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1CAN031306

March 26, 2013

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

SUBJECT: License Amendment Request
Adoption of Technical Specification Task Force (TSTF)-431, Revision 3
"Change in Technical Specifications End States (BAW-2441)"
Arkansas Nuclear One, Unit 1
Docket No. 50-313
License No. DPR-51

Dear Sir or Madam:

In accordance with the provisions of Title 10 of the Code of Federal Regulations (10 CFR) Section 50.90, Entergy Operations, Inc. (Entergy) is submitting a request for an amendment to Arkansas Nuclear One, Unit 1 (ANO-1) Technical Specifications (TS) to incorporate the NRC-approved TSTF-431, Revision 3, "Change in Technical Specifications End States (BAW-2441)."

This proposed amendment would modify the TS requirements for end states associated with the implementation of the approved Topical Report BAW-2441-A, Revision 2, "Risk-Informed Justification for LCO End-State Changes," as well as Required Actions revised by a specific Note in TSTF-431, Revision 3. TS Actions End States modifications would permit, for some systems, entry into a hot shutdown (Mode 4) end state rather than a cold shutdown (Mode 5) end state that is the current TS requirement.

Attachment 1 provides a description and assessment of the proposed change, the requested confirmation of applicability, and plant-specific verifications. Attachment 2 summarizes the regulatory commitments made in this submittal. Attachment 3 provides markup pages of existing TS and TS Bases to show the proposed change. Attachment 4 provides revised (clean) TS pages.

Entergy requests approval of the proposed license amendment by April 1, 2014, with the amendment being implemented within 90 days of approval.

In accordance with 10 CFR 50.91(a)(1), "Notice for public comment," the analysis about the issue of no significant hazards consideration (NSHC) using the standards in 10 CFR 50.92 is being provided to the Commission in accordance with the distribution requirements in 10 CFR 50.4.

In accordance with 10 CFR 50.91(b)(1), a copy of this application and the reasoned analysis about NSHC is being provided to the designated Arkansas state official.

If you have any questions or require additional information, please contact Stephenie Pyle at 479-858-4704.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on March 26, 2013.

Sincerely,

ORIGINAL SIGNED BY JEREMY G. BROWNING

JGB/dbb

Attachments:

1. Description and Assessment of the Proposed Changes
2. List of Regulatory Commitments
3. Proposed Technical Specification and Bases Changes (mark-up)
4. Revised (clean) Technical Specification Pages

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Attachment 1 to

1CAN031306

Description and Assessment of Proposed Changes

DESCRIPTION AND ASSESSMENT OF THE PROPOSED CHANGES

1.0 DESCRIPTION

The proposed License Amendment Request (LAR) to adopt Risk Informed Technical Specification Task Force Initiative 1 regarding TSTF-431, Revision 3, "Change in Technical Specifications End States (BAW-2441)," (ADAMS Accession Number ML093570241), would modify the Technical Specifications (TS) requirements to permit the plant to be placed in the preferred end state of hot shutdown (Mode 4) rather than the current TS required cold shutdown (Mode 5) end state. An end state is a condition that the reactor must be placed in if the TS Required Action(s) cannot be met. The *Federal Register* notice published on December 6, 2010 (75 FR 75705-75706) (Reference 2), announced the availability of this TS improvement as part of the consolidated line item improvement process (CLIIP).

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

Entergy Operations, Inc. (Entergy) has reviewed the model safety evaluation (SE) referenced in the Federal Register Notice of Availability published on December 6, 2010 (75 FR 75705-75706) for the proposed changes as part of the consolidated line item improvement process (CLIIP)). Entergy has also reviewed the NRC SE, (ADAMS Accession Number ML062130286) for Topical Report BAW-2441, Revision 2, (ADAMS Accession Number ML040260016) as well as the supporting information provided to support TSTF-431, Revision 3. As described herein, Entergy has concluded that the technical basis presented in the TSTF proposal and the SE are applicable to Arkansas Nuclear One, Unit 1 (ANO-1) and justifies this amendment for the incorporation of the changes to the ANO-1 TS.

2.2 Optional Changes and Variations

The proposed amendment is consistent with the Standard Technical Specifications (STS) changes described in TSTF-431, Revision 3, but Entergy proposes variations or deviations from TSTF-431, Revision 3, as identified and justified below.

Entergy's review included verification of compliance with Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision 3, July 2000, as well as the supporting TSTF-IG-07-01, "Implementation Guidance TSTF-431, Revision 1, 'Change in Technical Specifications End States (BAW-2441)'", April 2007. Entergy fleet procedure EN-DC-203, "Maintenance Rule Program," references NUMARC 93-01, as endorsed by Regulatory Guide (RG) 1.160, as the governing guidance for the Entergy Maintenance Rule program. ANO Operations directive COPD-024, "Risk Assessment Guidelines," currently meets the majority of the implementation guidance presented in TSTF-IG-07-01; however, this directive will be further enhanced prior to implementation of this amendment, as committed to in Attachment 2 of this letter.

Differences are as follows.

1. Changes may have required the movement of information from one TS page to another. This difference does not invalidate the applicability of TSTF-422 and the model SE to ANO-1.

2. STS 3.3.5 Required Action B.2.3 is equivalent to ANO-1 TS 3.3.5 Required Action B.3. This difference does not invalidate the applicability of TSTF-431 and the model SE to ANO-1.

3. STS 3.4.15 Required Action C.2 is equivalent to ANO-1 TS 3.3.5 Required Action D.2. This difference does not invalidate the applicability of TSTF-431 and the model SE to ANO-1.

4. STS 3.6.3 Action E is equivalent to ANO-1 TS 3.6.3 Action D. No other TSTF-431 related changes are affected. This difference does not invalidate the applicability of TSTF-431 and the model SE to ANO-1.

5. ANO-1 does not have a Containment Air Temperature specification (STS 3.6.5). Therefore, no TSTF-431 related changes related to Containment Air Temperature are incorporated into the ANO-1 TSs. This difference does not invalidate the applicability of TSTF-431 and the model SE to ANO-1.

6. The Actions associated with ANO-1 TS 3.6.5, “Reactor Building Spray and Cooling System,” differs significantly from the STS 3.6.6 version because the ANO-1 licensing basis only requires one train of Reactor Building Spray and one train of Reactor Building Coolers in Modes 3 and 4. This difference was approved by the NRC in the ANO-1 conversion to STS in 2001 (based on NUREG 1430, Revision 1). With regard to TSTF-431, an end state of Mode 4 is permitted for three scenarios: 1) one Reactor Building Spray train inoperable, 2) one Reactor Building Cooling train inoperable, or 3) one Reactor Building Spray train AND one Reactor Building Cooling train inoperable. In effect, at least one Reactor Building Spray train AND one Reactor Building Cooling train must remain operable to apply the Mode 4 end state.

   Unlike the STS, ANO-1 TS 3.6.5 Action E permits both Reactor Building Spray trains to be inoperable OR both Reactor Building Cooling trains to be inoperable when in Modes 3 or 4 for up to 36 hours prior to requiring exiting the Modes of Applicability (i.e., cooldown to Mode 5). Requiring entry into Mode 5 with both trains inoperable on either system remains consistent with the STS and TSTF-431. As long as at least one Reactor Building Spray train AND one Reactor Building Cooling train remains operable in Modes 3 and 4, no further action is required. Because of this unique difference between the ANO-1 licensing basis and the STS, no changes associated with TSTF-431 are applicable to ANO-1 and, therefore, no changes to TS 3.6.5 are proposed. This difference does not invalidate the applicability of TSTF-431 and the model SE to ANO-1.

7. ANO-1 does not have a Component Cooling Water (CCW) system or specification (STS 3.7.7). Therefore, no TSTF-431 changes related to CCW are incorporated into the ANO-1 TSs. This difference does not invalidate the applicability of TSTF-431 and the model SE to ANO-1.

8. The ANO-1 Ultimate Heat Sink (Emergency Cooling Pond) does not include cooling towers; therefore, TSTF-431 related changes (reference STS 3.7.9) are not applicable to ANO-1 TS 3.7.8. This difference does not invalidate the applicability of TSTF-431 and the model SE to ANO-1.

9. STS 3.8.1 Required Action G.2 is equivalent to ANO-1 TS 3.3.5 Required Action F.2. This difference does not invalidate the applicability of TSTF-431 and the model SE to ANO-1.

10. The markup and clean (revised) version of ANO-1 TS 3.8.4, "DC Sources – Operating," pages are based on approval of changes to these pages related to adoption of TSTF-500, "DC Electrical Rewrite" (Entergy letter dated January 28, 2013) currently under review by the NRC. Should the changes reflected in Entergy's January 28, 2013, letter not be approved, a revised version of this TS page will be forward to the NRC at the appropriate time. With respect to this unapproved version of these TS pages, a place-holder has been inserted in the footer (Amendment No. "xxx") with the assumption that the January 28, 2013, Entergy amendment request will be approved.

    In addition, STS 3.8.4 Required Action D.2 is equivalent to ANO-1 TS 3.3.5 Required Action B.2. This difference does not invalidate the applicability of TSTF-431 and the model SE to ANO-1.

11. ANO-1 TS 3.8.7, "Inverters – Operating," Action B envelops conditions where Action A is not met or when two or more required inverters are inoperable. The STS does not contain the latter condition. In order to apply the TSTF-431 end state properly, Action B of ANO-1 TS 3.8.7 has been split into two separate actions, with the new Action B being equivalent to STS 3.8.7 Action B, and the TSTF-431 Mode 4 end state appropriately applied. New Action C envelops only the condition where two or more required inverters are inoperable and continues to require entry into Mode 5. These modifications retain the current ANO-1 TS allowances while permitting the adoption of TSTF-431 for conditions where only one required inverter is inoperable. This difference does not invalidate the applicability of TSTF-431 and the model SE to ANO-1.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

Entergy Operations, Inc. (Entergy) has evaluated the proposed changes to the TS using the criteria in 10 CFR 50.92 and has determined that the proposed changes do not involve a significant hazards consideration.

Description of Amendment Request: The proposed amendment would modify the Arkansas Nuclear One, Unit 1 (ANO-1) Technical Specifications (TS) requirements to permit an end state of hot shutdown (Mode 4) rather than the current TS requirement of a cold shutdown (Mode 5) end state consistent with NRC-approved TSTF-431, Revision 3. The proposed amendment would include a Note in the applicable TS Required Actions, consistent with TSTF-431, Revision 3, which prohibits the use of LCO 3.0.4.a when entering the preferred end state.

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

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

   Response: No

   The proposed change allows a change to certain required end states when the Technical Specification (TS) Completion Times (CTs) for remaining in power operation are exceeded. Most of the requested TS changes are to permit an end state of hot shutdown (Mode 4) rather than an end state of cold shutdown (Mode 5) contained in the current TS. The request was limited to: (1) those end states where entry into the shutdown mode is for a short interval, (2) entry is initiated by inoperability of a single train of equipment or a restriction on a plant operational parameter, unless otherwise stated in the applicable TS, and (3) the primary purpose is to correct the initiating condition and return to power operation as soon as is practical. Risk insights from both the qualitative and quantitative risk assessments were used in specific TS assessments. Such assessments are documented in Sections 4 and 5 of BAW-2441-A, Revision 2, "Risk Informed Justification for LCO end-state Changes," for B&W Plants. The assessments provide an integrated discussion of deterministic and probabilistic issues, focusing on specific TSs, which are used to support the proposed TS end state and associated restrictions. The staff finds that the risk insights support the conclusions of the specific TS assessments. Therefore, the probability of an accident previously evaluated is not significantly increased, if at all. The consequences of an accident after adopting proposed TSTF-431, Revision 3, are no different than the consequences of an accident prior to its adoption. The addition of a requirement to assess and manage the risk introduced by this change will further minimize possible concerns.

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

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

   Response: No

   The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed). If risk is assessed and managed, allowing a change to certain required end states when the TS Completion Times for remaining in power operation are exceeded, i.e., entry into hot shutdown rather than cold shutdown to repair equipment, will not introduce new failure modes or effects and will not, in the absence of other unrelated failures, lead to an accident whose consequences exceed the consequences of accidents previously evaluated. The addition of a requirement to assess and manage the risk introduced by this change and the commitment by the licensee to adhere to the guidance in TSTF-IG-07-01, Implementation Guidance for TSTF-431, Revision 1, "Changes in Technical Specifications end states, BAW-2441-A," will further minimize possible concerns.

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

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

Response: No

The proposed change allows, for some systems, entry into hot shutdown rather than cold shutdown to repair equipment, if risk is assessed and managed. The B&WOG's risk assessment approach is comprehensive and follows staff guidance as documented in RGs 1.174 and 1.177. In addition, the analyses show that the criteria of the three-tiered approach for allowing TS changes are met. The risk impact of the proposed TS changes was assessed following the three-tiered approach recommended in RG 1.177. A risk assessment was performed to justify the proposed TS changes. The net change to the margin of safety is insignificant.

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

Based upon the reasoning presented above, Entergy concludes that the requested change involves no significant hazards consideration, as set forth in 10 CFR 50.92(c), "Issuance of Amendment."

3.2 Verifications, Commitments, and Additional Information Needed

As discussed in the notice of availability published in the *Federal Register* on December 6, 2010, for this TS improvement, plant-specific verifications were performed as follows:

Entergy commits to the regulatory commitments in Attachment 2. In addition, Entergy has proposed TS Bases consistent with Topical Report BAW-2441 and TSTF-431, which provide guidance and details on how to implement the new requirements. Implementation of TSTF-431 requires that risk be managed and assessed, and the licensee's configuration risk management program is adequate to satisfy this requirement. The risk assessment need not be quantified, but may be a qualitative assessment of the vulnerability of systems and components when one or more systems are not able to perform their associated function. Finally, Entergy has a Bases Control Program consistent with Section 5.5 of the Standard Technical Specifications.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment adopting TSTF-431, Revision 3, involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that TSTF-431, Revision 2, involves no significant hazards considerations, and there has been no public comment on the finding in *Federal Register* notice 72 FR 65615, dated November 21, 2007. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 REFERENCES

1. TSTF-431, Revision 3, “Change in Technical Specifications End States (BAW-2441),” dated December 22, 2009 (ADAMS Accession No. ML093570241).

2. *Federal Register*, [Vol. 75, No. 233, p. 75705-75706], Notice of Availability of the Models for Plant-Specific Adoption of Technical Specifications Task Force (TSTF) Traveler TSTF-431, Revision 3, “Change in Technical Specifications End States (BAW-2441),’ December 6, 2010 (ADAMS Accession No. ML102310367).

3. BAW-2441, Revision 2, “Risk Informed Justification for LCO End-State Changes," September 2006 (ADAMS Accession No. ML040260016).

4. NRC Model Safety Evaluation of TSTF-431, Revision 3 (ADAMS Accession No. ML102310365).

5. Final Safety Evaluation for BAW-2441, Revision 2, "Risk Informed Justification for LCO End-State Changes," August 25, 2006 (ADAMS Accession No. ML062130286).

Attachment 2

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List of Regulatory Commitments

LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
Entergy will modify the Technical Specification Bases for the revised specifications as adopted with the applicable license amendment.	✓		Upon implementation of the approved TS amendment
Entergy will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision 3, July 2000.		✓	Ongoing
Entergy will follow the guidance established in TSTF-IG-07-01, Revision 1, "Implementation Guidance for TSTF-431, Revision 3, 'Change in Technical Specifications End States,' BAW-2441-A"		✓	Upon implementation of the approved TS amendment, when the TS Required Action End State remains within the Applicability of the TS

Attachment 3 to

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Proposed Technical Specification and Bases Changes (mark-up)

3.3 INSTRUMENTATION

3.3.5 Engineered Safeguards Actuation System (ESAS) Instrumentation

LCO 3.3.5 Three ESAS analog instrument channels for each Parameter in Table 3.3.5-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Parameters with one analog instrument channel inoperable.	A.1 Place analog instrument channel in trip.	1 hour
B. One or more Parameters with more than one analog instrument channel inoperable. OR Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 ----------NOTE---------- Only required for RCS Pressure - Low setpoint. ---------- Reduce RCS pressure < 1750 psig. AND B.3 ----------NOTES---------- 1. Only required for Reactor Building Pressure High setpoint and High High setpoint. 2. LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 45.	6 hours 36 hours 1236 hours

3.3 INSTRUMENTATION

3.3.6 Engineered Safeguards Actuation System (ESAS) Manual Initiation

LCO 3.3.6 Two manual initiation channels of each one of the ESAS Functions below shall be OPERABLE:

a. High Pressure Injection (channels 1 and 2);

b. Low Pressure Injection (channels 3 and 4);

c. Reactor Building (RB) Cooling (channels 5 and 6);

d. RB Spray (channels 7 and 8); and

e. Spray Additive (channels 9 and 10).

APPLICABILITY: MODES 1 and 2,
MODES 3 and 4 when associated engineered safeguards equipment is required to be OPERABLE.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more ESAS Functions with one channel inoperable.	A.1 Restore channel to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4~~5~~.	6 hours 12~~36~~ hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops – MODE 4

LCO 3.4.6 Two loops consisting of any combination of RCS loops and decay heat removal (DHR) loops shall be OPERABLE and one OPERABLE loop shall be in operation.

----------NOTE----------
All reactor coolant pumps (RCPs) and DHR pumps may be removed from operation for ≤ 1 hour 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 less than or equal to a temperature which is 10°F below saturation temperature.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required loop inoperable.	A.1 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Initiate action to restore a second loop to OPERABLE status.	Immediately
	~~AND~~	
	~~A.2 ----------NOTE---------- Only required if DHR loop is OPERABLE. ----------~~ ~~Be in MODE 5.~~	~~24 hours~~

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required reactor building atmosphere radioactivity monitor inoperable.	B.1.1 Analyze grab samples of the reactor building atmosphere. OR B.1.2 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation at or near operating pressure. ---------- Perform SR 3.4.13.1. AND B.2 Restore required reactor building atmosphere radioactivity monitor to OPERABLE status.	Once per 24 hours Once per 24 hours 30 days
----------NOTE---------- Only applicable when the reactor building atmosphere gaseous radiation monitor is the only OPERABLE monitor. ---------- C. Reactor Building sump monitor inoperable.	C.1 Analyze grab samples of the reactor building atmosphere. AND C.2 Restore reactor building sump monitor to OPERABLE status.	Once per 12 hours 7 days
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4~~5~~.	6 hours 12~~36~~ hours
E. Both required monitors inoperable.	E.1 Enter LCO 3.0.3.	Immediately

3.5 EMERGENCY CORE COOLING SYSTEM (ECCS)

3.5.4 Borated Water Storage Tank (BWST)

LCO 3.5.4 The BWST shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. BWST boron concentration not within limits. ~~OR~~ ~~BWST water temperature not within limits.~~	A.1 Restore BWST to OPERABLE status.	8 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	6 hours 12 hours
C. BWST water temperature not within limits.	C.1 Restore BWST to OPERABLE status.	8 hours
D~~B~~. BWST inoperable for reasons other than Condition A or C.	D~~B~~.1 Restore BWST to OPERABLE status.	1 hour
E~~C~~. Required Action and associated Completion Time of Condition C or D not met.	E~~C~~.1 Be in MODE 3. AND E~~C~~.2 Be in MODE 5.	6 hours 36 hours

SR 3.5.4.1 is Moved to the Next TS Page in Clean Version

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.4.1	----------NOTE---------- Only required to be performed when ambient air temperature is < 40°F or > 110°F. ---------- Verify BWST borated water temperature is ≥ 40°F and ≤ 110°F.	24 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Lock an OPERABLE door closed in the affected air lock. AND 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.	24 hours Once per 31 days
C. One or more reactor building air locks inoperable for reasons other than Condition A or B.	C.1 Initiate action to evaluate overall reactor building leakage rate per LCO 3.6.1. AND C.2 Verify a door is closed in the affected air lock. AND C.3 Restore air lock to OPERABLE status.	Immediately 1 hour 24 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4~~5~~.	6 hours 12~~36~~ hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ----------NOTE---------- Only applicable to penetration flow paths with only one reactor building isolation valve and a closed system. ---------- One or more penetration flow paths with one reactor building isolation valve inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND C.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.	72 hours Once per 31 days
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 45.	6 hours 1236 hours

SR 3.6.3.1 is Moved to the Next TS Page in Clean Version

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1	Verify each reactor building purge isolation valve is closed.	31 days

3.6 REACTOR BUILDING SYSTEMS

3.6.4 Reactor Building Pressure

LCO 3.6.4 Reactor building pressure shall be ≥ -1.0 psig and ≤ +3.0 psig.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor building pressure not within limits.	A.1 Restore reactor building pressure to within limits.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4~~5~~.	6 hours 12~~36~~ hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.1	Verify reactor building pressure is ≥ -1.0 psig and ≤ +3.0 psig.	12 hours

3.7 PLANT SYSTEMS

3.7.7 Service Water System (SWS)

LCO 3.7.7 Two SWS loops shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SWS loop inoperable.	A.1 ----------NOTES---------- 1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources - Operating," for diesel generator made inoperable by SWS. 2. Enter Applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for decay heat removal made inoperable by SWS. ---------- Restore SWS loop to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 45.	6 hours 1236 hours

3.7 PLANT SYSTEMS

3.7.9 Control Room Emergency Ventilation System (CREVS)

LCO 3.7.9 Two CREVS trains shall be OPERABLE.

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

1. The control room envelope (CRE) boundary may be opened intermittently under administrative controls.

2. One CREVS train shall be capable of automatic actuation.

APPLICABILITY: MODES 1, 2, 3, 4,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREVS train inoperable for reasons other than Condition B.	A.1 Restore CREVS train to OPERABLE status.	7 days
B. One or more CREVS trains inoperable due to inoperable CRE boundary in MODES 1, 2, 3, or 4.	B.1 Initiate action to implement mitigating actions. AND B.2 Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits. AND B.3 Restore control room boundary to OPERABLE status.	Immediately 24 hours 90 days

ACTION C MOVED TO NEXT PAGE

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. AND C.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 45.	6 hours 1236 hours
D. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies.	D.1 Place OPERABLE CREVS train in emergency recirculation mode. OR D.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately
E. Two CREVS trains inoperable during movement of irradiated fuel assemblies. OR One or more CREVS trains inoperable due to an inoperable CRE boundary during movement of irradiated fuel assemblies.	E.1 Suspend movement of irradiated fuel assemblies.	Immediately
F. Two CREVS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCES MOVED TO NEXT PAGE

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Operate each CREVS train for ≥ 15 minutes.	31 days
SR 3.7.9.2	Perform required CREVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.9.3	Verify the CREVS automatically isolates the Control Room and switches into a recirculation mode of operation on an actual or simulated actuation signal.	18 months
SR 3.7.9.4	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program.

3.7 PLANT SYSTEMS

3.7.10 Control Room Emergency Air Conditioning System (CREACS)

LCO 3.7.10 Two CREACS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREACS train inoperable.	A.1 Restore CREACS 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. AND B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4~~5~~.	6 hours 12~~36~~ hours
C. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies.	C.1 Place OPERABLE CREACS train in operation. OR C.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately
D. Two CREACS trains inoperable during movement of irradiated fuel assemblies.	D.1 Suspend movement of irradiated fuel assemblies.	Immediately
E. Two CREACS trains inoperable during MODE 1, 2, 3, or 4.	E.1 Enter LCO 3.0.3.	Immediately

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and Associated Completion Time of Condition A, B, C, D, or E not met.	F.1 Be in MODE 3. AND F.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4~~5~~.	12 hours 12~~36~~ hours
G. Three or more required AC sources inoperable.	G.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
SR 3.8.1.2	----------NOTE---------- All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. ---------- Verify each DG starts from standby conditions and, in ≤ 15 seconds achieves “ready-to-load” conditions.	 31 days

SR 3.8.1.3 MOVED TO NEXT PAGE

SURVEILLANCE		FREQUENCY
SR 3.8.1.3	----------NOTES---------- 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and follow, without shutdown, a successful performance of SR 3.8.1.2. ---------- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 2475 kW and ≤ 2750 kW.	31 days
SR 3.8.1.4	Verify each day tank contains ≥ 160 gallons of fuel oil.	31 days
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	31 days
SR 3.8.1.6	Verify the fuel oil transfer system operates to transfer fuel oil from storage tanks to the day tank.	31 days
SR 3.8.1.7	----------NOTE---------- This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ---------- Verify automatic transfer of AC power sources to the selected offsite circuit and manual transfer to the alternate required offsite circuit.	18 months

SR 3.8.1.8 MOVED TO NEXT PAGE

SURVEILLANCE		FREQUENCY
SR 3.8.1.8	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. achieves “ready-to-load” conditions in ≤ 15 seconds, 2. energizes permanently connected loads, 3. energizes auto-connected shutdown load through automatic load sequencing timers, and 4. supplies connected loads for ≥ 5 minutes.	18 months
SR 3.8.1.9	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. achieves “ready-to-load” conditions in ≤ 15 seconds, 2. energizes permanently connected loads, 3. energizes auto-connected emergency loads through load sequencing timers, and 4. supplies connected loads for ≥ 5 minutes.	18 months

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 Both DC electrical power subsystems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One DC electrical power subsystem inoperable.	A.1 Restore DC electrical power subsystem to OPERABLE status.	8 hours
B. Required Action and Associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE ~~4~~5.	12 hours 12~~36~~ hours

SURVEILLANCES MOVED TO NEXT PAGE

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is greater than or equal to the minimum established float voltage.	7 days
SR 3.8.4.2	Verify each battery charger supplies ≥ 300 amps at greater than or equal to the minimum established float voltage for ≥ 8 hours. OR Verify each battery charger can recharge the battery to the fully charged state within 24 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state.	18 months

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~SURVEILLANCE~~		~~FREQUENCY~~
SR 3.8.4.3	Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test or a modified performance discharge test.	18 months

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met. ~~OR~~ ~~Two or more of the four inverters required by LCO 3.8.7.a and LCO 3.8.7.b inoperable.~~	B.1 Be in MODE 3. AND B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE ~~4~~5.	12 hours 12~~36~~ hours
C. Two or more of the four inverters required by LCO 3.8.7.a and LCO 3.8.7.b inoperable.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage, frequency, and alignment to associated 120 VAC buses RS1, RS2, RS3, and RS4.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

LCO 3.8.9 Two AC, DC, and 120 VAC electrical power distribution subsystems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more AC electrical power distribution subsystem(s) inoperable.	A.1 Restore AC electrical power distribution subsystem(s) to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO
B. One or more 120 VAC electrical power distribution subsystem(s) (RS1, RS2, RS3, RS4) inoperable.	B.1 Restore 120 VAC electrical power distribution subsystem(s) to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO
C. One or more DC electrical power distribution subsystem(s) inoperable.	C.1 Restore DC electrical power distribution subsystem(s) to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4~~5~~.	12 hours 12~~36~~ hours

ACTIONS (continued)

B.1, B.2, and B.3

Condition B applies when Required Action A.1 and its associated Completion Time are not met, or when one or more parameters have more than one analog instrument channel inoperable. If Condition B applies, the unit must be brought to a condition in which overall plant risk is minimized~~the LCO does not apply~~. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours. Additionally, for the RCS Pressure – Low parameter, the unit must be brought to < 1750 psig within 36 hours, and for the RB Pressure – High and High High parameters, the unit must be brought to MODE 4~~5~~ within 12~~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.

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 the energy in the RCS is lower resulting in a lower risk of an event occurring which would require the ESAS instrumentation. The ESAS functions can be manually initiated if needed. 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.

Required Action B.3 is modified by a second Note. Note 2 states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

SURVEILLANCE REQUIREMENTS

The ESAS Parameters listed in Table 3.3.5-1 are subject to CHANNEL CHECK, CHANNEL FUNCTIONAL TEST, and CHANNEL CALIBRATION.

SR 3.3.5.1

Performance of the CHANNEL CHECK every 12 hours provides reasonable assurance for prompt identification of a gross failure of instrumentation. 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 channel failure; therefore, it is key in verifying that the instrumentation continues to operate properly between CHANNEL CALIBRATIONs.

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

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.1 (continued)

The Frequency is based on operating experience that demonstrates channel failure is rare. Since the probability of two random failures in redundant channels in any 12-hour period is extremely 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 potentially more frequent, checks of channel OPERABILITY during normal operational use of the displays associated with the LCO's required channels.

SR 3.3.5.2

A CHANNEL FUNCTIONAL TEST is performed on each required ESAS analog instrument channel to ensure the entire channel will perform the intended functions. Any setpoint adjustment shall be consistent with the assumptions of the setpoint calculations.

The Frequency of 31 days is based on unit 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. The RCS low pressure automatic bypass removal feature is verified during its CHANNEL FUNCTIONAL TEST.

SR 3.3.5.3

CHANNEL CALIBRATION is a complete check of the analog instrument channel, including the sensor. The test 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 to ensure that the analog instrument channel remains OPERABLE between successive tests. CHANNEL CALIBRATION shall find that measurement errors and bistable setpoint errors are within the assumptions of the setpoint calculations. CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the setpoint calculations.

This Frequency is justified by the assumption of at least an 18-month calibration interval to determine the magnitude of equipment drift in the setpoint calculations.

REFERENCES

1. SAR, Chapter 7.
2. SAR, Chapter 14 and Chapter 3A.
3. 10 CFR 50.36.
4. Instrument Loop Error Analysis and Setpoint Methodology Manual, Design Guide, IDG-001.
5. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

ACTIONS

A Note has been added to the ACTIONS indicating separate Condition entry is allowed for each ESAS manual initiation Function.

A.1

Condition A applies when one manual initiation channel of one or more ESAS Functions becomes inoperable. Required Action A.1 must be taken to restore the channel to OPERABLE status within the next 72 hours. The Completion Time of 72 hours is based on unit operating experience and administrative controls, which provide alternative means of ESAS Function initiation via individual component controls. The 72-hour Completion Time is generally consistent with the allowed outage time for the safety systems actuated by ESAS.

B.1 and B.2

If Required Action A.1 and the associated Completion Time are not met, the unit must be brought to a MODE in which overall plant risk is minimized~~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 4~~5~~ within 12~~36~~ hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required MODES from full power conditions in an orderly manner and without challenging unit systems.

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 the energy in the RCS is lower resulting in a lower risk of an event occurring which would require the ESAS instrumentation. The ESAS functions can be manually initiated via the individual component controls if needed. 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.

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

SURVEILLANCE REQUIREMENTS

SR 3.3.6.1

This SR requires the performance of a CHANNEL FUNCTIONAL TEST of the ESAS manual initiation. This test verifies that the initiating circuitry is OPERABLE and will actuate the digital actuation logic channels. 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. This Frequency is demonstrated to be sufficient, based on operating experience, which shows these components usually pass the Surveillance when performed on the 18-month Frequency.

REFERENCES

1. 10 CFR 50.36.

2. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

ACTIONS

A.1

If only one required RCS loop or DHR loop is OPERABLE and in operation, redundancy for heat removal is lost. Action must be initiated to restore a second loop to OPERABLE status.

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 the Steam Generators are available for heat removal via natural circulation. 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.

Required Action A.1 is modified by a second Note. Note 2 states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

A.2

If restoration is not accomplished and a DHR loop is OPERABLE, the unit must be brought to MODE 5 within the following 24 hours. Bringing the unit to MODE 5 is a conservative action with regard to decay heat removal. With only one DHR loop OPERABLE, redundancy for decay heat removal is lost and, in the event of a loss of the remaining DHR loop, 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 in an orderly manner and without challenging unit systems.

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

ACTIONS (continued)

B.1 and B.2

If no RCS or DHR loops are OPERABLE or a required loop is not in operation (no loop is required to be in operation provided the conditions of the Note in the LCO section are met), all operations involving introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 must be suspended and action to restore one RCS or DHR loop to OPERABLE status and operation must be initiated. The required margin to criticality must not be reduced in this type of operation. Suspending the introduction of coolant into the RCS of coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate Completion Times reflect the importance of maintaining operation for decay heat removal. The action to restore must continue until one loop is restored to operation.

SURVEILLANCE REQUIREMENTS

SR 3.4.6.1

This Surveillance requires verification every 12 hours of the required DHR or RCS loop in operation to ensure forced flow is providing decay heat removal. Verification includes flow rate, temperature, or pump status monitoring. The 12-hour interval has been shown by operating practice to be sufficient to regularly assess RCS loop status. In addition, control room indication and alarms will normally indicate loop status.

SR 3.4.6.2

Verification that each required pump is OPERABLE ensures that an RCS or DHR loop can be placed in operation if needed to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to each required pump. Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability. The Frequency of 7 days is considered reasonable in view of other administrative controls and has been shown to be acceptable by operating experience.

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

1. 10 CFR 50.36.

2. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

ACTIONS (continued)

B.1.1, B.1.2, and B.2

With the required gaseous or particulate reactor building atmosphere radioactivity monitoring instrumentation channel inoperable, alternative action is required. Either grab samples of the reactor building atmosphere must be taken and analyzed or water inventory balances, in accordance with SR 3.4.13.1, must be performed to provide alternate periodic information. With a sample obtained and analyzed or a water inventory balance performed every 24 hours, the reactor may be operated for up to 30 days to allow restoration of at least one of the radioactivity monitors.

The 24-hour interval provides periodic information that is adequate to detect leakage. A Note is added allowing that SR 3.4.13.1 is not required to be performed until 12 hours after establishing steady state operation (stable temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows) at or near operating pressure. The 12-hour allowance provides sufficient time to collect and process all necessary data after stable unit conditions are established. The 30-day Completion Time recognizes at least one other form of leak detection is available.

C.1 and C.2

With the reactor building sump monitor inoperable, the only means of detecting LEAKAGE is the required reactor building atmosphere radiation monitor. A Note clarifies that this Condition is applicable when the only OPERABLE monitor is the reactor building atmosphere gaseous radiation monitor. In addition, this configuration does not provide the required diverse means of leakage detection. Indirect methods of monitoring RCS leakage must be implemented. Grab samples of the reactor building atmosphere must be taken and analyzed to provide alternate periodic information. The 12-hour interval is sufficient to detect increasing RCS leakage. The Required Action provides 7 days to restore another RCS leakage monitor to OPERABLE status to regain the intended leakage detection diversity. The 7-day Completion Time ensures that the plant will not be operated in a degraded configuration for a lengthy time period.

D.1 and D.2

If the Required Action and associated Completion Time are not met, the unit must be brought to a MODE in which overall plant risk is minimized~~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 ~~4~~5 within 12~~3~~6 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.

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 the RCS pressure is lower and the risk of significant RCS leakage is reduced. 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.

ACTIONS (continued)

D.1 and D.2 (continued)

Required Action D.2 is modified by a second Note. Note 2 states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

E.1

With both required monitors inoperable, no indicated means of monitoring leakage are available, and immediate plant shutdown in accordance with LCO 3.0.3 is required.

SURVEILLANCE REQUIREMENTS

SR 3.4.15.1

SR 3.4.15.1 requires the performance of a CHANNEL CHECK of the required reactor building atmosphere radioactivity monitor. The check gives reasonable confidence that each channel is operating properly. The Frequency of 12 hours is based on instrument reliability and is reasonable for detecting off normal conditions.

SR 3.4.15.2

SR 3.4.15.2 requires the performance of a CHANNEL FUNCTIONAL TEST of the required reactor building atmosphere radioactivity monitor. The test ensures that the monitor can perform its function in the desired manner. The test verifies the alarm function and relative accuracy of the instrument string. The Frequency of 92 days considers instrument reliability, and operating experience has shown it proper for detecting degradation.

SR 3.4.15.3 and SR 3.4.15.4

These SRs require the performance of a CHANNEL CALIBRATION for each of the required RCS leakage detection instrumentation channels. The calibration verifies the accuracy of the instrument string, including the instruments located inside the reactor building. The Frequency of 18 months is a typical refueling cycle and considers channel reliability. Additionally, operating experience has shown this Frequency is acceptable.

REFERENCES

1. SAR, Section 1.4, GDC 30.

2. Regulatory Guide 1.45, Revision 0, “Reactor Coolant Pressure Boundary Leakage Detection Systems,” May 1973.

3. SAR, Section 4.2.3.8.

4. 10 CFR 50.36.

5. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

APPLICABLE SAFETY ANALYSES (continued)

The 40 °F lower limit on the temperature of the solution in the BWST was established to ensure that the solution will not freeze. The 110 °F upper limit on the temperature of the BWST contents is consistent with the maximum water temperature assumed in the safety analysis. These parameter values are considered to be nominal values. Additional allowances for instrument uncertainty are not required to be included in the implementing procedures.

In MODE 1, the BWST satisfies Criterion 3 of 10 CFR 50.36 (Ref. 3). In MODES 2, 3 and 4, the BWST satisfies Criterion 4 of 10 CFR 50.36.

LCO

The BWST exists to ensure that an adequate supply of borated water is available to cool and depressurize the reactor building in the event of a DBA; to cool and cover the core in the event of a LOCA, thereby ensuring the reactor remains adequately shutdown following a DBA; and to ensure an adequate level exists in the reactor building sump to support ECCS and reactor building spray pump operation in the recirculation mode. To be considered OPERABLE, the BWST must meet the limits for water volume, boron concentration, and temperature established in the SRs.

APPLICABILITY

In MODES 1, 2, 3, and 4, the BWST OPERABILITY requirements are dictated by the ECCS and Reactor Building Spray System OPERABILITY requirements. Since both the ECCS and Reactor Building Spray System must be OPERABLE in MODES 1, 2, 3, and 4, the BWST 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," respectively. MODE 6 core cooling requirements are addressed by LCO 3.9.4, "Decay Heat Removal (DHR) and Coolant Circulation - High Water Level," and LCO 3.9.5, "Decay Heat Removal (DHR) and Coolant Circulation - Low Water Level."

ACTIONS

A.1

With ~~either~~ the BWST boron concentration ~~or borated water temperature~~ not within limits, the condition must be corrected within 8 hours. In this condition, neither the ECCS nor the Reactor Building Spray System may be able to perform its 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 overall plant risk is minimized~~these systems are not required~~. The 8 ~~-~~ hour limit to restore the ~~temperature or~~ boron concentration to within limits was developed considering the time required to change boron concentration ~~or temperature~~ and assuming that the contents of the tank are still available for injection.

ACTIONS (continued)

B.1 and B.2

If the BWST boron concentration is not restored to within limits within the associated Completion Time, the plant must be brought to MODE 3 within 6 hours and MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. Reference 4 demonstrated that it is acceptable to remain in MODE 4 in this condition because the boron concentration limit is based on MODE 1 events and there is additional SHUTDOWN MARGIN available for events initiated in MODE 4.

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

C.1

With BWST water temperature not within limits, it must be returned to within limits within 8 hours. If the temperature is not within limits, the ECCS and Containment Spray systems may not be able to perform their respective design functions; therefore, prompt action must be taken to restore the tank to OPERABLE status. The allowed Completion Time of 8 hours to restore the BWST water temperature 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.

D~~B~~.1

With the BWST inoperable for reasons other than Condition A or C (e.g., water volume), the BWST must be restored to OPERABLE status within 1 hour. In this condition, neither the ECCS nor the Reactor Building Spray System can perform its design functions. Therefore, prompt action must be taken to restore the BWST to OPERABLE status or to place the unit in a MODE in which the BWST is not required. The allowed Completion Time of 1 hour to restore the BWST to OPERABLE status is based on this condition simultaneously affecting multiple redundant trains.

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

If the Required Actions and associated Completion Times of Conditions C or D are not met, 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.

SURVEILLANCE REQUIREMENTS

SR 3.5.4.1

Verification every 24 hours that the BWST water temperature is within the specified temperature band ensures that the fluid will not freeze and that the fluid temperature will not be hotter than assumed in the safety analysis. These parameter values are considered to be nominal values and do not contain an allowance for instrument uncertainty. No additional allowances for instrument uncertainty are required to be included in the implementing procedures. The 24-hour Frequency is sufficient to identify a temperature change that would approach either temperature limit.

The SR is modified by a Note that requires the Surveillance to be performed only when ambient air temperatures are outside the operating temperature limits of the BWST. With ambient temperatures within this band, the BWST temperature should not exceed the limits.

SR 3.5.4.2

Verification every 7 days that the BWST level is $\geq$ 38.4 feet and $\leq$ 42 feet ensures that a sufficient initial supply is available for injection and to support continued ECCS pump operation on recirculation. These levels correspond to volumes of approximately 375,096 gallons and 405,090 gallons, respectively. These parameter values do not contain an allowance for instrument uncertainty. Additional allowances for instrument uncertainty are included in the implementing procedures. Since the BWST level is normally stable, a 7-day Frequency has been shown to be appropriate through operating experience.

SR 3.5.4.3

Verification every 7 days that the boron concentration of the BWST fluid is $\geq$ 2270 ppm and $\leq$ 2670 ppm ensures that the reactor will remain adequately shutdown following a LOCA. These parameter values do not contain an allowance for instrument uncertainty. Additional allowances for instrument uncertainty are included in the implementing procedures. Since the BWST level is normally stable, a 7-day sampling Frequency is appropriate and has been shown to be acceptable through operating experience.

REFERENCES

1. SAR, Section 6.1.

2. Letter from A. C. Thadani (NRC) to P. S. Walsh (BWOG) dated March 9, 1993.

3. 10 CFR 50.36.

4. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

ACTIONS (continued)

D.1 and D.2

If the Required Actions and associated Completion Times are not met, the unit must be brought to a MODE in which overall plant risk is minimized~~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 4~~5~~ within 12~~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.

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). The release of stored energy to the Reactor Building in the event of an accident in MODE 4 is substantially less than the energy release assumed due to an accident at power. Therefore, the challenge to containment air locks is substantially reduced. Because of the reduction in RCS pressure and temperature in MODE 4, the likelihood of an event is also reduced. In addition, there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms in MODE 4 than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action D.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

SURVEILLANCE REQUIREMENTS

SR 3.6.2.1

Maintaining the reactor building air locks OPERABLE requires compliance with the leakage rate test requirements of the Reactor Building 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 reactor building OPERABILITY testing. The periodic testing requirements verify that the air lock leakage does not exceed the allowed fraction of the overall reactor building leakage rate. The Frequency is required by the Reactor Building 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 B and C reactor building leakage rate.

SURVEILLANCE REQUIREMENTS (continued)

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 air lock are designed to withstand the maximum expected post accident reactor building pressure, closure of either door will support the reactor building OPERABILITY. Thus, the door interlock feature supports the reactor building OPERABILITY while the air lock is being used for personnel transit in and out of the reactor building. 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 reactor building air lock door is used for entry and exit (procedures require strict adherence to single door opening), this test is only required to be performed every 18 months. 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 loss of reactor building OPERABILITY if the Surveillance were performed with the reactor at power. The 18 month Frequency for the interlock is justified based on generic operating experience. The 18 month Frequency is based on engineering judgment and is considered adequate given that the interlock is not expected to be challenged during use of the airlock.

REFERENCES

1. 10 CFR 50, Appendix J, Option B.

2. SAR, Chapter 14.

3. SAR, Chapter 5.

4. 10 CFR 50.36.

5. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

ACTIONS (continued)

B.1 (continued)

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two reactor building isolation valves. Condition A of this LCO addresses the condition of one reactor building isolation valve inoperable in this type of penetration flow path.

C.1 and C.2

With one or more penetration flow paths with one reactor building isolation valve inoperable, the inoperable valve must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration. Required Action C.1 must be completed within the 72-hour Completion Time. The specified time period is reasonable, considering the relative structural integrity of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of supporting reactor building OPERABILITY during MODES 1, 2, 3, and 4. In the event the affected penetration is isolated in accordance with Required Action C.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This periodic verification is necessary to assure that reactor building penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying that each affected penetration flow path is isolated is appropriate considering the fact that the valves are operated under administrative controls and the probability of their misalignment is low.

Condition C is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with only one reactor building isolation valve and a closed system. This Note is necessary since this Condition is written to specifically address those penetration flow paths in a closed system.

Required Action C.2 is modified by two Notes. Note 1 applies to valves and blind flanges located in high radiation areas and allows these devices to be verified 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. Therefore, the probability of misalignment of these devices, once verified to be in the proper position, is small.

D.1 and D.2

If the Required Actions and associated Completion Times are not met, the unit must be brought to a MODE in which overall plant risk is minimized~~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 4~~5~~ within 12~~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.

ACTIONS (continued)

D.1 and D.2

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). The release of stored energy to the Reactor Building in the event of an accident in MODE 4 is substantially less than the energy release assumed due to an accident at power. Therefore, the challenge to containment isolation valves is substantially reduced. Because of the reduction in RCS pressure and temperature in MODE 4, the likelihood of an event is also reduced. In addition, there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms in MODE 4 than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action D.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

SURVEILLANCE REQUIREMENTS

SR 3.6.3.1

Each 24-inch reactor building purge isolation valve in the purge system supply and exhaust is required to be verified closed at 31 day intervals. This Surveillance is designed to ensure that a gross breach of the reactor building is not caused by an inadvertent opening of a reactor building 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 closed position during MODES 1, 2, 3, and 4. A reactor building purge valve that is closed must have motive power to the valve operator removed. This can be accomplished by removing the valve handswitch key. The Frequency is consistent with other reactor building isolation valves discussed in SR 3.6.3.2.

SR 3.6.3.2

This SR requires verification that each reactor building isolation manual valve and blind flange located outside the reactor building 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 reactor building boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those reactor building isolation valves outside the reactor building and capable of being mispositioned are in the correct position. Since verification of valve position for the reactor building isolation valves outside the reactor building is relatively easy, the 31-day Frequency was chosen to provide added assurance of the correct positions.

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.5

Automatic reactor building isolation valves close on a reactor building isolation signal to prevent leakage of radioactive material from the reactor building following a DBA. This SR ensures that each automatic reactor building isolation valve will actuate to its isolation position on a reactor building isolation signal. This SR is not required for valves that are locked, sealed, or otherwise secured in 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 on 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 this Surveillance when performed at the 18-month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. SAR, Chapter 5.

2. SAR, Chapter 14.

3. 10 CFR 50.36.

4. SAR, Table 5-1.

5. Generic Letter 91-08, Removal of Component Lists from Technical Specifications.

6. Condition Report CR-ANO-1-2010-2515.

7. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

LCO

Maintaining the reactor building pressure less than or equal to the LCO upper pressure limit ensures that, in the event of a DBA, the resultant peak reactor building accident pressure will remain below the reactor building design pressure.

Additionally, keeping the reactor building pressure within the limits maintains the initial conditions assumed for the ECCS analyses.

APPLICABILITY

In MODES 1, 2, 3 and 4, the reactor building OPERABILITY for the limiting Design Basis Accidents is based on full power operation. Although reduced power in the lower MODES would not require the same level of accident mitigation performance, there are no accident analyses for reduced performance in the lower MODES. Since maintaining reactor building pressure within design basis limits is essential to ensure that the peak reactor building pressure from an accident does not exceed the reactor building design pressure, the LCO is applicable in MODES 1, 2, 3, and 4.

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

ACTIONS

A.1

When the reactor building pressure is not within the limits of the LCO, the reactor building 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 reactor building analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Reactor Building," which requires that the reactor building be restored to OPERABLE status within 1 hour.

B.1 and B.2

If the Required Actions and associated Completion Times are not met, the unit must be brought to a MODE in which overall plant risk is minimized~~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 4~~5~~ within 12~~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.

ACTIONS (continued)

B.1 and B.2 (continued)

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). The release of stored energy to the Reactor Building in the event of an accident in MODE 4 is substantially less than the energy release assumed due to an accident at power. Therefore, the challenge to the containment systems due to an increase in containment pressure is substantially reduced. Because of the reduction in RCS pressure and temperature in MODE 4, the likelihood of an event is also reduced. In addition, there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms in MODE 4 than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1

Verifying that the reactor building pressure is within limits ensures that operation remains within the limits assumed in the ECCS and the reactor building analyses. The 12-hour Frequency of this SR was developed after taking into consideration operating experience related to trending of the reactor building pressure variations during the applicable MODES. Furthermore, the 12-hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to an abnormal reactor building pressure condition.

REFERENCES

1. SAR, Chapter 14.
2. SAR, Chapter 5.
3. 10 CFR 50, Appendix K.
4. 10 CFR 50.36.
5. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

ACTIONS

A.1

If one SWS loop is inoperable, action must be taken to restore OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE SWS loop is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the OPERABLE SWS loop could result in loss of SWS function. Required Action A.1 is modified by two Notes. The first Note indicates that the applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources - Operating," should be entered if an inoperable SWS loop results in an inoperable DG. The second Note indicates that the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," should be entered if an inoperable SWS loop results in an inoperable DHR loop. The 72 hour Completion Time is based on the redundant capabilities afforded by the OPERABLE loop, and the low probability of a DBA occurring during this period.

B.1 and B.2

If the Required Action and associated Completion Time are not met, the unit must be placed in a MODE in which overall plant risk is minimized~~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 ~~4~~5 within 12~~36~~ 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. 6). The stored energy in the RCS that must be removed by the SWS in the event of an accident in MODE 4 is substantially less than the energy assumed due to an accident at power. Therefore, the heat loads on the SWS are substantially reduced. Because of the reduction in RCS pressure and temperature in MODE 4, the likelihood of an event is also reduced. In addition, there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms in MODE 4 than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.~~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.~~

REFERENCES

1. SAR, Section 9.3.

2. SAR, Section 6.2.

3. SAR, Section 6.3.

4. SAR, Section 9.5.

5. 10 CFR 50.36.

6. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

ACTIONS (continued)

C.1 and C.2

In MODE 1, 2, 3, or 4 if the inoperable CREVS train or the CRE boundary cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE in whichthat minimizes accident 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 45 within 1236 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.

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). The control room is isolated and the CREVS is utilized in the event of an accident, such as a loss of coolant accident, to reduce or eliminate the ingress of radioactive material released during the event into the control room. Because of the reduction in RCS pressure and temperature in MODE 4, the likelihood of an accident is reduced. In addition, there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms in MODE 4 than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action C.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

D.1 and D.2

During movement of irradiated fuel assemblies, if the Required Action and associated Completion Time of Condition A are not met, the OPERABLE CREVS train must immediately be placed in the emergency recirculation mode. This action ensures 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 movement of irradiated fuel assemblies since this is an activity that could release radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude movement of fuel to a safe position.

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.9.4

This SR verifies the OPERABILITY of the CRE boundary by testing for unfiltered air inleakage past the CRE boundary and into the CRE. The details of the testing are specified in the Control Room Envelope Habitability Program.

The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more than 5 rem TEDE and the CRE occupants are protected from hazardous chemicals and smoke. This SR verifies that the unfiltered air inleakage into the CRE is no greater than the flow rate assumed in the licensing basis analyses of DBA consequences. When unfiltered air inleakage is greater than the assumed flow rate, Condition B must be entered. Required Action B.3 allows time to restore the CRE boundary to OPERABLE status provided mitigating actions can ensure that the CRE remains within the licensing basis habitability limits for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section C.2.7.3, (Ref. 3) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 4). These compensatory measures may also be used as mitigating actions as required by Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 5). Options for restoring the CRE boundary to OPERABLE status include changing the licensing basis DBA consequence analysis, repairing the CRE boundary, or a combination of these actions. Depending upon the nature of the problem and the corrective action, a full scope inleakage test may not be necessary to establish that the CRE boundary has been restored to OPERABLE status.

REFERENCES

1. SAR, Section 9.7.

2. SAR, Chapter 14.

3. Regulatory Guide 1.196.

4. NEI 99-03, "Control Room Habitability Assessment," June 2001.

5. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability." (ADAMS Accession No. ML040300694)

6. Standard Review Plan, Section 6.4, "Control Room Habitability System," Rev. 2, July 1981.

7. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

LCO

Two independent and redundant trains of the CREACS are required to be OPERABLE to ensure that at least one is available, assuming a single failure disables the other train. Total system failure could result in the control room temperature exceeding limits in the event of an accident.

For a CREACS train to be considered OPERABLE, the individual components that are necessary to maintain control room temperature must be OPERABLE. These components include the cooling coils, condensing units, and associated temperature control instrumentation. In addition, the CREACS must be capable of maintaining air circulation.

APPLICABILITY

In MODES 1, 2, 3, and 4, and during movement of irradiated fuel assemblies, the CREACS must be OPERABLE to ensure that the control room temperature will not exceed habitability and equipment OPERABILITY requirements following isolation of the control room.

ACTIONS

A.1

With one CREACS train inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining OPERABLE CREACS train is adequate to maintain the control room temperature within limits. However, the overall reliability is reduced because a failure in the OPERABLE CREACS train could result in a loss of CREACS function. The 30-day Completion Time is based on the low probability of an event occurring requiring control room isolation, the consideration that the remaining train can provide the required capabilities, and alternate nonsafety related cooling means that are available.

B.1 and B.2

In MODE 1, 2, 3, or 4, if the Required Action and associated Completion Time of Condition A are not met, the unit must be placed in a MODE in which overall plant risk is minimized~~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 ~~4~~5 within 12~~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 without challenging unit systems.

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). The control room is isolated in the event of an accident, such as a loss of coolant accident, to reduce or eliminate the ingress of radioactive material released during the event into the control room. However, control room ambient temperatures may increase as a result of operating in this manner. The CREATCS mitigates this temperature rise. Because of the reduction in RCS pressure and temperature in MODE 4, the likelihood of an accident is also reduced. In addition, there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms in MODE 4 than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

ACTIONS (continued)

B.1 and B.2 (continued)

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

C.1 and C.2

During movement of irradiated fuel, if the Required Action and associated Completion Time of Condition A are not met, the OPERABLE CREACS train must be placed in operation immediately. This action ensures that any active failure will be readily detected.

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

D.1

During movement of irradiated fuel assemblies, with two CREACS trains inoperable, action must be taken to immediately suspend activities that could release radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.

E.1

If both CREACS trains are inoperable in MODE 1, 2, 3, or 4, a loss of safety function has occurred, and LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1 and SR 3.7.10.2

These SRs, in conjunction with periodic preventative maintenance activities, provide verification that the CREACS will maintain the control room temperature within acceptable bounds. SR 3.7.10.1 is performed on a staggered basis with one train being tested every two weeks. The Frequencies (31 days and 18 months) are appropriate as periodic preventative maintenance activities are routinely performed and significant degradation of the CREACS is not expected over these time periods.

REFERENCES

1. SAR, Section 9.7.

2. 10 CFR 50.36.

3. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

ACTIONS (continued)

E.1

With Train A and Train B DGs inoperable, there are no remaining standby AC sources. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ES functions. Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

With both DGs inoperable, operation may continue for a period that should not exceed 2 hours.

F.1 and F.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 overall plant risk is minimized~~the LCO does not apply~~. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE ~~4~~5 within 12~~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 plant systems.

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. 9). There are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms in MODE 4 than in MODE 5. In particular, in MODE 4 the turbine-driven emergency feedwater pump[s] are available following a loss of AC sources to provide RCS cooling via the steam generators utilizing natural circulation. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action F.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

G.1

Condition G corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

REFERENCES

1. SAR, Section 1.4, GDC 17.

2. SAR, Chapter 8.

3. Regulatory Guide 1.9, “Selection, Design, and Qualification of Diesel Generator Units Used as Standby (Onsite) Electric Power Systems at Nuclear Power Plants,” Rev. 3, July 1993.

4. SAR, Section 1.4, GDC 18.

5. SAR, Chapter 14.

6. 10 CFR 50.36.

7. Generic Letter 84-15, “Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability,” July 2, 1984 (0CNA078423).

8. Regulatory Guide 1.137, Rev. 1, October 1979.

9. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

ACTIONS

A.1

Condition A represents one subsystem with a loss of ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is therefore imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected subsystem. The 8-hour limit is consistent with the allowed time for an inoperable DC distribution subsystem.

If one of the required DC electrical power subsystems is inoperable (e.g., inoperable battery, inoperable battery chargers, or inoperable battery chargers 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 the minimum necessary electrical subsystems to mitigate a worse case accident, continued steady-state power operation should not exceed 8 hours. The 8-hour Completion Time 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.

B.1 and B.2

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 overall plant risk is minimized~~the LCO does not apply~~. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE ~~4~~5 within 12~~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.

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. 11). There are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms in MODE 4 than in MODE 5. For example, in MODE 4 the turbine driven emergency feedwater pump[s] are available to provide RCS cooling via the steam generators utilizing natural circulation. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

REFERENCES

1. SAR, Section 1.4, GDC 17.

2. Regulatory Guide 1.6, “Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution Systems,” March, 1971.

3. IEEE-308-1971, “Criteria for Class 1E Power Systems for Nuclear Power Generating Stations.”

4. SAR, Chapter 8.

5. IEEE-485-1993, June 1983.

6. SAR, Chapter 14.

7. 10 CFR 50.36.

8. IEEE-450-1995, “Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications.”

9. Regulatory Guide 1.32, “Criteria for Power Systems for Nuclear Power Plants,” March 2004.

10. Regulatory Guide 1.129, “Maintenance, Testing, and Replacement of Vented Lead-Acid Storage Batteries for Nuclear Power Plants,” February 2007.

11. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

ACTIONS (continued)

Required Action A.1 allows 24 hours to fix the inoperable inverter and return it to service. The 24-hour limit takes into consideration the time required to repair an inverter, the availability of a swing inverter, and the additional risk to which the unit is exposed because of the inverter inoperability. This must be balanced against the risk of an immediate shutdown, along with the potential challenges to safety systems such a shutdown might entail. When the 120 VAC bus is powered from its alternate AC source, it is relying upon interruptible AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the 120 VAC buses is the preferred source for powering instrumentation trip setpoint devices.

B.1 and B.2

If the Required Actions and associated Completion Time are not met ~~or if any two inverters required by LCO 3.8.7.a and LCO 3.8.7.b are inoperable~~, the unit must be brought to a MODE in which overall plant risk is minimized ~~the LCO does not apply~~. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE 4 ~~5~~ within 12 ~~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 plant systems.

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). There are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms in MODE 4 than in MODE 5. For example, in MODE 4 the turbine driven emergency feedwater pump is available to provide RCS cooling via the steam generators utilizing natural circulation. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

C.1 and C.2

If any two inverters required by LCO 3.8.7.a and LCO 3.8.7.b are inoperable, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours 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 plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and 120 VAC buses energized from the inverter. The verification of proper voltage and frequency output ensures that the required power is readily available for the instrumentation connected to the 120 VAC 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. SAR, Chapter 8.

2. SAR, Chapter 14.

3. 10 CFR 50.36.

4. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

ACTIONS (continued)

C.1 (continued)

The second Completion Time for Required Action C.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition C is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 16 hours, since initial failure of the LCO, to restore the DC distribution system. At this time, an AC train could again become inoperable and DC distribution restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition C was entered. The 16-hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

D.1 and D.2

If the inoperable distribution subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which overall plant risk is minimized~~the LCO does not apply~~. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE ~~4~~5 within 12~~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 plant systems.

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). There are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms in MODE 4 than in MODE 5. For example, in MODE 4 the turbine driven emergency feedwater pump are available to provide RCS cooling via the steam generators utilizing natural circulation. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action D.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

E.1

Condition E corresponds to a level of degradation in the electrical distribution system that causes a required safety function to be lost. Therefore, no additional time is justified for continued operation. LCO 3.0.3 must be entered immediately to commence a controlled shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.8.9.1

This Surveillance verifies that the required AC, DC, and 120 VAC bus electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical divisions is maintained. The 7-day Frequency takes into account the redundant capability of the AC, DC, and 120 VAC bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.

REFERENCES

1. SAR, Chapter 14.

2. 10 CFR 50.36.

3. BAW-2441-A, Revision 2, Risk Informed Justification for LCO End-State Changes, September 2006.

Attachment 4 to

1CAN031306

Revised (clean) Technical Specification Pages

3.3 INSTRUMENTATION

3.3.5 Engineered Safeguards Actuation System (ESAS) Instrumentation

LCO 3.3.5 Three ESAS analog instrument channels for each Parameter in Table 3.3.5-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5-1.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Parameters with one analog instrument channel inoperable.	A.1 Place analog instrument channel in trip.	1 hour
B. One or more Parameters with more than one analog instrument channel inoperable. OR Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 ----------NOTE---------- Only required for RCS Pressure - Low setpoint. ---------- Reduce RCS pressure < 1750 psig. AND B.3 ----------NOTES---------- 1. Only required for Reactor Building Pressure High setpoint and High High setpoint. 2. LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	6 hours 36 hours 12 hours

3.3 INSTRUMENTATION

3.3.6 Engineered Safeguards Actuation System (ESAS) Manual Initiation

LCO 3.3.6 Two manual initiation channels of each one of the ESAS Functions below shall be OPERABLE:

a. High Pressure Injection (channels 1 and 2);

b. Low Pressure Injection (channels 3 and 4);

c. Reactor Building (RB) Cooling (channels 5 and 6);

d. RB Spray (channels 7 and 8); and

e. Spray Additive (channels 9 and 10).

APPLICABILITY: MODES 1 and 2,
MODES 3 and 4 when associated engineered safeguards equipment is required to be OPERABLE.

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more ESAS Functions with one channel inoperable.	A.1 Restore channel to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND	6 hours
	B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops – MODE 4

LCO 3.4.6 Two loops consisting of any combination of RCS loops and decay heat removal (DHR) loops shall be OPERABLE and one OPERABLE loop shall be in operation.

----------NOTE----------
All reactor coolant pumps (RCPs) and DHR pumps may be removed from operation for ≤ 1 hour 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 less than or equal to a temperature which is 10°F below saturation temperature.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required loop inoperable.	A.1 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Initiate action to restore a second loop to OPERABLE status.	Immediately

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required reactor building atmosphere radioactivity monitor inoperable.	B.1.1 Analyze grab samples of the reactor building atmosphere. OR B.1.2 ----------NOTE---------- Not required until 12 hours after establishment of steady state operation at or near operating pressure. ---------- Perform SR 3.4.13.1. AND B.2 Restore required reactor building atmosphere radioactivity monitor to OPERABLE status.	Once per 24 hours Once per 24 hours 30 days
----------NOTE---------- Only applicable when the reactor building atmosphere gaseous radiation monitor is the only OPERABLE monitor. ---------- C. Reactor Building sump monitor inoperable.	C.1 Analyze grab samples of the reactor building atmosphere. AND C.2 Restore reactor building sump monitor to OPERABLE status.	Once per 12 hours 7 days
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	6 hours 12 hours
E. Both required monitors inoperable.	E.1 Enter LCO 3.0.3.	Immediately

3.5 EMERGENCY CORE COOLING SYSTEM (ECCS)

3.5.4 Borated Water Storage Tank (BWST)

LCO 3.5.4 The BWST shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. BWST boron concentration not within limits.	A.1 Restore BWST to OPERABLE status.	8 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	6 hours 12 hours
C. BWST water temperature not within limits.	C.1 Restore BWST to OPERABLE status.	8 hours
D. BWST inoperable for reasons other than Condition A or C.	D.1 Restore BWST to OPERABLE status.	1 hour
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.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.4.1	----------NOTE---------- Only required to be performed when ambient air temperature is < 40°F or > 110°F. ---------- Verify BWST borated water temperature is ≥ 40°F and ≤ 110°F.	24 hours
SR 3.5.4.2	Verify BWST borated water level is ≥ 38.4 feet and ≤ 42 feet.	7 days
SR 3.5.4.3	Verify BWST boron concentration is ≥ 2270 ppm and ≤ 2670 ppm.	7 days

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Lock an OPERABLE door closed in the affected air lock. AND 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.	24 hours Once per 31 days
C. One or more reactor building air locks inoperable for reasons other than Condition A or B.	C.1 Initiate action to evaluate overall reactor building leakage rate per LCO 3.6.1. AND C.2 Verify a door is closed in the affected air lock. AND C.3 Restore air lock to OPERABLE status.	Immediately 1 hour 24 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	6 hours 12 hours

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ----------NOTE---------- Only applicable to penetration flow paths with only one reactor building isolation valve and a closed system. ---------- One or more penetration flow paths with one reactor building isolation valve inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND C.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.	72 hours Once per 31 days
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.1	Verify each reactor building purge isolation valve is closed.	31 days
SR 3.6.3.2	----------NOTE---------- Valves and blind flanges in high radiation areas may be verified by use of administrative means. ---------- Verify each reactor building isolation manual valve and blind flange that is located outside the reactor building and not locked, sealed, or otherwise secured, and is required to be closed during accident conditions is closed, except for reactor building isolation valves that are open under administrative controls.	31 days
SR 3.6.3.3	----------NOTE---------- Valves and blind flanges in high radiation areas may be verified by use of administrative means. ---------- Verify each reactor building isolation manual valve and blind flange that is located inside the reactor building and not locked, sealed, or otherwise secured, and required to be closed during accident conditions is closed, except for reactor building isolation valves that are open under administrative controls.	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days
SR 3.6.3.4	Verify the isolation time of each automatic power operated reactor building isolation valve is within limits.	In accordance with the Inservice Testing Program
SR 3.6.3.5	Verify each automatic reactor building isolation valve that is not locked, sealed, or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	18 months

3.7 PLANT SYSTEMS

3.7.7 Service Water System (SWS)

LCO 3.7.7 Two SWS loops shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SWS loop inoperable.	A.1 ----------NOTES---------- 1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources - Operating," for diesel generator made inoperable by SWS. 2. Enter Applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for decay heat removal made inoperable by SWS. ---------- Restore SWS loop to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	6 hours 12 hours

3.7 PLANT SYSTEMS

3.7.9 Control Room Emergency Ventilation System (CREVS)

LCO 3.7.9 Two CREVS trains shall be OPERABLE.

----------NOTES----------
1. The control room envelope (CRE) boundary may be opened intermittently under administrative controls.

2. One CREVS train shall be capable of automatic actuation.

APPLICABILITY: MODES 1, 2, 3, 4,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREVS train inoperable for reasons other than Condition B.	A.1 Restore CREVS train to OPERABLE status.	7 days
B. One or more CREVS trains inoperable due to inoperable CRE boundary in MODES 1, 2, 3, or 4.	B.1 Initiate action to implement mitigating actions. AND B.2 Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits. AND B.3 Restore control room boundary to OPERABLE status.	Immediately 24 hours 90 days

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. AND C.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	6 hours 12 hours
D. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies.	D.1 Place OPERABLE CREVS train in emergency recirculation mode. OR D.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately
E. Two CREVS trains inoperable during movement of irradiated fuel assemblies. OR One or more CREVS trains inoperable due to an inoperable CRE boundary during movement of irradiated fuel assemblies.	E.1 Suspend movement of irradiated fuel assemblies.	Immediately
F. Two CREVS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Operate each CREVS train for ≥ 15 minutes.	31 days
SR 3.7.9.2	Perform required CREVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.9.3	Verify the CREVS automatically isolates the Control Room and switches into a recirculation mode of operation on an actual or simulated actuation signal.	18 months
SR 3.7.9.4	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program.

3.7 PLANT SYSTEMS

3.7.10 Control Room Emergency Air Conditioning System (CREACS)

LCO 3.7.10 Two CREACS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREACS train inoperable.	A.1 Restore CREACS 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. AND B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	6 hours 12 hours
C. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies.	C.1 Place OPERABLE CREACS train in operation. OR C.2 Suspend movement of irradiated fuel assemblies.	Immediately Immediately
D. Two CREACS trains inoperable during movement of irradiated fuel assemblies.	D.1 Suspend movement of irradiated fuel assemblies.	Immediately
E. Two CREACS trains inoperable during MODE 1, 2, 3, or 4.	E.1 Enter LCO 3.0.3.	Immediately

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and Associated Completion Time of Condition A, B, C, D, or E not met.	F.1 Be in MODE 3. AND F.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	12 hours 12 hours
G. Three or more required AC sources inoperable.	G.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
SR 3.8.1.2	----------NOTE---------- All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. ---------- Verify each DG starts from standby conditions and, in ≤ 15 seconds achieves “ready-to-load” conditions.	 31 days

	SURVEILLANCE	FREQUENCY
SR 3.8.1.3	----------NOTES---------- 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This Surveillance shall be conducted on only one DG at a time. 4. This SR shall be preceded by and follow, without shutdown, a successful performance of SR 3.8.1.2. ---------- Verify each DG is synchronized and loaded and operates for $\geq$ 60 minutes at a load $\geq$ 2475 kW and $\leq$ 2750 kW.	31 days
SR 3.8.1.4	Verify each day tank contains $\geq$ 160 gallons of fuel oil.	31 days
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	31 days
SR 3.8.1.6	Verify the fuel oil transfer system operates to transfer fuel oil from storage tanks to the day tank.	31 days
SR 3.8.1.7	----------NOTE---------- This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. ---------- Verify automatic transfer of AC power sources to the selected offsite circuit and manual transfer to the alternate required offsite circuit.	18 months

SURVEILLANCE		FREQUENCY
SR 3.8.1.8	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. achieves “ready-to-load” conditions in ≤ 15 seconds, 2. energizes permanently connected loads, 3. energizes auto-connected shutdown load through automatic load sequencing timers, and 4. supplies connected loads for ≥ 5 minutes.	18 months
SR 3.8.1.9	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. achieves “ready-to-load” conditions in ≤ 15 seconds, 2. energizes permanently connected loads, 3. energizes auto-connected emergency loads through load sequencing timers, and 4. supplies connected loads for ≥ 5 minutes.	18 months

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 Both DC electrical power subsystems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One DC electrical power subsystem inoperable.	A.1 Restore DC electrical power subsystem to OPERABLE status.	8 hours
B. Required Action and Associated Completion Time not met.	B.1 Be in MODE 3. AND	12 hours
	B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage is greater than or equal to the minimum established float voltage.	7 days
SR 3.8.4.2	Verify each battery charger supplies ≥ 300 amps at greater than or equal to the minimum established float voltage for ≥ 8 hours. OR Verify each battery charger can recharge the battery to the fully charged state within 24 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state.	18 months
SR 3.8.4.3	Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test or a modified performance discharge test.	18 months

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	12 hours 12 hours
C. Two or more of the four inverters required by LCO 3.8.7.a and LCO 3.8.7.b inoperable.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage, frequency, and alignment to associated 120 VAC buses RS1, RS2, RS3, and RS4.	7 days

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems - Operating

LCO 3.8.9 Two AC, DC, and 120 VAC electrical power distribution subsystems shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more AC electrical power distribution subsystem(s) inoperable.	A.1 Restore AC electrical power distribution subsystem(s) to OPERABLE status.	8 hours <u>AND</u> 16 hours from discovery of failure to meet LCO
B. One or more 120 VAC electrical power distribution subsystem(s) (RS1, RS2, RS3, RS4) inoperable.	B.1 Restore 120 VAC electrical power distribution subsystem(s) to OPERABLE status.	8 hours <u>AND</u> 16 hours from discovery of failure to meet LCO
C. One or more DC electrical power distribution subsystem(s) inoperable.	C.1 Restore DC electrical power distribution subsystem(s) to OPERABLE status.	8 hours <u>AND</u> 16 hours from discovery of failure to meet LCO
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. <u>AND</u> D.2 ----------NOTE---------- LCO 3.0.4.a is not applicable when entering Mode 4. ---------- Be in MODE 4.	12 hours 12 hours