Industry/TSTF Standard Technical Specification Change Traveler

Change in Technical Specifications End States, CE NPSD-1186

NUREGs Affected: ☐ 1430 ☐ 1431 ☑ 1432 ☐ 1433 ☐ 1434

Classification: 1) Technical Change Recommended for CLIIP?: Yes

Priority: 1)High

Simple or Complex Change: Complex

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1.0 Description

CE NPSD-1186, "Technical Justification for the Risk Informed Modification to Selected Action End States for CEOG PWRs, April 2000, modified the end state technical specification (TS) for numerous allowed outage time (AOT) requirements. Most of the requested TS changes are to permit an end state of hot shutdown (Mode 4) rather than the cold shutdown (Mode 5) end state that is contained in the current TSs.

There are differences between the Topical Report, the NRC's Safety Evaluation, and this proposed change. These differences are described and justified in Attachment 1.

2.0 Proposed Change

This Traveler implements the changes described in CE NPSD-1186 and approved by the NRC on July 17, 2001. Twenty-six specifications are affected:
3.3.5 (analog) ESFAS Logic and Manual Trip
3.3.6 (digital) ESFAS Logic and Manual Trip
3.3.8 (digital) CPIS
3.3.8 (analog), 3.3.9 (digital) CRIS
3.3.9 (analog), CVCS Isolation Signal
3.3.10 (analog), Shield Building Filtration Actuation Signal
3.4.6, RCS Loops - MODE 4
3.5.4, RWT
3.6.2, Containment Air Locks
3.6.3, Containment Isolation Valves
3.6.4, Containment Pressure
3.6.5, Containment Air Temperature
3.6.6A, Containment Spray and Cooling Systems (Atmospheric and Dual) Credit taken for iodine removal by the Containment Spray System
3.6.6B, Containment Spray and Cooling Systems (Atmospheric and Dual) Credit not taken for iodine removal by the Containment Spray System
3.6.11, Shield Building (Dual)
3.7.7, Component Cooling Water System
3.7.8, Service Water System
3.7.9, Ultimate Heat Sink
3.7.10, Essential Chilled Water
3.7.11, CREACS
3.7.12, CREATCS
3.7.13, ECCS PREACS
3.7.15, PREACS
3.8.1, AC Sources - Operating
3.8.4, DC Sources - Operating
3.8.7, Inverters - Operating

3.0 Background

CE NPSD-1186, "Technical Justification for the Risk Informed Modification to Selected Action End States for CEOG PWRs, April 2000, modified the end state technical specification (TS) for numerous Required Actions. Most of the requested TS changes are to permit an end state of hot shutdown (Mode 4) rather than the cold shutdown (Mode 5) end state that is contained in the current TSs.

4.0 Technical Analysis

CE NPSD-1186 presented recommendations for replacing cold shutdown (MODE 5) Required Actions with hot shutdown (MODE 4) Required Actions for a large number of Specifications. Preventing plant challenges during shutdown conditions has been, and continues to be, an important aspect of ensuring safe operation of the plant. Past events demonstrate that risk of core damage associated with entry into, and operation in, shutdown cooling is not negligible and should be considered when a plant is required to shutdown. Therefore, the Technical Specifications should encourage plant operation in the steam generator heat removal mode whenever practical, and require reliance on shutdown cooling only when it is a risk beneficial alternative to other actions. CE NPSD-1186 justified remaining in hot shutdown for the subject Specifications. CE NPSD-1186 was approved by the NRC on July 17, 2001.

The justification of these changes is described in CE NPSD-1186, which demonstrates through probabilistic and deterministic safety evaluations that the proposed end states represent a condition of equal or lower risk than the original end states, and the NRC's Safety Evaluation dated July 17, 2001. In several cases, the change requested in the Topical Report differs from the change approved in the Safety Evaluation. In addition, in many cases the Topical Report and the Safety Evaluation apply conditions on the use of the new end states which are not amenable to incorporation in the Technical Specifications. Attachment 1 discusses the conditions listed in the Safety Evaluation and differences between the proposed change and the Topical Report or Safety Evaluation that were made to facilitate the application of the change to the Improved Technical Specifications.

5.1 No Significant Hazards Consideration

The TSTF has evaluated whether or not a significant hazards consideration is involved with the proposed generic change by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

   Response: No.

   Required Actions are not an initiator of any accident previously evaluated Therefore, the proposed changes do not affect the probability of any accident previously evaluated. CE NPSD-1186 demonstrated that the proposed changes in the required end state do not significantly increase the consequences of any accidents previously evaluated.

   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?

   The changes do not involve a physical alteration of the plant (i.e., 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.

   Response: No.

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

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

   Response: No.

   CE NPSD-1186 demonstrated that the changed end states represent a condition of equal or lower risk than the original end states.

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

Based on the above, the TSTF concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

Required Actions are not specified by any regulatory requirement or criteria. The Limiting Conditions for Operation, which are based on accident analysis assumptions and regulatory requirements are not affected by this change. Therefore, no regulatory requirements or criteria are affected by this change.

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 approval of the proposed change will not be inimical to the common defense and security or to the health and safety of the public.

6.0 Environmental Consideration

A review has determined that the proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

7.0 References

1. CE NPSD-1186, "Technical Justification for the Risk Informed Modification to Selected Action End States for CEOG PWRs, April 2000.

Revision History

OG Revision 0 **Revision Status: Closed**

Revision Proposed by: CEOG

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 11-Jul-00

Owners Group Comments:
Approved with modifications.

Owners Group Resolution: Approved Date: 11-Jul-00

TSTF Review Information

TSTF Received Date: 11-Jul-00 Date Distributed for Review:

OG Review Completed: ☐ BWOG ☐ WOG ☑ CEOG ☐ BWROG

TSTF Comments:

(No Comments)

TSTF Resolution: Superceeded Date:

OG Revision 0 **Revision Status: Closed**

OG Revision 1 **Revision Status: Active** **Next Action: NRC**

Revision Proposed by: CEOG

Revision Description:
Complete replacement of Revision 0. Revision 1 is based on the approved Topical and NRC's Safety Evaluation.

Owners Group Review Information

Date Originated by OG: 01-Aug-01

Owners Group Comments:
(No Comments)

Owners Group Resolution: Approved Date: 30-Jan-02

TSTF Review Information

TSTF Received Date: 30-Jan-02 Date Distributed for Review: 10-May-02

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:

1/30/2002 - Currently under review by RITSTF to incorporate information requested by NRC.
4/28/2002 - Incorporated RITSTF comments to address NRC requests.

TSTF Resolution: Approved Date: 03-Jun-02

NRC Review Information

NRC Received Date: 03-Jun-02

Affected Technical Specifications

Ref. 3.3.5 Bases — ESFAS Logic and Manual Trip (Analog)

Action 3.3.5.A — ESFAS Logic and Manual Trip (Analog)

Change Description: Deleted

Action 3.3.5.A Bases — ESFAS Logic and Manual Trip (Analog)

Change Description: Deleted

Action 3.3.5.B — ESFAS Logic and Manual Trip (Analog)

Change Description: Deleted

Action 3.3.5.B Bases — ESFAS Logic and Manual Trip (Analog)

Change Description: Deleted

Action 3.3.5.C — ESFAS Logic and Manual Trip (Analog)

Change Description: Renamed A and revised

Action 3.3.5.C Bases	ESFAS Logic and Manual Trip (Analog) Change Description: Renamed A and revised
Action 3.3.5.D	ESFAS Logic and Manual Trip (Analog) Change Description: Renamed B and revised
Action 3.3.5.D Bases	ESFAS Logic and Manual Trip (Analog) Change Description: Renamed B and revised
SR 3.3.5.1 Bases	ESFAS Logic and Manual Trip (Analog)
Ref. 3.3.6 Bases	ESFAS Logic and Manual Trip (Digital)
Action 3.3.6.E	ESFAS Logic and Manual Trip (Digital)
Action 3.3.6.E Bases	ESFAS Logic and Manual Trip (Digital)
Action 3.3.6.F	ESFAS Logic and Manual Trip (Digital) Change Description: Deleted
Action 3.3.6.F Bases	ESFAS Logic and Manual Trip (Digital) Change Description: Deleted
SR 3.3.6.1 Bases	ESFAS Logic and Manual Trip (Digital)
Ref. 3.3.8 Bases	CPIS (Digital)
Ref. 3.3.8 Bases	CRIS (Analog)
Action 3.3.8.B	CPIS (Digital)
Action 3.3.8.B	CRIS (Analog)
Action 3.3.8.B Bases	CPIS (Digital)
Action 3.3.8.B Bases	CRIS (Analog)
SR 3.3.8.2 Bases	CRIS (Analog)
SR 3.3.8.4 Bases	CPIS (Digital)
SR 3.3.8.4 Bases	CRIS (Analog)
SR 3.3.8.6 Bases	CPIS (Digital)
Ref. 3.3.9 Bases	CRIS (Digital)
Ref. 3.3.9 Bases	CVCS Isolation Signal (Analog)
Action 3.3.9.B	CRIS (Digital)
Action 3.3.9.B Bases	CRIS (Digital)

Action 3.3.9.D	CVCS Isolation Signal (Analog)	
Action 3.3.9.D Bases	CVCS Isolation Signal (Analog)	
SR 3.3.9.2 Bases	CRIS (Digital)	
SR 3.3.9.2 Bases	CVCS Isolation Signal (Analog)	
SR 3.3.9.3 Bases	CVCS Isolation Signal (Analog)	
SR 3.3.9.4 Bases	CRIS (Digital)	
Ref. 3.3.10 Bases	SBFAS (Analog)	
Action 3.3.10.B	SBFAS (Analog)	
Action 3.3.10.B Bases	SBFAS (Analog)	
Ref. 3.4.6 Bases	RCS Loops - MODE 4	
Action 3.4.6.A	RCS Loops - MODE 4	
Action 3.4.6.A Bases	RCS Loops - MODE 4	
Ref. 3.5.4 Bases	RWT	
Action 3.5.4.A	RWT	
	Change Description:	Split into Actions A and C
Action 3.5.4.A Bases	RWT	
	Change Description:	Split into Actions A and C
Action 3.5.4.B	RWT	
	Change Description:	Relabeled Action D
Action 3.5.4.B	RWT	
	Change Description:	New Action
Action 3.5.4.B Bases	RWT	
	Change Description:	Relabeled Action D
Action 3.5.4.B Bases	RWT	
	Change Description:	New Action
Action 3.5.4.C	RWT	
	Change Description:	Relabeled Action E
Action 3.5.4.C Bases	RWT	
	Change Description:	Relabeled Action E
Ref. 3.6.2 Bases	Containment Air Locks (Atmospheric and Dual)	
Action 3.6.2.D	Containment Air Locks (Atmospheric and Dual)	

Action 3.6.2.D Bases	Containment Air Locks (Atmospheric and Dual)
Ref. 3.6.3 Bases	Containment Isolation Valves (Atmospheric and Dual)
Action 3.6.3.F	Containment Isolation Valves (Atmospheric and Dual)
Action 3.6.3.F Bases	Containment Isolation Valves (Atmospheric and Dual)
SR 3.6.3.6 Bases	Containment Isolation Valves (Atmospheric and Dual)
Ref. 3.6.4 Bases	Containment Pressure (Atmospheric)
Ref. 3.6.4 Bases	Containment Pressure (Dual)
Action 3.6.4.B	Containment Pressure (Atmospheric and Dual)
Action 3.6.4.B Bases	Containment Pressure (Atmospheric)
Action 3.6.4.B Bases	Containment Pressure (Dual)
Ref. 3.6.5 Bases	Containment Tir Temperature (Atmospheric and Dual)
Action 3.6.5.B	Containment Tir Temperature (Atmospheric and Dual)
Action 3.6.5.B Bases	Containment Tir Temperature (Atmospheric and Dual)
Ref. 3.6.6B Bases	Containment Spray and Cooling Systems (Atmospheric and Dual)
Ref. 3.6.6A Bases	Containment Spray and Cooling Systems (Atmospheric and Dual)
Action 3.6.6A.B	Containment Spray and Cooling Systems (Atmospheric and Dual)
Action 3.6.6A.B Bases	Containment Spray and Cooling Systems (Atmospheric and Dual)
Action 3.6.6A.E	Containment Spray and Cooling Systems (Atmospheric and Dual)
Action 3.6.6A.E Bases	Containment Spray and Cooling Systems (Atmospheric and Dual)
Action 3.6.6B.F	Containment Spray and Cooling Systems (Atmospheric and Dual)
Action 3.6.6B.F Bases	Containment Spray and Cooling Systems (Atmospheric and Dual)
SR 3.6.6A.5	Containment Spray and Cooling Systems (Atmospheric and Dual)
SR 3.6.6B.5 Bases	Containment Spray and Cooling Systems (Atmospheric and Dual)

Ref. 3.6.11 Bases	Shield Building (Dual)
Action 3.6.11.B	Shield Building (Dual)
Action 3.6.11.B Bases	Shield Building (Dual)
SR 3.6.11.4 Bases	Shield Building (Dual)
Ref. 3.7.7 Bases	CCW System
Action 3.7.7.B	CCW System
Action 3.7.7.B Bases	CCW System
Ref. 3.7.8 Bases	SWS
Action 3.7.8.B	SWS
Action 3.7.8.B Bases	SWS
Ref. 3.7.9 Bases	UHS
Action 3.7.9.B	UHS Change Description: Relabeled C
Action 3.7.9.B	UHS Change Description: New
Action 3.7.9.B Bases	UHS Change Description: New
Action 3.7.9.B Bases	UHS Change Description: Relabeled C
Action 3.7.9.C	UHS Change Description: Relabeled D
Action 3.7.9.C Bases	UHS Change Description: Relabeled D
Ref. 3.7.10 Bases	ECW
Action 3.7.10.B	ECW
Action 3.7.10.B Bases	ECW
Ref. 3.7.11 Bases	CREACS
Action 3.7.11.C	CREACS
Action 3.7.11.C Bases	CREACS
SR 3.7.11.3 Bases	CREACS

SR 3.7.11.4 Bases	CREACS
Ref. 3.7.12 Bases	CREATCS
Action 3.7.12.B	CREATCS
Action 3.7.12.B Bases	CREATCS
Ref. 3.7.13 Bases	ECCS PREACS
Action 3.7.13.C	ECCS PREACS
Action 3.7.13.C Bases	ECCS PREACS
SR 3.7.13.4 Bases	ECCS PREACS
Ref. 3.7.15 Bases	PREACS
Action 3.7.15.C	PREACS
Action 3.7.15.C Bases	PREACS
SR 3.7.15.4 Bases	PREACS
Ref. 3.8.1 Bases	AC Sources - Operating
Action 3.8.1.G	AC Sources - Operating
Action 3.8.1.G Bases	AC Sources - Operating
SR 3.8.1.2 Bases	AC Sources - Operating
SR 3.8.1.5 Bases	AC Sources - Operating
SR 3.8.1.6 Bases	AC Sources - Operating
SR 3.8.1.9 Bases	AC Sources - Operating
SR 3.8.1.10 Bases	AC Sources - Operating
SR 3.8.1.11 Bases	AC Sources - Operating
SR 3.8.1.14 Bases	AC Sources - Operating
SR 3.8.1.15 Bases	AC Sources - Operating
SR 3.8.1.16 Bases	AC Sources - Operating
SR 3.8.1.17 Bases	AC Sources - Operating
SR 3.8.1.18 Bases	AC Sources - Operating
SR 3.8.1.20 Bases	AC Sources - Operating

Ref. 3.8.4 Bases	DC Sources - Operating
Action 3.8.4.D	DC Sources - Operating
Action 3.8.4.D Bases	DC Sources - Operating
SR 3.8.4.1 Bases	DC Sources - Operating
SR 3.8.4.2 Bases	DC Sources - Operating
SR 3.8.4.3 Bases	DC Sources - Operating
Ref. 3.8.7 Bases	Inverters - Operating
Action 3.8.7.B	Inverters - Operating
Action 3.8.7.B Bases	Inverters - Operating

Attachment 1

Comparison of CEOG-152, CE NSPD-1186 and the NRC's July 17, 2001 Safety Evaluation

General:

1. Section 6.0 of the Safety Evaluation states, "To be consistent with the staff's approval, any licensee requesting to operate in accordance with the CEOG request, as approved in this safety evaluation, should commit to operate in accord with the following stipulations." Each of these stipulations are addressed below.
   a. "Entry into the shutdown modes approved in this safety evaluation should be for the primary purpose of accomplishing the short duration repairs which necessitated exiting the original operating mode." Implementation: As stated in the Topical, the revised end states were requested in order to minimize the time in which a plant is not in power operation. Longer duration repairs will often necessitate entry into MODE 5 either due to decreasing decay heat or to accomplish other maintenance in parallel with the original repair.
   b. "Unless exceptions are stated in the individual TS descriptions of Section 5 of Reference 6, operation as approved in this safety evaluation should be limited to an entry that is initiated by inoperability of a single train of equipment or a restriction on a plant operational parameter." Implementation: 10CFR50.65(a)(4) provides that risk increases due to maintenance activities be assessed and managed. NRC Reg Guide 1.182 endorses section 11 of NUMARC 93-01, which provides implementation guidance for this rule, and is followed by all plants. This guidance includes provisions (Sections 11.3.4.1, and 11.3.4.2) for assessing and managing risk increases due to more than one SSC out of service at one time. Programs to implement this guidance were put into place as of November 28, 2000. Because of this, entry into the hot shutdown mode need not be limited to inoperability of a single SSC, as discussed in item 1.b. Writing of this portion of the NRC SE may have predated implementation of this rule.
   c. "Licensees should include the restrictions and guidance documented in Section 5.5 and Table 5.5-1 of Reference 6 in appropriate plant procedures and administrative controls when the plant is being operated in accordance with the proposed end states. Procedures and/or controls should include actions to expeditiously exit a risk-significant configuration in case such actions should be needed." Implementation: Section 11.3.2.8 of NUMARC 93-01 provides that risk analyses must be expeditiously re-evaluated, and risk management actions changed as appropriate, due to emergent conditions that were not anticipated in the original assessment. This addresses the issue of need to exit the hot shutdown configuration as discussed in item 1.c.
   d. "Entry and use of the proposed changes should be performed in accordance with the requirements of 10 CFR 50.65(a)(4). This should include a risk assessment with respect to performance of key shutdown safety functions as described in Section 3 of this safety evaluation." Implementation: This restriction will be managed through the program in place to implement 10 CFR 50.65(a)(4).

e. "The following conditions should be met unless exceptions are identified in Section 5 of this SE:
   i. Should SG cooling be lost while operating in Mode 4, there should be sufficient water in the SGs and operational procedures shall exist to ensure that long-term SDC can be initiated.
   ii. Uncontrolled loss-of-inventory events should be minimized by in-depth planning, maintaining the RCS at its nominal inventory and configuration control. In-depth event response capability, such as inventory addition, procedures, and training, should be provided.
   iii. The LTOP and SDC are not aligned when the plant is operated in Mode 4 on SG cooling unless the plant is being transitioned to or from SDC operation. LTOP shall be operational when the SDC system is hydraulically connected to the RCS."

Implementation: Section 11.3.6 of NUMARC 93-01 addresses shutdown key safety functions (including decay heat removal capability and inventory control). Sections 11.3.6.1 and 11.3.6.2 provide sufficient guidance to address the conditions raised regarding SG cooling versus SDC cooling, and unplanned loss of inventory events. LTOP will be aligned when required by technical specifications.

f. "The RCS pressure boundary should remain functional and, if isolated from the SDC system, should be capable of operating with pressure relief via the pressurizer safety valves." Implementation: If the RCS pressure boundary is not functional, LCO 3.4.13 requires a plant shutdown. RCS pressure relief requirements are contained in LCO 3.4.10, Pressurizer Safety Valves, 3.4.11, Pressurizer PORVs, and 3.4.12, LTOP.

g. "The primary purpose of the CEOG request is to allow corrective maintenance in an operating mode consistent with safe operation after an AOT has been exceeded and, secondarily, to minimize the correction time so that the plant can be restored to power operation. Ordinarily, conditions addressed in this request, and in this SE, involve failures that result in a degraded plant condition. Consequently, with respect to additional licensee outage activities that could affect the safe conduct of operations and that are not directly required for correction of the failure(s) that caused the AOT to be exceeded, a licensee should:
   i. Perform a safety assessment in accordance with the maintenance rule prior to undertaking such additional activities.
   ii. If conditions change so that the safety assessment is no longer valid, to suspend all such additional activities via a process consistent with safety until such time as the assessment has been re-performed and is again valid."

   Implementation: Section 11.3.2.8 of NUMARC 93-01 addresses emergent conditions.

In summary, the stipulations contained in Section 6.0 of the SE are addressed by existing Technical Specifications, other regulatory initiatives, or the requirements of 10 CFR 50.65(a)(4). No restrictions in the Traveler are needed to address these stipulations.

2. In the majority of the individual TS evaluations in the Topical and the NRC's SE, it was stated that there was risk benefit to remaining in MODE 4 on SG heat removal by

averting the risks associated with the alignment of the SDC system. This information is not placed in the revised TS or Bases. LCO 3.4.6, RCS Loops – MODE 4, allows SG heat removal, SDC heat removal, or a combination of SG and SDC heat removal. The risks associated with transitioning from MODE 4 SG heat removal to MODE 4 SDC heat removal are required to be assessed and managed by 10 CFR 50.65(a)(4). Assessment and management of risks associated with SG versus SDC are covered by Section 11.3.6.1 of NUMARC 93-01. Therefore, it is unnecessary to repeat those requirements in the various TS and would be in conflict with LCO 3.4.6.

Evaluation of Each Specification

#	Spec	Deviations from Topical or SE
1	3.1.9, Boration Systems – Operating	This LCO does not exist in NUREG-1432. Therefore, no change is included in the Traveler.
2	3.3.4 (Analog), 3.3.5 (digital) ESFAS Instruments – RAS	NUREG-1432 applicability for this function already stops at MODE 4. Therefore, no change is included in the Traveler.
3	3.3.5 (analog), 3.3.6 (digital) ESFAS Instruments – ESFAS Logic and Manual Trip SIAS, RAS, CIAS, CCAS	No deviations.

#	Spec	Deviations from Topical or SE
4	3.3.8 (digital) CPIS	The SE states, "The CEOG recommended that, when the CPIS is disabled, the operating staff should be alerted and operation of the containment mini-purge should be restricted. It further recommended consideration should be given to maintain availability of CIAS during the CPIS Mode 4 repair. The staff endorses these recommendations and licensees must commit to incorporate them into operating documentation." The Topical, under Tier 2 Restrictions, states, "No tier 2 restrictions are necessary. However, when utilizing this option, it is recommended that when the CPIS is disabled, the operating staff should be alerted and operation of the containment mini-purge should be restricted. Consideration should be given to maintain availability of CIAS during the CPIS Mode 4 repair." The requirements and recommendations stated above will be managed through the program in place to implement 10 CFR 50.65(a)(4).
5	3.3.8 (analog), 3.3.9 (digital) CRIS	The NRC's SE states, "The CEOG states that it would be prudent to minimize unavailability of SIAS and alternate shutdown panel and/or remote shutdown capabilities during Mode 4 operation with CRIS unavailable. The staff agrees. Licensees must commit to incorporate suitable guidance into their operational documentation to accomplish this." The Topical, under Tier 2 Restrictions states, "None. It would be prudent to minimize unavailability of SIAS and alternate shutdown panel and/or remote shutdown capabilities during Mode 4 operation with CRIS unavailable." The requirements and recommendations stated above will be managed through the program in place to implement 10 CFR 50.65(a)(4).

#	Spec	Deviations from Topical or SE
6	3.3.9 (analog), CVCS Isolation Signal	The NRC's SE stated that there was risk benefit to remaining in MODE 4 on SG heat removal by averting the risks associated with the alignment of the SDC system. The Topical stated that when SDC entry may be avoided, transition risks associated with SDC alignment may be averted. The risks associated with transitioning from MODE 4 SG heat removal to MODE 4 SDC heat removal are required to be assessed and managed by 10 CFR 50.65(a)(4) and do not need to be repeated in the TS.
7	3.3.10 (analog), Shield Building Filtration Actuation Signal	No deviations.
8	3.4.6, RCS Loops – MODE 4	No deviations.
9	3.5.4, RWT	No deviations.

#	Spec	Deviations from Topical or SE
10	3.6.1, Containment	The Topical states, "Since the applicability of this change is limited to isolable penetrations that are not fully non-functional and penetrations not included within TS 3.6.2 and 3.6.3, only small changes in containment integrity are considered and there is no impact on LERF." The SE states that the change applies to conditions when the CIVs or air locks are essentially functional and have the capability to perform their containment function. The SE states "leakage is assumed to be small," and "Since the applicability of this change is limited to isolable penetrations that are partially functional and penetrations not included within TS 3.6.2 and 3.6.3, only small changes in containment integrity are considered." These restrictions are inconsistent with LCO 3.6.1, which requires that leakage be less than 1.0 La. Therefore, if the ACTIONS of LCO 3.6.1 are entered, containment leakage must be large (e.g., > 1.0 La). In order to remain consistent with the current application of the specifications, the changes to LCO 3.6.1 are not adopted. If leakage is "large," MODE 5 must be entered in accordance with LCO 3.6.1. As described below, the change in end state is applied to the Containment Air Lock and Containment Isolation Valve specifications. If the leakage from those systems are greater than 1.0 La, LCO 3.6.1 must be entered and the MODE 5 end state applies. This retains the Topical and SE restrictions on large leakage while providing the approved flexibility for smaller containment leaks.
11	3.6.2, Containment Air Locks	No deviations other than those discussed under LCO 3.6.1.

#	Spec	Deviations from Topical or SE
12	3.6.3, Containment Isolation Valves	The change requested in the Topical and the change approved in the SE are different. The Topical states that the new end state applies when "one or more penetration flow paths exist with one or more containment isolation valves inoperable" and the affected penetration flow path cannot be isolated with the prescribed AOT/CT. The SE states that the new end state applies for any penetration having one CIV inoperable. The SE then states, "The issue of concern in the TS is the appropriate action/end state for extended repair of an inoperable CIV when one CIV in a single line is inoperable." In summary, the Topical asked for a revision to NUREG-1432, Revision 2, LCO 3.6.3, Condition F, for several conditions, including two CIVs in one or more penetrations inoperable. The SE proposes an entirely new condition for a single CIV in a single line inoperable. However, LCO 3.6.3 does not require a MODE change for a single CIV in a single line inoperable. The Traveler incorporates the change to Required Action F, which applies in several conditions, as requested by the Topical.

Attachment 1

Comparison of CEOG-152, CE NSPD-1186 and the NRC's July 17, 2001 Safety Evaluation

General:

1. Section 6.0 of the Safety Evaluation states, "To be consistent with the staff's approval, any licensee requesting to operate in accordance with the CEOG request, as approved in this safety evaluation, should commit to operate in accord with the following stipulations." Each of these stipulations are addressed below.
   a. "Entry into the shutdown modes approved in this safety evaluation should be for the primary purpose of accomplishing the short duration repairs which necessitated exiting the original operating mode." Implementation: As stated in the Topical, the revised end states were requested in order to minimize the time in which a plant is not in power operation. Longer duration repairs will often necessitate entry into MODE 5 either due to decreasing decay heat or to accomplish other maintenance in parallel with the original repair.
   b. "Unless exceptions are stated in the individual TS descriptions of Section 5 of Reference 6, operation as approved in this safety evaluation should be limited to an entry that is initiated by inoperability of a single train of equipment or a restriction on a plant operational parameter." Implementation: 10CFR50.65(a)(4) provides that risk increases due to maintenance activities be assessed and managed. NRC Reg Guide 1.182 endorses section 11 of NUMARC 93-01, which provides implementation guidance for this rule, and is followed by all plants. This guidance includes provisions (Sections 11.3.4.1, and 11.3.4.2) for assessing and managing risk increases due to more than one SSC out of service at one time. Programs to implement this guidance were put into place as of November 28, 2000. Because of this, entry into the hot shutdown mode need not be limited to inoperability of a single SSC, as discussed in item 1.b. Writing of this portion of the NRC SE may have predated implementation of this rule.
   c. "Licensees should include the restrictions and guidance documented in Section 5.5 and Table 5.5-1 of Reference 6 in appropriate plant procedures and administrative controls when the plant is being operated in accordance with the proposed end states. Procedures and/or controls should include actions to expeditiously exit a risk-significant configuration in case such actions should be needed." Implementation: Section 11.3.2.8 of NUMARC 93-01 provides that risk analyses must be expeditiously re-evaluated, and risk management actions changed as appropriate, due to emergent conditions that were not anticipated in the original assessment. This addresses the issue of need to exit the hot shutdown configuration as discussed in item 1.c.
   d. "Entry and use of the proposed changes should be performed in accordance with the requirements of 10 CFR 50.65(a)(4). This should include a risk assessment with respect to performance of key shutdown safety functions as described in Section 3 of this safety evaluation." Implementation: This restriction will be managed through the program in place to implement 10 CFR 50.65(a)(4).

e. "The following conditions should be met unless exceptions are identified in Section 5 of this SE:
   i. Should SG cooling be lost while operating in Mode 4, there should be sufficient water in the SGs and operational procedures shall exist to ensure that long-term SDC can be initiated.
   ii. Uncontrolled loss-of-inventory events should be minimized by in-depth planning, maintaining the RCS at its nominal inventory and configuration control. In-depth event response capability, such as inventory addition, procedures, and training, should be provided.
   iii. The LTOP and SDC are not aligned when the plant is operated in Mode 4 on SG cooling unless the plant is being transitioned to or from SDC operation. LTOP shall be operational when the SDC system is hydraulically connected to the RCS."

Implementation: Section 11.3.6 of NUMARC 93-01 addresses shutdown key safety functions (including decay heat removal capability and inventory control). Sections 11.3.6.1 and 11.3.6.2 provide sufficient guidance to address the conditions raised regarding SG cooling versus SDC cooling, and unplanned loss of inventory events. LTOP will be aligned when required by technical specifications.

f. "The RCS pressure boundary should remain functional and, if isolated from the SDC system, should be capable of operating with pressure relief via the pressurizer safety valves." Implementation: If the RCS pressure boundary is not functional, LCO 3.4.13 requires a plant shutdown. RCS pressure relief requirements are contained in LCO 3.4.10, Pressurizer Safety Valves, 3.4.11, Pressurizer PORVs, and 3.4.12, LTOP.

g. "The primary purpose of the CEOG request is to allow corrective maintenance in an operating mode consistent with safe operation after an AOT has been exceeded and, secondarily, to minimize the correction time so that the plant can be restored to power operation. Ordinarily, conditions addressed in this request, and in this SE, involve failures that result in a degraded plant condition. Consequently, with respect to additional licensee outage activities that could affect the safe conduct of operations and that are not directly required for correction of the failure(s) that caused the AOT to be exceeded, a licensee should:
   i. Perform a safety assessment in accordance with the maintenance rule prior to undertaking such additional activities.
   ii. If conditions change so that the safety assessment is no longer valid, to suspend all such additional activities via a process consistent with safety until such time as the assessment has been re-performed and is again valid."

   Implementation: Section 11.3.2.8 of NUMARC 93-01 addresses emergent conditions.

In summary, the stipulations contained in Section 6.0 of the SE are addressed by existing Technical Specifications, other regulatory initiatives, or the requirements of 10 CFR 50.65(a)(4). No restrictions in the Traveler are needed to address these stipulations.

2. In the majority of the individual TS evaluations in the Topical and the NRC's SE, it was stated that there was risk benefit to remaining in MODE 4 on SG heat removal by

SR 3.7.11.4 Bases	CREACS
Ref. 3.7.12 Bases	CREATCS
Action 3.7.12.B	CREATCS
Action 3.7.12.B Bases	CREATCS
Ref. 3.7.13 Bases	ECCS PREACS
Action 3.7.13.C	ECCS PREACS
Action 3.7.13.C Bases	ECCS PREACS
SR 3.7.13.4 Bases	ECCS PREACS
Ref. 3.7.15 Bases	PREACS
Action 3.7.15.C	PREACS
Action 3.7.15.C Bases	PREACS
SR 3.7.15.4 Bases	PREACS
Ref. 3.8.1 Bases	AC Sources - Operating
Action 3.8.1.G	AC Sources - Operating
Action 3.8.1.G Bases	AC Sources - Operating
SR 3.8.1.2 Bases	AC Sources - Operating
SR 3.8.1.5 Bases	AC Sources - Operating
SR 3.8.1.6 Bases	AC Sources - Operating
SR 3.8.1.9 Bases	AC Sources - Operating
SR 3.8.1.10 Bases	AC Sources - Operating
SR 3.8.1.11 Bases	AC Sources - Operating
SR 3.8.1.14 Bases	AC Sources - Operating
SR 3.8.1.15 Bases	AC Sources - Operating
SR 3.8.1.16 Bases	AC Sources - Operating
SR 3.8.1.17 Bases	AC Sources - Operating
SR 3.8.1.18 Bases	AC Sources - Operating
SR 3.8.1.20 Bases	AC Sources - Operating

Ref. 3.8.4 Bases	DC Sources - Operating
Action 3.8.4.D	DC Sources - Operating
Action 3.8.4.D Bases	DC Sources - Operating
SR 3.8.4.1 Bases	DC Sources - Operating
SR 3.8.4.2 Bases	DC Sources - Operating
SR 3.8.4.3 Bases	DC Sources - Operating
Ref. 3.8.7 Bases	Inverters - Operating
Action 3.8.7.B	Inverters - Operating
Action 3.8.7.B Bases	Inverters - Operating

Action 3.6.2.D Bases	Containment Air Locks (Atmospheric and Dual)
Ref. 3.6.3 Bases	Containment Isolation Valves (Atmospheric and Dual)
Action 3.6.3.F	Containment Isolation Valves (Atmospheric and Dual)
Action 3.6.3.F Bases	Containment Isolation Valves (Atmospheric and Dual)
SR 3.6.3.6 Bases	Containment Isolation Valves (Atmospheric and Dual)
Ref. 3.6.4 Bases	Containment Pressure (Atmospheric)
Ref. 3.6.4 Bases	Containment Pressure (Dual)
Action 3.6.4.B	Containment Pressure (Atmospheric and Dual)
Action 3.6.4.B Bases	Containment Pressure (Atmospheric)
Action 3.6.4.B Bases	Containment Pressure (Dual)
Ref. 3.6.5 Bases	Containment Tir Temperature (Atmospheric and Dual)
Action 3.6.5.B	Containment Tir Temperature (Atmospheric and Dual)
Action 3.6.5.B Bases	Containment Tir Temperature (Atmospheric and Dual)
Ref. 3.6.6B Bases	Containment Spray and Cooling Systems (Atmospheric and Dual)
Ref. 3.6.6A Bases	Containment Spray and Cooling Systems (Atmospheric and Dual)
Action 3.6.6A.B	Containment Spray and Cooling Systems (Atmospheric and Dual)
Action 3.6.6A.B Bases	Containment Spray and Cooling Systems (Atmospheric and Dual)
Action 3.6.6A.E	Containment Spray and Cooling Systems (Atmospheric and Dual)
Action 3.6.6A.E Bases	Containment Spray and Cooling Systems (Atmospheric and Dual)
Action 3.6.6B.F	Containment Spray and Cooling Systems (Atmospheric and Dual)
Action 3.6.6B.F Bases	Containment Spray and Cooling Systems (Atmospheric and Dual)
SR 3.6.6A.5	Containment Spray and Cooling Systems (Atmospheric and Dual)
SR 3.6.6B.5 Bases	Containment Spray and Cooling Systems (Atmospheric and Dual)

Ref. 3.6.11 Bases	Shield Building (Dual)
Action 3.6.11.B	Shield Building (Dual)
Action 3.6.11.B Bases	Shield Building (Dual)
SR 3.6.11.4 Bases	Shield Building (Dual)
Ref. 3.7.7 Bases	CCW System
Action 3.7.7.B	CCW System
Action 3.7.7.B Bases	CCW System
Ref. 3.7.8 Bases	SWS
Action 3.7.8.B	SWS
Action 3.7.8.B Bases	SWS
Ref. 3.7.9 Bases	UHS
Action 3.7.9.B	UHS Change Description: Relabeled C
Action 3.7.9.B	UHS Change Description: New
Action 3.7.9.B Bases	UHS Change Description: New
Action 3.7.9.B Bases	UHS Change Description: Relabeled C
Action 3.7.9.C	UHS Change Description: Relabeled D
Action 3.7.9.C Bases	UHS Change Description: Relabeled D
Ref. 3.7.10 Bases	ECW
Action 3.7.10.B	ECW
Action 3.7.10.B Bases	ECW
Ref. 3.7.11 Bases	CREACS
Action 3.7.11.C	CREACS
Action 3.7.11.C Bases	CREACS
SR 3.7.11.3 Bases	CREACS

#	Spec	Deviations from Topical or SE
13	3.6.4, Containment Pressure	The change requested in the Topical and the change approved in the SE are different. The Topical simply requests changing Required Action B.2 from "Be in MODE 5" to "Be in MODE 4" with a change to the Completion Time from 36 hours to 12 hours. This Required Action applies when Containment Pressure is not within limits and is not restored within 1 hour. The SE repeats the requested change and states that it is acceptable. However, in the "Assessment" portion, the SE states, "Therefore, for plants with steel shell containments, if the lower limit pressure specification is violated, the operators are to confirm operability of the vacuum breakers. For all plants, when entering this action statement for violation of low containment pressure limit for a period projected to exceed one day, one containment spray pump is to be secured." Similar information is given in the Topical. This would requiring the creation of a new Condition for containment pressure below the lower limit which requires the CS pump to be secured if it is <u>expected</u> that the plant will be in the Condition for greater than a day and a separate condition for steel shelled (i.e., dual) containments that requires verification of the OPERABILITY of the vacuum breakers. However, LCO 3.6.12, Vacuum Relief Valves (Dual) requires the vacuum breaker valves to be OPERABLE in MODES 1, 2, 3, and 4. The Traveler is written to reflect the change requested in the Topical.
14	3.6.5, Containment Air Temperature	No deviations.

#	Spec	Deviations from Topical or SE
15	3.6.6A, Containment Spray and Cooling Systems (Atmospheric and Dual) Credit taken for iodine removal by the Containment Spray System	No deviations.
16	3.6.6B, Containment Spray and Cooling Systems (Atmospheric and Dual) Credit not taken for iodine removal by the Containment Spray System	No deviations.
17	3.6.11, Shield Building (Dual)	The SE makes the statement, "containment leakage is controlled via TS 3.6.1, and no major leak paths should be unisolable, there should be no contribution to an increased LERF." The Topical, under Tier 2 Restrictions, states, "Shield building inoperability should not result in a "large" radiation release pathway (See TS 3.6.1)." As stated above, the Traveler retains the MODE 5 end state for LCO 3.6.1, consistent with the SE and Topical assumptions.
18	3.7.5, Auxiliary Feedwater	The Topical addressed the LCO. However, the SE states that their July 3, 2001 letter CEOG withdrew this change as the ISTS already affords the proper end state when one or more AFW pumps are inoperable. Therefore, the Traveler does not contain a change to LCO 3.7.5.

#	Spec	Deviations from Topical or SE
19	3.7.7, Component Cooling Water System	The SE and the Topical, under Tier 2 Restrictions, have additional conditions which modify the application of the new Condition. The Bases state, "A MODE 4 end state with the reactor coolant system on steam generator heat removal is preferred to the MODE 5 end state on shutdown cooling heat removal, provided CCW is available to the reactor coolant pumps." The SE contains similar statements. The Topical states, "For conditions where CCW flow is lost to the RCP seals, reactor shutdown is required and the RCS Loops operating TS is entered. Limited duration natural circulation operation is acceptable, but extended plant operation in the higher Mode 4 temperatures may degrade RCP seal elastomers. Mode 5 operation ensures adequately low RCS temperatures so that any RCP seal challenges would be avoided. Prior to entry into Mode 5 due to loss of CCW to RCP seals, the redundant CCW train should be confirmed to be operable and backup cooling water systems should be confirmed for emergency use. SG inventory should be retained to assure a diverse and redundant heat removal source if CCW should fail." The Traveler modifies the TS to apply the MODE 4 end state and the Bases are modified to state that entry into MODE 5 should be considered if CCW flow is lost to the RCP seals.

#	Spec	Deviations from Topical or SE
20	3.7.8, Service Water System	The Topical and the SE require entry into MODE 4 and reliance on the SGs for heat removal for the condition of one SWS loop inoperable. The Traveler does not incorporate the restriction to be using the SGs for heat removal. LCO 3.4.6, RCS Loops – MODE 4, requires two loops , consisting of any combination of RCS and SDC loops, to be OPERABLE and one loop to be in operation. Placing a restriction on the loops which can be used to satisfy LCO 3.4.6 in the SWS LCO is confusing and unnecessary. If an inoperable SWS loop results in a inoperable SDC loop, that inoperable SDC loop cannot be used to meet the requirements of LCO 3.4.6. Restricting the utilization of an OPERABLE SDC loop supported by the remaining OPERABLE SWS loop is unnecessary and reduces redundancy and diversity of heat removal methods.
21	3.7.9, Ultimate Heat Sink	TSTF-330 added a Condition for UHS temperature greater than the LCO limit. This Condition was not considered in the Topical. Therefore, the MODE 5 end state was retained for this Condition and a new ACTION was added for the condition considered in the Topical.
22	3.7.10, Essential Chilled Water	The Topical states under Tier 2 restrictions: "None. Reduced pressure operation in Mode 4 should be considered to reduce the potential of a LOCA without Emergency Chilled Water." This recommendation will be managed through the program in place to implement 10 CFR 50.65(a)(4).

#	Spec	Deviations from Topical or SE
23	3.7.11, CREACS	Revision 2 of NUREG-1432 has two conditions which require entry into MODE 5 – one CREACS train inoperable and an inoperable control room boundary. The Topical states, "Regardless of the CREACS status, the risks of MODE 4 are lower (or equivalent) to the similar MODE 5 operating state." The SE evaluation does not address the specific case of one CREACS train inoperable. Therefore, the MODE 4 end state was applied to both conditions. The Topical states under Tier 2 restrictions: "Using CRMP ensures plant staff is aware of the system inoperability and that respiratory units and CR pressurization systems are available and operational and that leakage pathways are properly controlled. Also ensure availability of alternate shutdown panels and local shutdown stations." This recommendation will be managed through the program in place to implement 10 CFR 50.65(a)(4).
24	3.7.12, CREATCS	The SE states, "for longer outages, licensees should ensure availability of the alternate shutdown panel or local plant shutdown and control capability." This statement is in the Topical under Tier 2 Restrictions (after stating "None."). This recommendation will be managed through the program in place to implement 10 CFR 50.65(a)(4).
25	3.7.13, ECCS PREACS	Revision 2 of NUREG-1432 has two Conditions which require entry into MODE 5 – one ECCS PREACS train inoperable and two ECCS PREACS trains inoperable due to inoperable ECCS pump room boundary. The Topical states, "Regardless of the ECCS PREACS status, the risk of MODE 4 are lower (or equivalent) to the similar MODE 5 operating state." In order to adopt the NUREG-1432 condition for an inoperable ECCS pump room boundary, the licensee must commit to preplanned compensatory measures. Therefore, the MODE 4 end state was applied to both conditions.

#	Spec	Deviations from Topical or SE
26	3.7.15, PREACS	Revision 2 of NUREG-1432 has two conditions which require entry into MODE 5 – one PREACS train inoperable and an two PREACS trains inoperable due to inoperable penetration room boundary. The Topical states, "Regardless of the PREACS status, the risk of MODE 4 are lower (or equivalent) to the similar MODE 5 operating state." In order to adopt the NUREG-1432 condition for an inoperable penetration room boundary, the licensee must commit to preplanned compensatory measures. Therefore, the MODE 4 end state was applied to both conditions.
27	3.8.1, AC Sources – Operating	The Topical lists the following Tier 2 Restrictions: "Switchyard activities other than those necessary to restore offsite power should be prohibited when AC power sources are degraded. Note that to properly utilize turbine driven AFW pumps the SG pressure should be maintained above the minimum recommended pressure required to operate the TDAFW." These restrictions are also in the SE. These restrictions will be managed through the program in place to implement 10 CFR 50.65(a)(4). The SE and the Topical state that the preferred end state is MODE 4 on SG heat removal. The Traveler only specifies MODE 4. LCO 3.4.6 requires any combination of two RCS loops or SDC trains. Placing restrictions on the methods which may be used to meet LCO 3.4.6 in LCO 3.8.1 is unnecessary and confusing. If offsite power is lost, an OPERABLE RCS loop may not be available (which the LCO 3.4.6 Bases describe as including an RCP capable of being powered.) If the intention is to require the use of natural circulation, this is in conflict with LCO 3.4.6. The existing LCO 3.4.6 allowance to use a mix of RCS and SDC loops maximizes the redundancy and diversity available to plant operators during a period of degraded electrical power.

#	Spec	Deviations from Topical or SE
28	3.8.4, DC Sources – Operating	TSTF-360 revised the LCO 3.8.4 ACTIONS. However, the change only separated various conditions leading to DC subsystem inoperability. As all of the conditions cause one train to be inoperable, the MODE 4 end state was applied to all of the conditions. The SE and the Topical state that the preferred end state is MODE 4 on SG heat removal. The Traveler only specifies MODE 4. See the discussion of LCO 3.8.1, above.
29	3.8.7, Inverters - Operating	The SE and the Topical state that the preferred end state is MODE 4 on SG heat removal. The Traveler only specifies MODE 4. See the discussion of LCO 3.8.1, above.

LCO 3.3.5 (analog), ESFAS Logic and Manual Trip

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 2). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

2. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

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3.3 INSTRUMENTATION

3.3.5 Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip (Analog)

LCO 3.3.5 Two ESFAS Manual Trip and two ESFAS Actuation Logic channels shall be OPERABLE for each ESFAS Function specified in Table 3.3.5-1.

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one Auxiliary Feedwater Actuation Signal (AFAS) Manual Trip or Actuation Logic channel inoperable.	A.1 Restore channel to OPERABLE status.	48 hours
B. Two AFAS Manual Trip or Actuation Logic channels inoperable. OR Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours [12] hours
A. C. One or more Functions with one Manual Trip or Actuation Logic channel inoperable except AFAS.	A C.1 Restore channel to OPERABLE status.	48 hours

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ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. One or more Functions with two Manual Trip or Actuation Logic channel inoperable except AFAS. <u>OR</u> Required Action and associated Completion Time of Condition C not met.	D.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	D.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.5.1	-------------------- **- NOTES -** -------------------- 1. Testing of Actuation Logic shall include verification of the proper operation of each initiation relay. 2. Relays associated with plant equipment that cannot be operated during plant operation are only required to be tested during each MODE 5 entry exceeding 24 hours unless tested during the previous 6 months. -- Perform a CHANNEL FUNCTIONAL TEST on each ESFAS logic channel.	[92] days
SR 3.3.5.2	Perform a CHANNEL FUNCTIONAL TEST on each ESFAS Manual Trip channel.	[18] months

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BASES

ACTIONS (continued)

A.1

Condition A applies to one AFAS Manual Trip or AFAS Actuation Logic channel inoperable. It is identical to Condition C for the other ESFAS Functions, except for the shutdown track imposed by Condition D.

The channel must be restored to OPERABLE status to restore redundancy of the AFAS Function. The 48 hour Completion Time is commensurate with the importance of avoiding the vulnerability of a single failure in the only remaining OPERABLE channel.

B.1 and B.2

If two Manual Trip or Actuation Logic channels are inoperable or the Required Action and associated Completion Time of Condition A cannot be met, the reactor should be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 within [12] hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

(A) C.1

Condition C (A) applies to one Manual Trip or Actuation Logic channel inoperable for those ESFAS Functions that must be OPERABLE in MODES 1, 2, 3, and 4 (all Functions except AFAS). The shutdown track imposed by Condition D requires entry into MODE 5, where the LCO does not apply to the affected Functions.

The channel must be restored to OPERABLE status to restore redundancy of the affected Functions. The 48 hour Completion Time is commensurate with the importance of avoiding the vulnerability of a single failure in the only remaining OPERABLE channel.

(B) D.1 and D.2 (B)

Condition D (B) is entered when one or more Functions have two Manual Trip or Actuation Logic channels inoperable except AFAS or the Required Action and associated Completion Time of Condition C (A) are not met. If Required Action C (A).1 cannot be met within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. (A) Overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3

BASES

ACTIONS (continued)

(4) (12) (Insert 1)

within 6 hours and to MODE 5 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 3.3.5.1

A CHANNEL FUNCTIONAL TEST is performed every 92 days to ensure the entire channel will perform its intended function when needed. Sensor subsystem tests are addressed in LCO 3.3.4. This SR addresses Actuation Logic tests. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

Actuation Logic Tests

Actuation subsystem testing includes injecting one trip signal into each two-out-of-four logic subsystem in each ESFAS Function and using a bistable trip input to satisfy the trip logic. Initiation relays associated with the affected channel will then actuate the individual ESFAS components. Since each ESFAS Function employs subchannels of Actuation Logic, it is possible to actuate individual components without actuating an entire ESFAS Function.

Note 1 requires that Actuation Logic tests include operation of initiation relays. Note 2 allows deferred at power testing of certain relays to allow for the fact that operating certain relays during power operation could cause plant transients or equipment damage. Those initiation relays that cannot be tested at power must be tested in accordance with Note 2. These include [SIAS No. 5, SIAS No. 10, CIAS No. 5, and MSIS No. 1.]

These relays actuate the following components, which cannot be tested at power:

- RCP seal bleedoff isolation valves,
- Service water isolation valves,
- VCT discharge valves,

BASES

SURVEILLANCE REQUIREMENTS (continued)

- Letdown stop valves,
- CCW to and from the RCPs,
- MSIVs and feedwater isolation valves, and
- Instrument air containment isolation valves.

The reasons that each of the above cannot be fully tested at power are stated in Reference 1.

These tests verify that the ESFAS is capable of performing its intended function, from bistable input through the actuated components.

The Frequency of [92] days is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 2 3).

SR 3.3.5.2

A CHANNEL FUNCTIONAL TEST is performed on the manual ESFAS actuation circuitry, de-energizing relays and providing Manual Trip of the Function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

This Surveillance verifies that the trip push buttons are capable of opening contacts in the Actuation Logic as designed, de-energizing the initiation relays and providing Manual Trip of the Function. The [18] 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. Operating experience has shown these components usually pass the Surveillance when performed at a Frequency of once every [18] months.

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BASES

REFERENCES	1.	FSAR, Section [7.3].
Insert 2	3 2.	CEN-327, June 2, 1986, including Supplement 1, March 3, 1989.

LCO 3.3.6 (digital), ESFAS Logic and Manual Trip

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 2). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

2. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more Functions with two Initiation Logic channels affecting the same trip leg inoperable.	C.1	Open at least one contact in the affected trip leg of both ESFAS Actuation Logics.	Immediately
	<u>AND</u>		
	C.2	Restore channels to OPERABLE status.	48 hours
D. One or more Functions with one Actuation Logic channel inoperable.	D.1	- NOTE - One channel of Actuation Logic may be bypassed for up to 1 hour for Surveillances, provided the other channel is OPERABLE. Restore inoperable channel to OPERABLE status.	48 hours
E. Two Actuation Logic channels inoperable <u>OR</u> Required Action and associated Completion Time of Conditions, for Containment Spray Actuation Signal, Main Steam Isolation Signal, or Emergency Feedwater Actuation Signal not met.	E.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	E.2	Be in MODE 4.	[12] hours

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ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. Two Actuation Logic channels, inoperable. OR Required Action and associated Completion Time of Conditions for, Safety Injection Actuation Signal, Containment Isolation Actuation Signal, Recirculation Actuation Signal, or Containment Cooling Actuation Signal not met.	F.1	Be in MODE 3.	6 hours
	AND		
	F.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.6.1	- NOTE - Testing of Actuation Logic shall include the verification of the proper operation of each initiation relay. Perform a CHANNEL FUNCTIONAL TEST on each ESFAS logic channel.	[92] days
SR 3.3.6.2	- NOTE - Relays exempt from testing during operation shall be tested during each MODE 5 entry exceeding 24 hours unless tested during the previous 6 months. Perform a subgroup relay test of each Actuation Logic channel, which includes the de-energization of each subgroup relay and verification of the OPERABILITY of each subgroup relay.	[184] days

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BASES

ACTIONS (continued)

protection in the event of Design Basis Accidents, but the single failure criterion may be violated. For this reason operation in this condition is restricted.

The channel must be restored to OPERABLE status within 48 hours. Operating experience has demonstrated that the probability of a random failure in the Actuation Logic of the second train is low during a given 48 hour period.

Failure of a single Initiation Logic channel, matrix channel power supply, or vital instrument bus may open one or both contacts in the same trip leg in both Actuation Logic channels. For the purposes of this Specification, the Actuation Logic is not inoperable. This obviates the need to enter LCO 3.0.3 in the event of a vital bus, matrix, or initiation channel failure.

Required Action D.1 is modified by a Note to indicate that one channel of Actuation Logic may be bypassed for up to 1 hour for Surveillance, provided the other channel is OPERABLE.

This allows performance of a PPS CHANNEL FUNCTIONAL TEST on an OPERABLE ESFAS train without generating an ESFAS actuation in the inoperable train.

E.1 and E.2

Overall plant risk is minimized

If two associated Actuation Logic channels are inoperable, or if the Required Actions and associated Completion Times of Conditions for CSAS, MSIS, or EFAS 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 6 hours and to MODE 4 within [12] hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

Insert 1

F.1 and F.2

If two associated Actuation Logic channels are inoperable, or if the Required Actions and associated Completion Times for SIAS, CIAS, RAS, or CCAS 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 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on

BASES

ACTIONS (continued)

operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.3.6.1

A CHANNEL FUNCTIONAL TEST is performed every [92] days to ensure the entire channel will perform its intended function when needed. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The CHANNEL FUNCTIONAL TEST is part of an overlapping test sequence similar to that employed in the RPS. This sequence, consisting of SR 3.3.5.2, SR 3.3.6.1, and SR 3.3.6.2, tests the entire ESFAS from the bistable input through the actuation of the individual subgroup relays. These overlapping tests are described in Reference 1. SR 3.3.5.2 and SR 3.3.6.1 are normally performed together and in conjunction with ESFAS testing. SR 3.3.6.2 verifies that the subgroup relays are capable of actuating their respective ESF components when de-energized.

These tests verify that the ESFAS is capable of performing its intended function, from bistable input through the actuated components. SR 3.3.5.2 is addressed in LCO 3.3.5. SR 3.3.6.1 includes Matrix Logic tests and trip path (Initiation Logic) tests.

Matrix Logic Tests

These tests are performed one matrix at a time. They verify that a coincidence in the two input channels for each function removes power to the matrix relays. During testing, power is applied to the matrix relay test coils, preventing the matrix relay contacts from assuming their energized state. The Matrix Logic tests will detect any short circuits around the bistable contacts in the coincidence logic, such as may be caused by faulty bistable relay or trip channel bypass contacts.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Trip Path (Initiation Logic) Tests

These tests are similar to the Matrix Logic tests, except that test power is withheld from one matrix relay at a time, allowing the initiation circuit to de-energize, opening one contact in each Actuation Logic channel.

The initiation circuit lockout relay must be reset (except for EFAS, which lacks initiation circuit lockout relays) prior to testing the other three initiation circuits, or an ESFAS actuation may result.

Automatic Actuation Logic operation is verified during Initiation Logic testing by verifying that current is interrupted in each trip leg in the selective two-out-of-four actuation circuit logic whenever the initiation relay is de-energized. A Note is added to indicate that testing of Actuation Logic shall include verification of the proper operation of each initiation relay.

The Frequency of [92] days is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 2).

SR 3.3.6.2

Individual ESFAS subgroup relays must also be tested, one at a time, to verify the individual ESFAS components will actuate when required. Proper operation of the individual subgroup relays is verified by de-energizing these relays one at a time using an ARC mounted test circuit. Proper operation of each component actuated by the individual relays is thus verified without the need to actuate the entire ESFAS function.

The 184 day Frequency is based on operating experience and ensures individual relay problems can be detected within this time frame. Considering the large number of similar relays in the ARC, and the similarity in their use, a large test sample can be assembled to verify the validity of this Frequency. The actual justification is based on CEN-403, "Relaxation of Surveillance Test Interval for ESFAS Subgroup Relay Testing" (Ref. 3).

Some components cannot be tested at power since their actuation might lead to plant trip or equipment damage. Reference 1 lists those relays exempt from testing at power, with an explanation of the reason for each

BASES

SURVEILLANCE REQUIREMENTS (continued)

exception. Relays not tested at power must be tested in accordance with the Note to this SR.

SR 3.3.6.3

A CHANNEL FUNCTIONAL TEST is performed on the manual ESFAS actuation circuitry, de-energizing relays and providing manual actuation of the function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

This test verifies that the trip push buttons are capable of opening contacts in the Actuation Logic as designed. The [18] 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. Operating experience has shown these components usually pass the Surveillance when performed at a Frequency of once every [18] months.

REFERENCES

1. FSAR, Section [7.3].

Insert 2

(3) ~~2~~. CEN-327, May 1986, including Supplement 1, March 1989.

(4) ~~3~~. CEN-403.

LCO 3.3.8 (digital), CPIS

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 4). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

4. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

3.3 INSTRUMENTATION

3.3.8 Containment Purge Isolation Signal (CPIS) (Digital)

LCO 3.3.8 One CPIS channel shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,
During movement of [recently] irradiated fuel assemblies within containment.

- NOTE -

Only required when the penetration is not isolated by at least one closed and de-activated automatic valve, closed manual valve, or blind flange.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CPIS Manual Trip, Actuation Logic, or one or more required channels of radiation monitors inoperable in MODES 1, 2, 3, and 4.	A.1	Enter applicable Conditions and Required Actions for affected valves of LCO 3.6.3, "Containment Isolation Valves," made inoperable by CPIS instrumentation.	Immediately
B. Required Action and associated Completion Time not met in MODE 1, 2, 3, or 4.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5 (4)	36 (12) hours

BASES

ACTIONS (continued)

When the number of inoperable channels in a trip Function exceeds that specified in any related Condition associated with the same trip Function, then the plant is outside the safety analysis. Therefore, LCO 3.0.3 is immediately entered if applicable in the current MODE of operation.

A.1

Condition A applies to the failure of CPIS Manual Trip, Actuation Logic, and required [particulate, iodine, gaseous, and area radiation monitors]. The Required Action is to enter the applicable Conditions and Required Actions for affected valves of LCO 3.6.3, "Containment Isolation Valves." The Completion Time accounts for the condition that the capability to isolate containment on valid containment high radiation or manual signals is degraded during power operation or shutdown modes.

B.1 and B.2

Condition B applies when the Required Action and associated Completion Time of Condition A are not met in MODE 1, 2, 3, or 4. If Required Action A cannot be met within the required Completion Time, the plant must be brought to a MODE in which ~~the LCO does not apply.~~ the overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE ~~5~~ 4 within ~~36~~ 12 hours.

Insert 1

C.1 and C.2

Condition C applies to the same conditions as are described in Condition A; however, the applicability is during the movement of [recently] irradiated fuel assemblies within containment. Required Action C.1 is to place the containment purge and exhaust isolation valves in the closed position. The Required Action immediately performs the isolation function of the CPIS. Required Action C.2 may be performed in lieu of Required Action C.1. Required Action C.2 requires suspension of movement of [recently] irradiated fuel in containment immediately. The Completion Time accounts for the fact that the automatic capability to isolate containment on valid containment high radiation signals is degraded during conditions in which a fuel handling accident is possible and CPIS provides the only required automatic mitigation of radiation release.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.3

A CHANNEL FUNCTIONAL TEST is performed on the required containment radiation monitoring channel to ensure the entire channel will perform its intended function. Setpoints must be found within the Allowable Values specified in SR 3.3.8.3 and left consistent with the assumptions of the plant specific setpoint analysis (Ref. 4). A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The Frequency of 92 days is based on 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 92 day Frequency is a rare event.

A Note to the SR indicates this Surveillance is required to be met in MODES 1, 2, 3, and 4 only.

SR 3.3.8.4

A CHANNEL FUNCTIONAL TEST is performed on the required containment radiation monitoring channel to ensure the entire channel will perform its intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Setpoints must be found within the Allowable Values specified in SR 3.3.8.4 and left consistent with the assumptions of the plant specific setpoint methodology (Ref. 4). The Frequency of 92 days is based on 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 92 day interval is a rare event.

A Note to the SR indicates that this test is only required to be met during CORE ALTERATIONS or during movement of irradiated fuel assemblies within containment.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.5

Proper operation of the individual initiation relays is verified by actuating these relays during the CHANNEL FUNCTIONAL TEST of the Actuation Logic every [18] months. This will actuate the Function, operating all associated equipment. Proper operation of the equipment actuated by each train is thus verified. The Frequency of [18] months is based on plant operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function during any [18] month interval is a rare event. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. A Note to the SR indicates that this Surveillance includes verification of operation for each initiation relay.

SR 3.3.8.6

CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The Surveillance verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations to ensure that the channel remains operational between successive surveillances. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [~~5~~ 6].

The [18] 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.

SR 3.3.8.7

This Surveillance ensures that the train actuation response times are less than or equal to the maximum times assumed in the analyses. The

BASES

SURVEILLANCE REQUIREMENTS (continued)

[18] month Frequency is based upon plant operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences. Testing of the final actuating devices, which make up the bulk of the response time, is included in the Surveillance.

SR 3.3.8.8

Every [18] months, a CHANNEL FUNCTIONAL TEST is performed on the CPIS Manual Trip channel. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

This test verifies that the trip push buttons are capable of opening contacts in the Actuation Logic as designed, de-energizing the initiation relays and providing manual actuation of the Function. The [18] 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. Operating experience has shown these components usually pass the Surveillance when performed at a Frequency of once every [18] months.

REFERENCES

1. FSAR, Chapter [15].
2. "Plant Protection System Selection of Trip Setpoint Values."
(Insert 3) → 3. 10 CFR 100.
~~4~~ 5. Plant Specific Setpoint Methodology.
~~5~~ 6. [ ].

3.3.8 (analog), LCO 3.3.9 (digital), CRIS

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 4). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

4. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

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ACTIONS (continued)

generally made during the performance of a CHANNEL FUNCTIONAL TEST when the process instrument is set up for adjustment to bring it within specification. If the trip setpoint is not within the Allowable Value, the channel is inoperable and the appropriate Conditions must be entered.

A.1, B.1, B.2, C.1, C.2.1, and C.2.2

Conditions A and C have been modified by a Note, which specifies that CREACS be placed manually in the toxic gas protection mode if the automatic transfer to the toxic gas protection mode is inoperable. [At this unit, the basis for this Note is as follows:]

Conditions A, B, and C are applicable to manual and automatic actuation of the CREACS by CRIS. Condition A applies to the failure of the CRIS Manual Trip, Actuation Logic, and required particulate/iodine and required gaseous radiation monitor channels in MODE 1, 2, 3, or 4. Entry into this Condition requires action to either restore the failed channel(s) or manually perform the CRIS safety function (Required Action A.1). The Completion Time of 1 hour is sufficient to complete the Required Actions and accounts for the fact that CRIS supplements control room isolation by other Functions (e.g., SIAS) in MODES 1, 2, 3, and 4. If the channel cannot be restored to OPERABLE status, the plant must be brought to a MODE ~~in which the LCO does not apply~~ [in which overall plant risk is minimized]. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours (Required Action B.1) and to MODE ~~5~~ [4] within ~~36~~ [12] hours (Required Action B.2). [Insert 1] The Completion Times of 6 hours and ~~36~~ [12] hours for reaching MODES 3 and ~~5~~ [4] from MODE 1 are reasonable, based on operating experience and normal cooldown rates, for reaching the required MODE from full power conditions in an orderly manner and without challenging plant safety systems or operators.

Condition C applies to the failure of CRIS Manual Trip, Actuation Logic, and required particulate/iodine and required gaseous radiation monitor channels [in MODE 5 or 6] or when moving [recently] irradiated assemblies. The Required Actions are immediately taken to place one OPERABLE CREACS train in the emergency radiation protection mode or to suspend positive reactivity additions and movement of [recently] irradiated fuel assemblies. The Completion Time recognizes the fact that the radiation signals are the only Functions available to initiate control room isolation in the event of a fuel handling accident requiring control room isolation.

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SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.8.2

A CHANNEL FUNCTIONAL TEST is performed on the required control room radiation monitoring channel to ensure the entire channel will perform its intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the frequency extension analysis. The requirements for this review are outlined in Reference [4] 5.

The Frequency of [92] days is based on 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 [92] day interval is a rare event.

SR 3.3.8.3

Proper operation of the individual initiation relays is verified by de-energizing these relays during the CHANNEL FUNCTIONAL TEST of the Actuation Logic every [31] days. This will actuate the Function, operating all associated equipment. Proper operation of the equipment actuated by each train is thus verified. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The Frequency of [31] days is based on plant operating experience with regard to channel OPERABILITY, which demonstrates that failure of more than one channel of a given Function in any [31] days interval is a rare event.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

Note 1 indicates this Surveillance includes verification of operation for each initiation relay.

Note 2 indicates that relays that cannot be tested at power are excepted from the Surveillance Requirement while at power. These relays must, however, be tested during each entry into MODE 5 exceeding 24 hours unless they have been tested within the previous 6 months.

SR 3.3.8.4

CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The Surveillance verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations to ensure that the channel remains operational between successive surveillances. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [4]. 5

The Frequency is based upon the assumption of an [18] month calibration interval for the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.8.5

Every [18] months, a CHANNEL FUNCTIONAL TEST is performed on the manual CRIS actuation circuitry. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

This test verifies that the trip push buttons are capable of opening contacts in the Actuation Logic as designed, de-energizing the initiation relays and providing Manual Trip of the function. The [18] month Frequency is based on the need to perform this Surveillance under the

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SURVEILLANCE REQUIREMENTS (continued)

conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at a Frequency of once every [18] months.

[SR 3.3.8.6

This Surveillance ensures that the train actuation response times are less than the maximum times assumed in the analyses. The [18] month Frequency is based upon plant operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences. Testing of the final actuating devices, which make up the bulk of the response time, is included in the Surveillance testing.]

REFERENCES

1. FSAR, Chapter [15].

2. "Plant Protection System Selection of Trip Setpoint Values."

3. 10 CFR 50, Appendix A, GDC 19.

Insert 2

5 4. [ ].

3.3 INSTRUMENTATION

3.3.9 Control Room Isolation Signal (CRIS) (Digital)

LCO 3.3.9 One CRIS channel shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4, [5, and 6],
During movement of [recently] irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CRIS Manual Trip, Actuation Logic, or [one or more required channels of particulate/ iodine or gaseous] radiation monitors inoperable in MODE 1, 2, 3, or 4.	A.1	- NOTE - Place Control Room Emergency Air Cleanup System (CREACS) in toxic gas protection mode if automatic transfer to toxic gas protection mode inoperable. Place one CREACS train in emergency radiation protection mode.	1 hour
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE ~~5~~ 4	~~36~~ 12 hours

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A CRIS channel is inoperable when it does not satisfy the OPERABILITY criteria for the channel's function. The most common cause of channel inoperability is outright failure or drift of the bistable or process module sufficient to exceed the tolerance allowed by the plant specific setpoint analysis. Typically, the drift is not large and would result in a delay of actuation rather than a total loss of function. This determination is generally made during the performance of a CHANNEL FUNCTIONAL TEST when the process instrument is set up for adjustment to bring it within specification. If the trip setpoint is not within the Allowable Value, the channel is inoperable and the appropriate Conditions must be entered.

A.1, B.1, B.2, C.1, C.2.1, and C.2.2

Conditions A and C have been modified by a Note, which specifies that CREACS be placed manually in the toxic gas protection mode if the automatic transfer to the toxic gas protection mode is inoperable. [At this unit, the basis for this Note is as follows:]

Conditions A, B, and C are applicable to manual and automatic actuation of the CREACS by CRIS. Condition A applies to the failure of the CRIS Manual Trip, Actuation Logic, and required [particulate/iodine and required gaseous radiation monitor channels] in MODE 1, 2, 3, or 4. Entry into this Condition requires action to either restore the failed channel(s) or manually perform the CRIS safety function (Required Action A.1). The Completion Time of 1 hour is sufficient to complete the Required Actions and accounts for the fact that CRIS supplements control room isolation by other Functions (e.g., SIAS) in MODES 1, 2, 3, and 4. If the channel cannot be restored to OPERABLE status, the plant must be brought to a MODE in which the ~~LCO does not apply~~ [overall plant risk is minimized]. To achieve this status, the plant must be brought to at least ~~MODE 3 within 6 hours (Required Action B.1) and to~~ MODE ~~5~~ [4] within ~~36~~ [12] hours (Required Action B.2). [Insert 1] The Completion Times of 6 hours and ~~36~~ [12] hours for reaching MODES 3 and ~~5~~ [4] from MODE 1 are reasonable, based on operating experience and normal cooldown rates, for reaching the required MODE from full power conditions in an orderly manner and without challenging plant safety systems or operators.

Condition C applies to the failure of CRIS Manual Trip, Actuation Logic, and required particulate/iodine and required gaseous radiation monitor channels [in MODE 5 or 6] or when moving [recently] irradiated assemblies. The Required Actions are immediately taken to place one OPERABLE CREACS train in the emergency radiation protection mode, or to suspend positive reactivity additions and movement of [recently] irradiated fuel assemblies. The Completion Time recognizes the fact that

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BASES

SURVEILLANCE REQUIREMENTS (continued)

[At this unit, verification of sample system alignment and operation for gaseous, particulate, and iodine monitors is required as follows:]

SR 3.3.9.2

A CHANNEL FUNCTIONAL TEST is performed on the required control room radiation monitoring channel to ensure the entire channel will perform its intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the frequency extension analysis. The requirements for this review are outlined in Reference [~~4~~] (5).

The Frequency of [92] days is based on 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 [92] day interval is a rare event.

SR 3.3.9.3

Proper operation of the individual initiation relays is verified by de-energizing these relays during the CHANNEL FUNCTIONAL TEST of the Actuation Logic every [18] months. This will actuate the Function, operating all associated equipment. Proper operation of the equipment actuated by each train is thus verified. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

The Frequency of [18] months is based on plant operating experience with regard to channel OPERABILITY, which demonstrates that failure of

BASES

SURVEILLANCE REQUIREMENTS (continued)

more than one channel of a given Function in any [18] month interval is a rare event.

Note 1 indicates this Surveillance includes verification of operation for each initiation relay.

Note 2 indicates that relays that cannot be tested at power are excepted from the Surveillance Requirement while at power. These relays must, however, be tested during each entry into MODE 5 exceeding 24 hours unless they have been tested within the previous 6 months.

SR 3.3.9.4

CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The Surveillance verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations to ensure that the channel remains operational between successive surveillances. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [4]. 5

The Frequency is based upon the assumption of an [18] month calibration interval for the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.9.5

Every [18] months, a CHANNEL FUNCTIONAL TEST is performed on the manual CRIS actuation circuitry. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

BASES

SURVEILLANCE REQUIREMENTS (continued)

This test verifies that the trip push buttons are capable of opening contacts in the Actuation Logic as designed, de-energizing the initiation relays and providing Manual Trip of the function. The [18] 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. Operating experience has shown these components usually pass the Surveillance when performed at a Frequency of once every [18] months.

[SR 3.3.9.6

This Surveillance ensures that the train actuation response times are less than the maximum times assumed in the analyses. The [18] month Frequency is based upon plant operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences. Testing of the final actuating devices, which make up the bulk of the response time, is included in the Surveillance testing.]

REFERENCES

1. FSAR, Chapter [15].

2. "Plant Protection System Selection of Trip Setpoint Values."

3. 10 CFR 50, Appendix A, GDC 19.

Insert 2

5 ~~4~~. [ ].

3.3.9 (analog), CVCS Isolation Signal

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 3). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

3. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Two Actuation Logic channels inoperable. OR Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 Be in MODE (5). (4)	6 hours (36) hours (12)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.9.1	Perform a CHANNEL CHECK.	12 hours
SR 3.3.9.2	------------------------------- - NOTES - ------------------------------- 1. Testing of Actuation Logic shall include the verification of the proper operation of each initiation relay. 2. Relays associated with plant equipment that cannot be operated during plant operation are only required to be tested during each MODE 5 entry exceeding 24 hours unless tested within the previous 6 months. ------------------------------- Perform a CHANNEL FUNCTIONAL TEST on each CVCS isolation channel with setpoints in accordance with the following Allowable Values: West Penetration Room Pressure - High ≤ .5 psig Letdown Heat Exchanger Room Pressure - High ≤ .5 psig	31 days
SR 3.3.9.3	Perform a CHANNEL CALIBRATION on each CVCS isolation pressure indicating channel.	18 months

TSTF 422

BASES

ACTIONS (continued)

Once the Required Action to trip or bypass the channel has been complied with, Required Action C.2 provides for restoring one channel to OPERABLE status within 48 hours. The justification of the 48 hour Completion Time is the same as for Condition B.

After one channel is restored to OPERABLE status, the provisions of Condition C still apply to the remaining inoperable channel.

The Required Action is modified by a Note stating that LCO 3.0.4 is not applicable. The Note was added to allow the changing of MODES even though two channels are inoperable, with one channel bypassed and one tripped. MODE changes in this configuration are allowed to permit maintenance and testing on one of the inoperable channels. In this configuration, the protection system is in a one-out-of-two logic, and the probability of a common cause failure affecting both of the OPERABLE channels during the 48 hours permitted is remote.

D.1 and D.2

Condition D specifies the shutdown track to be followed if two Actuation Logic channels are inoperable or if the Required Actions and associated Completion Times of Condition A, B, or C are not met. If two Actuation Logic channels are inoperable or the Required Actions cannot be met within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. [a MODE in which overall plant risk is minimized.] To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 [4] within 36 [12] hours. [Insert 1] The Completion Times are 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 3.3.9.1

Performance of the CHANNEL CHECK on each CVCS isolation pressure indicating channel 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 two 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

TSTF 422

BASES

SURVEILLANCE REQUIREMENTS (continued)

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 transmitter or the signal processing equipment has drifted outside its limit.

The Frequency, about once every shift, is based on operating experience that demonstrates the rarity of channel failure. Since the probability of two random failures in redundant channels in any 12 hour period is low, the CHANNEL CHECK minimizes the chance of loss of protective function due to failure of redundant channels. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel OPERABILITY during normal operational use of the displays associated with the LCO required channels.

SR 3.3.9.2

A CHANNEL FUNCTIONAL TEST is performed on each channel to ensure the entire channel will perform its intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [3]. (4)

The Frequency of 31 days is based on 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 a rare event.

Proper operation of the individual subgroup relays is verified by de-energizing these relays during the CHANNEL FUNCTIONAL TEST of the Actuation Logic every 31 days. This will actuate the Function,

BASES

SURVEILLANCE REQUIREMENTS (continued)

operating all associated equipment. Proper operation of the equipment actuated by each train is thus verified. Note 1 indicates this test includes verification of operation for each initiation relay. [At this unit, the verification is conducted as follows:]

Note 2 indicates that relays that cannot be tested at power are excepted from the SR while at power. These relays must, however, be tested during each entry into MODE 5 exceeding 24 hours unless they have been tested within the previous 6 months.

[At this unit, the basis for this test exception is as follows:]

[At this unit, the following relays excepted by this Note are:]

SR 3.3.9.3

CHANNEL CALIBRATION is a complete check of the instrument channel including the sensor. The Surveillance verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations to ensure that the channel remains operational between successive tests. CHANNEL CALIBRATIONS must be performed consistent with the plant specific setpoint analysis.

The as found and as left values must also be recorded and reviewed for consistency with the assumptions of the surveillance interval extension analysis. The requirements for this review are outlined in Reference [~~3~~]. (4)

Radiation detectors may be removed and calibrated in a laboratory, calibrated in place using a transfer source or replaced with an equivalent laboratory calibrated unit.

The Frequency is based upon the assumptions of an 18 month calibration interval for the determination of the magnitude of equipment drift in the setpoint analysis and includes operating experience as well as consistency with an 18 month fuel cycle.

REFERENCES

1. FSAR, Section [7.3].
2. "Plant Protection System Selection of Trip Setpoint Values."

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BASES

REFERENCES (continued)

Insert 2

4 3. [ ].

3.3.10 (analog), Shield Building Filtration Actuation Signal

INSERT 1

(new paragraph)

Inoperability of the SBFAS has no effect on plant core damage frequency in any operational MODE. Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 2). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

2. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

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3.3 INSTRUMENTATION

3.3.10 Shield Building Filtration Actuation Signal (SBFAS) (Analog)

LCO 3.3.10 Two channels of SBFAS automatic and two channels of Manual Trip shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Manual Trip or Actuation Logic channel inoperable.	A.1 Restore the channel to OPERABLE status.	48 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE ~~5~~. 4	6 hours ~~36~~ 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.10.1	Perform a CHANNEL FUNCTIONAL TEST on each SBFAS automatic actuation channel.	[92] days
SR 3.3.10.2	Perform a CHANNEL FUNCTIONAL TEST on each SBFAS Manual Trip channel.	[18] months

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BASES

ACTIONS (continued)

A.1

Condition A applies to the failure of one SBFAS Manual Trip channel or of one Actuation Logic associated with the Chemical and Volume Control System Isolation Signal or SBFAS. Required Action A.1 requires restoration of the inoperable channel to restore redundancy of the affected Function. The Completion Time of 48 hours is consistent with the Completion Time of other ESFAS Functions employing similar logic and should be adequate for most repairs while minimizing the risk of operating with an inoperable channel for a manually actuated Function.

B.1 and B.2

overall plant risk is minimized

Condition B specifies the shutdown track to be followed if the Required Action and associated Completion Time of Condition A are not met. If Required Action A.1 cannot be met within the required Completion Time, the plant must be brought to a MODE in which the ~~LCO does not apply~~. Insert 1 To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE ~~5~~ 4 within ~~36~~ 12 hours. The Completion Times are 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 3.3.10.1

The SBFAS can be initiated either on a Safety Injection Actuation Signal (SIAS) or manually. This Surveillance is a restatement of SR 3.3.5.1 on the SIAS Function. Performing SR 3.3.5.1 satisfies this Surveillance. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The Frequency is the same as that for SR 3.3.5.1.

SR 3.3.10.2

Every [18] months, a CHANNEL FUNCTIONAL TEST is performed on the manual SBFAS actuation circuitry. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is

BASES

SURVEILLANCE REQUIREMENTS (continued)

acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

This Surveillance verifies that the trip push buttons are capable of opening contacts in the Actuation Logic as designed, de-energizing the initiation relays and providing Manual Trip of the Function. The 18 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. Operating experience has shown these components usually pass the Surveillance when performed at a Frequency of once every [18] months.

REFERENCES

1. FSAR, Chapter [15].

Insert 2

LCO 3.4.6, RCS Loops – MODE 4

INSERT 1

If only one required SDC train is OPERABLE and in operation and no required RCS loops are OPERABLE, redundancy for heat removal is lost and the plant must be placed in a configuration that minimizes overall plant risk. This redundancy is obtained by making at least one SG available for decay heat removal via natural circulation because:

1. MODE 4 operation poses overall lower risk of core damage and large early radiation release than does MODE 5 (Ref. 1). This is particularly true with SDC impaired.

2. In MODE 4, RCS and steam generator conditions may be maintained such that failure of the operating SDC train may be mitigated by natural circulation heat removal through one or more steam generators.

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 1) However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

1. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

- For Information Only -

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops - MODE 4

LCO 3.4.6

Two loops or trains consisting of any combination of RCS loops and shutdown cooling (SDC) trains shall be OPERABLE and one loop or train shall be in operation.

- NOTES -

1. All reactor coolant pumps (RCPs) and SDC pumps may be not in operation for ≤ 1 hour per 8 hours period, provided:

   a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1 and

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

2. No RCP shall be started with any RCS cold leg temperature ≤ [285]°F unless:

   a. Pressurizer water level is < [60]% or

   b. Secondary side water temperature in each steam generator (SG) is < [100]°F above each of the RCS cold leg temperatures.

APPLICABILITY:

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required loop inoperable.	A.1	Initiate action to restore a non-operating loop or train to OPERABLE status.	Immediately
	AND		

Initiate action to make at least one steam generator available for decay heat removal via natural circulation.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	~~- NOTE - Only required if SDC train is OPERABLE.~~ A.2. ~~Be in MODE 5.~~	~~24 hours~~ Immediately
B. Two required loops or trains inoperable. OR Required loop or train not in operation.	B.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet SDM of LCO 3.1.1. AND B.2 Initiate action to restore one loop or train to OPERABLE status and operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.6.1	Verify required RCS loop or SDC train is in operation.	12 hours
SR 3.4.6.2	Verify secondary side water level in required SG(s) is ≥ [25]%.	12 hours
SR 3.4.6.3	- NOTE - Not required to be performed until 24 hours after a required pump is not in operation. Verify correct breaker alignment and indicated power available to each required pump.	7 days

BASES

APPLICABILITY (continued)

LCO 3.4.4,	"RCS Loops - MODES 1 and 2,"
LCO 3.4.5,	"RCS Loops - MODE 3,"
LCO 3.4.7,	"RCS Loops - MODE 5, Loops Filled,"
LCO 3.4.8,	"RCS Loops - MODE 5, Loops Not Filled,"
LCO 3.9.4,	"Shutdown Cooling and Coolant Circulation - High Water Level" (MODE 6), and
LCO 3.9.5,	"Shutdown Cooling and Coolant Circulation - Low Water Level" (MODE 6).

ACTIONS

A.1

If only one required RCS loop is OPERABLE and in operation and no SDC trains are OPERABLE, redundancy for heat removal is lost. Action must be initiated immediately to restore a required non-operating loop or train to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for decay heat removal.

A.2

If restoration is not accomplished and a SDC train is OPERABLE, the plant must be placed in MODE 5 within the next 24 hours. Placing the plant in MODE 5 is a conservative action with regard to decay heat removal. With only one SDC train OPERABLE, redundancy for decay heat removal is lost and, in the event of a loss of the remaining SDC train, it would be safer to initiate that loss from MODE 5 rather than MODE 4. The Completion Time of 24 hours is reasonable, based on operating experience, to reach MODE 5 from MODE 4, with only one SDC train operating, in an orderly manner and without challenging plant systems.

This Required Action is modified by a Note which indicates that the unit must be placed in MODE 5 only if a SDC train is OPERABLE. With no SDC train OPERABLE, the unit is in a condition with only limited cooldown capabilities. Therefore, the actions are to be concentrated on the restoration of a SDC train, rather than a cooldown of extended duration.

Insert 1

B.1 and B.2

If two required loops or trains are inoperable or a required loop or train is not in operation except during conditions permitted by Note 1 in the LCO section, all operations involving introduction of coolant into the RCS

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BASES

SURVEILLANCE REQUIREMENTS (continued)

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a required pump is not in operation.

REFERENCES None.

Insert 2

LCO 3.5.4, RWT

INSERT 1

B.1

If the RWT boron concentration is not restored to within limits within the associated Completion Time, the plant must be brought to MODE 3 within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. Reference 2 demonstrated that is it acceptable to remain in MODE 3 in this condition because the boron concentration limit is based on MODE 1 events which are unlikely in MODE 3, such as a LOCA, and conditions which do not exist in MODE 3, such as a critical core with all rods out. Since the anticipated deviations from the RWT boron concentration requirements are expected to be small and the ability to correct the deficiency is expected to be readily available, entry into MODE 4 or 5 is not unnecessary.

C.1

With RWT water temperature not within limits, it must be returned to within limits within 8 hours. In this condition neither the ECCS nor the Containment Spray System can perform their design functions; therefore, prompt action must be taken to restore the tank to OPERABLE condition. The allowed Completion Time of 8 hours to restore the RWT to within limits was developed considering the time required to change water temperature and that the contents of the tank are still available for injection.

INSERT 2

2. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.4 Refueling Water Tank (RWT)

LCO 3.5.4 The RWT shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RWT boron concentration not within limits. ~~OR~~	A.1 Restore RWT to OPERABLE status.	8 hours
C. RWT borated water temperature not within limits.	C.1 Restore RWT to OPERABLE status.	8 hours
~~B~~ [D]. RWT inoperable for reasons other than Condition[s] A [or C].	~~B~~ [D].1 Restore RWT to OPERABLE status.	1 hour
~~C~~ [E]. Required Action[s] and associated Completion Time[s] [of Conditions C or D] not met.	~~C~~ [E].1 Be in MODE 3. AND ~~C~~ [E].2 Be in MODE 5.	6 hours 36 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	6 hours

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, the RWT OPERABILITY requirements are dictated by the ECCS and Containment Spray System OPERABILITY requirements. Since both the ECCS and the Containment Spray System must be OPERABLE in MODES 1, 2, 3, and 4, the RWT must be OPERABLE to support their operation.

Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation - High Water Level," and LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation - Low Water Level."

ACTIONS

A.1

With RWT boron concentration ~~or borated water temperature~~ not within limits, it must be returned to within limits within 8 hours. In this condition neither the ECCS nor the Containment Spray System can perform their design functions; therefore, prompt action must be taken to restore the tank to OPERABLE condition. The allowed Completion Time of 8 hours to restore the RWT to within limits was developed considering the time required to change boron concentration ~~or temperature~~ and that the contents of the tank are still available for injection.

Insert 1

D ~~B~~.1

With RWT borated water volume not within limits, it must be returned to within limits within 1 hour. In this condition, neither the ECCS nor Containment Spray System can perform their design functions; therefore, prompt action must be taken to restore the tank to OPERABLE status or to place the unit in a MODE in which these systems are not required. The allowed Completion Time of 1 hour to restore the RWT to OPERABLE status is based on this condition simultaneously affecting multiple redundant trains.

E ~~C~~.1 and E ~~C~~.2

If the RWT (temperature or water volume) cannot be restored to OPERABLE status 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 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full

BASES

ACTIONS (continued)

power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.4.1

RWT borated water temperature shall be verified every 24 hours to be within the limits assumed in the accident analysis. This Frequency has been shown to be sufficient to identify temperature changes that approach either acceptable limit.

The SR is modified by a Note that eliminates the requirement to perform this Surveillance when ambient air temperatures are within the operating temperature limits of the RWT. With ambient temperatures within this range, the RWT temperature should not exceed the limits.

SR 3.5.4.2

Above minimum RWT water volume level shall be verified every 7 days. This Frequency ensures that a sufficient initial water supply is available for injection and to support continued ESF pump operation on recirculation. Since the RWT volume is normally stable and is provided with a Low Level Alarm, a 7 day Frequency is appropriate and has been shown to be acceptable through operating experience.

SR 3.5.4.3

Boron concentration of the RWT shall be verified every 7 days to be within the required range. This Frequency ensures that the reactor will remain subcritical following a LOCA. Further, it ensures that the resulting sump pH will be maintained in an acceptable range such that boron precipitation in the core will not occur earlier than predicted and the effect of chloride and caustic stress corrosion on mechanical systems and components will be minimized. Since the RWT volume is normally stable, a 7 day sampling Frequency is appropriate and has been shown through operating experience to be acceptable.

REFERENCES

1. FSAR, Chapter [6] and Chapter [15].

Insert 2

LCO 3.6.2, CONTAINMENT AIR LOCKS

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 4). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

4. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

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ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	B.2	Lock an OPERABLE door closed in the affected air lock.	24 hours
	<u>AND</u>		
	B.3	--------------------------------- **- NOTE -** Air lock doors in high radiation areas may be verified locked closed by administrative means. --------------------------------- Verify an OPERABLE door is locked closed in the affected air lock.	Once per 31 days
C. One or more containment air locks inoperable for reasons other than Condition A or B.	C.1	Initiate action to evaluate overall containment leakage rate per LCO 3.6.1.	Immediately
	<u>AND</u>		
	C.2	Verify a door is closed in the affected air lock.	1 hour
	<u>AND</u>		
	C.3	Restore air lock to OPERABLE status.	24 hours
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	D.2	Be in MODE ~~5~~ 4.	~~36~~ 12 hours

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BASES

ACTIONS (continued)

Additionally, the affected air lock(s) must be restored to OPERABLE status within the 24 hour Completion Time. The specified time period is considered reasonable for restoring an inoperable air lock to OPERABLE status, assuming that at least one door is maintained closed in each affected air lock.

D.1 and D.2

the overall plant risk is minimized

If the inoperable containment 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 6 hours and to MODE 5 (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.

(12) Insert 1

SURVEILLANCE REQUIREMENTS

SR 3.6.2.1

Maintaining containment air locks OPERABLE requires compliance with the leakage rate test requirements of the Containment Leakage Rate Testing Program. This SR reflects the leakage rate testing requirements with regard to air lock leakage (Type B leakage tests). The acceptance criteria were established during initial air lock and containment OPERABILITY testing. The periodic testing requirements verify that the air lock leakage does not exceed the allowed fraction of the overall containment leakage rate. The Frequency is required by the Containment Leakage Rate Testing Program.

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 which is applicable to SR 3.6.1.1. This ensures that air lock leakage is properly accounted for in determining the combined Type A and C containment leakage rate.

SR 3.6.2.2

The air lock interlock is designed to prevent simultaneous opening of both doors in a single air lock. Since both the inner and outer doors of an

BASES

SURVEILLANCE REQUIREMENTS (continued)

air lock are designed to withstand the maximum expected post accident containment pressure, closure of either door will support containment OPERABILITY. Thus, the door interlock feature supports containment OPERABILITY while the air lock is being used for personnel transit into and out of containment. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous opening of the inner and outer doors will not inadvertently occur. Due to the purely mechanical nature of this interlock, and given that the interlock mechanism is not normally challenged when the containment airlock door is used for entry and exit (procedures require strict adherence to single door opening), this test is only required to be performed every 24 months. 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 loss of containment OPERABILITY if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency. The 24 month Frequency is based on engineering judgment and is considered adequate given that the interlock is not challenged during the use of the airlock.

REFERENCES

1. 10 CFR 50, Appendix J, Option [A][B].
2. FSAR, Section [ ].
3. FSAR, Section [ ].

Insert 2

LCO 3.6.3, CONTAINMENT ISOLATION VALVES

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 5). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

5. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	E.2	- NOTES - 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
	AND		
	E.3	Perform SR 3.6.3.6 for the resilient seal purge valves closed to comply with Required Action E.1.	Once per [ ] days]
F. Required Action and associated Completion Time not met.	F.1	Be in MODE 3.	6 hours
	AND		
	F.2	Be in MODE ~~5~~ (4).	~~36~~ (12) hours

BASES

ACTIONS (continued)

Required Action E.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned.]

F.1 and F.2

overall plant risk is minimized

If the Required Actions and associated Completion Times are not met, the plant must be brought to a MODE in which the ~~LCO does not apply~~. (4) ~~To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours.~~ (12) 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. (Insert 1)

SURVEILLANCE REQUIREMENTS

[SR 3.6.3.1

Each [42] inch containment purge valve is required to be verified sealed closed at 31 day intervals. This Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Therefore, these valves are required to be in the sealed closed position during MODES 1, 2, 3, and 4. A containment purge valve that is sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power or by removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leak tightness. The Frequency is a result of an NRC initiative, Generic Issue B-24 (Ref. 5), related to containment purge valve use during unit operations. (6) This SR is not required to be met while in Condition E of this LCO. This is reasonable since the penetration flow path would be isolated.]

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.4

This SR requires verification that each containment isolation manual valve and blind flange located inside containment 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 containment boundary is within design limits. For containment isolation valves inside containment, the Frequency of "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is appropriate, since these containment isolation valves are operated under administrative controls and the probability of their misalignment is low. Containment isolation valves that are open under administrative controls are not required to meet the SR during the time that they are open. 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.

The Note allows valves and blind flanges located in high radiation areas to be verified closed 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 containment isolation valves, once they have been verified to be in their proper position, is small.

SR 3.6.3.5

Verifying that the isolation time of each automatic power operated containment isolation valve is within limits is required to demonstrate OPERABILITY. The isolation time test ensures 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 or 92 days.]

SR 3.6.3.6

For containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option [A][B], (Ref. 6 → 7), 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

BASES

SURVEILLANCE REQUIREMENTS (continued)

fully open. The [18] month Frequency is appropriate because the blocking devices are typically removed only during a refueling outage.]

[SR 3.6.3.9

This SR ensures that the combined leakage rate of all secondary containment bypass leakage paths is less than or equal to the specified leakage rate. This provides assurance that the assumptions in the safety analysis 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 one closed and de-activated automatic valve, closed manual valve, or 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 device. If both isolation valves in the penetration are closed, the actual leakage rate is the lesser leakage rate of the two valves. The Frequency is required by the Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria.

[Bypass leakage is considered part of L_a.

- REVIEWER'S NOTE -

Unless specifically exempted.]]

REFERENCES

1. FSAR, Section [ ].
2. FSAR, Section [ ].
3. Standard Review Plan 6.2.4.
Insert 2 →
4. Generic Issue B-20.
(6) ~~5~~. Generic Issue B-24.
(7) ~~6~~. 10 CFR 50, Appendix J, Option [A][B].

LCO 3.6.4, CONTAINMENT PRESSURE

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 1). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

1. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

TSTF 422

3.6 CONTAINMENT SYSTEMS

3.6.4 Containment Pressure (Atmospheric and Dual)

LCO 3.6.4 Containment pressure shall be [Dual: > 14.375 psia and < 27 inches water gauge] [or] [Atmospheric: ≥ -0.3 psig and ≤ +1.5 psig].

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment pressure not within limits.	A.1 Restore containment 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 5. (4)	6 hours 36 (12) hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.1	Verify containment pressure is within limits.	12 hours

TSTF 422

BASES

APPLICABLE SAFETY ANALYSES (continued)

Containment Spray System. The LCO limit of [-0.3] psig ensures that operation within the design limit of [-0.5] psig is maintained. The maximum calculated external pressure that would occur as a result of an inadvertent actuation of the Containment Spray System is [2.8] psig.

Containment pressure satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

Maintaining containment pressure less than or equal to the LCO upper pressure limit ensures that, in the event of a DBA, the resultant peak containment accident pressure will remain below the containment design pressure. Maintaining containment pressure greater than or equal to the LCO lower pressure limit ensures that the containment will not exceed the design negative pressure differential following the inadvertent actuation of the Containment Spray System.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. Since maintaining containment pressure within limits is essential to ensure initial conditions assumed in the accident analysis are maintained, the LCO is applicable in MODES 1, 2, 3, and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining containment pressure within the limits of the LCO is not required in MODE 5 or 6.

ACTIONS

A.1

When containment pressure is not within the limits of the LCO, containment pressure must be restored to within these limits within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

B.1 and B.2

Overall plant risk is minimized

If containment pressure cannot be restored to within limits within the required Completion Time, the plant must be brought to a MODE in which the ~~LCO does not apply~~. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE ~~5~~ 4 within ~~36~~ 12 hours. Insert 1 The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full

TSTF 422

BASES

ACTIONS (continued)

power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.4A.1

Verifying that containment pressure is within limits ensures that operation remains within the limits assumed in the accident analysis. The 12 hour Frequency of this SR was developed after taking into consideration operating experience related to trending of 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 containment pressure condition.

REFERENCES

None.

Insert 2

BASES

APPLICABLE SAFETY ANALYSES (continued)

Containment pressure satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

Maintaining containment pressure less than or equal to the LCO upper pressure limit ensures that, in the event of a DBA, the resultant peak containment accident pressure will remain below the containment design pressure. Maintaining containment pressure greater than or equal to the LCO lower pressure limit ensures the containment will not exceed the design negative differential pressure following the inadvertent actuation of the Containment Spray System.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. Since maintaining containment pressure within limits is essential to ensure initial conditions assumed in the accident analysis are maintained, the LCO is applicable in MODES 1, 2, 3, and 4. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES.

ACTIONS

A.1

When containment pressure is not within the limits of the LCO, containment pressure must be restored to within these limits within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

B.1 and B.2

Overall plant risk is minimized

If containment pressure cannot be restored to within limits within the required Completion Time, the plant must be brought to a MODE in which the ~~LCO does not apply~~. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE ~~5~~ 4 within ~~36~~ 12 hours. Insert 1 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.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.4B.1

Verifying that containment pressure is within limits ensures that facility operation remains within the limits assumed in the containment analysis. The 12 hour Frequency of this SR was developed after taking into consideration operating experience related to trending of 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 containment pressure condition.

REFERENCES

~~None.~~

Insert 2

LCO 3.6.5, CONTAINMENT AIR TEMPERATURE

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 3). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

3. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

TSTF 422

3.6 CONTAINMENT SYSTEMS

3.6.5 Containment Air Temperature (Atmospheric and Dual)

LCO 3.6.5 Containment average air temperature shall be ≤ [120]°F.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Containment average air temperature not within limit.	A.1 Restore 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 ~~5~~ 4.	6 hours ~~36~~ 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.1	Verify containment average air temperature is within limit.	24 hours

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BASES

ACTIONS (continued)

the overall plant risk is minimized.

B.1 and B.2

If the containment average air temperature cannot be restored to within its 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 6 hours and to MODE ~~5~~ 4 within ~~36~~ 12 hours. Insert 1 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

Verifying that containment average air temperature is within the LCO limit ensures that containment operation remains within the limit assumed for the containment analyses. In order to determine the containment average air temperature, an arithmetic average is calculated using measurements taken at locations within the containment selected to provide a representative sample of the overall containment atmosphere. The 24 hour Frequency of this SR is considered acceptable based on the observed slow rates of temperature increase within containment as a result of environmental heat sources (due to the large volume of 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 containment temperature condition.

REFERENCES

1. FSAR, Section [ ].

2. FSAR, Section [ ].

Insert 2

3.6.6A Containment Spray and Cooling Systems (Credit taken for iodine removal by the Containment Spray System)

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 6). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

6. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

TSTF 422

3.6 CONTAINMENT SYSTEMS

3.6.6A Containment Spray and Cooling Systems (Atmospheric and Dual) (Credit taken for iodine removal by the Containment Spray System)

LCO 3.6.6A Two containment spray trains and two containment cooling trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One containment spray train inoperable.	A.1	Restore containment spray train to OPERABLE status.	72 hours <u>AND</u> 10 days from discovery of failure to meet the LCO
B. Required Action and associated Completion Time of Condition A not met.	B.1 <u>AND</u>	Be in MODE 3.	6 hours
	B.2	Be in MODE ~~5~~ (4).	84 hours
C. One containment cooling train inoperable.	C.1	Restore containment cooling train to OPERABLE status.	7 days <u>AND</u> 10 days from discovery of failure to meet the LCO
D. Two containment cooling trains inoperable.	D.1	Restore one containment cooling train to OPERABLE status.	72 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Be in MODE 3. AND E.2 Be in MODE ~~5~~ 4	6 hours 36 hours
F. Two containment spray trains inoperable. OR Any combination of three or more trains inoperable.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.6A.1	Verify each containment spray 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
SR 3.6.6A.2	Operate each containment cooling train fan unit for ≥ 15 minutes.	31 days
SR 3.6.6A.3	Verify each containment cooling train cooling water flow rate is ≥ [2000] gpm to each fan cooler.	31 days
SR 3.6.6A.4	[Verify the containment spray piping is full of water to the [100] ft level in the containment spray header.	31 days]
SR 3.6.6A.5	Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment and an increase in containment pressure and temperature, requiring the operation of the containment spray trains and containment cooling trains.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Thus, the Containment Spray and Containment Cooling systems are not required to be OPERABLE in MODES 5 and 6.

ACTIONS

A.1

With one containment spray train inoperable, the inoperable containment spray train must be restored to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE spray and cooling trains are adequate to perform the iodine removal and containment cooling functions. The 72 hour Completion Time takes into account the redundant heat removal capability afforded by the Containment Spray System, reasonable time for repairs, and the low probability of a DBA occurring during this period.

The 10 day portion of the Completion Time for Required Action A.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3, "Completion Times," for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.

B.1 and B.2 (the overall plant risk is minimized.)

If the inoperable containment spray train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the ~~LCO does not apply~~. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE ~~5~~ (4) within 84 hours. (Insert 1) The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems. The extended interval to reach MODE ~~5~~ (4) allows additional time for the restoration of the containment spray train and is reasonable when considering that the driving force for a release of radioactive material from the Reactor Coolant System is reduced in MODE 3.

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BASES

ACTIONS (continued)

C.1

With one required containment cooling train inoperable, the inoperable containment cooling train must be restored to OPERABLE status within 7 days. The remaining OPERABLE containment spray and cooling components provide iodine removal capabilities and are capable of providing at least 100% of the heat removal needs after an accident. The 7 day Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System and the low probability of a DBA occurring during this period.

The 10 day portion of the Completion Time for Required Action C.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3 for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.

D.1

With two required containment cooling trains inoperable, one of the required containment cooling trains must be restored to OPERABLE status within 72 hours. The components in this degraded condition provide iodine removal capabilities and are capable of providing at least 100% of the heat removal needs after an accident. The 72 hour Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Cooling System, the iodine removal function of the Containment Spray System, and the low probability of a DBA occurring during this period.

E.1 and E.2

Overall plant risk is minimized

If the Required Actions and associated Completion Times of Condition C or D of this LCO 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 6 hours and to MODE ~~5~~ 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.

Insert 1

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.6.6A.4

Verifying that the containment spray header piping is full of water to the [100] ft level minimizes the time required to fill the header. This ensures that spray flow will be admitted to the containment atmosphere within the time frame assumed in the containment analysis. The 31 day Frequency is based on the static nature of the fill header and the low probability of a significant degradation of water level in the piping occurring between surveillances.]

SR 3.6.6A.5

Verifing that each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head ensures that spray pump performance has not degraded during the cycle. Flow and differential pressure are normal tests of centrifugal pump performance required by Section XI of the ASME Code (Ref. ~~6~~ 7). Since the containment spray pumps cannot be tested with flow through the spray headers, they are tested on recirculation flow. 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 3.6.6A.6 and SR 3.6.6A.7

These SRs verify that each automatic containment spray valve actuates to its correct position and that each containment spray pump starts upon receipt of an actual or simulated actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillances were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillances when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

The surveillance of containment sump isolation valves is also required by SR 3.5.2.5. A single surveillance may be used to satisfy both requirements.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.6A.8

This SR verifies that each containment cooling train actuates upon receipt of an actual or simulated actuation signal. The [18] month Frequency is based on engineering judgment and has been shown to be acceptable through operating experience. See SR 3.6.6A.6 and SR 3.6.6A.7, above, for further discussion of the basis for the [18] month Frequency.

SR 3.6.6A.9

With the containment spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be blown through test connections. Performance of this SR demonstrates that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. Due to the passive design of the nozzle, a test at [the first refueling and at] 10 year intervals is considered adequate to detect obstruction of the spray nozzles.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 38, GDC 39, GDC 40, GDC 41, GDC 42, and GDC 43.

2. FSAR, Section [ ].

3. FSAR, Section [ ].

4. FSAR, Section [ ].

5. FSAR, Section [ ].

(Insert 2)

7 ~~6~~. ASME, Boiler and Pressure Vessel Code, Section XI.

3.6.6B Containment Spray and Cooling Systems (No credit taken for iodine removal by the Containment Spray System)

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 6). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

6. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

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ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E. Two containment cooling trains inoperable.	E.1	Restore one containment cooling train to OPERABLE status.	72 hours
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met.	F.1	Be in MODE 3.	6 hours
	AND		
	F.2	Be in MODE ~~5~~ (4)	~~36~~ (12) hours
G. Any combination of three or more trains inoperable.	G.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.6B.1	Verify each containment spray 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
SR 3.6.6B.2	Operate each containment cooling train fan unit for ≥ 15 minutes.	31 days
SR 3.6.6B.3	Verify each containment cooling train cooling water flow rate is ≥ [2000] gpm to each fan cooler.	31 days
SR 3.6.6B.4	[Verify the containment spray piping is full of water to the [100] ft level in the containment spray header.	31 days]
SR 3.6.6B.5	Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program

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BASES

ACTIONS (continued)

D.1 and D.2

With one required containment spray train inoperable and one of the required containment cooling trains inoperable, the inoperable containment spray train or the inoperable containment cooling train must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing at least 100% of the heat removal needs after an accident. The 72 hour Completion Time was developed based on the same reasons as those for Required Action C.1.

E.1

With two containment cooling trains inoperable, one of the required containment cooling trains must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing greater than 100% of the heat removal needs after an accident. The 72 hour Completion Time was developed based on the same reasons as those for Required Action C.1.

Overall plant risk is minimized

F.1 and F.2

Insert 1

If any of the Required Actions and associated Completion Times of this LCO 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 6 hours and to MODE ~~5~~ 4 within ~~36~~ 12 hours. ~~The~~ 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.

G.1

With any combination of three or more Containment Spray System and Containment Cooling System trains inoperable, the unit is in a condition outside the accident analysis. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.6.6B.1

Verifying the correct alignment for manual, power operated, and automatic valves, excluding check valves, in the Containment Spray System provides assurance that the proper flow path exists for Containment Spray System operation. This SR also does not apply to valves that are locked, sealed, or otherwise secured in position since

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BASES

SURVEILLANCE REQUIREMENTS (continued)

performance required by Section XI of the ASME Code (Ref. ~~6~~ 7). Since the containment spray pumps cannot be tested with flow through the spray headers, they are tested on recirculation flow. 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 3.6.6B.6 and SR 3.6.6B.7

These SRs verify each automatic containment spray valve actuates to its correct position and that each containment spray pump starts upon receipt of an actual or simulated actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillances were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillances when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

The surveillance of containment sump isolation valves is also required by SR 3.5.2.5. A single surveillance may be used to satisfy both requirements.

SR 3.6.6B.8

This SR verifies each containment cooling train actuates upon receipt of an actual or simulated actuation signal. The [18] month Frequency is based on engineering judgment and has been shown to be acceptable through operating experience. See SR 3.6.6B.6 and SR 3.6.6B.7, above, for further discussion of the basis for the [18] month Frequency.

SR 3.6.6B.9

With the containment spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be blown through test connections. Performance of this SR demonstrates that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. Due to the passive

BASES

SURVEILLANCE REQUIREMENTS (continued)

design of the nozzle, a test at [the first refueling and at] 10 year intervals is considered adequate to detect obstruction of the spray nozzles.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 38, GDC 39, GDC 40, GDC 41, GDC 42, and GDC 43.

2. FSAR, Section [ ].

3. FSAR, Sections [ ].

4. FSAR, Section [ ].

5. FSAR, Section [ ].

Insert 2

7 ~~6~~. ASME, Boiler and Pressure Vessel Code, Section XI.

3.6.11 Shield Building

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 1). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

1. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

TSTF 422

3.6 CONTAINMENT SYSTEMS

3.6.11 Shield Building (Dual)

LCO 3.6.11 Shield building shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Shield building inoperable.	A.1 Restore shield building to OPERABLE status.	24 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5 (4).	6 hours 36 (12) hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.11.1	Verify annulus negative pressure is > [5] inches water gauge.	12 hours
SR 3.6.11.2	Verify one shield building access door in each access opening is closed.	31 days
SR 3.6.11.3	Verify shield building structural integrity by performing a visual inspection of the exposed interior and exterior surfaces of the shield building.	During shutdown for SR 3.6.1.1 Type A tests

TSTF 422

BASES

APPLICABILITY (continued)

In MODES 5 and 6, the probability and consequences of these events are low due to the Reactor Coolant System temperature and pressure limitations in these MODES. Therefore, shield building OPERABILITY is not required in MODE 5 or 6.

ACTIONS

A.1

In the event shield building OPERABILITY is not maintained, shield building OPERABILITY must be restored within 24 hours.

Twenty-four hours is a reasonable Completion Time considering the limited leakage design of the containment and the low probability of a DBA occurring during this time period.

B.1 and B.2

If the shield building 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~~ the overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE ~~5~~ 4 within ~~36~~ 12 hours. Insert 1 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 3.6.11.1

Verifying that shield building annulus pressure is within limit ensures that operation remains within the limit assumed in the containment analysis. The 12 hour Frequency of this SR was developed considering operating experience related to shield building annulus pressure variations and pressure instrument drift during the applicable MODES.

SR 3.6.11.2

Maintaining shield building OPERABILITY requires verifying one door in the access opening closed. [An access opening may contain one inner and one outer door, or in some cases, shield building access openings are shared such that a shield building barrier may have multiple inner or multiple outer doors. The intent is to not breach the shield building boundary at any time when the shield building boundary is required. This is achieved by maintaining the inner or outer portion of the barrier closed

BASES

SURVEILLANCE REQUIREMENTS (continued)

at all times.] However, all shield building access doors are normally kept closed, except when the access opening is being used for entry and exit or when maintenance is being performed on an access opening. The Frequency of 31 days is based on engineering judgment and is considered adequate in view of other indications of door status available to the operator.

SR 3.6.11.3

This Surveillance would give advance indication of gross deterioration of the concrete structural integrity of the shield building. The Frequency of this SR is the same as that of SR 3.6.1.1. The verification is done during shutdown and as part of Type A leakage tests associated with SR 3.6.1.1.

SR 3.6.11.4

The SBEACS produces a negative pressure to prevent leakage from the building. SR 3.6.11.4 verifies that the shield building can be rapidly drawn down to ≥ [0.25] inch water. This test is used to ensure shield building boundary integrity. Establishment of this pressure is confirmed by SR 3.6.11.4, which demonstrates that the shield building can be drawn down to ≥ [0.25] inches of water ≤ 1 minute using one SBEACS train. The time limit ensures that no significant quantity of radioactive material leaks from the shield building prior to developing the negative pressure. Since this SR is a shield building boundary integrity test, it does not need to be performed with SBEACS train. The SBEACS train used for this Surveillance is staggered to ensure that in addition to the requirements of LCO 3.6.11.4, either train will perform this test. The primary purpose of this SR is to ensure shield building integrity. The secondary purpose of this SR is to ensure that the SBEACS being tested functions as designed. The inoperability of the SBEACS train does not necessarily constitute a failure of this Surveillance relative to the shield building OPERABILITY. The 18 month Frequency is consistent with Regulatory Guide 1.52 (Ref. ~~1~~ 2) guidance for functional testing of the ability of the SBEACS.

Insert 2

REFERENCES

~~1~~ 2. Regulatory Guide 1.52, Revision [2].

3.7.7, CCW

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 2). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state. If CCW flow is lost to the RCP seals, entering MODE 5 and lowering the RCS temperature should be considered in order to avoid possible damage to the RCP seal materials.

INSERT 2

2. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

TSTF-422

3.7 PLANT SYSTEMS

3.7.7 Component Cooling Water (CCW) System

LCO 3.7.7 Two CCW trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CCW train inoperable.	A.1	------------------------------ **- NOTE -** Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4" for shutdown cooling made inoperable by CCW. ------------------------------ Restore CCW train to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE ~~5~~ 4.	~~36~~ 12 hours

TSTF 422

BASES

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating the requirement of entry into the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for SDC made inoperable by CCW. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components.

With one CCW train inoperable, action must be taken to restore OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE CCW train is adequate to perform the heat removal function. The 72 hour Completion Time is based on the redundant capabilities afforded by the OPERABLE train, and the low probability of a DBA occurring during this period.

B.1 and B.2

If the CCW train cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which ~~the LCO does not apply~~ [the overall plant risk is minimized]. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE ~~5~~ [4] within ~~36~~ [12] hours.

[Insert 1]

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 3.7.7.1

Verifying the correct alignment for manual, power operated, and automatic valves in the CCW flow path provides assurance that the proper flow paths exist for CCW 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 locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in their correct position.

This SR is modified by a Note indicating that the isolation of the CCW components or systems may render those components inoperable but does not affect the OPERABILITY of the CCW System.

BASES

SURVEILLANCE REQUIREMENTS (continued)

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

SR 3.7.7.2

This SR verifies proper automatic operation of the CCW valves on an actual or simulated actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] 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. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

SR 3.7.7.3

This SR verifies proper automatic operation of the CCW pumps on an actual or simulated actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. The [18] 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. Operating experience has shown these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

REFERENCES

1. FSAR, Section [9.2.2].

Insert 2

3.7.8, SWS

INSERT 1

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 4). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

4. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

TSTF 422

3.7 PLANT SYSTEMS

3.7.8 Service Water System (SWS)

LCO 3.7.8 Two SWS trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One SWS train inoperable.	A.1	---------------------------- **- NOTES -** 1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources-Operating," for emergency diesel generator made inoperable by SWS. 2. Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for shutdown cooling made inoperable by SWS. ----------------------------	
		Restore SWS train to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	B.2	Be in MODE 5 (4)	36 (12) hours

TSTF 422

ACTIONS (continued)

by the OPERABLE train, and the low probability of a DBA occurring during this time period.

the overall plant risk is minimized.

B.1 and B.2

If the SWS train cannot be restored to OPERABLE status within the associated Completion Time, 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 6 hours and in MODE 5 4 within 36 12 hours.

Insert 1

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 3.7.8.1

Verifying the correct alignment for manual, power operated, and automatic valves in the SWS flow path ensures that the proper flow paths exist for SWS operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance 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 is modified by a Note indicating that the isolation of the SWS components or systems may render those components inoperable but does not affect the OPERABILITY of the SWS.

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

SR 3.7.8.2

This SR verifies proper automatic operation of the SWS valves on an actual or simulated actuation signal. The SWS is a normally operating system that cannot be fully actuated as part of the normal testing. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] 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

BASES

SURVEILLANCE REQUIREMENTS (continued)

with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

SR 3.7.8.3

The SR verifies proper automatic operation of the SWS pumps on an actual or simulated actuation signal. The SWS is a normally operating system that cannot be fully actuated as part of the normal testing during normal operation. The [18] 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. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

REFERENCES

1. FSAR, Section [9.2.1].
2. FSAR, Section [6.2].
3. FSAR, Section [5.4.7].

Insert 2

3.7.9, UHS

INSERT 1

B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. B.2 Be in MODE 4.	6 hours 12 hours

INSERT 2

B.1 and B.2

If the cooling tower fan cannot be restored to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which overall plant risk is minimized. To achieve this status, the plant must be brought to MODE 3 within 6 hours and to MODE 4 within 12 hours.

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 3). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power in an orderly manner and without challenging plant systems.

INSERT 3

3. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

LCO 3.7.9 The UHS shall be OPERABLE.

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

Insert 1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. [One or more cooling towers with one cooling tower fan inoperable.	A.1 Restore cooling tower fan(s) to OPERABLE status.	7 days]
- REVIEWER'S NOTE - The [ ]°F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit. C ~~B~~. [Water temperature of the UHS > [90]°F and ≤ [ ]°F.	C ~~B~~.1 Verify water temperature of the UHS is ≤ [90]°F averaged over the previous 24 hour period.	Once per hour]
D ~~C~~. [Required Action and associated Completion Time of Condition ~~A or B~~ C not met. OR] UHS inoperable [for reasons other than Condition A or ~~B~~ C].	D ~~C~~.1 Be in MODE 3. AND D ~~C~~.2 Be in MODE 5.	6 hours 36 hours

BASES

ACTIONS (continued)

The 7 day Completion Time is reasonable, based on the low probability of an accident occurring during the 7 days that one cooling tower fan is inoperable, the number of available systems, and the time required to complete the action.]

Insert 2

[B.1

- REVIEWER'S NOTE -

The [ ]°F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.

With water temperature of the UHS > [90]°F, the design basis assumption associated with initial UHS temperature are bounded provided the temperature of the UHS averaged over the previous 24 hour period is ≤ [90]°F. With the water temperature of the UHS > [90]°F, long term cooling capability of the ECCS loads and DGs may be affected. Therefore, to ensure long term cooling capability is provided to the ECCS loads when water temperature of the UHS is > [90]°F, Required Action B.1 is provided to more frequently monitor the water temperature of the UHS and verify the temperature is ≤ [90]°F when averaged over the previous 24 hour period. The once per hour Completion Time takes into consideration UHS temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. If the water temperature of the UHS exceeds [90]°F when averaged over the previous 24 hour period or the water temperature of the UHS exceeds [ ]°F, Condition C must be entered immediately.]

[C.1 and C.2

If the Required Actions or Completion Times of Conditions [A or B] are not met, or the UHS is inoperable [for reasons other than Condition A or B], 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 6 hours and in MODE 5 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.]

BASES

SURVEILLANCE REQUIREMENTS

[SR 3.7.9.1

This SR verifies adequate long term (30 days) cooling can be maintained. The level specified also ensures sufficient NPSH is available for operating the SWS pumps. The 24 hour Frequency is based on operating experience related to the trending of the parameter variations during the applicable MODES. This SR verifies that the UHS water level is ≥ [562] ft [mean sea level].]

[SR 3.7.9.2

This SR verifies that the SWS is available to cool the CCW System to at least its maximum design temperature within the maximum accident or normal design heat loads for 30 days following a DBA. The 24 hour Frequency is based on operating experience related to the trending of the parameter variations during the applicable MODES. This SR verifies that the UHS water temperature is ≤ [92]°F.]

[SR 3.7.9.3

Operating each cooling tower fan for ≥ [15] minutes verifies that all fans are OPERABLE and that all associated controls are functioning properly. It also ensures that fan or motor failure, or excessive vibration can be detected for corrective action. The 31 day Frequency is based on operating experience, the known reliability of the fan units, the redundancy available, and the low probability of significant degradation of the UHS cooling tower fans occurring between surveillances.]

REFERENCES

1. FSAR, Section [9.2.5].

2. Regulatory Guide 1.27.

Insert 3

3.7.10, ECW

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 2). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

2. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

TSTF 422

3.7 PLANT SYSTEMS

3.7.10 Essential Chilled Water (ECW)

LCO 3.7.10 [Two] ECW trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One ECW train inoperable.	A.1	Restore ECW train to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE ~~5~~ 4.	~~36~~ 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	--- **- NOTE -** Isolation of ECW flow to individual components does not render the ECW system inoperable. --- Verify each ECW 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
SR 3.7.10.2	Verify the proper actuation of each ECW System component on an actual or simulated actuation signal.	[18] months

BASES

LCO

[Two] ECW trains are required to be OPERABLE to provide the required redundancy to ensure that the system functions to remove post accident heat loads, assuming the worst single failure.

An ECW train is considered OPERABLE when:

a. The associated pump and surge tank are OPERABLE and

b. The associated piping, valves, heat exchanger, refrigeration unit, and instrumentation and controls required to perform the safety related function are OPERABLE.

The isolation of the ECW from other components or systems may render those components or systems inoperable, but does not affect the OPERABILITY of the ECW System.

APPLICABILITY

In MODES 1, 2, 3, and 4, the ECW System is required to be OPERABLE when a LOCA or other accident would require ESF operation.

In MODES 5 and 6, potential heat loads are smaller and the probability of accidents requiring the ECW System is low.

ACTIONS

A.1

If one ECW train is inoperable, action must be taken to restore OPERABLE status within 7 days. In this condition, one OPERABLE ECW train is adequate to perform the cooling function. The 7 day Completion Time is reasonable, based on the low probability of an event occurring during this time, the 100% capacity OPERABLE ECW train, and the redundant availability of the normal HVAC System.

B.1 and B.2

If the ECW train cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply [handwritten: the overall plant risk is minimized]. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 [4] within 36 [12] hours. [Insert 1] 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.

TSTF 422

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1

Verifying the correct alignment for manual, power operated, and automatic valves in the ECW flow path provides assurance that the proper flow paths exist for ECW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance 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 is modified by a NOTE indicating that the isolation of ECW flow to components or systems may render those components inoperable but does not affect the OPERABILITY of the ECW system.

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

SR 3.7.10.2

This SR verifies proper automatic operation of the ECW System components that the ECW pumps will start in the event of any accident or transient that generates an SIAS. This SR also ensures that each automatic valve in the flow paths actuates to its correct position on an actual or simulated SIAS. The ECW System cannot be fully actuated as part of the SIAS CHANNEL FUNCTIONAL TEST during normal operation. The actuation logic is tested as part of the SIAS functional test every 92 days, except for the subgroup relays that actuate the system that cannot be tested during normal unit operation. The [18] 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 [18] month Frequency is based on operating experience and design reliability of the equipment.

REFERENCES

1. FSAR, Section [9.2.9].

Insert 2

3.7.11, CREACS

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 3). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

3. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

TSTF 422

3.7 PLANT SYSTEMS

3.7.11 Control Room Emergency Air Cleanup System (CREACS)

LCO 3.7.11 Two CREACS trains shall be OPERABLE.

- NOTE -

The control room boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, 3, 4, [5, and 6,]
During movement of [recently] irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CREACS train inoperable.	A.1	Restore CREACS train to OPERABLE status.	7 days
B. Two CREACS trains inoperable due to inoperable control room boundary in MODE 1, 2, 3, or 4.	B.1	Restore control room boundary to OPERABLE status.	24 hours
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 AND C.2	Be in MODE 3. Be in MODE 5 (4).	6 hours 36 (12) hours

BASES

APPLICABILITY (continued)

(i.e., fuel that has occupied part of a critical reactor core within the previous [ ] days).]

ACTIONS

A.1

With one CREACS train inoperable, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CREACS subsystem is adequate to perform control room radiation protection function. However, the overall reliability is reduced because a single failure in the OPERABLE CREACS train could result in loss of CREACS function. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and the ability of the remaining train to provide the required capability.

B.1

- REVIEWER'S NOTE -

Adoption of Condition B is dependent on a commitment from the licensee to have written procedures available describing compensatory measures to be taken in the event of an intentional or unintentional entry into Condition B.

If the control room boundary is inoperable to MODES 1, 2, 3, and 4, the CREACS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE control room boundary within 24 hours. During the period that the control room boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19) should be utilized to protect control room operators from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the control room boundary.

C.1 and C.2

If the inoperable CREACS or control room boundary cannot be restored to OPERABLE status within the associated Completion Time in MODE 1, 2, 3, or 4, the unit must be placed in a MODE that minimizes the accident

Overall plant

(4) (12) (Insert 1)

risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE (5) 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.

D.1 and D.2

Required Action D.1 is modified by a Note indicating to place the system in the emergency radiation protection mode if the automatic transfer to emergency mode is inoperable.

In MODE 5 or 6, or during movement of [recently] irradiated fuel assemblies, if Required Action A.1 cannot be completed within the required Completion Time, the OPERABLE CREACS train must be immediately placed in the emergency mode of operation. This action ensures that the remaining train is OPERABLE, that no failures preventing automatic actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action D.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel assemblies to a safe position.

E.1

When [in MODES 5 and 6, or] during movement of [recently] irradiated fuel assemblies, with two CREACS trains inoperable, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.

F.1

If both CREACS trains are inoperable in MODE 1, 2, 3, or 4 for reasons other than an inoperable control room boundary (i.e., Condition B), the CREACS may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.7.11.1

Standby systems should be checked periodically to ensure that they function properly. Since the environment and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

Monthly heater operations dry out any moisture accumulated in the charcoal from humidity in the ambient air. [Systems with heaters must be operated for ≥ 10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥ 15 minutes to demonstrate the function of the system.] The 31 day Frequency is based on the known reliability of the equipment, and the two train redundancy available.

SR 3.7.11.2

This SR verifies that the required CREACS testing is performed in accordance with the [Ventilation Filter Testing Program (VFTP)]. The [VFTP] includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the [VFTP].

SR 3.7.11.3

This SR verifies each CREACS train starts and operates on an actual or simulated actuation signal. The Frequency of [18] months is consistent with that specified in Reference ~~3~~. 4

SR 3.7.11.4

This SR verifies the integrity of the control room enclosure and the assumed inleakage rates of potentially contaminated air. The control room positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify proper function of the CREACS. During the emergency radiation state of the emergency mode of operation, the CREACS is designed to pressurize the control room ≥ [0.125] inches water gauge positive pressure with respect to adjacent areas in order to prevent unfiltered inleakage. The CREACS is designed to maintain this positive pressure with one train at an emergency ventilation flow rate of [3000] cfm. The Frequency of [18] months on a STAGGERED TEST BASIS is consistent with the guidance provided in NUREG-0800, Section 6.4 (Ref. ~~4~~ 5).

BASES

REFERENCES

1. FSAR, Section [9.4].

(Insert 2) → 2. FSAR, Chapter [15].

4 ~~3~~. Regulatory Guide 1.52, Rev. [2].

5 ~~4~~. NUREG-0800, Section 6.4, Rev. 2, July 1981.

3.7.12, CREATCS

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 2). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

2. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

3.7 PLANT SYSTEMS

3.7.12 Control Room Emergency Air Temperature Control System (CREATCS)

LCO 3.7.12 Two CREATCS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4, [5, and 6,]
During movement of [recently] irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CREATCS train inoperable.	A.1	Restore CREATCS train to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.	B.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	B.2	Be in MODE ~~5~~ (4).	~~36~~ (12) hours
C. Required Action and associated Completion Time of Condition A not met [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.	C.1	Place OPERABLE CREATCS train in operation.	Immediately
	<u>OR</u>		
	C.2	Suspend movement of [recently] irradiated fuel assemblies.	Immediately
D. Two CREATCS trains inoperable [in MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies.	D.1	Suspend movement of [recently] irradiated fuel assemblies.	Immediately

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LCO (continued)

are OPERABLE in both trains. These components include the cooling coils and associated temperature control instrumentation. In addition, the CREATCS must be OPERABLE to the extent that air circulation can be maintained.

APPLICABILITY

In MODES 1, 2, 3, 4, [5, and 6,] and during movement of [recently] irradiated fuel assemblies [(i.e., fuel that has occupied part of a critical reactor core within the previous [ ] days)], the CREATCS must be OPERABLE to ensure that the control room temperature will not exceed equipment OPERABILITY requirements following isolation of the control room.

In MODES 5 and 6, CREATCS may not be required for those facilities which do not require automatic control room isolation.

ACTIONS

A.1

With one CREATCS train inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining OPERABLE CREATCS train is adequate to maintain the control room temperature within limits. The 30 day Completion Time is reasonable, based on the low probability of an event occurring requiring control room isolation, consideration that the remaining train can provide the required capabilities, and the alternate safety or nonsafety related cooling means that are available.

B.1 and B.2

In MODE 1, 2, 3, or 4, when Required Action A.1 cannot be completed within the required Completion Time, the unit must be placed in a MODE that minimizes the accident risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 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.

[C.1 and C.2

In MODE 5 or 6, or during movement of [recently] irradiated fuel assemblies, when Required Action A.1 cannot be completed within the required Completion Time, the OPERABLE CREATCS train must be

BASES

ACTIONS (continued)

placed in operation immediately. This action ensures that the remaining train is OPERABLE, that no failures preventing automatic actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action C.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel assemblies to a safe position.]

[D.1

In [MODE 5 or 6, or] during movement of [recently] irradiated fuel assemblies, with two CREATCS trains inoperable, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.]

E.1

If both CREATCS trains are inoperable in MODE 1, 2, 3, or 4, the CREATCS may not be capable of performing the intended function and the unit is in a condition outside the accident analysis. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1

This SR verifies that the heat removal capability of the system is sufficient to meet design requirements. This SR consists of a combination of testing and calculations. An [18] month Frequency is appropriate, since significant degradation of the CREATCS is slow and is not expected over this time period.

REFERENCES

1. FSAR, Section [6.4].

Insert 2

3.7.13, ECCS PREACS

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 6). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

6. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

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3.7 PLANT SYSTEMS

3.7.13 Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)

LCO 3.7.13 Two ECCS PREACS trains shall be OPERABLE.

- NOTE -

The ECCS pump room boundary may be opened intermittently under administrative control.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ECCS PREACS train inoperable.	A.1 Restore ECCS PREACS train to OPERABLE status.	7 days
B. Two ECCS PREACS trains inoperable due to inoperable ECCS pump room boundary.	B.1 Restore ECCS pump room boundary to OPERABLE status.	24 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE ~~5~~ 4.	6 hours ~~36~~ 12 hours

BASES

ACTIONS (continued)

If the ECCS pump room boundary is inoperable, the ECCS PREACS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE ECCS pump room boundary within 24 hours. During the period that the ECCS pump room boundary is inoperable, appropriate compensatory measures [consistent with the intent, as applicable, of GDC 19, 60, 64 and 10 CFR Part 100] should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the ECCS pump room boundary.

C.1 and C.2

If the ECCS PREACS train or ECCS pump room boundary cannot be restored to OPERABLE status within the associated Completion Time, the unit must be in a MODE in which the LCO does not apply (that minimizes the overall plant risk.). To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 (4) within 36 (12) hours. (Insert 1) 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 3.7.13.1

Standby systems should be checked periodically to ensure that they function properly. Since the environment and normal operating conditions on this system are not severe, testing each train once a month provides an adequate check on this system. Monthly heater operations dry out any moisture that may have accumulated in the charcoal from humidity in the ambient air. [Systems with heaters must be operated for ≥ 10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥ 15 minutes to demonstrate the function of the system.] The 31 day Frequency is based on the known reliability of equipment, and the two train redundancy available.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.13.2

This SR verifies that the required ECCS PREACS testing is performed in accordance with the [Ventilation Filter Testing Program (VFTP)]. The [VFTP] includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the [VFTP].

SR 3.7.13.3

This SR verifies that each ECCS PREACS train starts and operates on an actual or simulated actuation signal. The [18] month Frequency is consistent with that specified in Regulatory Guide 1.52 (Ref. 4).

SR 3.7.13.4

This SR verifies the integrity of the ECCS pump room enclosure. The ability of the ECCS pump room to maintain a negative pressure, with respect to potentially uncontaminated adjacent areas, is periodically tested to verify proper function of the ECCS PREACS. During the post accident mode of operation, the ECCS PREACS is designed to maintain a slight negative pressure in the ECCS pump room with respect to adjacent areas to prevent unfiltered LEAKAGE. The ECCS PREACS is designed to maintain this negative pressure at a flow rate of ≤ [20,000] cfm from the ECCS pump room. The Frequency of [18] months is consistent with the guidance provided in the NUREG-0800, Section 6.5.1 (Ref. ~~6~~ 7).

This test is conducted with the tests for filter penetration; thus, an [18] month Frequency, on a STAGGERED TEST BASIS is consistent with other filtration SRs.

[SR 3.7.13.5

Operating the ECCS PREACS filter bypass damper is necessary to ensure that the system functions properly. The OPERABILITY of the bypass damper is verified if it can be closed. An [18] month Frequency is consistent with that specified in Reference 4.]

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REFERENCES

1. FSAR, Section [6.5.1].

2. FSAR, Section [9.4.5].

3. FSAR, Section [15.6.5].

4. Regulatory Guide 1.52, Rev. [2].

5. 10 CFR 100.11.

Insert 2

7 ~~6~~. NUREG-0800, Section 6.5.1, Rev. 2, July 1981.

3.7.15, PREACS

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 6). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

6. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

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3.7 PLANT SYSTEMS

3.7.15 Penetration Room Exhaust Air Cleanup System (PREACS)

LCO 3.7.15 Two PREACS trains shall be OPERABLE.

- NOTE -

The penetration room boundary may be opened intermittently under administrative control.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One PREACS train inoperable.	A.1	Restore PREACS train to OPERABLE status.	7 days
B. Two PREACS trains inoperable due to inoperable penetration room boundary.	B.1	Restore penetration room boundary to OPERABLE status.	24 hours
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours
	AND		
	C.2	Be in MODE 5. (4)	36 (12) hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.15.1	Operate each PREACS train for [≥ 10 continuous hours with the heater operating or (for systems without heaters) ≥ 15 minutes].	31 days

BASES

ACTIONS (continued)

reasonable time to diagnose, plan and possibly repair, and test most problems with the penetration room boundary.

C.1 and C.2

If the inoperable PREACS train or penetration room boundary cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE ~~in which the LCO does not apply~~ that minimizes overall plant risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, ~~and in MODE 5 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. Insert 1

SURVEILLANCE REQUIREMENTS

SR 3.7.15.1

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

Monthly heater operation dries out any moisture that may have accumulated in the charcoal as a result of humidity in the ambient air. [Systems with heaters must be operated for ≥ 10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥ 15 minutes to demonstrate the function of the system.] The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.

SR 3.7.15.2

This SR verifies the performance of PREACS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)]. The PREACS filter tests are in accordance with Reference 4. The [VFTP] includes testing the performance of the HEPA filter, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the [VFTP].

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.7.15.3

This SR verifies that each PREACS train starts and operates on an actual or simulated actuation signal. The [18] month Frequency is consistent with that specified in Reference 4.]

[SR 3.7.15.4

This SR verifies the integrity of the penetration room enclosure. The ability of the penetration room to maintain negative pressure, with respect to potentially uncontaminated adjacent areas, is periodically tested to verify proper function of the PREACS. During the post accident mode of operation, PREACS is designed to maintain a slightly negative pressure at a flow rate of ≤ [3000] cfm in the penetration room with respect to adjacent areas to prevent unfiltered LEAKAGE. The Frequency of [18] months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. ~~6~~ 7).]

[The minimum system flow rate maintains a slight negative pressure in the penetration room area and provides sufficient air velocity to transport particulate contaminants, assuming only one filter train is operating.

The number of filter elements is selected to limit the flow rate through any individual element to about [1000] cfm. This may vary based on filter housing geometry. The maximum limit ensures that flow through, and pressure drop across, each filter element is not excessive.

The number and depth of the adsorber elements ensures that, at the maximum flow rate, the residence time of the air stream in the charcoal bed achieves the desired adsorption rate. At least a [0.125] second residence time is necessary for an assumed [99]% efficiency.

The filters have a certain pressure drop at the design flow rate when clean. The magnitude of the pressure drop indicates acceptable performance, and is based on manufacturer's recommendations for the filter and adsorber elements at the design flow rate. An increase in pressure drop or decrease in flow indicates that the filter is being loaded or is indicative of other problems with the system.

This test is conducted with the tests for filter penetration; thus, an [18] month Frequency on a STAGGERED TEST BASIS consistent with other filtration SRs.]

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.7.15.5

Operating the PREACS filter bypass damper is necessary to ensure that the system functions properly. The OPERABILITY of the PREACS filter bypass damper is verified if it can be closed. An [18] month Frequency is consistent with that specified in Reference 4.]

REFERENCES

1. FSAR, Section [6.5.1].

2. FSAR, Section [9.4.5].

3. FSAR, Section [15.6.5].

4. Regulatory Guide 1.52 Rev. [2].

5. 10 CFR 100.11.

Insert 2 →

7 ~~6~~. NUREG-0800, Section 6.5.1.

3.8.1, AC Sources - Operating

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 7). In MODE 5, it is likely that increased plant maintenance activities (particularly those involving the switchyard) will make the plant more susceptible to loss of offsite power events. In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

7. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

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ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
F. ------------------------- **- NOTE -** [This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event. ------------------------- One [required] [automatic load sequencer] inoperable.	F.1	Restore [required] [automatic load sequencer] to OPERABLE status.	[12] hours]
G. Required Action and Associated Completion Time of Condition A, B, C, D, E, or [F] not met.	G.1 <u>AND</u> G.2	Be in MODE 3. Be in MODE 5 [4]	6 hours 36 [12] hours
H. Three or more [required] AC sources inoperable.	H.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each [required] offsite circuit.	7 days

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ACTIONS (continued)

Note, is that the Condition is not applicable to any train that does not have a sequencer.]

G.1 and G.2

If the inoperable AC electrical power sources cannot be restored to OPERABLE status within the required 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 6 hours and to MODE 5 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.

H.1

Condition H 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 andtesting of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, 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), as addressed in the FSAR.

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of [3740] V is 90% of the nominal 4160 V output voltage. This value, which is specified in ANSI C84.1-1982 (Ref. 11), allows for voltage drop to the terminals of 4000 V motors whose minimum operating voltage is specified as 90% or 3600 V. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 80% of name plate rating. The specified maximum steady state output voltage of [4756] V is equal to the maximum operating voltage specified for 4000 V motors. It ensures

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SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.7 requires that, at a 184 day Frequency, the DG starts from standby conditions and achieves required voltage and frequency within 10 seconds. The 10 second start requirement supports the assumptions of the design basis LOCA analysis in the FSAR, Chapter [15] (Ref. 5).]

The 10 second start requirement is not applicable to SR 3.8.1.2 (see Note 2) when a modified start procedure as described above is used. If a modified start is not used, 10 second start requirement of SR 3.8.1.7 applies.

Since SR 3.8.1.7 requires a 10 second start, it is more restrictive than SR 3.8.1.2, and it may be performed in lieu of SR 3.8.1.2.

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.

The 31 day Frequency for SR 3.8.1.2 is consistent with Regulatory Guide 1.9 (Ref. 3). The 184 day Frequency for SR 3.8.1.7 is a reduction in cold testing consistent with Generic Letter 84-15 (Ref. ~~X~~ 8). These Frequencies provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.

SR 3.8.1.3

This Surveillance verifies that the DGs are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to the equivalent of the maximum expected accident loads. 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.

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]. The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9 (Ref. 3).

This SR is modified by four Notes. Note 1 indicates 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 states that momentary transients because

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BASES

SURVEILLANCE REQUIREMENTS (continued)

of changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the limit will not invalidate the test. Note 3 indicates that this Surveillance should 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 [and engine mounted tank] is at or above the level at which fuel oil is automatically added. The level is expressed as an equivalent volume in gallons, and is selected to ensure adequate fuel oil for a minimum of 1 hour of DG operation at full load plus 10%.

The 31 day Frequency is adequate to assure 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.

SR 3.8.1.5

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 [and engine mounted] tanks once every [31] 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. 10). This SR is for (11) preventive maintenance. The presence of water does not necessarily represent failure of this SR provided the accumulated water is removed during the performance of this Surveillance.

SR 3.8.1.6

This Surveillance demonstrates that each required fuel oil transfer pump operates and transfers fuel oil from its associated storage tank to its

BASES

SURVEILLANCE REQUIREMENTS (continued)

associated day tank. This is required to support continuous operation of standby power sources. This Surveillance provides assurance that the 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 Frequency for this SR is variable, depending on individual system design, with up to a [92] day interval. The [92] day Frequency corresponds to the testing requirements for pumps as contained in the ASME Code, Section XI (Ref. 12) (13); however, the design of fuel transfer systems is such that pumps will operate automatically or must be started manually in order to maintain an adequate volume of fuel oil in the day [and engine mounted] tanks during or following DG testing. In such a case, a 31 day Frequency is appropriate. Since proper operation of fuel transfer systems is an inherent part of DG OPERABILITY, the Frequency of this SR should be modified to reflect individual designs.]

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 distribution network to power the shutdown loads. The [18 month] Frequency of the Surveillance is based on engineering judgment, taking into consideration the unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the [18 month] Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note. 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, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns)

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SURVEILLANCE REQUIREMENTS (continued)

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 3.8.1.9

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 without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. [For this unit, the single load for each DG and its horsepower rating is as follows:] This Surveillance may be accomplished by either:

a. Tripping the DG output breaker with the DG carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power or while solely supplying the bus or

b. Tripping its associated single largest post-accident load with the DG solely supplying the bus.

As required by IEEE-308 (Ref. ~~13~~ 14), 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.

The time, voltage, and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence intervals. The [3] seconds specified is equal to 60% of a typical 5 second load sequence interval associated with sequencing of the largest load. The voltage and frequency specified are consistent with the design range of the equipment powered by the DG. SR 3.8.1.9.a corresponds to the maximum frequency excursion, while SR 3.8.1.9.b and SR 3.8.1.9.c are steady state voltage and

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SURVEILLANCE REQUIREMENTS (continued)

frequency values to which the system must recover following load rejection. The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. ~~9~~ 10).

This SR is modified by two Notes. 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, unit safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) 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. Note 2 ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ [0.9]. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note 2 allows the surveillance to be conducted as a power factor other than ≤ [0.9]. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ [0.9] results in voltages on the emergency busses that are too high. Under these conditions, the power factor should be maintained as close as practicable to [0.9] while still maintaining acceptable voltage limits on the emergency busses. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of [0.9] may not cause unacceptable voltages on the emergency busses, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to [0.9] without exceeding the DG excitation limits.

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SURVEILLANCE REQUIREMENTS (continued)

- REVIEWER'S NOTE -

The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:

a. Performance of the SR will not render any safety system or component inoperable,

b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and

c. Performance of the SR or failure of the SR will not cause or result in an AOO with attendant challenge to plant safety systems.

SR 3.8.1.10

This Surveillance demonstrates the DG capability to reject a full 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 the total connected load that the DG experiences following a full load rejection and verifies that the DG will 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 continues 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.

The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. ~~9~~ 10) and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by two Notes. The reason for Note 1 is that during operation with the reactor critical, performance of this SR could cause perturbation to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. Note 2 ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of

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SURVEILLANCE REQUIREMENTS (continued)

c. Performance of the SR or failure of the SR will not cause or result in an AOO with attendant challenge to plant safety systems.

SR 3.8.1.11

As required by Regulatory Guide 1.108 (Ref. ~~9~~ 10), 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 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.

The DG auto-start time of [10] seconds is 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 power supply of permanent and auto-connected loads 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, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, high pressure injection systems are not capable of being operated at full flow, or shutdown cooling (SDC) systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of connection and loading 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 the entire connection and loading sequence is verified.

The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. ~~9~~ 10), paragraph 2.a.(1), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

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

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SURVEILLANCE REQUIREMENTS (continued)

b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems, and

c. Performance of the SR or failure of the SR will not cause or result in an AOO with attendant challenge to plant safety systems.

SR 3.8.1.14

Regulatory Guide 1.108 (Ref. ~~9~~ 10), 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, ≥ [2] hours of which is at a load equivalent to 110% of the continuous duty rating and the remainder of the time at a load equivalent to the continuous duty rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelubricating 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.

The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. ~~7~~ 8), paragraph 2.a.(3), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This Surveillance is modified by three Notes. Note 1 states that momentary transients due to changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the power factor limit will not invalidate the test. The reason for Note 2 is that 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, unit safety systems. Note 3 ensures that the DG is tested under load conditions that are as close to design basis conditions as possible. When synchronized with offsite power, testing should be performed at a power factor of ≤ [0.9]. This power factor is representative of the actual inductive loading a DG would see under design basis accident conditions. Under certain conditions, however, Note 3 allows the surveillance to be conducted as a power factor other than ≤ [0.9]. These conditions occur when grid voltage is high, and the additional field excitation needed to get the power factor to ≤ [0.9] results in voltages on the emergency busses that are too high. Under these conditions, the power factor should be maintained as close as practicable to [0.9] while still maintaining acceptable voltage limits on the emergency busses. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of [0.9] may not cause unacceptable voltages on the emergency busses, but the excitation levels are in excess of those recommended for the DG. In such cases, the power factor shall be maintained as close practicable to [0.9] without exceeding the DG excitation limits. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) 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 3.8.1.15

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. The [10] second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. ~~9~~ 10), paragraph 2.a.(5).

This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. The requirement that the diesel has operated for at least [2] hours at full load conditions prior to performance of this Surveillance is based on

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manufacturer recommendations for achieving hot conditions. 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~~ 10), paragraph 2.a.(6), this Surveillance ensures that the manual synchronization and automatic load transfer from the DG to the offsite source 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 auto-start 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 and autoclose signal on bus undervoltage, and the load sequence timers are reset.

The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. ~~9~~ 10), paragraph 2.a.(6), and takes into consideration unit conditions required to perform the Surveillance.

This SR is modified by a Note. 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. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) 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.

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[SR 3.8.1.17

Demonstration of the test mode override ensures that the DG availability under accident conditions will not be compromised as the result of testing and the DG will automatically reset to ready to load operation if a LOCA actuation 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~~ 14), 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 was not affected by the DG operation in test mode. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the emergency loads 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 [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. ~~9~~ 10), paragraph 2.a.(8); takes into consideration unit conditions required to perform the Surveillance; and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by a Note. 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. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) 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

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the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment.]

SR 3.8.1.18

Under accident [and loss of offsite power] conditions loads are sequentially connected to the bus by the [automatic load sequencer]. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading of the DGs due to high motor starting currents. The [10]% load sequence time interval tolerance ensures that sufficient time exists for the DG 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 1 provides a summary of the automatic loading of ESF buses.

The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(2); takes into consideration unit conditions required to perform the Surveillance; and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by a Note. 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. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) 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.

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challenge safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) 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 the assessment.

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.

The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. ~~9~~ 10).

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 continuously circulated, and temperature maintained consistent with manufacturer recommendations.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.

2. FSAR, Chapter [8].

3. Regulatory Guide 1.9, Rev. [3].

4. FSAR, Chapter [6].

5. FSAR, Chapter [15].

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REFERENCES (continued)

6. Regulatory Guide 1.93, Rev. [ ], [date].

(Insert 2) →

8 ~~7~~. Generic Letter 84-15.

9 ~~8~~. 10 CFR 50, Appendix A, GDC 18.

10 ~~9~~. Regulatory Guide 1.108, Rev. [1], [August 1977].

11 ~~10~~. Regulatory Guide 1.137, Rev. [ ], [date].

12 ~~11~~. ANSI C84.1-1982.

13 ~~12~~. ASME, Boiler and Pressure Vessel Code, Section XI.

14 ~~13~~. IEEE Standard 308-[1978].

3.8.4, DC Sources - Operating

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 8). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

8. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

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3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 The Train A and Train B DC electrical power subsystems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One [or two] battery charger[s on one train] inoperable.	A.1	Restore battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours
	AND		
	A.2	Verify battery float current ≤ [2] amps.	Once per [12] hours
	AND		
	A.3	Restore battery charger[s] to OPERABLE status.	7 days
B. One [or two] batter[y][ies on one train] inoperable.	B.1	Restore batter[y][ies] to OPERABLE status.	[2] hours]
C. One DC electrical power subsystem inoperable for reasons other than Condition A [or B].	C.1	Restore DC electrical power subsystem to OPERABLE status.	[2] hours
D. Required Action and Associated Completion Time not met.	D.1	Be in MODE 3.	6 hours
	AND		
	D.2	Be in MODE 5 (4)	36 (12) hours

BASES

ACTIONS (continued)

consistent with the allowed time for an inoperable DC distribution system train.

If one of the required DC electrical power subsystems is inoperable for reasons other than Condition A or B (e.g., inoperable battery charger and associated inoperable battery), the remaining DC electrical power subsystem has the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst- case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 7) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown.

D.1 and D.2

where overall plant risk is minimized.

If the inoperable DC electrical power subsystem cannot be restored to OPERABLE status within the required 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 6 hours and to MODE 5 (4) within 36 (12) hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 5 is consistent with the time required in Regulatory Guide 1.93 (Ref. 8). (7)

Insert 1

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the battery chargers, which support 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 and maintain the battery in a fully charged state while supplying the continuous steady state loads of the associated DC subsystem. On float charge, battery cells will receive adequate current to optimally charge the battery. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the minimum float voltage established by the battery manufacturer ([2.20] Vpc or [127.6] V at the battery terminals). This voltage maintains the battery plates in a condition that supports maintaining the grid life (expected to be approximately 20 years). The

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SURVEILLANCE REQUIREMENTS (continued)

7 day Frequency is consistent with manufacturer recommendations and IEEE-450 (Ref. 8). (9)

SR 3.8.4.2

This SR verifies the design capacity (10) of the battery chargers. According to Regulatory Guide 1.32 (Ref. 9), the battery charger supply is recommended 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.

This SR provides two options. One option requires that each battery charger be capable of supplying [400] amps at the minimum established float voltage for [8] hours. The ampere requirements are based on the output rating of the chargers. The voltage requirements are based on the charger voltage level after a response to a loss of AC power. The time period if sufficient for the charger temperature to have stabilized and to have been maintained for at lease [2] hours.

The other option requires that each battery charger be capable of recharging the battery after a service test coincident with supplying the largest coincident demands of the various continuous steady state loads (irrespective of the status of the plant during which these demands occur). This level of loading may not normally be available following the battery service test and will need to be supplemented with additional loads. The duration for this test may be longer than the charger sizing criteria since the battery recharge is affected by float voltage, temperature, an the exponential decay in charging current. The battery is recharged when the measured charging current is ≤ [2] amps.

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 [18 month] intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

SR 3.8.4.3

A battery service test is a special test of the battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical

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SURVEILLANCE REQUIREMENTS (continued)

power system. The discharge rate and test length should correspond to the design duty cycle requirements as specified in Reference 4.

The Surveillance Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 9) and Regulatory Guide 1.129 (Ref. 10), which state that the battery service test should be performed during refueling operations, or at some other outage, with intervals between tests not to exceed [18 months].

This SR is modified by two Notes. Note 1 allows the performance of a modified performance discharge test in lieu of a service test.

The reason for Note 2 is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) 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 the assessment.

REFERENCES

1. 10 CFR.50, Appendix A, GDC 17.
2. Regulatory Guide 1.6, March 10, 1971.
3. IEEE-308-[1978].
4. FSAR, Chapter [8].
5. FSAR, Chapter [6].
6. FSAR, Chapter [15].

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REFERENCES (continued)

7. Regulatory Guide 1.93, December 1974.

Insert 2 →

9 ~~8~~. IEEE-450-[1995].

10 ~~9~~. Regulatory Guide 1.32, February 1977.

11 ~~10~~. Regulatory Guide 1.129, December 1974.

3.8.7, Inverters - Operating

INSERT 1

(new paragraph)

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 4). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

INSERT 2

4. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters - Operating

LCO 3.8.7 The required Train A and Train B inverters shall be OPERABLE.

- NOTE -

[[One/two] inverter[s] may be disconnected from [its/their] associated DC bus for ≤ 24 hours to perform an equalizing charge on [its/their] associated [common] battery, provided:

a. The associated AC vital bus(es) [is/are] energized from [its/their] [Class 1E constant voltage source transformers] [inverter using internal AC source] and

b. All other AC vital buses are energized from their associated OPERABLE inverters.]

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One [required] inverter inoperable.	A.1	------------------------------ **- NOTE -** Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any vital bus de-energized. ------------------------------ Restore inverter to OPERABLE status.	24 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE ~~5~~ (4).	~~36~~ (12) hours

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APPLICABILITY (continued)

Inverter requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.8, "Inverters - Shutdown."

ACTIONS

A.1

With a required inverter inoperable, its associated AC vital bus becomes inoperable until it is [manually] re-energized from its [Class 1E constant voltage source transformer or inverter using internal AC source].

Required Action A.1 is modified by a Note, which states to enter the applicable conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," when Condition A is entered with one AC vital bus de-energized. This ensures the vital bus is re-energized within 2 hours.

Required Action A.1 allows 24 hours to fix the inoperable inverter and return it to service. The 24 hour limit is based upon engineering judgment, taking into consideration the time required to repair an inverter and the additional risk to which the unit is exposed because of the inverter inoperability. This has to be balanced against the risk of an immediate shutdown, along with the potential challenges to safety systems such a shutdown might entail. When the AC vital bus is powered from its constant voltage source, it is relying upon interruptible AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the AC vital buses is the preferred source for powering instrumentation trip setpoint devices.

B.1 and B.2

If the inoperable devices or components cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE ~~in which the LCO does not apply~~ where overall plant risk is minimized. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE ~~5~~ 4 within ~~36~~ 12 hours. Insert 1 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 3.8.7.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital buses energized from the inverter. The verification of proper voltage and frequency output ensures

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SURVEILLANCE REQUIREMENTS (continued)

that the required power is readily available for the instrumentation of the RPS and ESFAS connected to the AC vital buses. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.

REFERENCES

1. FSAR, Chapter [8].

2. FSAR, Chapter [6].

3. FSAR, Chapter [14].

Insert 2