations in progress	3.10.8.4	3.10.8.4
Verify CRD charging water header pressure	3.10.8.6	3.10.8.6
Recirculation Loops - Testing	**3.10.9**	**---------**
Verify LCO 3.4.1 requirements suspended for < 24 hours	3.10.9.1	---------
Verify Thermal power < 5% RTP during Physics Test	3.10.9.2	---------

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Training Startups	3.10.10	**---------**
Verify all operable IRM channels are <25/40 div. of full scale	3.10.10.1	---------
Verify average reactor coolant temperature < 200 F	3.10.10.2	---------
Programs (Surveillance Frequency Control Program)	**5.5.15**	**5.5.15**

Note: Italicized text denotes PNPP plant-specific TS or surveillances

* The Technical Specification Section Title/Surveillance Description portion of this attachment is a summary description of the referenced TSTF-425 (NUREG-1434)/PNPP TS Surveillances, is provided for information purposes only, and is not intended to be a verbatim description of the TS Surveillances.

** This PNPP Surveillance Frequency is provided in another program for the specific interval, is event driven, or is related to a certain condition.