



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

SEP 15 2004

TVA-WBN-TS-04-09

10 CFR 50.90

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

Gentlemen:

In the Matter of ) Docket Nos. 50-390  
Tennessee Valley Authority )

**WATTS BAR NUCLEAR PLANT (WBN) - UNIT 1 - TECHNICAL SPECIFICATIONS (TS) CHANGE 04-09 - MODE CHANGE LIMITATIONS USING THE CONSOLIDATED LINE ITEM IMPROVEMENT PROCESS (CLIIP)**

Pursuant to 10 CFR 50.90, TVA is submitting a request for an amendment to the technical specifications (TS) for WBN, Unit 1.

The proposed amendment (TS-04-09) would modify TS requirements for mode change limitations in Limiting Condition for Operation (LCO) 3.0.4 and Surveillance Requirement (SR) 3.0.4. The proposed changes are consistent with Nuclear Regulatory Commission (NRC) approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change, TSTF-359 Revision 9. TSTF-359, Revision 9 is the equivalent of TSTF-359, Revision 8, as modified by the notice in the *Federal Register* published on April 4, 2003. That *Federal Register* notice announced the availability of this TS improvement through the consolidated line item improvement process (CLIIP).

ADD1

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In conjunction with adopting the TSTF-359 changes, TVA has proposed some additional improvements for several TS sections consistent with standard TS requirements for Westinghouse plants (NUREG-1431, Revision 3). These changes implement NRC-approved TSTFs 153, R0 (in part) and TSTF-285, R1 for WBN TS Sections which were also affected by TSTF-359. Therefore, these changes are adopted to provide additional consistency and standardization.

Enclosure 1 provides a description of the proposed change (including a table of affected TS with a brief description of the change), the requested confirmation of applicability, and plant-specific verifications. Enclosure 2 provides the existing TS pages marked-up to show the proposed change. Enclosure 3 provides the existing TS Bases pages marked-up to reflect the proposed change.

In conjunction with the proposed change, the *Federal Register* Notice also stated that TS requirements for a Bases Control Program, consistent with the TS Bases Control Program described in Section 5.5 of the applicable vendor's Standard Technical Specifications (STS), shall be incorporated into the licensee's TS, if not already in the TS, and similarly, the STS requirements of SR 3.0.1 and associated Bases shall have been adopted. Since the WBN TS is based on the Improved Technical Specifications (ITS), these requirements are already in the current TS. Consequently, it is not necessary to propose additional changes to the Bases Control Program or to SR 3.0.1 and its associated Bases within this license amendment request for WBN.

In accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and enclosures to the Tennessee State Department of Public Health.

TVA is asking that this TS change be approved by February 14, 2005, in support of the Cycle 6 refueling outage, and that the implementation of the revised TS be made within 60 days of NRC approval. The enclosed changes to the TS Bases will be implemented concurrently with the TS change in accordance with the TS Bases Control Program.

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There are no regulatory commitments associated with this submittal.

If you have any questions about this change, please telephone me at (423) 365-1824.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'P. L. Pace', written in a cursive style.

P. L. Pace

Enclosures:

1. TVA Description and Evaluation of the Proposed Change
2. Proposed Technical Specifications Change (mark-up)
3. Proposed Technical Specifications Bases Changes (mark-up)

cc: See page 4

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Enclosures

cc (Enclosures):

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ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY  
WATTS BAR NUCLEAR PLANT (WBN)  
UNIT 1 - DOCKET NO. 390

PROPOSED LICENSE AMENDMENT REQUEST WBN-TS-04-09  
MODE CHANGE LIMITATIONS USING THE CONSOLIDATED LINE ITEM  
IMPROVEMENT PROCESS (CLIIP)

DESCRIPTION AND EVALUATION OF PROPOSED CHANGE

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1.0 DESCRIPTION

The proposed amendment would modify WBN Technical Specifications (TS) requirements for mode change limitations in Limiting Condition for Operation (LCO) 3.0.4 and Surveillance Requirement (SR) 3.0.4.

The proposed changes are consistent with Nuclear Regulatory Commission (NRC) approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-359 Revision 9. TSTF-359, Revision 9 is the equivalent of TSTF-359, Revision 8, as modified by the notice in the *Federal Register* published on April 4, 2003. That *Federal Register* notice announced the availability of this TS improvement through the consolidated line item improvement process (CLIIP).

A description of the proposed TS/TS Bases changes is provided in Table 1, "Technical Specification and Bases Impacts," at the end of this enclosure indicating the affected portions of the TS and Bases and the impact to each portion. A description of the TS/TS Bases changes where variances are required to adopt TSTF-359 Revision 9, due to differences between WBN TS and the Standard Technical Specifications (STS), is provided in Section 2.2 of this enclosure.

Enclosure 2 provides the existing WBN Unit 1 TS pages marked-up to show the proposed change. Enclosure 3 provides the existing WBN Unit 1 TS Bases pages marked-up to show the proposed change, for information.

## **2.0 ASSESSMENT**

### **2.1 Applicability of Published Safety Evaluation**

TVA has reviewed the safety evaluation published on April 4, 2003 (68 FR 16579) as part of the CLIIP. This review included a review of the NRC staff's evaluation, as well as the supporting information provided to support TSTF-359. TVA has concluded that the justifications presented in the TSTF proposal and the safety evaluation prepared by the NRC staff are applicable to WBN Unit 1, and justify this amendment for the incorporation of the changes to the WBN TSs.

### **2.2 Optional Changes and Variations**

TVA has not proposed any significant variations or deviations from the TS changes described in TSTF-359, Revision 9 or the NRC staff's model safety evaluation published on April 4, 2003.

However, it is noted that due to several differences between WBN TS/TS Bases and the model STS in NUREG-1431 Revision 3, "Standard Technical Specifications - Westinghouse Plants," there are several instances where additional changes from those identified in TSTF mark-up changes are necessary or desired to improve the consistency of the WBN TS. These variations are discussed below and summarized in the attached Table 1 and do not affect the adoption or application of TSTF-359 Revision 9. All other TS Sections are modified without variance as described in Table 1.

As indicated in Table 1 for LCO 3.1.1, 3.1.2, 3.4.8, 3.4.12 (Notes 1 and 4), 3.9.1, 3.9.2, and 3.9.6, a deletion is proposed for certain MODE change restriction notes that were included in the original version (Revision 0) of the WBN TS. These notes were generally based on NUREG-1431, Revision 0 and/or Revision 1 and were included as a result of the evaluation required by a Reviewer's Note in LCO 3.0.4 in Revision 1 of NUREG-1431. As discussed in TSTF-359, "Proposed Change" the Reviewer's Note has been deleted as well as any plant-specific Notes restricting MODE changes added as a result of the evaluation required by the Reviewer's Note. Therefore, these notes are not required.

Because of their plant-specific nature, the notes do not appear in NUREG-1431, and are therefore not applicable in TSTF-359. The resulting changes are consistent with TSTF-359, R9, and NUREG-1431, Revision 3.

**1. LCO 3.4.12 - Cold Overpressure Mitigation System (COMS)**

- The proposed WBN change revises the LCO to be consistent with LCO 3.4.12 [Low Temperature Overpressure Protection (LTOP) System], in TSTF-359 and NUREG-1431, Revision 3, with the exception of the WBN title which remains as "COMS." Because of differences between the WBN TS/TS Bases and the model STS in NUREG-1431 Revision 3, some changes proposed for TSTF-359 for LCO 3.4.12 are not applicable to WBN. The differences are as follows:

- Notes 1 and 4 are deleted based on deletion of the Reviewer's NOTE, as discussed above. NOTE 3 is not required due to proposed changes made to WBN LCO 3.5.2 (ECCS Operating), consistent with TSTF-153, Revision 0 and NUREG-1431, Revision 3. (See LCO 3.5.2 discussion below).
- In accordance with NRC-approved TSTF-285 R1 and NUREG-1431, R3, a new NOTE 1 is added to the LCO and current Note 2 is editorially relocated from the APPLICABILITY section to the LCO section. Accordingly, Bases changes are also provided consistent with TSTF-285 R1, and NUREG-1431. Note that these TSTF-285 changes post-date the TSTF-359 markups. The new NOTE 1 revises and relocates the current NOTE in Required Action B.1, from:

*"NOTE - Two charging pumps may be capable of injecting into the RCS during pump swap operation for less than or equal to 15 minutes."*

to:

*"NOTE 1 - Two charging pumps may be made capable of injecting for less than or equal to 1 hour for pump swap operations."*

As discussed in TSTF-285, Rev 1, the current B.1 Required Action Note is undesirable since it requires entry into the Actions; specifically an action with an "Immediately fix the condition" requirement. The relation between the "15 minutes" allowance in the Note and the "Immediately" could be confusing. Furthermore, 15 minutes is insufficient time to prudently complete the operation of making the charging pump incapable of injection. Closing and racking out valves, or racking out the pump breaker requires appropriate administrative controls to be followed by Operations personnel. With proper diligence, these actions may not be safely accomplished within 15 minutes in all cases. One hour is reasonable considering the small likelihood of an event during this brief period and the other administrative controls available (e.g., operator action to stop any pump that inadvertently starts). Therefore, the exception is reformatted as an LCO Note with a one hour allowance.

Pump swaps during COMS conditions must take into account the restrictions of the COMS analysis as well as the other required functions. In Mode 4, a charging pump is required to be operable to meet the ECCS requirements. The charging pump also is a part of charging and letdown to maintain RCS inventory and chemistry control. Further, securing charging for the purpose of not having more than the allowable pumps operable would also put thermal fatigue cycles on the piping and impact seal injection to the Reactor Coolant Pumps (RCP) which has seal degradation potential. For these reasons it is desirable to have a provision to safely and deliberately swap pumps. In Modes 5 or 6, a charging pump is required for the necessary boration flowpath. This requirement has been relocated from the TS, but remains part of the Licensing Basis. While not as time critical as the ECCS function, it is still required, and depending on plant status, the need for RCP seal injection may still be present. A time estimate for the charging pump swap performed by one Equipment Operator and one Reactor Operator was

performed (as documented in TSTF-285, R1) to confirm the requested time. This was an estimate starting with an open, racked out pump breaker on one pump and ending with an open, racked out, and properly surveilled pump breaker on the other pump. The estimates clearly demonstrated 15 minutes to be inadequate to safely and deliberately complete the evolution. One hour is more appropriate. However, the intent is to minimize the actual time that more than one charging pump is physically capable of injection and this is discussed in the changes proposed to Bases.

Regarding LCO 3.4.12 Note 2, as discussed in TSTF-285, the NOTE is proposed to be editorially relocated from the APPLICABILITY section to the LCO section. Because the Note allows an exception to the LCO, it would be more appropriately located under the LCO.

TVA has reviewed the changes proposed by TSTF-285 and confirmed its applicability to WBN. A supplemental No Significant Hazards Consideration Determination for this change is provided in Section 3.1.1.

2. **LCO 3.5.2 - ECCS - Operating** - The following administrative changes provide compatibility with TSTF-359: NOTE 2 is revised to delete reference to LCO 3.0.4 and is clarified consistent with the proposed deletion of LCO 3.4.12, NOTE 3 (discussed above) and with NUREG-1431, Revision 3, and with TSTF-153, R0 (partial - LCO 3.5.2 only). Both Notes 1 and 2 are moved from the APPLICABILITY to the LCO, consistent with NUREG-1431, Revision 3. Because these changes were already made to NUREG-1431 in earlier travelers, TSTF-359 did not affect LCO 3.5.2. Corresponding Bases changes are also provided.
  
3. **LCO 3.9.6 - Residual Heat Removal (RHR) and Coolant Circulation** - In addition to the NOTE deleted pursuant to the Item 1 (above), an administrative change is provided to delete the LCO NOTE pertaining to the need for only one RHR loop to be OPERABLE prior to initial criticality of WBN Unit 1. That NOTE is no longer applicable (only applied prior to WBN Unit 1 initial criticality).

4. NUREG-1431 LCO 3.6.9 - Hydrogen Mixing System - TSTF-359 provided a change for this LCO. The WBN TS does not include this system therefore, no proposed change is provided.

### 3.0 REGULATORY ANALYSIS

#### 3.1 No Significant Hazards Consideration Determination

TVA has reviewed the proposed no significant hazards consideration determination (NSHCD) published in the *Federal Register* as part of the CLIIP. TVA has concluded that the proposed NSHCD presented in the *Federal Register* notice is applicable to Watts Bar Nuclear Plant (WBN) and is, hereby, incorporated by reference to satisfy the requirements of 10 CFR 50.91(a).

##### 3.1.1 Supplemental No Significant Hazards Consideration Determination for LCO 3.4.12, Notes 1 and 2

In accordance with NRC-approved TSTF-285 R1 and NUREG-1431, R3, Limiting Condition for Operation (LCO) 3.4.12, Cold Overpressure Mitigation System (COMS) is being revised to modify and relocate two notes in the WBN Technical Specifications (TS). The changes are all administrative, except a change which would allow two charging pumps to be made capable of injecting into the Reactor Coolant System (RCS) to support pump swap operations for a period not to exceed one hour instead of the currently allowed 15 minutes.

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

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

Response: No.

The proposed change to the WBN TS is consistent with improvements made to the Standard Technical Specifications for Westinghouse Plants and continues to provide controls for safe operation within the required limits. The probability of occurrence or the

consequences of an accident are not significantly increased as a result of the increased time from 15 minutes to one hour to allow pump swap operations. The one hour time period is reasonable considering the small likelihood of an event during this brief period and the other administrative controls available (e.g., operator action to stop any pump that inadvertently starts) and considering the required vent paths in accordance with the LCO. The proposed change does not affect degradation of accident mitigation systems. The proposed revision continues to maintain the required safety functions. Accordingly, the probability of an accident or the consequences of an accident previously evaluated is not significantly increased.

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 improves the WBN TS consistent with improvements made to the Standard Technical Specifications (STS) for Westinghouse Plants and continues to provide controls for safe operation within the required limits. The subject change improves currently allowed pump swap provisions by realistically addressing time to safely and deliberately secure the operating pump and place the alternate pump in service, and provides additional assurance that seal injection requirements are not compromised. No new or different accident potential is created by the subject change. The change does not adversely impact plant equipment, test methods, or operating practices. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

Response: No.

The proposed change to the WBN TS is consistent with improvements made to the Standard Technical Specifications for Westinghouse Plants and provides improved pump swap provisions which should enhance safe operation within required limits. The change does not adversely impact plant equipment, test methods, or

operating practices. The proposed change does not affect degradation of accident mitigation systems and continues to maintain the required safety functions of COMS to assure that the reactor vessel is adequately protected against exceeding pressure and temperature limits. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

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

### **3.2 Verification and Commitments**

As discussed in the notice of availability published in the *Federal Register* on April 4, 2003, for this TS improvement, plant-specific verifications were performed as follows:

1. TVA has established TS Bases for LCO 3.0.4 and SR 3.0.4, which state that use of the TS MODE change limitation flexibility established by LCO 3.0.4 and SR 3.0.4 is not to be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to operable status before entering an associated mode or other specified condition in the TS Applicability.
2. The modification also includes changes to the Bases for LCO 3.0.4 and SR 3.0.4 that provide details on how to implement the new requirements. The Bases changes provide guidance for changing MODES or other specified conditions in the Applicability when an LCO is not met. The Bases changes describe in detail how:
  - LCO 3.0.4.a allows entry into a MODE or other specified condition in the Applicability with the LCO not met when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;

- LCO 3.0.4.b allows entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; and
- LCO 3.0.4.c allows entry into a MODE or other specified condition in the Applicability with the LCO not met based on a Note in the Specification, which is typically applied to Specifications which describe values and parameters (e.g., Reactor Coolant System Activity), though it may be applied to other Specifications based on plant-specific approval by the NRC.

The Bases also state that any risk impact should be managed through the program in place to implement 10 CFR 50.65(a)(4) and its implementation guidance, NRC Regulatory Guide 1.182, "Assessing and Managing Risks Before Maintenance Activities at Nuclear Power Plants," and that the results of the risk assessment shall be considered in determining the acceptability of entering the MODE or other specified condition in the Applicability, and any corresponding risk management actions. Upon entry into a MODE or other specified condition in the Applicability with the LCO not met, LCO 3.0.1 and LCO 3.0.2 require entry into the applicable Conditions and Required Actions until the Condition is resolved, until the LCO is met, or until the unit is not within the Applicability of the TS. The Bases also state that SR 3.0.4 does not restrict changing MODES or other specified conditions of the Applicability when a surveillance has not been performed within the specified Frequency, provided the requirement to declare the LCO not met has been delayed in accordance with SR 3.0.3.

WBN already has a Bases Control Program consistent with Section 5.5 of the STS and has the equivalent of STS SR 3.0.1 and associated Bases. The revised TS Bases will be implemented concurrently with the TS change in accordance with the TS Bases Control Program as described in TS 5.6.

#### 4.0 ENVIRONMENTAL EVALUATION

TVA has reviewed the environmental evaluation included in the model safety evaluation dated March 28, 2003, as part of the CLIIP. TVA has concluded that the staff's findings presented in that evaluation are applicable to WBN and the evaluation is hereby incorporated by reference for this application.

TABLE 1 - TECHNICAL SPECIFICATION AND BASES IMPACTS

Specification	Page	WBN Title and Change Description	Variation from TSTF-359,R9
LCO 3.0.4	3.0-1 3.0-2 B 3.0-5 B 3.0-6	<b>Mode Restraints</b> - Delete current LCO 3.0.4 requirements and replace with new TSTF-359 requirements. LCO 3.0.4 is revised to allow entry into a MODE or other specified condition in the Applicability while relying on the associated ACTIONS, provided that there is a risk assessment performed which justifies the use of LCO 3.0.4, the ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time, or an NRC approved allowance is provided in the Specification to be entered. The associated Bases are likewise being modified in accordance with TSTF-359 Revision 9.	No variation.
SR 3.0.4	3.0-5 B 3.0-13a B 3.0-14 B 3.0-15	<b>SR 3.0.4</b> - Delete current SR 3.0.4 requirements and replace with new TSTF-359 requirements. SR 3.0.4 is revised to reflect the concepts of the change to LCO 3.0.4. The applicability of LCO 3.0.4 and SR 3.0.4 is expanded to include transition into all MODES or other specified conditions in the Applicability, except when required to comply with ACTIONS or that are part of a shutdown of the unit. The associated Bases are likewise being modified in accordance with TSTF-359 Revision 9.	No variation.

Specification	Page	WBN Title and Change Description	Variation from TSTF-359,R9
LCO 3.1.1	3.1-1 B 3.1-4	<b>Shut Down Margin (SDM, Modes 2-4) -</b> Delete Mode change restriction NOTE under APPLICABILITY originally added as a result of evaluation required by "Reviewers Note" in NUREG-1431, Revision 1. The Reviewers Note has been deleted in TSTF-359, therefore, this NOTE is not required. The resulting change to LCO 3.1.1 is consistent with NUREG-1431, Revision 3.	Not included in TSTF-359. TSTF-359 specifies removal of mode change restriction notes but does not address them individually since the notes are plant-specific.
LCO 3.1.2	3.1-2 B 3.1-9	<b>Shut Down Margin (SDM, Mode 5) -</b> Delete Mode change restriction NOTE under APPLICABILITY originally added as a result of evaluation required by "Reviewers Note" in NUREG-1431, Rev 1. The Reviewers Note has been deleted in TSTF-359, therefore, this NOTE is not required. The resulting change to LCO 3.1.2 is consistent with NUREG-1431, Revision 3.	Not included in TSTF-359. TSTF-359 specifies removal of mode change restriction notes but does not address them individually since the notes are plant-specific.
LCO 3.3.3	3.3-41 B 3.3-135	<b>Post Accident Monitoring (PAM) -</b> Delete current ACTIONS NOTE (1) which states LCO 3.0.4 is not applicable, consistent with TSTF-359.	<b>No variation</b>
LCO 3.3.4	3.3-46 B 3.3-143	<b>Remote Shutdown System -</b> Delete current ACTIONS NOTE (1) which states LCO 3.0.4 is not applicable, consistent with TSTF-359.	<b>No variation</b>

Specification	Page	WBN Title and Change Description	Variation from TSTF-359,R9
LCO 3.4.8	3.4-16 B 3.4-39	<b>RCS Loops-Mode 5, Loops Not Filled -</b> Delete Mode change restriction NOTE under APPLICABILITY originally added as a result of evaluation required by "Reviewers Note" in NUREG-1431, Revision 1. The Reviewers Note has been deleted in TSTF-359, therefore, this NOTE is not required. The resulting change to LCO 3.4.8 is consistent with NUREG-1431, Revision 3.	Not included in TSTF-359. TSTF-359 specifies removal of mode change restriction notes but does not address them individually since the notes are plant-specific.
LCO 3.4.11	3.4-22 B 3.4-53	<b>Pressurizer PORVs -</b> Delete current ACTIONS NOTE (2) which states LCO 3.0.4 is not applicable, consistent with TSTF-359.	<b>No variation</b>
LCO 3.4.12	3.4-25 3.4-26 B 3.4-65 B 3.4-67	<b>Cold Overpressure Mitigation System (COMS) -</b> Revise to be consistent with LCO 3.4.12 [Low Temperature Overpressure Protection (LTOP)] System, in TSTF-359 and NUREG-1431, Revision 3. <b>(1)</b> Delete current Notes 1, 3, and 4 under APPLICABILITY. Note 1, which states "While this LCO is not met, entry into the Applicability of the LCO is not permitted, except as allowed by Notes 2, 3, and 4 below" is replaced by the new ACTIONS NOTE (Refer to Item 3 below). NOTES 1 and 4 were originally added as a result of the evaluation	<b>Items (1 &amp; 2) -</b> Not included in TSTF-359. TSTF-359 specifies removal of mode change restriction notes but does not address them individually since the notes are plant-specific. Variation necessary due to non-standard wording of current WBN LCO 3.4.12. Refer to Section 2.2. <b>Item (3) - No variation</b>

Specification	Page	WBN Title and Change Description	Variation from TSTF-359,R9
LCO 3.4.12 (continued)	3.4-25 3.4-26 B 3.4-65 B 3.4-67	<p>required by the "Reviewers Note" in NUREG-1431, Rev 1. The Reviewers Note has been deleted in TSTF-359, therefore, these notes are not required. NOTE 3 is not required due to proposed changes made to WBN LCO 3.5.2 (ECCS Operating), consistent with TSTF-153, Revision 0 and NUREG-1431, Revision 3.</p> <p>(2) In accordance with NRC approved TSTF-285 R1, and NUREG-1431, new NOTE 1 is added to the LCO and current Note 2 is editorially relocated from the APPLICABILITY section to the LCO section. Accordingly, Bases changes are also provided consistent with TSTF-285 R1, and NUREG-1431.</p> <p>(3) Insert a new ACTIONS NOTE which states that LCO.3.0.4.b is not applicable when entering MODE 4, consistent with TSTF-359.</p>	
LCO 3.4.15	3.4-36 3.4-37 B 3.4-90 B 3.4-91	<p><b>RCS Leakage Detection Instrumentation -</b> Delete notes under REQUIRED ACTIONS for Conditions A and B which state LCO 3.0.4 is not applicable, consistent with TSTF-359.</p>	<p><b>Minor variation -</b> Change is editorially different since the deleted 3.0.4 Note for the TSTF had been previously relocated from the individual REQUIRED ACTIONS to the ACTIONS in NUREG-1431 Revisions 2.</p>

Specification	Page	WBN Title and Change Description	Variation from TSTF-359,R9
LCO 3.4.16	3.4-39 B 3.4-96	<b>RCS Specific Activity</b> - The current REQUIRED ACTION NOTE which states LCO 3.0.4 is not applicable, is replaced with a new NOTE stating that LCO 3.0.4.c is applicable, consistent with TSTF-359.	No variation
LCO 3.5.2	3.5-4 B 3.5-14 B 3.5-15	<b>ECCS - Operating</b> - NOTE 2 is revised to delete reference to LCO 3.0.4 and is clarified consistent with the proposed deletion of LCO 3.4.12, Note 3 (discussed above) and with NUREG-1431, Revision 3. Both Notes 1 and 2 are moved from the APPLICABILITY to the LCO, consistent with NUREG-1431, Rev 3.	TSTF-359 did not affect LCO 3.5.2. These changes were already made to NUREG-1431 in earlier travelers. Change necessary due to non-standard wording of current WBN LCO 3.5.2. Refer to Section 2.2.
LCO 3.5.3	3.5.7 B 3.5-21	<b>ECCS - Shutdown</b> - A new ACTIONS NOTE is added which states that LCO 3.0.4.b is not applicable, consistent with TSTF-359.	No variation
LCO 3.6.7	3.6-20 B 3.6-46	<b>Hydrogen Recombiners</b> - Deletes current REQUIRED ACTION A.1 NOTE which states LCO 3.0.4 is not applicable, consistent with TSTF-359.	No variation, except the TSTF section affected is LCO 3.6.8.
LCO 3.7.4	3.7-9 B 3.7-22	<b>Atmospheric Dump Valves (ADV)s</b> - Deletes current REQUIRED ACTION A.1 NOTE which states LCO 3.0.4 is not applicable, consistent with TSTF-359.	No variation

Specification	Page	WBN Title and Change Description	Variation from TSTF-359,R9
LCO 3.7.5	3.7-11 B 3.7-28	<b>Auxiliary Feedwater (AFW) System</b> - A new ACTIONS NOTE is added which states that LCO 3.0.4.b is not applicable when entering Mode 1, consistent with TSTF-359.	No variation
LCO 3.8.1	3.8-1 B 3.8-5	<b>AC Sources - Operating</b> - A new ACTIONS NOTE is added which states that LCO 3.0.4.b is not applicable, consistent with TSTF-359.	No variation
LCO 3.9.1	3.9-1 B 3.9-3	<b>Boron Concentration</b> - Delete Mode change restriction NOTE under APPLICABILITY originally added as a result of evaluation required by "Reviewers Note" in NUREG-1431, Revision 1. The Reviewers Note has been deleted in TSTF-359, therefore, this NOTE is not required. The resulting change to LCO 3.9.1 is consistent with NUREG-1431, Revision 3.	Not included in TSTF-359. TSTF-359 specifies removal of mode change restriction notes but does not address them individually since the notes are plant-specific.
LCO 3.9.2	3.9-2 B 3.9-6	<b>Unborated Water Source Isolation Valves</b> - Delete Mode change restriction NOTE under APPLICABILITY originally added as a result of evaluation required by "Reviewers Note" in NUREG-1431, Revision 1. The Reviewers Note has been deleted in TSTF-359, therefore, this NOTE is not required. The resulting change to LCO 3.9.2 is consistent with NUREG-1431, Revision 3.	Not included in TSTF-359. TSTF-359 specifies removal of mode change restriction notes but does not address them individually since the notes are plant-specific.

Specification	Page	WBN Title and Change Description	Variation from TSTF-359,R9
<p>LCO 3.9.6</p>	<p>3.9-10 B 3.9-22 B 3.9-23</p>	<p><b>Residual Heat Removal (RHR) and Coolant Circulation</b> - (1) Delete Mode change restriction NOTE under APPLICABILITY originally added as a result of evaluation required by "Reviewers Note" in NUREG-1431, Revision 1. The Reviewers Note has been deleted in TSTF-359, therefore, this NOTE is not required. The resulting change to LCO 3.9.6 is consistent with NUREG-1431, Revision 3. (2) Administrative change to delete LCO NOTE which is no longer applicable (only applied prior to WBN initial criticality).</p>	<p>(1) Not included in TSTF-359. TSTF-359 specifies removal of mode change restriction notes but does not address them individually since the notes are plant-specific.</p> <p>(2) Administrative change for WBN not applicable to TSTF-359.</p>

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY  
WATTS BAR NUCLEAR PLANT (WBN)  
UNIT 1 - DOCKET NO. 390

PROPOSED LICENSE AMENDMENT REQUEST WBN-TS-04-09

MODE CHANGE LIMITATIONS USING THE CONSOLIDATED LINE ITEM  
IMPROVEMENT PROCESS (CLIIP)

PROPOSED TECHNICAL SPECIFICATIONS CHANGES (MARK-UP)

---

I. Affected Page List:

3.0-1	3.4-37
3.0-2	3.4-39
3.0-5	3.5-4
3.1-1	3.5-7
3.1-2	3.6-20
3.3-41	3.7-9
3.3-46	3.7-11
3.4-16	3.8-1
3.4-22	3.9-1
3.4-25	3.9-2
3.4-26	3.9-10
3.4-36	

Note:

For the attached annotated pages, wording changes or additions are shown as "inserts." Strikethrough text or other clear markings are used for deleted text.

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

---

LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2.

---

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated.

---

LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

- a. MODE 3 within 7 hours;
- b. MODE 4 within 13 hours; and
- c. MODE 5 within 37 hours.

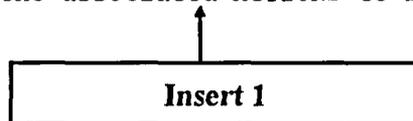
Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.

---

LCO 3.0.4 ~~When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued~~



(continued)

---

3.0 LCO APPLICABILITY

---

LCO 3.0.4  
(continued)

Insert 1

~~operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent 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.~~

~~Exceptions to this Specification are stated in the individual Specifications. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time.~~

~~LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.~~

---

LCO 3.0.5

Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

---

LCO 3.0.6

When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, additional evaluations and limitations may be required in accordance with Specification 5.7.2.18, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

(continued)

**INSERT 1 (LCO 3.0.4)**

When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made:

- a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time;
- b. After performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate; exceptions to this Specification are stated in the individual Specifications, or
- c. When an allowance is stated in the individual value, parameter, or other Specification.

This Specification shall not prevent 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.

3.0 SR APPLICABILITY

---

SR 3.0.3 (continued) When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

---

SR 3.0.4 ~~Entry into a MODE or other specified condition in the Applicability of an LCO shall not be made unless the LCO's Surveillances have been met within their specified Frequency. This provision shall not prevent entry into 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.~~

Insert 2

~~SR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.~~

---

**INSERT 2 (SR 3.0.4)**

Entry into a MODE or other specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency, except as provided by SR 3.0.3. When an LCO is not met due to Surveillances not having been met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with LCO 3.0.4.

This provision shall not prevent entry into 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.

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM) —  $T_{avg} > 200^{\circ}\text{F}$

LCO 3.1.1 SDM shall be  $\geq 1.6\% \Delta k/k$ .

APPLICABILITY: MODE 2 with  $k_{eff} < 1.0$ ,  
MODES 3 and 4.

Delete Note

NOTE  
While this LCO is not met, entry into MODE 4 from MODE 3 is not permitted.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limit.	A.1 Initiate boration to restore SDM to within limit.	15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.1.1 Verify SDM is $\geq 1.6\% \Delta k/k$ .	24 hours

SDM-T<sub>avg</sub> ≤ 200°F  
3.1.2

3.1 REACTIVITY CONTROL SYSTEMS

3.1.2 SHUTDOWN MARGIN (SDM)-T<sub>avg</sub> ≤ 200°F

LCO 3.1.2 The SDM shall be ≥ 1.0% Δk/k.

Delete Note

APPLICABILITY: MODE 5.

-----NOTE-----  
While this LCO is not met, entry into MODE 5 from MODE 4 is not permitted.  
-----

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limit.	A.1 Initiate boration to restore SDM to within limit.	15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.2.1 Verify SDM is ≥ 1.0% Δk/k.	24 hours

3.3 INSTRUMENTATION

3.3.3 Post Accident Monitoring (PAM) Instrumentation

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

APPLICABILITY: According to Table 3.3.3-1.

ACTIONS

- NOTES-----
- ~~1- LCO 3.0.4 is not applicable.~~
  - 2- Separate Condition entry is allowed for each Function.
- 

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Not applicable to Functions 3, 4, 15, and 17. -----</p> <p>One or more Functions with one required channel inoperable.</p>	<p>A.1 Restore required channel to OPERABLE status.</p>	<p>30 days</p>
<p>B. Required Action and associated Completion Time of Condition A not met.</p>	<p>B.1 Initiate action in accordance with Specification 5.9.8.</p>	<p>Immediately</p>

(continued)

3.3 INSTRUMENTATION

3.3.4 Remote Shutdown System

LCO 3.3.4 The Remote Shutdown System Functions in Table 3.3.4-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTES-----

~~1. LCO 3.0.4 is not applicable.~~

~~2. Separate Condition entry is allowed for each Function.~~

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Functions inoperable.	A.1 Restore required Function to OPERABLE status.	30 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 4.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops - MODE 5, Loops Not Filled

LCO 3.4.8 Two residual heat removal (RHR) loops shall be OPERABLE and one RHR loop shall be in operation.

- NOTES-----
1. All RHR pumps may be de-energized for  $\leq 15$  minutes when switching from one loop to another provided:
    - a. The core outlet temperature is maintained  $> 10^{\circ}\text{F}$  below saturation temperature.
    - b. No operations are permitted that would cause a reduction of the RCS boron concentration; and
    - c. No draining operations to further reduce the RCS water volume are permitted.
  2. One RHR loop may be inoperable for  $\leq 2$  hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.
- 

Delete Note

APPLICABILITY: MODE 5 with RCS loops not filled.

-----NOTE-----  
While this LCO is not met, entry into MODE 5, Loops Not Filled is not permitted.  
-----

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

LCO 3.4.11 Each PORV and associated block valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTES-----

~~1- Separate Condition entry is allowed for each PORV.~~

~~2- LCO 3.0.4 is not applicable.~~

-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more PORVs inoperable and capable of being manually cycled.	A.1 Close and maintain power to associated block valve.	1 hour
B. One PORV inoperable and not capable of being manually cycled.	B.1 Close associated block valve.	1 hour
	<u>AND</u>	
	B.2 Remove power from associated block valve.	1 hour
	<u>AND</u>	
	B.3 Restore PORV to OPERABLE status.	72 hours

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Cold Overpressure Mitigation System (COMS)

LCO 3.4.12 A COMS System shall be OPERABLE with a maximum of one charging pump and no safety injection pump capable of injecting into the RCS and the accumulators isolated and either a or b below.

- a. Two RCS relief valves, as follows:
  - 1. Two power operated relief valves (PORVs) with lift settings within the limits specified in the PTLR, or
  - 2. One PORV with a lift setting within the limits specified in the PTLR and the RHR suction relief valve with a setpoint  $\geq 436.5$  psig and  $\leq 463.5$  psig.
- b. The RCS depressurized and an RCS vent capable of relieving  $> 475$  gpm water flow.

Insert 3A

APPLICABILITY: MODES 4 and 5,  
MODE 6 when the reactor vessel head is on.

- NOTES-----
- 1. While this LCO is not met, entry into the Applicability of the LCO is not permitted, except as allowed by Notes 2, 3, and 4 below.
  - 2. Accumulator isolation is only required when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR.
  - 3. For the purposes of making the required safety injection pumps and charging pumps inoperable, the following time is permitted. Up to 4 hours after entering MODE 4 from MODE 3, or prior to decreasing temperature on any RCS loop to below 325°F, whichever occurs first.
  - 4. For the purposes of making the RHR suction relief valve operable, up to 4 hours is permitted after entering Mode 4 from Mode 3.
- 

Delete Notes

Insert 3B

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more safety injection pumps capable of injecting into the RCS.</p>	<p>A.1 Initiate action to verify no safety injection pumps are capable of injecting into the RCS.</p>	<p>Immediately</p>
<p>B. Two or more charging pumps capable of injecting into the RCS.</p>	<p>B.1</p> <div data-bbox="723 576 1087 789" style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>-----NOTE----- Two charging pumps may be capable of injecting into the RCS during pump swap operation for ≤ 15 minutes. -----</p> </div> <p>Initiate action to verify a maximum of one charging pump is capable of injecting into the RCS.</p>	<div data-bbox="1153 608 1488 687" style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Delete Note</p> </div> <p>Immediately</p>
<p>C. An accumulator not isolated when the accumulator pressure is greater than or equal to the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.</p>	<p>C.1 Isolate affected accumulator.</p>	<p>1 hour</p>

(continued)

**INSERT 3A (LCO 3.4.12, COMS)**

-----NOTES-----

1. Two charging pumps may be made capable of injecting for less than or equal to one hour for pump swap operations.
2. Accumulator may be unisolated when accumulator pressure is less than the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR.

-----

**INSERT 3B (LCO 3.4.12, COMS)**

-----NOTE-----

LCO 3.0.4.b is not applicable when entering MODE 4.

-----

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

LCO 3.4.15 The following RCS leakage detection instrumentation shall be OPERABLE:

- a. One containment pocket sump level monitor; and
- b. One lower containment atmosphere radioactivity monitor (gaseous and particulate).

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. Required containment pocket sump level monitor inoperable.</p>	<div style="border: 1px dashed black; padding: 2px; margin-bottom: 5px;"> <p>-----NOTE----- LCO 3.0.4 is not applicable.</p> </div> <p>A.1 Perform SR 3.4.13.1.</p> <p><u>AND</u></p> <p>A.2 Restore required containment pocket sump level monitor to OPERABLE status.</p>	<div style="border: 1px solid black; padding: 5px; display: inline-block; margin-bottom: 5px;">Delete Note</div> <p>Once per 24 hours</p> <p>30 days</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. Required containment atmosphere radioactivity monitor inoperable.</p>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 10px;"> <p>-----NOTE----- LCO 3.0.4 is not applicable.</p> </div> <p>B.1.1 Analyze grab samples of the containment atmosphere.</p> <p style="text-align: center;"><u>OR</u></p> <p>B.1.2 Perform SR 3.4.13.1.</p> <p style="text-align: center;"><u>AND</u></p> <p>B.2 Restore required containment atmosphere radioactivity monitor to OPERABLE status.</p>	<div style="border: 1px solid black; padding: 5px; display: inline-block; margin-bottom: 10px;">Delete Note</div> <p>Once per 24 hours</p> <p>Once per 24 hours</p> <p>30 days</p>
<p>C. Required Action and associated Completion Time not met.</p>	<p>C.1 Be in MODE 3.</p> <p style="text-align: center;"><u>AND</u></p> <p>C.2 Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>
<p>D. All required monitors inoperable.</p>	<p>D.1 Enter LCO 3.0.3.</p>	<p>Immediately</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Specific Activity

LCO 3.4.16 The specific activity of the reactor coolant shall be within limits.

APPLICABILITY: MODES 1 and 2,  
MODE 3 with RCS average temperature ( $T_{avg}$ )  $\geq$  500°F.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 > 0.265 $\mu$ Ci/gm.	-----NOTE----- <del>LCO 3.0.4 is not applicable.</del>	<div style="border: 1px solid black; display: inline-block; padding: 2px;">Insert 4</div>
	A.1 Verify DOSE EQUIVALENT I-131 $\leq$ 21 $\mu$ Ci/gm  <u>AND</u> A.2 Restore DOSE EQUIVALENT I-131 to within limit.	
B. Gross specific activity of the reactor coolant not within limit.	B.1 Perform SR 3.4.16.2.	4 hours
	<u>AND</u> B.2 Be in MODE 3 with $T_{avg}$ < 500°F.	6 hours

(continued)

**INSERT 4 (LCO 3.4.16, RCS SPECIFIC ACTIVITY)**

LCO 3.0.4.c is applicable

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS-Operating

LCO 3.5.2

Two ECCS trains shall be OPERABLE.

**Insert 16**

APPLICABILITY: MODES 1, 2, and 3.

**Delete Notes**

- NOTES-----
1. In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.
  2. The provisions of Specifications LCO 3.0.4 and SR 3.0.4 are not applicable for entry into MODE 3 for the safety injection pumps and charging pumps declared inoperable pursuant to Specification 3.4.12 for up to four hours or until the temperature of all the RCS cold legs exceeds 375°F, whichever occurs first.
- 

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more trains inoperable.</p> <p><u>AND</u></p> <p>At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.</p>	<p>A.1 Restore train(s) to OPERABLE status.</p>	72 hours
<p>B. Required Action and associated Completion Time not met.</p>	<p>B.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>B.2 Be in MODE 4.</p>	<p>6 hours</p> <p>12 hours</p>

**INSERT 16 (LCO 3.5.2, ECCS - OPERATING)**

-----NOTES-----

1. In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.
  2. In MODE 3, the safety injection pumps and charging pumps may be made incapable of injecting to support transition into or from the Applicability of the LCO 3.4.12, Cold Overpressure Mitigation System (COMS) for up to four hours or until the temperature of all the RCS cold legs exceeds 375°F, whichever occurs first.
-

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.3 ECCS - Shutdown

LCO 3.5.3 One ECCS train shall be OPERABLE.

APPLICABILITY: MODE 4.

ACTIONS ← Insert 5

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. Required ECCS residual heat removal (RHR) subsystem inoperable.</p>	<p>-----NOTE-----                      The required ECCS residual heat removal (RHR) subsystem may be inoperable for up to 1 hour for surveillance testing of valves provided that alternate heat removal methods are available via the steam generators to maintain the Reactor Coolant System <math>T_{avg}</math> less than 350°F and provided that the required subsystem is capable of being manually realigned to the ECCS mode of operation from the main control room.                      -----</p> <p>A.1 Initiate action to restore required ECCS RHR subsystem to OPERABLE status.</p>	<p>Immediately</p>
<p>B. Required ECCS centrifugal charging subsystem inoperable.</p>	<p>B.1 Restore required ECCS centrifugal charging subsystem to OPERABLE status.</p>	<p>1 hour</p>

(continued)

**INSERT 5 (LCO 3.5.3, ECCS SHUTDOWN)**

-----NOTE-----

LCO 3.0.4.b is not applicable to ECCS high head (centrifugal charging) subsystem.

-----

3.6 CONTAINMENT SYSTEMS

3.6.7 Hydrogen Recombiners

LCO 3.6.7 Two hydrogen recombiners shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One hydrogen recombinder inoperable.	A.1 <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 5px;">                         -----NOTE-----                          LCO 3.0.4 is not applicable.                          -----                     </div>  Restore hydrogen recombinder to OPERABLE status.	<div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 5px;">Delete Note</div> ←  30 days
B. Two hydrogen recombiners inoperable.	B.1 Verify by administrative means that the hydrogen control function is maintained.  <u>AND</u> B.2 Restore one hydrogen recombinder to OPERABLE status.	1 hour  <u>AND</u> Once per 12 hours thereafter  7 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours

3.7 PLANT SYSTEMS

3.7.4 Atmospheric Dump Valves (ADV)

LCO 3.7.4 Four ADV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,  
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required ADV line inoperable.	A.1 <div style="border: 1px solid black; padding: 5px; display: inline-block;">-----NOTE----- LCO 3.0.4 is not applicable.</div>  Restore required ADV line to OPERABLE status.	<div style="border: 1px solid black; padding: 5px; display: inline-block;">Delete Note</div>  7 days
B. One train (two ADV lines) inoperable due to one train of ACAS inoperable.	B.1 Restore ADV lines to OPERABLE status.	72 hours
C. Two or more required ADV lines inoperable for reasons other than Condition B.	C.1 Restore all but one ADV line to OPERABLE status.	24 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u> D.2 Be in MODE 4 without reliance upon steam generator for heat removal.	18 hours

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 Three AFW trains shall be OPERABLE.

-----NOTE-----  
Only one AFW train, which includes a motor driven pump,  
is required to be OPERABLE in MODE 4.  
-----

APPLICABILITY: MODES 1, 2, and 3,  
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS 

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One steam supply to turbine driven AFW pump inoperable.	A.1 Restore steam supply to OPERABLE status.	7 days <u>AND</u> 10 days from discovery of failure to meet the LCO
B. One AFW train inoperable in MODE 1, 2 or 3 for reasons other than Condition A.	B.1 Restore AFW train to OPERABLE status.	72 hours <u>AND</u> 10 days from discovery of failure to meet the LCO

(continued)

**INSERT 6 (LCO 3.7.5, AFW SYSTEM)**

-----NOTE-----  
LCO 3.0.4.b is not applicable when entering MODE 1.  
-----

3.8 ELECTRICAL POWER SYSTEMS

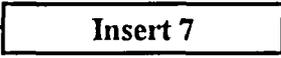
3.8.1 AC Sources-Operating

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

- a. Two qualified circuits between the offsite transmission network and the onsite Class 1E AC Electrical Power Distribution System; and
- b. Four diesel generators (DGs) capable of supplying the onsite Class 1E AC Electrical Power Distribution System.

-----NOTE-----  
The C-S DG may be substituted for any of the required DGs.  
-----

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

ACTIONS 

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit.	1 hour
	<u>AND</u>	<u>AND</u>
	A.2 Declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable.	Once per 8 hours thereafter
	<u>AND</u>	24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s)
		(continued)

**INSERT 7 (LCO 3.8.1, AC SOURCES - OPERATING)**

-----NOTE-----

LCO 3.0.4.b is not applicable to DGs.

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3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

LCO 3.9.1 Boron concentrations of the Reactor Coolant System, the refueling canal, and the refueling cavity shall be maintained within the limit specified in the COLR.

Delete Note

APPLICABILITY: MODE 6.

~~NOTE~~  
 With the RCS boron concentration specified in the COLR for MODE 6 not met, entry into MODE 6 is not permitted.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Boron concentration not within limit.	A.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2 Suspend positive reactivity additions.	Immediately
	<u>AND</u>	
	A.3 Initiate action to restore boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.1.1 Verify boron concentration is within the limit specified in COLR.	72 hours



3.9 REFUELING OPERATIONS

3.9.6 Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level

LCO 3.9.6 Two RHR loops shall be OPERABLE, and one RHR loop shall be in operation.

Delete Notes

-----NOTE-----  
Prior to initial criticality, only one RHR loop needs to be OPERABLE and in operation and the required RHR loop may be removed from operation for ≤ 1 hour per 8-hour period provided no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration.  
-----

APPLICABILITY:

MODE 6 with the water level < 23 ft above the top of reactor vessel flange.

-----NOTE-----  
While this LCO is not met, entry into MODE 6 with water level < 23 ft above the top of the reactor vessel flange is not permitted.  
-----

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Less than the required number of RHR loops OPERABLE.	A.1 Initiate action to restore required RHR loops to OPERABLE status.	Immediately
	<u>OR</u> A.2 Initiate action to establish ≥ 23 ft of water above the top of reactor vessel flange.	Immediately

(continued)

ENCLOSURE 3

TENNESSEE VALLEY AUTHORITY  
WATTS BAR NUCLEAR PLANT (WBN)  
UNIT 1 - DOCKET NO. 390

PROPOSED LICENSE AMENDMENT REQUEST WBN-TS-04-09

MODE CHANGE LIMITATIONS USING THE CONSOLIDATED LINE ITEM  
IMPROVEMENT PROCESS (CLIIP)

PROPOSED TECHNICAL SPECIFICATIONS BASES CHANGES (MARK-UP)

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I. Affected Page List:

B 3.0-5	B 3.4-91
B 3.0-6	B 3.4-96
B 3.0-13a	B 3.5-14
B 3.0-14	B 3.5-15
B 3.0-15	B 3.5-21
B 3.1-4	B 3.6-46
B 3.1-9	B 3.7-22
B 3.3-135	B 3.7-28
B 3.3-143	B 3.8-5
B 3.4-39	B 3.9-3
B 3.4-53	B 3.9-6
B 3.4-65	B 3.9-22
B 3.4-67	B 3.9-23
B 3.4-90	

Note:

For the attached annotated pages, wording changes or additions are shown as "inserts." Strikethrough text or other clear markings are used for deleted text.

Bases

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LCO 3.0.3  
(continued)

Exceptions to LCO 3.0.3 are provided in instances where requiring a unit shutdown, in accordance with LCO 3.0.3, would not provide appropriate remedial measures for the associated condition of the unit. An example of this is in LCO 3.7.13, "Fuel Storage Pool Water Level." LCO 3.7.13 has an Applicability of "During movement of irradiated fuel assemblies in the fuel storage pool." Therefore, this LCO can be applicable in any or all MODES. If the LCO and the Required Actions of LCO 3.7.13 are not met while in MODE 1, 2, or 3, there is no safety benefit to be gained by placing the unit in a shutdown condition. The Required Action of LCO 3.7.13 of "Suspend movement of irradiated fuel assemblies in the fuel storage pool" is the appropriate Required Action to complete in lieu of the actions of LCO 3.0.3. These exceptions are addressed in the individual Specifications.

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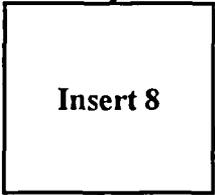
LCO 3.0.4

~~LCO 3.0.4 establishes limitations on changes in MODES or other specified conditions in the Applicability when an LCO is not met. It precludes placing the unit in a MODE or other specified condition stated in that Applicability (e.g., Applicability desired to be entered) when the following exist:~~

- a. ~~Unit conditions are such that the requirements of the LCO would not be met in the Applicability desired to be entered, and~~
- b. ~~Continued noncompliance with the LCO requirements, if the Applicability were entered, would result in the unit being required to exit the Applicability desired to be entered to comply with the Required Actions.~~

~~Compliance with Required Actions that permit continued operation of the unit for an unlimited period of time in a MODE or other specified condition provides an acceptable level of safety for continued operation. This is without regard to the status of the unit before or after the MODE change. Therefore, in such cases, entry into a MODE or other specified condition in the Applicability may be made in accordance with the provisions of the Required Actions. The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good~~

Insert 8



(continued)

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Bases

LCO 3.0.4  
(continued)

~~practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.~~

Insert 8

~~The provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.~~

~~Exceptions to LCO 3.0.4 are stated in the individual Specifications. Exceptions may apply to all the ACTIONS or to a specific Required Action of a Specification.~~

~~LCO 3.0.4 is only applicable when entering MODE 4 from MODE 5, MODE 3 from MODE 4, MODE 2 from MODE 3, or MODE 1 from MODE 2. Furthermore, LCO 3.0.4 is applicable when entering any other specified condition in the Applicability only while operating in MODE 1, 2, 3, or 4. The requirements of LCO 3.0.4 do not apply in MODES 5 and 6, or in other specified conditions of the Applicability (unless in MODE 1, 2, 3, or 4) because the ACTIONS of individual Specifications sufficiently define the remedial measures to be taken. In some cases (e.g., LCOs 3.1.1, 3.1.2, 3.4.8, 3.4.12, 3.9.1, 3.9.2, and 3.9.6) the LCO ACTIONS do not define adequate remedial measures. Therefore, these LCOs contain a Note that prevents entry into the Applicability while the LCO is not met.~~

~~Surveillances do not have to be performed on the associated inoperable equipment (or on variables outside the specified limits), as permitted by ER 3.0.1. Therefore, changing MODES or other specified conditions while in an ACTIONS Condition, in compliance with LCO 3.0.4 or where an exception to LCO 3.0.4 is stated, is not a violation of ER 3.0.1 or ER 3.0.4 for those Surveillances that do not have to be performed due to the associated inoperable equipment. However, ERs must be met to ensure OPERABILITY prior to declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected LCO.~~

(continued)

## **INSERT 8 (LCO 3.0.4 BASES)**

LCO 3.0.4 establishes limitations on changes in MODES or other specified conditions in the Applicability when an LCO is not met. It allows placing the unit in a MODE or other specified condition stated in that Applicability (e.g., the Applicability desired to be entered) when unit conditions are such that the requirements of the LCO would not be met, in accordance with LCO 3.0.4.a, LCO 3.0.4.b, or LCO 3.0.4.c.

LCO 3.0.4.a allows entry into a MODE or other specified condition in the Applicability with the LCO not met when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. Compliance with Required Actions that permit continued operation of the unit for an unlimited period of time in a MODE or other specified condition provides an acceptable level of safety for continued operation. This is without regard to the status of the unit before or after the MODE change. Therefore, in such cases, entry into a MODE or other specified condition in the Applicability may be made in accordance with the provisions of the Required Actions.

LCO 3.0.4.b allows entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate.

The risk assessment may use quantitative, qualitative, or blended approaches, and the risk assessment will be conducted using the plant program, procedures, and criteria in place to implement 10 CFR 50.65(a)(4), which requires that risk impacts of maintenance activities be assessed and managed. The risk assessment, for the purposes of LCO 3.0.4 (b), must take into account all inoperable Technical Specification equipment regardless of whether the equipment is included in the normal 10 CFR 50.65(a)(4) risk assessment scope. The risk assessments will be conducted using the procedures and guidance endorsed by Regulatory Guide 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants." Regulatory Guide 1.182 endorses the guidance in Section 11 of NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." These documents address general guidance for conduct of the risk assessment, quantitative and qualitative guidelines for establishing risk management actions, and example risk management actions. These include actions to plan and conduct other activities in a manner that controls overall risk, increased risk awareness by shift and management personnel, actions to reduce the duration of the condition, actions to minimize the magnitude of risk increases (establishment of backup success paths or compensatory measures), and determination that the proposed MODE change is acceptable. Consideration should also be given to the probability of completing restoration such that the requirements of the LCO would be met prior to the expiration of ACTIONS Completion Times that would require exiting the Applicability.

LCO 3.0.4.b may be used with single, or multiple systems and components unavailable. NUMARC 93-01 provides guidance relative to consideration of simultaneous unavailability of multiple systems and components.

The results of the risk assessment shall be considered in determining the acceptability of entering the MODE or other specified condition in the Applicability, and any corresponding risk management actions. The LCO 3.0.4.b risk assessments do not have to be documented.

The Technical Specifications allow continued operation with equipment unavailable in MODE 1 for the duration of the Completion Time. Since this is allowable, and since in general the risk impact in that particular MODE bounds the risk of transitioning into and through the applicable MODES or other specified conditions in the Applicability of the LCO, the use of the LCO 3.0.4.b allowance should be generally acceptable, as long as the risk is assessed and managed as stated above. However, there is a small subset of systems and components that have been determined to be more important to risk and use of the LCO 3.0.4.b allowance is prohibited. The LCOs governing these system and components contain Notes prohibiting the use of LCO 3.0.4.b by stating that LCO 3.0.4.b is not applicable.

LCO 3.0.4.c allows entry into a MODE or other specified condition in the Applicability with the LCO not met based on a Note in the Specification which states LCO 3.0.4.c is applicable. These specific allowances permit entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered do not provide for continued operation for an unlimited period of time and a risk assessment has not been performed. This allowance may apply to all the ACTIONS or to a specific Required Action of a Specification. The risk assessments performed to justify the use of LCO 3.0.4.b usually only consider systems and components. For this reason, LCO 3.0.4.c is typically applied to Specifications which describe values and parameters (e.g., Reactor Coolant System Specific Activity), and may be applied to other Specifications based on NRC plant-specific approval.

The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

The provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown. In this context, a unit shutdown is defined as a change in MODE or other specified condition in the Applicability associated with transitioning from MODE 1 to MODE 2, MODE 2 to MODE 3, MODE 3 to MODE 4, and MODE 4 to MODE 5.

Upon entry into a MODE or other specified condition in the Applicability with the LCO not met, LCO 3.0.1 and LCO 3.0.2 require entry into the applicable Conditions and Required Actions until the Condition is resolved, until the LCO is met, or until the unit is not within the Applicability of the Technical Specification.

Surveillances do not have to be performed on the associated inoperable equipment (or on variables outside the specified limits), as permitted by SR 3.0.1. Therefore, utilizing LCO 3.0.4 is not a violation of SR 3.0.1 or SR 3.0.4 for any Surveillances that have not been performed on inoperable equipment. However, SRs must be met to ensure OPERABILITY prior to declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected LCO.

Bases

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SR 3.0.3  
(continued)

evaluation should be commensurate with the importance of the component. Missed Surveillances for important components should be analyzed quantitatively. If the results of the risk evaluation determine the risk increase is significant, this evaluation should be used to determine the safest course of action. All missed Surveillances will be placed in the licensee's Corrective Action Program.

If a Surveillance is not completed within the allowed delay period, then the equipment is considered inoperable or the variable is considered outside the specified limits and the Completion Times of the Required Actions for the applicable LCO Conditions begin immediately upon expiration of the delay period. If a Surveillance is failed within the delay period, then the equipment is inoperable, or the variable is outside the specified limits and the Completion Times of the Required Actions for the applicable LCO Conditions begin immediately upon the failure of the Surveillance.

Completion of the Surveillance within the delay period allowed by this Specification, or within the Completion Time of the ACTIONS, restores compliance with SR 3.0.1.

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SR 3.0.4

Insert 9

~~SR 3.0.4 establishes the requirement that all applicable SRs must be met before entry into a MODE or other specified condition in the Applicability.~~

~~This Specification ensures that system and component OPERABILITY requirements and variable limits are met before entry into MODES or other specified conditions in the Applicability for which these systems and components ensure~~

(continued)

Bases

SR 3.0.4  
(continued)

Insert 9

~~safe operation of the unit. However, in certain circumstances failing to meet an SR will not result in SR 3.0.4 restricting a MODE change or other specified condition change. When a system, subsystem, division, component, device, or variable is inoperable or outside its specified limits, the associated SR(s) are not required to be performed per SR 3.0.1, which states that surveillances do not have to be performed on inoperable equipment. When equipment is inoperable, SR 3.0.4 does not apply to the associated SR(s) since the requirement for the SR(s) to be performed is removed. Therefore, failing to perform the Surveillances(s) within the specified Frequency does not result in an SR 3.0.4 restriction to changing MODES or other specified conditions of the Applicability. However, since the LCO is not met in this instance, LCO 3.0.4 will govern any restrictions that may (or may not) apply to MODE or other specified condition changes.~~

~~The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.~~

~~The provisions of SR 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.~~

~~The precise requirements for performance of SRs are specified such that exceptions to SR 3.0.4 are not necessary. The specific time frames and conditions necessary for meeting the SRs are specified in the Frequency, in the Surveillance, or both. This allows performance of Surveillances when the prerequisite condition(s) specified in a Surveillance procedure require entry into the MODE or other specified condition in the Applicability of the associated LCO prior to the performance or completion of a Surveillance. A Surveillance that could not be performed until after entering the LCO Applicability, would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the Surveillance may be stated in the form of a Note as not~~

(continued)

Bases

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SR 3.0.4  
(continued)

Insert 9

~~required (to be met or performed) until a particular event, condition, or time has been reached. Further discussion of the specific formats of SRs' annotation is found in Section 1.4, Frequency.~~

~~SR 3.0.4 is only applicable when entering MODE 4 from MODE 5, MODE 3 from MODE 4, MODE 2 from MODE 3, or MODE 1 from MODE 2. Furthermore, SR 3.0.4 is applicable when entering any other specified condition in the Applicability only while operating in MODE 1, 2, 3, or 4. The requirements of SR 3.0.4 do not apply in MODES 5 and 6, or in other specified conditions of the Applicability (unless in MODE 1, 2, 3, or 4) because the ACTIONS of individual Specifications sufficiently define the remedial measures to be taken.~~

---

## **INSERT 9 (SR 3.0.4 BASES)**

SR 3.0.4 establishes the requirement that all applicable SRs must be met before entry into a MODE or other specified condition in the Applicability.

This Specification ensures that system and component OPERABILITY requirements and variable limits are met before entry into MODES or other specified conditions in the Applicability for which these systems and components ensure safe operation of the unit. The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

A provision is included to allow entry into a MODE or other specified condition in the Applicability when an LCO is not met due to Surveillance not being met in accordance with LCO 3.0.4.

However, in certain circumstances, failing to meet an SR will not result in SR 3.0.4 restricting a MODE change or other specified condition change. When a system, subsystem, division, component, device, or variable is inoperable or outside its specified limits, the associated SR(s) are not required to be performed, per SR 3.0.1, which states that surveillances do not have to be performed on inoperable equipment. When equipment is inoperable, SR 3.0.4 does not apply to the associated SR(s) since the requirement for the SR(s) to be performed is removed. Therefore, failing to perform the Surveillance(s) within the specified Frequency does not result in an SR 3.0.4 restriction to changing MODES or other specified conditions of the Applicability. However, since the LCO is not met in this instance, LCO 3.0.4 will govern any restrictions that may (or may not) apply to MODE or other specified condition changes. SR 3.0.4 does not restrict changing MODES or other specified conditions of the Applicability when a Surveillance has not been performed within the specified Frequency, provided the requirement to declare the LCO not met has been delayed in accordance with SR 3.0.3.

The provisions of SR 3.0.4 shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of SR 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown. In this context, a unit shutdown is defined as a change in MODE or other specified condition in the Applicability associated with transitioning from MODE 1 to MODE 2, MODE 2 to MODE 3, MODE 3 to MODE 4, and MODE 4 to MODE 5.

The precise requirements for performance of SRs are specified such that exceptions to SR 3.0.4 are not necessary. The specific time frames and conditions necessary for meeting the SRs are specified in the Frequency, in the Surveillance, or both. This allows performance of Surveillances when the prerequisite condition(s) specified in a Surveillance procedure require

entry into the MODE or other specified condition in the Applicability of the associated LCO prior to the performance or completion of a Surveillance. A Surveillance that could not be performed until after entering the LCO's Applicability, would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the Surveillance may be stated in the form of a Note, as not required (to be met or performed) until a particular event, condition, or time has been reached. Further discussion of the specific formats of SRs' annotation is found in Section 1.4, Frequency.

BASES

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APPLICABLE  
SAFETY ANALYSES  
(continued)

rod also produces a time dependent redistribution of core power.

SDM satisfies Criterion 2 of the NRC Policy Statement. Even though it is not directly observed from the control room, SDM is considered an initial condition process variable because it is periodically monitored to ensure that the unit is operating within the bounds of accident analysis assumptions.

---

LCO

SDM is a core design condition that can be ensured during operation through control rod positioning (control and shutdown banks) and through the soluble boron concentration.

The MSLB (Ref. 2) and the boron dilution (Ref. 3) accidents are the most limiting analyses that establish the SDM value of the LCO. For MSLB accidents, if the LCO is violated, there is a potential to exceed the DNBR limit and to exceed 10 CFR 100, "Reactor Site Criteria," limits (Ref. 4). For the boron dilution accident, if the LCO is violated, the minimum required time assumed for operator action to terminate dilution may no longer be applicable.

---

APPLICABILITY

In MODE 2 with  $k_{eff} < 1.0$  and in MODES 3 and 4, the SDM requirements are applicable to provide sufficient negative reactivity to meet the assumptions of the safety analyses discussed above. In MODE 5, SDM is addressed by LCO 3.1.2, "SHUTDOWN MARGIN (SDM) -  $T_{avg} \leq 200^{\circ}\text{F}$ ." In MODE 6, the shutdown reactivity requirements are given in LCO 3.9.1, "Boron Concentration." In MODES 1 and 2, SDM is ensured by complying with LCO 3.1.6 and LCO 3.1.7. ~~Since LCO 3.0.4 does not apply to changes in MODES or other specified conditions in the Applicability that are part of a normal unit shutdown, LCO 3.0.4 does not preclude cooldown from MODE 3 to MODE 5. Since cooldown would add positive reactivity and consequently decrease the SDM further, a Note has been added to the Applicability that precludes entry into MODE 4 from MODE 3 while the SDM is not met.~~

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(continued)

BASES (continued)

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LCO SDM is a core design condition that can be ensured during operation through control rod positioning (control and shutdown banks) and through the soluble boron concentration.

---

APPLICABILITY In MODE 5, the SDM requirements are applicable to provide sufficient negative reactivity to meet the assumptions of the safety analyses discussed above. In MODE 2 with  $K_{eff} < 1.0$  and MODES 3 and 4, the SDM requirements are given in LCO 3.1.1, "SHUTDOWN MARGIN (SDM) -  $T_{avg} > 200^{\circ}\text{F}$ ." In MODE 6, the shutdown reactivity requirements are given in LCO 3.9.1, "Boron Concentration." In MODE 1 and MODE 2 with  $K_{eff} \geq 1.0$ , SDM is ensured by complying with LCO 3.1.6 and LCO 3.1.7. ~~Since LCO 3.0.4 does not apply to changes in MODES or other specified conditions in the Applicability that are part of a normal unit shutdown, LCO 3.0.4 does not preclude cooldown from MODE 4 to MODE 5. Since cooldown would add positive reactivity and consequently decrease the SDM further, a Note has been added to the Applicability that precludes entry into MODE 5 from MODE 4 while the SDM is not met.~~

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ACTIONS

A.1

If the SDM requirements are not met, boration must be initiated promptly. A Completion Time of 15 minutes is adequate for an operator to correctly align and start the required systems and components. It is assumed that boration will be continued until the SDM requirements are met.

In the determination of the required combination of boration flow rate and boron concentration, there is no unique requirement that must be satisfied. Since it is imperative to raise the boron concentration of the RCS as soon as possible, the boron concentration should be a concentrated solution, such as that normally found in the boric acid storage tank or the refueling water storage tank. The operator should borate with the best source available for the plant conditions.

In determining the boration flow rate the time in core life must be considered. For instance, the most difficult time

(continued)

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BASES (continued)

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APPLICABILITY      The PAM instrumentation LCO is applicable as shown in Table 3.3.3-1. These variables are related to the diagnosis and pre-planned actions required to mitigate DBAs. The applicable DBAs are assumed to occur in MODES 1, 2, and 3. In MODES 4, 5, and 6, unit conditions are such that the likelihood of an event that would require PAM instrumentation is low; therefore, the PAM instrumentation is not required to be OPERABLE in these MODES.

---

ACTIONS            ~~Note 1 has been added in the ACTIONS to exclude the MODE change restriction of LCO 3.0.4. This exception allows entry into the applicable MODE while relying on the ACTIONS even though the ACTIONS may eventually require unit shutdown. This exception is acceptable due to the passive function of the instruments, the operator's ability to respond to an accident using alternate instruments and methods, and the low probability of an event requiring these instruments.~~

Insert "A Note"

→ ~~Note 2 has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed on Table 3.3.3-1. The Completion Time(s) of the inoperable channel(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.~~

A.1

Condition A applies when one or more Functions have one required channel that is inoperable. Required Action A.1 requires restoring the inoperable channel to OPERABLE status within 30 days. The 30 day Completion Time is based on operating experience and takes into account the remaining OPERABLE channel (or in the case of a Function that has only one required channel, other non-Regulatory Guide 1.97 instrument channels to monitor the Function), the passive nature of the instrument (no critical automatic action is assumed to occur from these instruments), and the low probability of an event requiring PAM instrumentation during this interval.

(continued)

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BASES

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LCO  
(continued)

A Function of a Remote Shutdown System is OPERABLE if all instrument and control channels needed to support the Remote Shutdown System Function are OPERABLE. Reference 3 and 4 provides additional information on required equipment. In some cases, Table 3.3.4-1 may indicate that the required information or control capability is available from several alternate sources. In these cases, the Function is OPERABLE as long as one channel of any of the alternate information or control sources is OPERABLE.

The remote shutdown instrument and control circuits covered by this LCO do not need to be energized to be considered OPERABLE. This LCO is intended to ensure the instruments and control circuits will be OPERABLE if unit conditions require that the Remote Shutdown System be placed in operation.

---

APPLICABILITY

The Remote Shutdown System LCO is applicable in MODES 1, 2, and 3. This is required so that the unit can be placed and maintained in MODE 3 for an extended period of time from a location other than the control room.

This LCO is not applicable in MODE 4, 5, or 6. In these MODES, the facility is already subcritical and in a condition of reduced RCS energy. Under these conditions, considerable time is available to restore necessary instrument control functions if control room instruments or controls become unavailable.

---

ACTIONS

~~Note 1 is included which excludes the MODE change restriction of LCO 3.0.4. This exception allows entry into an applicable MODE while relying on the ACTIONS even though the ACTIONS may eventually require a unit shutdown. This exception is acceptable due to the low probability of an event requiring the Remote Shutdown System and because the equipment can generally be repaired during operation without significant risk of spurious trip.~~

Insert "A Note"

→ Note 2 has been added to the ACTIONS to clarify the application of Completion Time rules. Separate Condition entry is allowed for each Function listed on Table 3.3.4-1.

(continued)

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BASES

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LCO  
(continued)

Note 1 permits all RHR pumps to be de-energized for  $\leq 15$  minutes when switching from one loop to another. The circumstances for stopping both RHR pumps are to be limited to situations when the outage time is short and core outlet temperature is maintained  $> 10^{\circ}\text{F}$  below saturation temperature. The Note prohibits boron dilution or draining operations when RHR forced flow is stopped.

Note 2 allows one RHR loop to be inoperable for a period of  $\leq 2$  hours, provided that the other is OPERABLE and in operation. This permits periodic surveillance tests to be performed on the inoperable loop during the only time when these tests are safe and possible.

An OPERABLE RHR loop is comprised of an OPERABLE RHR pump capable of providing forced flow to an OPERABLE RHR heat exchanger. RHR pumps are OPERABLE if they are capable of being powered and are able to provide flow if required.

---

APPLICABILITY

In MODE 5 with loops not filled, this LCO requires core heat removal and coolant circulation by the RHR System.

Operation in other MODES is covered by:

- LCO 3.4.4, "RCS Loops - MODES 1 and 2";
- LCO 3.4.5, "RCS Loops - MODE 3";
- LCO 3.4.6, "RCS Loops - MODE 4";
- LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled";
- LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level" (MODE 6); and
- LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level" (MODE 6).

~~LCO 3.0.4 does not apply to changes in MODES or other specified conditions in the Applicability that are part of a normal unit shutdown or are in MODES 5 or 6, and therefore, does not preclude entry into mid loop operations with one RHR loop inoperable. Since this would increase the probability of a complete loss of decay heat removal, a Note has been added to the Applicability that precludes entry into MODE 5, Loops Not Filled with only one RHR pump OPERABLE.~~

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(continued)

BASES

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LCO  
(continued)

inoperable PORV that is capable of being manually cycled (e.g., as in the case of excessive PORV leakage). Similarly, isolation of an OPERABLE PORV does not render that PORV or block valve inoperable provided the relief function remains available with manual action.

An OPERABLE PORV is required to be capable of manually opening and closing and not experiencing excessive seat leakage. Excessive seat leakage, although not associated with a specific acceptance criteria, exists when conditions dictate closure of the block valve to limit leakage.

Satisfying the LCO helps minimize challenges to fission product barriers.

---

APPLICABILITY

In MODES 1, 2, and 3, the PORV and its block valve are required to be OPERABLE to limit the potential for a small break LOCA through the flow path. The most likely cause for a PORV small break LOCA is a result of a pressure increase transient that causes the PORV to open. Imbalances in the energy output of the core and heat removal by the secondary system can cause the RCS pressure to increase to the PORV opening setpoint. The most rapid increases will occur at the higher operating power and pressure conditions of MODES 1 and 2. The PORVs are also required to be OPERABLE in MODES 1, 2, and 3 for manual actuation to mitigate a steam generator tube rupture event.

Pressure increases are less prominent in MODE 3 because the core input energy is reduced, but the RCS pressure is high. Therefore, the LCO is applicable in MODES 1, 2, and 3. The LCO is not applicable in MODES 4, 5, and 6 with the reactor vessel head in place when both pressure and core energy are decreased and the pressure surges become much less significant. LCO 3.4.12 addresses the PORV requirements in these MODES.

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ACTIONS

Insert "A Note"

Note 1 has been added to clarify that all pressurizer PORVs are treated as separate entities, each with separate Completion Times (i.e., the Completion Time is on a component basis). ~~The exception for LCO 3.0.4, Note 2, permits entry into MODES 1, 2, and 3 to perform cycling of the PORVs or block valves to verify their OPERABLE status.~~

(continued)

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BASES

APPLICABLE  
SAFETY ANALYSES

RCS Vent Performance (continued)

Three vent flow paths have been identified in the RCS which could serve as pressure release (vent) paths. With one safety or PORV removed, the open line could serve as one vent path. The pressurizer manway could serve as an alternative vent path with the manway cover removed. These flow paths are capable of discharging 475 gpm at low pressure in the RCS. Thus, any one of the openings can be used for relieving the pressure to prevent violating the P/T limits.

The RCS vent size will be re-evaluated for compliance each time the P/T limit curves are revised based on the results of the vessel material surveillance. The RCS vent is passive and is not subject to active failure.

The COMS satisfies Criterion 2 of the NRC Policy Statement.

LCO

This LCO requires that the COMS is OPERABLE. The COMS is OPERABLE when the minimum coolant input and pressure relief capabilities are OPERABLE. Violation of this LCO could lead to the loss of low temperature overpressure mitigation and violation of the Reference 1 limits as a result of an operational transient.

Insert 10A

~~To limit the coolant input capability, the LCO requires no safety injection pumps and only one charging pump capable of injecting into the RCS and all accumulator discharge isolation valves closed and immobilized when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR.~~

The elements of the LCO that provide low temperature overpressure mitigation through pressure relief are:

- a. Two RCS relief valves, as follows:

(continued)

BASES

APPLICABILITY  
(continued)

~~The Applicability is modified by four Notes. LCO 3.0.4 does not apply to changes in MODES or other specified conditions in the Applicability that are part of a normal unit shutdown, or are in MODES 5 or 6, and therefore, does not preclude cooldown from MODE 3 to MODE 5. Since cooldown would make the reactor vessel more susceptible to brittle failure, a Note has been added to the Applicability that precludes entry into Applicability of the LCO while the LCO is not met, except as allowed by Notes 2, 3, and 4. Note 2 states that accumulator isolation is only required when the accumulator pressure is more than or at the maximum RCS pressure for the existing temperature, as allowed by the P/T limit curves. This Note permits the accumulator discharge isolation valve Surveillance to be performed only under these pressure and temperature conditions. Note 3 provides time to make the required pumps inoperable since the COMS arming temperature is the same as MODE 3 to MODE 4 transition temperature. Note 4 provides time to make the RWR suction relief valve operable after entering Mode 4.~~

ACTIONS

Insert 10B

A.1 and B.1

With two or more charging pumps or any safety injection pumps capable of injecting into the RCS, RCS overpressurization is possible.

To immediately initiate action to restore restricted coolant input capability to the RCS reflects the urgency of removing the RCS from this condition.

~~Required Action B.1 is modified by a Note that permits two charging pumps capable of RCS injection for  $\leq 15$  minutes to allow for pump swaps.~~

C.1, D.1, and D.2

An unisolated accumulator requires isolation within 1 hour. This is only required when the accumulator pressure is at or more than the maximum RCS pressure for the existing temperature allowed by the P/T limit curves.

If isolation is needed and cannot be accomplished in 1 hour, Required Action D.1 and Required Action D.2 provide two options, either of which must be performed in the next 12 hours. By increasing the RCS temperature to  $> 350^{\circ}\text{F}$ , an accumulator pressure specified in WAT-D-9448 (Ref. 9) cannot exceed the COMS limits if the accumulators are fully injected.

(continued)

#### **INSERT 10A (LCO 3.4.12 BASES, COMS)**

To limit the coolant input capability, the LCO requires no safety injection pumps and a maximum of one charging pump be capable of injecting into the RCS, and all accumulator discharge isolation valves be closed and immobilized when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR.

The LCO is modified by two Notes. Note 1 allows two charging pumps to be made capable of injecting for less than or equal to 1 hour during pump swap operations. One hour provides sufficient time to safely complete the actual transfer and to complete the administrative controls and surveillance requirements associated with the swap. The intent is to minimize the actual time that more than one charging pump is physically capable of injection.

Note 2 states that accumulator isolation is only required when the accumulator pressure is more than or at the maximum RCS pressure for the existing temperature, as allowed by the P/T limit curves. This Note permits the accumulator discharge isolation valve Surveillance to be performed only under these pressure and temperature conditions.

#### **INSERT 10B (LCO 3.4.12 BASES, COMS)**

A Note prohibits the application of LCO 3.0.4.b to an inoperable COMS. There is an increased risk associated with entering MODE 4 from MODE 5 with COMS inoperable and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

BASES (continued)

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ACTIONS

A.1 and A.2

With the required containment pocket sump level monitor inoperable, no other form of sampling can provide the equivalent information; however, the containment atmosphere radioactivity monitor will provide indications of changes in leakage. Together with the atmosphere monitor, the periodic surveillance for RCS water inventory balance, SR 3.4.13.1, must be performed at an increased frequency of 24 hours to provide information that is adequate to detect leakage.

Restoration of the required containment pocket sump level monitor to OPERABLE status within a Completion Time of 30 days is required to regain the function after the monitor's failure. This time is acceptable, considering the Frequency and adequacy of the RCS water inventory balance required by Required Action A.1.

~~Required Action A.1 is modified by a Note that indicates that the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when the containment pocket sump level monitor is inoperable. This allowance is provided because other instrumentation is available to monitor RCS leakage.~~

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

With either the gaseous or the particulate containment atmosphere radioactivity monitoring instrumentation channels inoperable, alternative action is required. Either grab samples of the containment 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.

During periods when the heat tracing is inoperable for the sample lines supplying the radioactivity monitoring instrumentation, the particulate channel of the instrumentation is inoperable and grab samples for particulates may not be taken using the sample lines.

With a sample obtained and analyzed or water inventory balance performed every 24 hours, the reactor may be operated for up to 30 days to allow restoration of the required containment atmosphere radioactivity monitors.

BASES (continued)

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ACTIONS

B.1.1, B.1.2, and B.2 (continued)

The 24 hour interval provides periodic information that is adequate to detect leakage. The 30 day Completion Time recognizes at least one other form of leakage detection is available.

~~Required Action B.1 and Required Action B.2 are modified by a Note that indicates that the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when the gaseous and particulate containment atmosphere radioactivity monitor channel is inoperable. This allowance is provided because other instrumentation is available to monitor for RCS LEAKAGE.~~

C.1 and C.2

If a Required Action of Condition A or B cannot be met, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

D.1

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

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SURVEILLANCE  
REQUIREMENTS

SR 3.4.15.1

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

BASES (continued)

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ACTIONS

A.1 and A.2

With the DOSE EQUIVALENT I-131 greater than the LCO limit, samples at intervals of 4 hours must be taken to demonstrate that the limit of 21  $\mu\text{Ci/gm}$  is not exceeded. The Completion Time of 4 hours is required to obtain and analyze a sample. Sampling is done to continue to provide a trend.

The DOSE EQUIVALENT I-131 must be restored to within limits within 48 hours. The Completion Time of 48 hours is required, if the limit violation resulted from normal iodine spiking.

Insert 11

~~A Note to the ACTIONS excludes the MODE change restriction of LCO 3.0.4. This exception allows entry into the applicable MODE(s) while relying on the ACTIONS even though the ACTIONS may eventually require plant shutdown. This exception is acceptable due to the significant conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient specific activity excursions while the plant remains at, or proceeds to power operation.~~

B.1 and B.2

With the gross specific activity in excess of the allowed limit, an analysis must be performed within 4 hours to determine DOSE EQUIVALENT I-131. The Completion Time of 4 hours is required to obtain and analyze a sample.

The change within 6 hours to MODE 3 and RCS average temperature  $< 500^{\circ}\text{F}$  lowers the saturation pressure of the reactor coolant below the setpoints of the main steam safety valves and prevents venting the SG to the environment in an SGTR event. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below  $500^{\circ}\text{F}$  from full power conditions in an orderly manner and without challenging plant systems.

(continued)

**INSERT 11 (LCO 3.4.16 BASES, RCS SPECIFIC ACTIVITY )**

A Note permits the use of the provisions of LCO 3.0.4.c. This allowance permits entry into the applicable MODE(S) while relying on the ACTIONS. This allowance

BASES

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APPLICABLE  
SAFETY ANALYSES  
(continued)

The effects on containment mass and energy releases are accounted for in appropriate analyses (Refs. 3 and 4). The LCO ensures that an ECCS train will deliver sufficient water to match boil off rates soon enough to minimize the consequences of the core being uncovered following a large LOCA. It also ensures that the centrifugal charging and SI pumps will deliver sufficient water and boron during a small LOCA to maintain core subcriticality. For smaller LOCAs, the centrifugal charging pump delivers sufficient fluid to maintain RCS inventory. For a small break LOCA, the steam generators continue to serve as the heat sink, providing part of the required core cooling.

The ECCS trains satisfy Criterion 3 of the NRC Policy Statement.

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LCO

In MODES 1, 2, and 3, two independent (and redundant) ECCS trains are required to ensure that sufficient ECCS flow is available, assuming a single failure affecting either train. Additionally, individual components within the ECCS trains may be called upon to mitigate the consequences of other transients and accidents.

In MODES 1, 2, and 3, an ECCS train consists of a centrifugal charging subsystem, an SI subsystem, and an RHR subsystem. Each train includes the piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an SI signal and automatically transferring suction to the containment sump.

During an event requiring ECCS actuation, a flow path is required to provide an abundant supply of water from the RWST to the RCS via the ECCS pumps and their respective supply headers to each of the four cold leg injection nozzles. In the long term, this flow path may be switched to take its supply from the containment sump and to supply its flow to the RCS hot and cold legs.

The flow path for each train must maintain its designed independence to ensure that no single failure can disable both ECCS trains.

Insert 12 →

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(continued)

BASES (continued)

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APPLICABILITY

In MODES 1, 2, and 3, the ECCS OPERABILITY requirements for the limiting Design Basis Accident, a large break LOCA, are based on full power operation. Although reduced power would not require the same level of performance, the accident analysis does not provide for reduced cooling requirements in the lower MODES. The centrifugal charging pump performance is based on a small break LOCA, which establishes the pump performance curve and has less dependence on power. The SI pump performance requirements are based on a small break LOCA. MODE 2 and MODE 3 requirements are bounded by the MODE 1 analysis.

This LCO is only applicable in MODE 3 and above. Below MODE 3, the SI signal setpoint is manually bypassed by operator control, and system functional requirements are relaxed as described in LCO 3.5.3, "ECCS-Shutdown."

~~As indicated in Note 1, the flow path may be isolated for 2 hours in MODE 3, under controlled conditions, to perform pressure isolation valve testing per SR 3.4.14.1. The flow path is readily restorable from the control room. Note 2 provides relief from the restrictions of LCO 3.0.4 and SR 3.0.4 to allow time to restore the required equipment to OPERABLE status.~~

In MODES 5 and 6, plant conditions are such that the probability of an event requiring ECCS injection is extremely low. Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops-MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops-MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation-High Water Level," and LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation-Low Water Level."

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ACTIONS

A.1

With one or more trains inoperable and at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available, the inoperable components must be returned to OPERABLE status within 72 hours. The 72 hour Completion Time is based on an NRC reliability evaluation (Ref. 5) and is a reasonable time for repair of many ECCS components.

An ECCS train is inoperable if it is not capable of delivering design flow to the RCS. Individual components

(continued)

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## **INSERT 12 (LCO 3.5.2 BASES, ECCS - OPERATING)**

As indicated in Note 1, the SI flow paths may be isolated for 2 hours in MODE 3, under controlled conditions, to perform pressure isolation valve testing per SR 3.4.14.1. The flow path is readily restorable from the control room. As indicated in Note 2, operation in MODE 3 with safety injection pumps and charging pumps made incapable of injecting in order to facilitate entry into or exit from the Applicability of LCO 3.4.12, "Cold Overpressure Mitigation System (COMS)" is necessary with a COMS arming temperature at or near the MODE 3 boundary temperature of 350°F. LCO 3.4.12 requires that certain pumps be rendered incapable of injecting at and below the COMS arming temperature. When this temperature is at or near the MODE 3 boundary temperature, time is needed to make pumps incapable of injecting prior to entering the COMS Applicability, and provide time to restore the inoperable pumps to OPERABLE status on exiting the COMS Applicability.

BASES

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LCO  
(continued)

In MODE 4, an ECCS train consists of a centrifugal charging subsystem and an RHR subsystem. Each centrifugal charging subsystem includes the piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST and transferring suction to the discharge of the RHR subsystem. Each RHR subsystem includes the piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the containment sump and recirculating to the RCS.

During an event requiring ECCS actuation, a flow path is required to provide an abundant supply of water from the RWST to the RCS via a charging pump and its respective supply header. In the long term, the flow path may be switched to take its supply from the containment sump and provide recirculation flow to the RCS.

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APPLICABILITY

In MODES 1, 2, and 3, the OPERABILITY requirements for the ECCS are covered by LCO 3.5.2.

In MODE 4, one OPERABLE ECCS train is acceptable without single failure consideration, on the basis of the stable reactivity of the reactor and the limited core cooling requirements.

In MODES 5 and 6, plant conditions are such that the probability of an event requiring ECCS injection is extremely low. Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level," and LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level."

---

ACTIONS

A.1

Insert 13

With no ECCS RHR subsystem OPERABLE, the plant is not prepared to respond to a loss of coolant accident. The Completion Time of immediately to initiate actions that would restore at least one ECCS RHR subsystem to OPERABLE status ensures that prompt action is taken to restore the required recirculation cooling capacity. Normally, in MODE 4, reactor decay heat is removed from the RCS by an RHR loop. If no RHR loop is OPERABLE for this function, reactor

(continued)

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**INSERT 13 (LCO 3.5.3 BASES, ECCS SHUTDOWN)**

A Note prohibits the application of LCO 3.0.4.b to an inoperable ECCS high head subsystem when entering MODE 4. There is an increased risk associated with entering MODE 4 from MODE 5 with an inoperable ECCS high head subsystem and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

BASES

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ACTIONS

A.1 (continued)

~~Required Action A.1 has been modified by a Note that states the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when one recombiner is inoperable. This allowance is based on the availability of the other hydrogen recombiner, the small probability of a LOCA or SIB occurring (that would generate an amount of hydrogen that exceeds the flammability limit), and the amount of time available after a LOCA or SIB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.~~

B.1 and B.2

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

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(continued)

BASES

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LCO  
(continued)                    An ADV is considered OPERABLE when it is capable of providing controlled relief of the main steam flow and capable of fully opening and closing on demand.

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APPLICABILITY                In MODES 1, 2, and 3, and in MODE 4, when a steam generator is being relied upon for heat removal, the ADVs are required to be OPERABLE.

In MODE 5 or 6, an SGTR is not a credible event.

---

ACTIONS

A.1

With one required ADV line inoperable, action must be taken to restore OPERABLE status within 7 days. The 7 day Completion Time allows for the redundant capability afforded by the remaining OPERABLE ADV lines, a nonsafety grade backup in the Steam Dump System, and MSSVs. ~~Required Action A.1 is modified by a Note indicating that LCO 3.0.4 does not apply.~~

B.1

The four ADVs are supplied with safety-related Train A and Train B control air by the Auxiliary Control Air System (ACAS). Two valves receive Train A air and two valves receive Train B air. With one train (two ADV lines) inoperable due to an inoperable ACAS train, action must be taken to restore operability of the ACAS train to ensure operability of the ADV lines. The 72 hour Completion Time is reasonable since alternate means are available to operate the ADVs assuming an inoperable ACAS train, and the low probability of an event occurring during this period that would require the ADV lines. Normal control air is used to operate the valves, if available. In addition, the ADVs can be manually operated with the valve hand wheel, or by manually aligning a bottled nitrogen system to the valve operators. Each ADV is provided with a main and alternate nitrogen bottle designed to operate the valves if normal and emergency air supplies are lost. Further, the MSSVs will provide system over pressure protection if the ADVs fail to function, and the condenser steam dump valves will normally be available for plant cooldown.

C.1

With two or more ADV lines inoperable, action must be taken to restore all but one ADV line to OPERABLE status. Since the block valve can be closed to isolate an ADV, some repairs may be possible with the unit at power. The 24 hour Completion Time is reasonable to repair inoperable ADV lines, based on the availability of the Steam Dump System and MSSVs, and the low probability of an event occurring during this period that would require the ADV lines.

(continued)

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BASES (Continued)

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ACTIONS

Insert 14

A.1

If one of the two steam supplies to the turbine driven AFW train is inoperable, action must be taken to restore OPERABLE status within 7 days. The 7 day Completion Time is reasonable, based on the following reasons:

- a. The redundant OPERABLE steam supply to the turbine driven AFW pump;
- b. The availability of redundant OPERABLE motor driven AFW pumps; and
- c. The low probability of an event occurring that requires the inoperable steam supply to the turbine driven AFW pump.

The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of Conditions to be inoperable during any continuous failure to meet this LCO.

The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The AND connector between 7 days and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

B.1

With one of the required AFW trains (pump or flow path) inoperable in MODE 1, 2, or 3 for reasons other than Condition A, action must be taken to restore OPERABLE status within 72 hours. This Condition includes the loss of two steam supply lines to the turbine driven AFW pump. The 72 hour Completion Time is reasonable, based on redundant capabilities afforded by the AFW System, time needed for repairs, and the low probability of a DBA occurring during this time period.

The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any

(continued)

**INSERT 14 (LCO 3.7.5 BASES, AFW SYSTEM)**

A Note prohibits the application of LCO 3.0.4.b to an inoperable AFW train when entering MODE 1. There is an increased risk associated with entering MODE 1 with an AFW train inoperable and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

BASES

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LCO  
(continued)

The AC sources in one train must be separate and independent (to the extent possible) of the AC sources in the other train. For the DGs, separation and independence are complete.

For the offsite AC sources, separation and independence are to the extent practical. A circuit may be connected to more than one ESF bus, with fast transfer capability to the other circuit OPERABLE, and not violate separation criteria. A circuit that is not connected to an ESF bus is required to have OPERABLE fast transfer interlock mechanisms to at least two ESF buses to support OPERABILITY of that circuit.

---

APPLICABILITY

The AC sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

- a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOs or abnormal transients; and
- b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources - Shutdown."

---

ACTIONS

A.1

Insert 15

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

(continued)

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**INSERT 15 (LCO 3.8.1 BASES, AC SOURCES - OPERATING)**

A Note prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

BASES (continued)

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APPLICABILITY This LCO is applicable in MODE 6 to ensure that the fuel in the reactor vessel will remain subcritical. The required boron concentration ensures a  $k_{eff} \leq 0.95$ . Above MODE 6, LCO 3.1.1, "SHUTDOWN MARGIN (SDM) -  $T_{avg} > 200^{\circ}F$ ," and LCO 3.1.2, "SHUTDOWN MARGIN (SDM) -  $T_{avg} \leq 200^{\circ}F$ ," ensure that an adequate amount of negative reactivity is available to shut down the reactor and maintain it subcritical. ~~LCO 3.0.4 does not apply to changes in MODES or other specified conditions in the Applicability that are part of a normal unit shutdown, or in MODES 5 or 6, and therefore does not preclude entry into refueling activities without meeting the boron concentration requirement. Therefore, a Note has been added to the Applicability that precludes entry into MODE 6 before the boron concentration requirements are met.~~

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ACTIONS

A.1 and A.2

Continuation of CORE ALTERATIONS or positive reactivity additions (including actions to reduce boron concentration) is contingent upon maintaining the unit in compliance with the LCO. If the boron concentration of any coolant volume in the RCS, the refueling canal, or the refueling cavity is less than its limit, all operations involving CORE ALTERATIONS or positive reactivity additions must be suspended immediately.

Suspension of CORE ALTERATIONS and positive reactivity additions shall not preclude moving a component to a safe position.

A.3

In addition to immediately suspending CORE ALTERATIONS or positive reactivity additions, boration to restore the concentration must be initiated immediately.

In determining the required combination of boration flow rate and concentration, no unique Design Basis Event must be satisfied. The only requirement is to restore the boron concentration to its required value as soon as possible. In order to raise the boron concentration as soon as possible, the operator should begin boration with the best source available for unit conditions.

(continued)

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BASES (continued)

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APPLICABILITY      In MODE 6, this LCO is applicable to prevent an inadvertent boron dilution event by ensuring isolation of all sources of unborated water to the RCS.

For all other MODES, the boron dilution accident was analyzed and was found to be capable of being mitigated. ~~LCO 3.0.4 does not apply to changes in MODES or other specified conditions in the Applicability that are part of a normal unit shutdown, or in MODES 5 or 6, and therefore does not preclude entry into refueling activities without meeting the LCO requirement. Therefore, a Note has been added to the Applicability that precludes entry into MODE 6 before all unborated water sources are isolated.~~

---

ACTIONS            The ACTIONS table has been modified by a Note that allows separate Condition entry for each unborated water source isolation valve.

A.1

Continuation of CORE ALTERATIONS is contingent upon maintaining the unit in compliance with this LCO. With any valve used to isolate unborated water sources not secured in the closed position, all operations involving CORE ALTERATIONS must be suspended immediately. The Completion Time of "immediately" for performance of Required Action A.1 shall not preclude completion of movement of a component to a safe position.

Condition A has been modified by a Note to require that Required Action A.3 be completed whenever Condition A is entered.

A.2

Preventing inadvertent dilution of the reactor coolant boron concentration is dependent on maintaining the unborated water isolation valves secured closed. Securing the valves in the closed position ensures that the valves cannot be inadvertently opened. The Completion Time of "immediately" requires an operator to initiate actions to close an open valve and secure the isolation valve in the closed position immediately. Once actions are initiated, they must be continued until the valves are secured in the closed position.

(continued)

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BASES

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LCO  
(continued)

Additionally, one loop of RHR must be in operation in order to provide:

- a. Removal of decay heat;
- b. Mixing of borated coolant to minimize the possibility of criticality; and
- c. Indication of reactor coolant temperature.

An OPERABLE RHR loop consists of an RHR pump, a heat exchanger, valves, piping, instruments and controls to ensure an OPERABLE flow path and to determine the low end temperature. The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs. Both RHR pumps may be aligned to the RWST to support filling the refueling cavity or to perform RHR injection testing. During these modes of operation, the wide range RCS temperature indicators are used to indicate RCS temperature since the RHR temperature elements indicate RWST temperature when RHR pump suction is from the RWST. The flow path for filling the refueling cavity or for performance of RHR cold leg injection testing starts at the RWST and is supplied to the RCS cold legs. During RHR hot leg injection testing with suction from the RWST, the other RHR train must be OPERABLE and in operation with discharge to the RCS cold legs. In this alignment, both RHR trains are OPERABLE provided that the RHR train injecting into the RHR hot legs is capable of being realigned to discharge to the RCS cold legs in the event a failure occurs of the RHR train supplying the cold legs.

~~The LCO is modified by a Note that allows only one RHR loop to be OPERABLE and in operation prior to the initial criticality of the unit. The Note also allows the loop to be removed from service for up to 1 hour per 8-hour period provided no operations are permitted that would cause a dilution of RCS boron concentration. This allowance is provided only for the initial criticality since there is no decay heat present.~~

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APPLICABILITY

Two RHR loops are required to be OPERABLE, and one RHR loop must be in operation in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, to provide decay heat removal. Requirements for the RHR System in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS), and Section 3.5, Emergency Core Cooling Systems (ECCS). RHR loop requirements in MODE 6 with the water level  $\geq$  23 ft are located in LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level." ~~LCO 3.0.4 does not apply to changes in MODES~~

(continued)

BASES

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~~APPLICABILITY~~  
~~(continued)~~

~~or other specified conditions in the Applicability that are part of a normal unit shutdown or are in MODES 5 or 6, and therefore, does not preclude entry into this LCO with one RHR loop inoperable. Since this would increase the probability of a complete loss of decay heat removal, a Note has been added to the Applicability that precludes entry into MODE 6 with water level < 23 ft above the top of the reactor vessel flange with only one RHR loop OPERABLE.~~

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ACTIONS

A.1 and A.2

If less than the required number of RHR loops are OPERABLE, actions shall be immediately initiated and continued until the RHR loop is restored to OPERABLE status and to operation or until  $\geq 23$  ft of water level is established above the reactor vessel flange. When the water level is  $\geq 23$  ft above the reactor vessel flange, the Applicability changes to that of LCO 3.9.5, and only one RHR loop is required to be OPERABLE and in operation. An immediate Completion Time is necessary for an operator to initiate corrective actions.

B.1

If no RHR loop is in operation, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Reduced boron concentrations cannot occur by the addition of water with a lower boron concentration than that contained in the RCS, because all of the unborated water sources are isolated.

B.2

If no RHR loop is in operation, actions shall be initiated immediately, and continued, to restore one RHR loop to operation. Since the unit is in Conditions A and B concurrently, the restoration of two OPERABLE RHR loops and one operating RHR loop should be accomplished expeditiously.

B.3

If no RHR loop is in operation, all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere must be closed within 4 hours. With the RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Closing containment penetrations that are open to the outside atmosphere ensures that dose limits are not exceeded.

The Completion Time of 4 hours is reasonable, based on the low probability of the coolant boiling in that time.

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(continued)