VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

August 27, 2001

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No.: 01- 358
CM/RAB R0
Docket Nos.: 50-338
50-339
License Nos.: NPF-4
NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 AND 2
PROPOSED IMPROVED TECHNICAL SPECIFICATIONS
REQUEST FOR ADDITIONAL INFORMATION – ITS 2.0, 3.1, 3.2, 3.9, and 5.0

This letter transmits responses to the NRC's request for additional information (RAI) regarding the North Anna Power Station Units 1 and 2 proposed Improved Technical Specifications (ITS). The North Anna ITS license amendment request was submitted to the NRC in a December 11, 2000 letter (Serial No. 00-606). The NRC requested additional information on ITS 2.0, 3.1, 3.2, and 3.9 in a letter dated July 30, 2001 (TAC Nos. MB0799 and MB0800). The NRC requested additional information on ITS 5.0 in two letters dated June 1, 2001, and July 2, 2001. This letter also transmits minor changes to these sections that are a result of internal comments and approved changes to the Improved Standard Technical Specifications.

The attachment includes each NRC question, the response to each question, and the required revisions to the original ITS license amendment request, based on the response to each question. Following the responses to the NRC's questions is a summary of the changes that are not associated with the NRC's questions, and the affected ITS submittal pages.

Additionally, our letters of June 18, 2001 (Serial Number 01-281) and July 20, 2001 (Serial Number 01-435) included changes to the submittal that were not related to the NRC's RAIs. In a recent telephone call, Mr. N. Le of your office requested a list of the pages that were affected by these changes. This letter also includes these lists. The pages are listed by ITS section.

A001

If you have any further questions or require additional information, please contact us.

Very truly yours,

Leslie N. Hartz
Vice President - Nuclear Engineering

Attachment

Commitments made in this letter: None

cc: U.S. Nuclear Regulatory Commission
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Sam Nunn Atlanta Federal Center
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NRC Senior Resident Inspector
North Anna Power Station

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COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Leslie N. Hartz, who is Vice President - Nuclear Engineering, of Virginia Electric and Power Company. She has affirmed before me that she is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged before me this 27th day of August, 2001.

My Commission Expires: 3-31-04.

Maggie McClure
Notary Public

(SEAL)

North Anna Power Station
Summary of Changes Not Associated with RAIs
June 18, 2001 Letter
Section 3.3

Virginia Electric and Power Company's letter of June 18, 2001 (Serial Number 01-281), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.3.

Source of Change	Summary of Change	Affected Pages
TSTF-367	Revised the Bases to refer to Criterion 4 of 10CFR50.36 rather than referring to risk significance.	ISTS Bases Mark-up Page: B 3.3-139

North Anna Power Station
Summary of Changes Not Associated with RAIs
June 18, 2001 Letter
Section 3.4

Virginia Electric and Power Company's letter of June 18, 2001 (Serial Number 01-281), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.4.

Source of Change	Summary of Change	Affected Pages
TSTF-367	Revised the Bases to refer to Criterion 4 of 10CFR50.36 rather than referring to risk significance.	ISTS Bases Mark-up Pages: B 3.4-27 B 3.4-33 B 3.4-37 Typed ITS Bases Pages: B 3.4.6-1 B 3.4.8-1
TSTF-61	Capitalized the word "LEAKAGE" in SR 3.4.13.1.	Typed ITS Page: 3.4.13-2 ISTS Mark-up Page: 3.4-34
NRC-ED-7	Corrected alignment of the Completion Times for ITS 3.4.16 Condition A.	ISTS Mark-up Page: 3.4-43
Internal comment	Revised the insert to the Applicable Safety Analyses Bases for ITS 3.4.16 to "SGTR" rather than "STGR."	Typed ITS Bases Page: B 3.4.16-2 ISTS Bases Mark-up Page: B 3.4-94
Internal comment	Revised the ACTIONS Notes for ITS 3.4.11 and 3.4.14 to state "NOTES" rather than "NOTE."	Typed ITS Pages: 3.4.11-1 3.4.14-1
Internal comment	Corrected the number in the page header for CTS 3.4.10.1.	Discussion of Changes (DOC) Pages for CTS 3.4.10.1: DOC Pages 1 and 2
Internal comment	Revised Note for ITS 3.4.11, Required Actions D.1 and D.2 to be the full width of the column. Revised Completion Times for ITS 3.4.11, Required Actions F.1 and F.2 from 1 hour to 6 and 12 hours, respectively.	Typed ITS Page: 3.4.11-2
Internal comment	Moved the Completion Time for ITS 3.4.11, Required Action G.1 to be aligned with the action.	Typed ITS Page: 3.4.11-3
Internal comment	Revised the Note for ITS 3.4.15, Required Actions A.1 and B.1.2 to be only the width of the action, not the width of the column.	Typed ITS Pages: 3.4.15-1 3.4.15-2
Internal comment	Changed the word "meed" to "meet" in ITS 3.4.7 Required Action C.1 and ITS 3.4.8 Required Action B.1.	Typed ITS Pages: 3.4.7-2 3.4.8-2

North Anna Power Station
Summary of Changes Not Associated with RAIs
June 18, 2001 Letter
Section 3.9

Virginia Electric and Power Company's letter of June 18, 2001 (Serial Number 01-281), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.9.

Source of Change	Summary of Change	Affected Pages
TSTF-367	Revised the Bases to refer to Criterion 4 of 10CFR50.36 rather than referring to risk significance.	Typed ITS Bases Pages: B 3.9.5-1 B 3.9.6-1 ISTS Bases Mark-up Pages: B 3.9-17 B 3.9-18 B 3.9-21

North Anna Power Station
Summary of Changes Not Associated with RAIs
July 20, 2001 Letter
Chapter 1.0

Virginia Electric and Power Company's letter of July 20, 2001 (Serial Number 01-435), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Chapter 1.0.

Source of Change	Summary of Change	Affected Pages
Internal comment	Added the word "continued" to the bottom of the pages.	Typed ITS Page: 1.1-3 1.1-4 1.1-5
TSTF-248	Revised the definition of Shutdown Margin to provide an exception for a stuck rod.	Typed ITS Page: 1.1-5 ISTS Mark-up Page: 1.1-6 CTS Mark-up Pages: 8 (Units 1 and 2) Discussion of Changes (DOC) Pages: 1 13 14 Determination of No Significant Hazards Pages: 9 10

North Anna Power Station
Summary of Changes Not Associated with RAIs
July 20, 2001 Letter
Section 3.0

Virginia Electric and Power Company's letter of July 20, 2001 (Serial Number 01-435), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.0.

Source of Change	Summary of Change	Affected Pages
TSTF-358	Extended time limit to declare LCO not met when a Surveillance has not been performed.	Typed ITS Pages: 3.0-4 Typed ITS Bases Pages: B 3.0-16 through 3.0-18 ISTS Mark-up Pages: 3.0-4 ISTS Bases Mark-up Pages: B 3.0-12 B 3.0-13 Insert to Page B 3.0-13 CTS Mark-up Pages: Page 3 of 5 (Units 1 and 2) Page 4 of 5 (Units 1 and 2) Discussion of Changes (DOC) Pages: 9 10 22 23 24 Determination of No Significant Hazards Pages: 15 through 17

North Anna Power Station
Summary of Changes Not Associated with RAIs
July 20, 2001 Letter
Section 3.0 (Continued)

Source of Change	Summary of Change	Affected Pages
TSTF-359	Revised allowance for entry into MODE Applicabilities.	Typed ITS Pages: 3.0-1 3.0-2 3.0-5 Typed ITS Bases Pages: B 3.0-5 through B 3.0-8 B 3.0-18 B 3.0-19 ISTS Mark-up Pages: 3.0-1 Insert to 3.0-1 3.0-2 3.0-5 Insert to 3.0-5 ISTS Bases Mark-up Pages: B 3.0-5 Insert to B 3.0-5 (2 pages) B 3.0-6 B 3.0-14 Insert to B 3.0-14 JFD Page: 1 CTS Mark-up Pages: 3 of 5 (Units 1 and 2) 4 of 5 (Units 1 and 2) DOC Pages: 5 6 11 12 Determination of No Significant Hazards Pages: 1 through 3

North Anna Power Station
Summary of Changes Not Associated with RAIs
July 20, 2001 Letter
Section 3.1

Virginia Electric and Power Company's letter of July 20, 2001 (Serial Number 01-435), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.1.

Source of Change	Summary of Change	Affected Pages
CTS Amendment 225/206	Revised boron concentration requirements.	CTS Mark-up Pages: CTS 3.1.2.7 (Relocated spec): Page 1 of 1 (Units 1 and 2) CTS 3.1.2.8 (Relocated spec): Page 1 of 1 (Units 1 and 2)

North Anna Power Station
Summary of Changes Not Associated with RAIs
July 20, 2001 Letter
Section 3.3

Virginia Electric and Power Company's letter of July 20, 2001 (Serial Number 01-435), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.3.

Source of Change	Summary of Change	Affected Pages
TSTF-359	Revised allowance for entry into MODE Applicabilities.	Typed ITS Pages: 3.3.3-1 3.3.4-1 Typed ITS Bases Pages: B 3.3.3-11 B 3.3.4-3 ISTS Mark-up Pages: 3.3-40 3.3-44 ISTS Bases Mark-up Pages: B 3.3-133 B 3.3-140 CTS Mark-up Pages: ITS 3.3.3: 1 and 2 of 14 (Unit 1) 1 and 2 of 11 (Unit 2) ITS 3.3.4: 1 of 3 (Units 1 & 2) Discussion of Changes Pages: ITS 3.3.3: 1 4 7 ITS 3.3.4: 2

North Anna Power Station
Summary of Changes Not Associated with RAIs
July 20, 2001 Letter
Section 3.4

Virginia Electric and Power Company's letter of July 20, 2001 (Serial Number 01-435), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.4.

Source of Change	Summary of Change	Affected Pages
TSTF-359	Revised allowance for entry into MODE Applicabilities.	Typed ITS Pages: 3.4.11-1 3.4.15-1 3.4.16-1 Typed ITS Bases Pages: B 3.4.11-3 B 3.4.15-3 B 3.4.16-4 ISTS Mark-up Pages: 3.4-23 3.4-39 3.4-43 ISTS Bases Mark-up Pages: B 3.4-52 B 3.4-88 B 3.4-89 B 3.4-96 CTS Mark-up Pages: ITS 3.4.11: 1 and 2 of 2 (Units 1 &2) ITS 3.4.15: 1 of 4 (Units 1 & 2) ITS 3.4.16: 1 of 4 (Unit 1) 2 of 4 (Unit 2) Discussion of Changes Pages: ITS 3.4.11: 3 ITS 3.4.15 2 ITS 3.4.16: 2

North Anna Power Station
Summary of Changes Not Associated with RAIs
July 20, 2001 Letter
Section 3.5

Virginia Electric and Power Company's letter of July 20, 2001 (Serial Number 01-435), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.5.

Source of Change	Summary of Change	Affected Pages
Internal comment	Adopted ISTS Note for LCO 3.5.2. Allows both Safety Injection flow paths to be isolated for up to 2 hours to perform testing.	Typed ITS Page: 3.5.2-1 Typed ITS Bases Page: B 3.5.2-6 ISTS Mark-up Page: 3.5-4 ISTS JFD Page: ITS 3.5.2: 1 ISTS Bases Mark-up Pages: B 3.5-14 B 3.5-15 CTS Mark-up Pages: ITS 3.5.2: 1 of 3 (Units 1 and 2) Discussion of Changes Page: ITS 3.5.2: 9

North Anna Power Station
Summary of Changes Not Associated with RAIs
July 20, 2001 Letter
Section 3.5 (Continued)

Source of Change	Summary of Change	Affected Pages
CTS Amendment 225/206	Revised boron concentration requirements.	Typed ITS Page: 3.5.1-2 3.5.4-2 Typed ITS Bases Page: B 3.5.1-7 B 3.5.4-3 B 3.5.4-6 ISTS Mark-up Pages: 3.5-2 Insert to Page 3.5-2 3.5-10 Insert to Page 3.5-10 ISTS JFD Pages: ITS 3.5.1: 1 ITS 3.5.4: 1 ISTS Bases Mark-up Pages: B 3.5-8 Insert to B 3.5-8 B 3.5-27 Insert to B 3.5-27 B 3.5-28 Insert to B 3.5-28 B 3.5-30 Insert to B 3.5-30 CTS Mark-up Pages: ITS 3.5.1: 1 and 2 (Unit 2) ITS 3.5.4: 1 (Unit 2)

North Anna Power Station
Summary of Changes Not Associated with RAIs
July 20, 2001 Letter
Section 3.6

Virginia Electric and Power Company's letter of July 20, 2001 (Serial Number 01-435), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.6.

Source of Change	Summary of Change	Affected Pages
TSTF-359	Revised allowance for entry into MODE Applicabilities.	Typed ITS Page: 3.6.9-1 Typed ITS Bases Page: B 3.6.9-3 ISTS Mark-up Page: 3.6-40 ISTS Bases Mark-up Page: B 3.6-118 CTS Mark-up Pages: 1 (Units 1 & 2) Discussion of Changes Page: 1
CTS Amendment 225/206	Revised boron concentration requirements.	Typed ITS Page: 3.6.7-2 Typed ITS Bases Page: B 3.6.7-7 ISTS Mark-up Page: 3.6-36 Insert to Page 3.6-36 ISTS JFDs: ITS 3.6.7: 1 ISTS Bases Mark-up Pages: B 3.6-106 Insert to Page 3.6-106 CTS Mark-up Pages: ITS 3.6.7: 1 of 4 (Unit 2) 3 of 4 (Unit 2)

North Anna Power Station
Summary of Changes Not Associated with RAIs
July 20, 2001 Letter
Section 3.7

Virginia Electric and Power Company's letter of July 20, 2001 (Serial Number 01-435), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.7.

Source of Change	Summary of Change	Affected Pages
TSTF-359	Revised allowance for entry into MODE Applicabilities.	Typed ITS Page: 3.7.4-1 Typed ITS Bases Page: B 3.7.4-3 ISTS Mark-up Page: 3.7-9 ISTS Bases Mark-up Page: B 3.7-21
CTS Amendment 227/208	Increased fuel enrichment and modified spent fuel pool criticality limits. Added two new specifications to ITS 3.7.	Typed ITS Pages: 3.7.17-1 3.7.18-1 through 3.7.18-4 Typed ITS Bases Pages: B 3.7.17-1 through B 3.7.17-3 B 3.7.18-1 through B 3.7.18-3 ISTS Mark-up Pages: 3.7-36 through 3.7-39 Figure 3.7.18-1 Figure 3.7.18-2 ISTS JFD Pages: ITS 3.7.17: 1 ITS 3.7.18: 1 ISTS Bases Mark-up Pages: 3.7-81 through 3.7-87 ISTS Bases JFDs: ITS 3.7.17: 1 ITS 3.7.18: Page 1 CTS Mark-up Pages: ITS 3.7.17: 1 of 1 (Units 1 & 2) ITS 3.7.18: 1, 2, and 3 (Units 1 & 2) Discussions of Changes Pages: ITS 3.7.17: 1 ITS 3.7.18: 1

North Anna Power Station
Summary of Changes Not Associated with RAIs
July 20, 2001 Letter
Section 3.9

Virginia Electric and Power Company's letter of July 20, 2001 (Serial Number 01-435), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.9.

Source of Change	Summary of Change	Affected Pages
CTS Amendment 225/206	Revised boron concentration requirements.	CTS Mark-up Pages: ITS 3.9.1: 1 of 1 (Units 1 and 2)

North Anna Power Station
Summary of Changes Not Associated with RAIs
July 20, 2001 Letter
Chapter 4.0

Virginia Electric and Power Company's letter of July 20, 2001 (Serial Number 01-435), included changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that were not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Chapter 4.0.

Source of Change	Summary of Change	Affected Pages
CTS Amendment 227/208	Increased fuel enrichment and modified spent fuel pool criticality limits. Added two new specifications to ITS 3.7.	Typed ITS Pages: 4.0-1 4.0-2 ISTS Mark-up Pages: 4.0-1 Insert to 4.0-1 4.0-2 Insert to 4.0-2 ISTS JFD Page: 1 CTS Mark-up Pages: 4 through 6 (Unit 1) 4 and 5 (Unit 2)

ITS 2.0

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Chapter 2.0, Safety Limits

RAI 2.1.1-1
ITS 2.1.1 Reactor Core SLs, Insert
CTS 2.1.1 Reference to figures and limits relocated to the COLR
DOC LA.1

NRC RAI: The DOC LA.1 describes the CTS changes as "relocating the reactor core SLs to the COLR ...". **Comment**: The DOC LA.1 description is incorrect. The SLs are retained in the ITS. The limits that are relocated are operational limits that preclude reaching the SLs. Safety Limits must be in the TS per regulation. The DOC needs to be rewritten.

Response: The Company will take the action proposed in the Comment. DOC LA.1 has been revised to state that cycle-specific parameters are relocated to the COLR and that the Safety Limits remain in the Technical Specifications.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 5 – Removal of Cycle-Specific Parameter Limits from the Technical Specifications to the Core Operating Limits Report)* CTS 2.1.1 requires that the combination of THERMAL POWER, pressurizer pressure, and the highest operating loop coolant temperature not exceed the limits in CTS Figure 2.1-1. ITS 2.1.1 states that the combination of THERMAL POWER, RCS highest loop average temperature, and pressurizer pressure shall not exceed the limits specified in the COLR and provides specific limits on DNBR and peak fuel centerline temperature. This changes the CTS by relocating cycle-specific parameter limits to the COLR. The limiting Safety Limit parameters are retained in the SL.

The removal of these cycle-specific parameter limits from the Technical Specifications to the COLR and the retention of the limiting Safety Limits in the Technical Specifications is acceptable because the cycle-specific limits are developed or utilized under NRC-approved methodologies which will ensure that the Safety Limits are met. The NRC documented in Generic Letter 88-16, Removal of Cycle-Specific Parameter Limits From the Technical Specifications, that this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the Safety Limits. NRC-approved Topical Report WCAP-14483-A, "Generic Methodology for Expanded Core Operating Limits Report" determined that the specific values for these parameters may be relocated to the COLR provided the limiting Safety Limits continue to appear in the Technical Specifications. The methodologies used to develop the parameters in the COLR have obtained prior approval by the NRC in accordance with Generic Letter 88-16. Also, this change is acceptable because the removed information will be adequately controlled in the COLR under the requirements provided in ITS 5.6.5, Core Operating Limits Report. ITS 5.6.5 ensures that the applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems limits, and nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met. This change is designated as a less restrictive removal of detail change because information relating to cycle-specific parameter limits is being removed from the Technical Specifications.

RAI 2.1.1-1 R4

LESS RESTRICTIVE CHANGES

L.1 *(Category 8 – Deletion of Reporting Requirements)* CTS 6.7.1 states that when a Safety Limit is violated, the NRC Operations Center must be notified within one hour, the Vice President - Nuclear Operations and the MSRC shall be notified within 24 hours, and a Safety Limit Violation Report must be prepared and submitted to the NRC, the Vice

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Chapter 2.0, Safety Limits

RAI 2.1.2-1
ITS Bases 2.1.2, Applicable Safety Analyses
Reactor Trip System Allowable Values and Trip Setpoints
JFD-2

NRC RAI: The ITS revises the third paragraph of the Bases STS 2.1.2 Applicable Safety Analyses by replacing the word "setpoint" with "allowable value." **Comment**: The third paragraph of the Bases ITS 2.1.2 Applicable Safety Analyses discusses an allowable value as being "set." Setpoints are "set," not allowable values. The replacing of the word "setpoint" with "allowable value" appears to be wrong.

Response: The Company will take the action proposed in the Comment, with certain modifications. The use of the term "setpoint" is avoided in the NAPS ITS as the setpoints are no longer contained in the Technical Specifications. The term "allowable value" will be used, but the sentence is revised to state that the allowable values are "determined" instead of "set."

BASES

APPLICABLE SAFETY ANALYSES (continued)

The RCS pressurizer safety valves are sized to prevent system pressure from exceeding the design pressure by more than 10%, as specified in Section III of the ASME Code for Nuclear Power Plant Components (Ref. 2). The transient that establishes the required relief capacity, and hence valve size requirements and lift settings, is a complete loss of external load without a direct reactor trip. During the transient, no control actions are assumed, except that the safety valves on the secondary plant are assumed to open when the steam pressure reaches the secondary plant safety valve settings, and nominal feedwater supply is maintained.

The Reactor Trip System allowable values (Ref. 5), together with the settings of the MSSVs, provide pressure protection for normal operation and AOOs. The reactor high pressure trip allowable value is specifically determined to provide protection against overpressurization (Ref. 5). The safety analyses for both the high pressure trip and the RCS pressurizer safety valves are performed using conservative assumptions relative to pressure control devices. | RAI 2.1.2-1 R4

More specifically, no credit is taken for operation of the following:

a. Pressurizer power operated relief valves (PORVs);

b. Steam Generator PORVs;

c. Steam Dump System;

d. Reactor Control System;

e. Pressurizer Level Control System; or

f. Pressurizer spray valve.

SAFETY LIMITS

The maximum transient pressure allowed in the RCS pressure vessel under the ASME Code, Section III, is 110% of design pressure. The maximum transient pressure allowed in the RCS piping, valves, and fittings under USAS, Section B31.1 (Ref. 6) is 120% of design pressure. The most limiting of these two allowances is the 110% of design pressure; therefore, the SL on maximum allowable RCS pressure is 2735 psig.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The RCS pressurizer safety valves are sized to prevent system pressure from exceeding the design pressure by more than 10%, as specified in Section III of the ASME Code for Nuclear Power Plant Components (Ref. 2). The transient that establishes the required relief capacity, and hence valve size requirements and lift settings, is a complete loss of external load without a direct reactor trip. During the transient, no control actions are assumed, except that the safety valves on the secondary plant are assumed to open when the steam pressure reaches the secondary plant safety valve settings, and nominal feedwater supply is maintained.

The Reactor Trip System ~~setpoints~~ allowable values (Ref. 5), together with the settings of the MSSVs, provide pressure protection for normal operation and AOOs. The reactor high pressure trip ~~setpoint~~ allowable value is specifically ~~set~~ determined to provide protection against overpressurization (Ref. 5). The safety analyses for both the high pressure trip and the RCS pressurizer safety valves are performed using conservative assumptions relative to pressure control devices.

(2) RAI 2.1.2-1 R4

More specifically, no credit is taken for operation of the following:

a. Pressurizer power operated relief valves (PORVs);

b. ~~Steam line relief valve~~; Steam Generator PORVs (2)

c. Steam Dump System;

d. Reactor Control System;

e. Pressurizer Level Control System; or

f. Pressurizer spray valve.

SAFETY LIMITS

The maximum transient pressure allowed in the RCS pressure vessel under the ASME Code, Section III, is 110% of design pressure. The maximum transient pressure allowed in the RCS piping, valves, and fittings under USAS, Section B31.1 (Ref. 6) is 120% of design pressure. The most limiting of these two allowances is the 110% of design pressure; therefore, the SL on maximum allowable RCS pressure is 2735 psig. (3)

(continued)

Rev. 4

ITS 3.1

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.1, Reactivity Control Systems

RAI 3.1.4-1
ITS 3.1.4 Rod Group Alignment Limits, and associated Bases
ITS 3.1.4 LCO Note on Indicated Rod Position
CTS Applicability Footnote
JFD-7

NRC RAI: The ITS and CTS notes permit a wider than normal indicated rod position inaccuracy band for 1 hour in every 24 hour period, to allow for thermal soak time. **Comment**: The intent of the LCO on alignment limits is to ensure the control rods are aligned, and not to focus on, or "spec," the rod position indication system; there is a separate Rod Position Indication specification to perform that function. The CTS note is not consistent with the intent of the STS LCO. If there is a need for thermal soak time to be addressed in the ITS, it seems that the Rod Position Indication specification is the place.

Response: The Company does not agree with the action recommended in the Comment. During the development of the North Anna ITS, careful consideration was given to the proper location of the CTS exception allowing wider than normal indicated rod position deviation from the group step counter demand position. We carefully considered and then rejected placing the exception in ITS 3.1.7 (ISTS 3.1.8), Rod Position Indication. ITS 3.1.7 does not contain the normal 12 step rod deviation limit to which the CTS exception applies and the OPERABILITY requirements in ISTS 3.1.7 are not based on rod alignment. The Company determined that ISTS 3.1.7 would need to be modified extensively in order to include the CTS exception, which is contrary to the goal of maintaining the greatest consistency between NUREG-1431 and the North Anna ITS as the design and licensing basis allow. In addition, because ISTS 3.1.4 contains the 12 step normal rod alignment limit, and SR 3.1.4.1 requires verification the rods are within the alignment limit, it would still be necessary to modify ISTS 3.1.4 to address the CTS exception. Therefore, we determined that in order to retain the CTS exception and to maximize consistency with NUREG-1431, the CTS exception is best placed in ITS 3.1.4 with Bases discussing the relationship between the Note and ITS 3.1.7.

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.1, Reactivity Control Systems

RAI 3.1.4-2
ITS 3.1.4 Rod Group Alignment Limits, Bases
Required Actions
Incorporation of TSTF-240 into the ITS

NRC RAI: The ITS adopts TSTF-240, which is not approved. **Comment**: TSTF-240 modifies the "B" Required Actions, and associated Bases. TSTF-240 was not approved because it deleted relevant information in the Bases that happened to be in the Bases paragraphs of the Required Actions that were removed. The actual changes to the Required Actions are acceptable. The information in the deleted B.1 Bases paragraph should be retained.

Response: The Company will take the action proposed in the Comment. References to TSTF-240 are removed and a specific JFD is added addressing the changes. In a letter from the NRC to the TSTF dated July 16, 1998, the NRC stated that the Bases information deleted in TSTF-240 that should be retained is in LCO 3.2.2 (3.2.2 Action A.1.1, NUREG-1431, Revision 1 page B 3.2-24). This information is retained in the North Anna ITS, Specification 3.2.2 Bases. There is no information in ITS 3.1.4, Required Action B.1 which should be retained.

CTS

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Rod Group Alignment Limits

TSTF-136

LCO 3.1.3.1

LCO 3.1.5 All shutdown and control rods shall be OPERABLE with all individual indicated rod positions within 12 steps of their group step counter demand position.

AND

shall be

TSTF-136 TSTF-107

LCO 3.1.3.1 NOTE

Insert

APPLICABILITY: MODES 1 and 2.

to be within the limits provided in the COLR

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.1.3.1 action a A. One or more rod(s) untrippable. (inoperable)	A.1.1 Verify SDM is ≥ [1.6]% Δk/k. OR A.1.2 Initiate boration to restore SDM to within limit. AND A.2 Be in MODE 3.	1 hour 1 hour 6 hours
B. One rod not within alignment limits.	B.1 Restore rod to within alignment limits. OR B.2.1.1 Verify SDM is ≥ [1.6]% Δk/k. OR	1 hour 1 hour (continued)

RAI 3.1.4-2 R4

TSTF-9

TSTF-107

3.1.3.1 action c.2

action C.2.6)

to be within the limits provided in the COLR

AND

Once per 12 hours thereafter

1. The LCO has been modified by a Note to incorporate a North Anna specific allowance. The Note addresses the inaccuracy of the rod position indication system at less than 50% RTP and allows the accuracy of the individual rod position indications to decrease from 12 steps to 24 steps for up to 1 hour in every 24 hours. This allowance applies to the indicated position of the rod, not its actual position. If the actual position is known to be greater than 12 steps from the group step counter demand position, the Conditions and Required Actions of the specification must be followed.

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. The ITS Actions have been modified to incorporate a North Anna specific allowance to reduce power or verify the reactor peaking factors when a single rod is not within the alignment limits. This is appropriate because verification that the peaking factors are within limits assures that the reactor power distribution is acceptable and a reduction in power is not necessary. If the peaking factors cannot be verified, a reduction in power is appropriate.

4. ISTS Required Action B.1 requires restoration of a rod not within alignment limits within 1 hour or performance of a number of other actions, such as verification of SHUTDOWN MARGIN, reduction in reactor power, measurement of hot channel factors, and re-evaluation of the safety analyses. The Writer's Guide for the Restructured Technical Specifications, NUMARC 93-03, Section 4.1.6.g, states "A Required Action which requires restoration, such that the Condition is no longer met, is considered superfluous. It is only included if it would be the only Required Action for the Condition or it is needed for presentation clarity." Neither exception applies in this case. In fact, the inclusion of Required Action B.1 requires an additional level of indenting and numbering for the remaining Required Actions in Condition B, which reduces its clarity. Therefore, Required Action B.1 is deleted and the subsequent Required Actions renumbered.

RAI 3.1.4-2 R4

BASES

ACTIONS

A.2 (continued)

this status, the unit must be brought to at least MODE 3 within 6 hours.

The allowed Completion Time is reasonable, based on operating experience, for reaching MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

B.1

When a rod becomes misaligned, it can usually be moved and is still trippable. If the rod can be realigned within the Completion Time of 1 hour, local xenon redistribution during this short interval will not be significant, and operation may proceed without further restriction.

An alternative to realigning a single misaligned RCCA to the group average position is to align the remainder of the group to the position of the misaligned RCCA. However, this must be done without violating the bank sequence, overlap, and insertion limits specified in LCO 3.1.6, "Shutdown Bank Insertion Limits," and LCO 3.1.7, "Control Bank Insertion Limits." The Completion Time of 1 hour gives the operator sufficient time to adjust the rod positions in an orderly manner.

B.2.1.1 and B.2.1.2

With a misaligned rod, SDM must be verified to be within limit or boration must be initiated to restore SDM to within limit.

In many cases, realigning the remainder of the group to the misaligned rod may not be desirable. For example, realigning control bank B to a rod that is misaligned 15 steps from the top of the core would require a significant power reduction, since control bank D must be moved fully in and control bank C must be moved in to approximately 100 to 115 steps.

Power operation may continue with one RCCA trippable but misaligned, provided that SDM is verified within 1 hour.

(continued)

Rev. 4

BASES

ACTIONS

B.2.1.1 and B.2.1.2 (continued) ⑦ RAI 3.1.4-2 R4

The Completion Time of 1 hour represents the time necessary for determining the actual unit SDM and, if necessary, aligning and starting the necessary systems and components to initiate boration.

B.2.2.1, B.2.2.2, B.2.3, B.2.4, B.2.5, and B.2.6 ③

For continued operation with a misaligned rod, RTP must be reduced or SDM must periodically be verified within limits, hot channel factors ($F_Q(Z)$ and $F^N_{\Delta H}$) must be verified within limits, and the safety analyses must be re-evaluated to confirm continued operation is permissible. ⑨

Reduction of power to 75% RTP ensures that local LHR increases due to a misaligned RCCA will not cause the core design criteria to be exceeded (Ref. 4). The Completion Time of 2 hours gives the operator sufficient time to accomplish an orderly power reduction without challenging the Reactor Protection System. ④ ④

When a rod is known to be misaligned, there is a potential to impact the SDM. Since the core conditions can change with time, periodic verification of SDM is required. A Frequency of 12 hours is sufficient to ensure this requirement continues to be met. ⑦

Alternatively,

Verifying that $F_Q(Z)$ and $F^N_{\Delta H}$ are within the required limits ensures that current operation at 75% RTP with a rod misaligned does not result in power distributions that may invalidate safety analysis assumptions at full power. The Completion Time of 72 hours allows sufficient time to obtain flux maps of the core power distribution using the incore flux mapping system and to calculate $F_Q(Z)$ and $F^N_{\Delta H}$. ⑦ ⑧ ⑦

Does

Once current conditions have been verified acceptable, time is available to perform evaluations of accident analysis to determine that core limits will not be exceeded during a Design Basis Event for the duration of operation under these conditions. A Completion Time of 5 days is sufficient time to obtain the required input data and to perform the analysis. TSTF-331

(continued)

The accident analyses presented in UFSAR Chapter 15 (Ref. 3) that may be adversely affected will be evaluated to ensure that the analysis results remain valid for the duration of continued operation under these conditions. Rev. 4

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.1, Reactivity Control Systems

RAI 3.1.5-1
ITS 3.1.5 Shutdown Bank Insertion Limits
ITS Condition B and associated Required Actions
CTS 3.1.3.5 Actions b.1, b.3, and b.4
JFD-1

NRC RAI: The ITS adopts the CTS allowance for one Shutdown Bank to be below the insertion limit. **Comment**: Has this Condition been entered in the past; historically what is the need for this Condition? The second Condition B statement, for each control and shutdown bank to be within alignment limits, should address control and shutdown rods. Rewording the Condition will avoid potential confusion since only one rod is permitted to be misaligned.

Response: The Company will take the action proposed in the Comment. The second Condition B statement is revised to refer to "rods," not banks, being within the alignment limit.

This allowance was added to the CTS by Amendment 179/160, approved on March 1, 1994. The change was requested because on several occasions North Anna Units 1 and 2 have experienced control rod urgent failure alarms during the rod freedom Surveillance testing (i.e., the equivalent of ITS SR 3.1.4.2). This alarm is indicative of an internal failure in the rod control equipment that affects the ability of the system to move control rod assemblies. These failures do not affect the trippability of the control rod assemblies. These failures have a number of causes and take some time to diagnose. With an urgent failure alarm, the ISTS allows only 2 hours for troubleshooting, repair, and restoration prior to requiring the unit to go to MODE 3 within 6 hours. The proposed ITS, which is consistent with the CTS, allows 72 hours for troubleshooting, repair, and restoration, provided the requirements in Condition B are met, prior to requiring a shutdown.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One shutdown bank inserted ≤ 18 steps below the insertion limit and immovable. AND Each control and shutdown rod within limits of LCO 3.1.4. AND Each control bank within the insertion limits of LCO 3.1.6.	B.1 Verify SDM to be within the limits provided in the COLR. AND B.2 Restore the shutdown bank to within insertion limit.	Once per 12 hours 72 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify each shutdown bank is within the insertion limits specified in the COLR.	12 hours

BASES

ACTIONS

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

of SDM or initiation of boration within 1 hour is required, since the SDM in MODES 1 and 2 is ensured by adhering to the control and shutdown bank insertion limits (see LCO 3.1.1).

If shutdown banks are not within their insertion limits, then SDM will be verified by performing a reactivity balance calculation, considering the effects listed in the BASES for SR 3.1.1.1.

The allowed Completion Time of 2 hours provides an acceptable time for evaluating and repairing minor problems without allowing the unit to remain in an unacceptable condition for an extended period of time.

B.1 and B.2

If a shutdown bank is inserted below the insertion limits, power operation may continue for up to 72 hours provided that the bank is not inserted more than 18 steps below the insertion limits, the control and shutdown rods are within the operability and rod group alignment requirements provided in LCO 3.1.4, and the control banks are within the insertion limits provided in LCO 3.1.6. The requirement to be in compliance with LCO 3.1.4 and LCO 3.1.6 ensures that the rods are trippable, and power distribution is acceptable during the time allowed to restore the inserted rod. If any of these Conditions are not met, Condition A must be applied. RAI 3.1.5-1 R4

The Completion Time of 72 hours is based on operating experience and provides an acceptable time for evaluating and repairing problems with the rod control system.

C.1

If the Required Action and associated Completion Time of Conditions A or B are not met, the unit must be brought to a MODE where the LCO is not applicable. The allowed Completion Time of 6 hours is reasonable, based on operating experience, for reaching the required MODE from full power conditions in an orderly manner and without challenging unit systems.

INSERT

B. One shutdown bank inserted ≤ 18 steps below the insertion limit and immovable. AND Each control and shutdown rod within limits of LCO 3.1.4. AND Each control bank within the insertion limits of LCO 3.1.6.	B.1 Verify SDM to be within the limits provided in the COLR. AND B.2 Restore the shutdown bank to within insertion limit.	Once per 12 hours 72 hours	R4 RAI 3.1.5-1 R4

JUSTIFICATION FOR DEVIATIONS
ITS 3.1.5, SHUTDOWN BANK INSERTION LIMITS

1. The Actions have been modified to incorporate a North Anna specific allowance. The CTS allows a shutdown bank to be inserted below the insertion limits and power operation to continue for up to 72 hours provided that the bank is not inserted more than 18 steps below the insertion limit, the control and shutdown rods are within the limits provided in LCO 3.1.4, and the control banks are within the insertion limits provided in LCO 3.1.6. The shutdown banks are normally fully withdrawn prior to reactor criticality and remain fully withdrawn until after reactor shutdown. The shutdown banks are exercised every 92 days under SR 3.1.4.2 by moving the banks into the core more than 10 steps and ITS 3.1.5 Applicability includes a Note excluding the shutdown bank insertion limits during this testing. However, should the shutdown bank become immovable due to problems with the control rod drive system during the performance of the Surveillance, time is needed to diagnose and repair the problem. Therefore, the CTS allows 72 hours to restore the shutdown bank to within its limit. The requirement to be in compliance with LCO 3.1.4 and LCO 3.1.6 ensures that the required shutdown margin is available, the rods are trippable, and power distribution is acceptable during the time allowed to restore the inserted bank. Editorial changes are made to the other Actions to accommodate this change.

RAI 3.1.5-1 R4

INSERT

B.1, and B.2

If a shutdown bank is inserted below the insertion limits, power operation may continue for up to 72 hours provided that the bank is not inserted more than 18 steps below the insertion limits, the control and shutdown rods are within the operability and rod group alignment requirements provided in LCO 3.1.4, and the control banks are within the insertion limits provided in LCO 3.1.6. The requirement to be in compliance with LCO 3.1.4 and LCO 3.1.6 ensures that the rods are trippable, and power distribution is acceptable during the time allowed to restore the inserted rod. If any of these Conditions are not met, Condition A must be applied.

RAI 3.1.5-1 R4

The Completion Time of 72 hours is based on operating experience and provides an acceptable time for evaluating and repairing problems with the rod control system.

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.1, Reactivity Control Systems

RAI 3.1.5-2
ITS 3.1.5 Shutdown Bank Insertion Limits, Bases
ITS 3.1.5 Bases Applicability section
JFD-6

NRC RAI: The last sentence to the ITS 3.1.5 Bases Applicability section has been added, and is not in the STS wording. The sentence reads, "Should the SR testing be suspended due to equipment malfunction with the rod bank below the insertion limit, the applicable Condition should be entered." **Comment**: What is the purpose of this sentence? Is it necessary?

Response: ITS 3.1.5 contains an Applicability Note which states, "This LCO is not applicable while performing SR 3.1.4.2." The North Anna ITS retains as Condition B a CTS allowance which allows 72 hours to restore a shutdown bank inserted below the insertion limit provided other conditions are met. As described in the response to RAI 3.1.5-1, this allowance is used if a rod urgent failure occurs during the performance of SR 3.1.4.2. The purpose of the additional Bases information is to clearly state that, should a rod urgent failure occur during the performance of SR 3.1.4.2, the Applicability Note no longer applies and the appropriate Condition should be entered. Without the Bases clarification, it may not be clear whether the Note applies should performance of SR 3.1.4.2 be interrupted due to an equipment failure.

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.1, Reactivity Control Systems

RAI 3.1.6-1
ITS 3.1.6 Control Bank Insertion Limits
ITS Condition C and associated Required Actions
CTS 3.1.3.6 Actions b.1, b.3, and b.4
JFD-1

NRC RAI: The ITS adopts the CTS allowance for one Control Bank to be below the insertion limit. **Comment:** Has this Condition been entered in the past; historically what is the need for this Condition? The second Condition C statement, for each control and shutdown bank to be within alignment limits, should address control and shutdown rods. Rewording the Condition will avoid potential confusion since only one rod is permitted to be misaligned. In addition, recommend rewording the first Condition C statement to read as the first ITS 3.1.5 Condition B statement reads, that is: "One Control Bank inserted ...".

Response: The Company will take the action proposed in the Comment, with certain modifications. The second Condition C statement is revised to refer to "rods," not banks, being within the alignment limit.

This allowance was added to the CTS by Amendment 179/160, approved on March 1, 1994. The change was requested because on several occasions North Anna Units 1 and 2 have experienced control rod urgent failure alarms during the rod freedom Surveillance testing (i.e., the equivalent of ITS SR 3.1.4.2). This alarm is indicative of an internal failure in the rod control equipment that affects the ability of the system to move control rod assemblies. These failures do not affect the trippability of the control rod assemblies. These failures have a number of causes and take some time to diagnose. With an urgent failure alarm, the ISTS allows only 2 hours for troubleshooting, repair, and restoration prior to requiring the unit to MODE 3 within 6 hours. The proposed ITS, which is consistent with the CTS, allows 72 hours for troubleshooting, repair, and restoration, provided the requirements in Condition B are met, prior to requiring a shutdown.

The first condition in Condition C states "Control bank A, B, or C inserted ..." instead of "One Control Bank inserted ..." to be consistent with the CTS which does not apply this allowance to Control Bank D (See Unit 1 and Unit 2 CTS markup pages 1 of 3, footnote # #). This allowance is not needed for Control Bank D as it is not normally necessary to violate the insertion limits for Control Bank D when performing the rod freedom Surveillance test. Therefore, the second Condition C statement is acceptable as written.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Restore control bank(s) to within limits.	2 hours
C. Control bank A, B, or C inserted ≤ 18 steps below the insertion limit and immovable. AND Each control and shutdown rod within limits of LCO 3.1.4. AND Each shutdown bank within the insertion limits of LCO 3.1.5.	C.1 Verify SDM to be within the limits provided in the COLR. AND C.2 Restore the control bank to within insertion limit.	Once per 12 hours 72 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 2 with K_{eff} < 1.0.	6 hours

R4

RAI 3.1.6-1 R4

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR	3.1.6.1	Verify estimated critical control bank position is within the insertion limits specified in the COLR.	Within 4 hours prior to achieving criticality

BASES

ACTIONS

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

When the control banks are outside the acceptable insertion limits, except as allowed by Condition C, they must be restored to within those limits. This restoration can occur in two ways:

a. Reducing power to be consistent with rod position; or

b. Moving rods to be consistent with power.

The allowed Completion Time of 2 hours for restoring the banks to within the insertion, sequence, and overlaps limits provides an acceptable time for evaluating and repairing minor problems without allowing the unit to remain in an unacceptable condition for an extended period of time.

C.1 and C.2

If Control Banks A, B, or C are inserted below the insertion limits, power operation may continue for up to 72 hours provided that the bank is not inserted more than 18 steps below the insertion limits, the control and shutdown rods are within the operability and rod group alignment requirements provided in LCO 3.1.4, and the shutdown banks are within the insertion limits provided in LCO 3.1.5. The requirement to be in compliance with LCO 3.1.4 and LCO 3.1.5 ensures that the rods are trippable, and power distribution is acceptable during the time allowed to restore the inserted rod. If any of these Conditions are not met, Condition B must be applied. RAI 3.1.6-1 R4

The Completion Time of 72 hours is based on operating experience and provides an acceptable time for evaluating and repairing problems with the rod control system.

D.1

If Required Actions A.1 and A.2, B.1 and B.2, or C.1 and C.2 cannot be completed within the associated Completion Times, the unit must be brought to MODE 2 with $k_{eff} < 1.0$, where the LCO is not applicable. The allowed Completion Time of 6 hours is reasonable, based on operating experience, for reaching the required MODE from full power conditions in an orderly manner and without challenging unit systems.

INSERT

C. Control bank A, B, or C inserted ≤ 18 steps below the insertion limit and immovable. AND Each control and shutdown rod within limits of LCO 3.1.4. AND Each shutdown bank within the insertion limits of LCO 3.1.5.	C.1 Verify SDM to be within the limits provided in the COLR. AND C.2 Restore the control bank to within insertion limit.	Once per 12 hours 72 hours	R4 RAI 3.1.6-1 R4

1. The Actions have been modified to incorporate a North Anna specific allowance. The CTS allows any control bank, except control bank D, to be inserted below the insertion limits and power operation to continue for up to 72 hours provided that the bank is not inserted more than 18 steps beyond the insertion limits provided in the COLR, the control and shutdown rods are within the limits provided in LCO 3.1.4, and the shutdown banks are within the insertion limits provided in LCO 3.1.5. The control banks are normally fully withdrawn during power operation. The control banks are exercised every 92 days under SR 3.1.4.2 by moving the banks into the core more than 10 steps and Specification 3.1.6 Applicability includes a Note excluding the control bank insertion limits during this testing. However, should the control bank become immovable due to problems with the control rod drive system during the performance of the Surveillance, time is needed to diagnose and repair the problem. Therefore, the CTS allows 72 hours to restore the control bank to within its limit. The requirement to be in compliance with LCO 3.1.4 and LCO 3.1.5 ensures that the required shutdown margin is available, the rods are trippable, and power distribution is acceptable during the time allowed to restore the inserted bank. Editorial changes are made to the other Actions to accommodate this change. For example, ITS Condition B is moved to Condition A so that the two control bank insertion Conditions appear together and in order of increasing Completion Times.

RAI 3.1.6-1 R4

2. SR 3.1.6.1 is clarified to state that the estimated critical control bank position must be verified to be within the insertion limits, instead of just limits, specified in the COLR. Many limits are specified in the COLR and the clarification is needed to avoid confusion.

INSERT

C.1, and C.2

If Control Banks A, B, or C are inserted below the insertion limits, power operation may continue for up to 72 hours provided that the bank is not inserted more than 18 steps below the insertion limits, the control and shutdown rods are within the operability and rod group alignment requirements provided in LCO 3.1.4, and the shutdown banks are within the insertion limits provided in LCO 3.1.5. The requirement to be in compliance with LCO 3.1.4 and LCO 3.1.5 ensures that the rods are trippable, and power distribution is acceptable during the time allowed to restore the inserted rod. If any of these Conditions are not met, Condition B must be applied.

RAI 3.1.6-1 R4

The Completion Time of 72 hours is based on operating experience and provides an acceptable time for evaluating and repairing problems with the rod control system.

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.1, Reactivity Control Systems

RAI 3.1.6-2
ITS 3.1.6 Control Bank Insertion Limits, Bases
ITS 3.1.6 Bases Applicability section
JFD-5

NRC RAI: The last sentence to the ITS 3.1.6 Bases Applicability section has been added, it is not in the STS wording. The sentence reads, "Should the SR testing be suspended due to equipment malfunction with the rod bank below the insertion limit, the applicable Condition should be entered." **Comment**: What is the purpose of this sentence? Is it necessary?

Response: ITS 3.1.6 contains an Applicability Note which states, "This LCO is not applicable while performing SR 3.1.4.2." The North Anna ITS retains as Condition B a CTS allowance which allows 72 hours to restore a control bank inserted below the insertion limit provided other conditions are met. As described in the response to RAI 3.1.6-1, this allowance is used if a rod urgent failure occurs during the performance of SR 3.1.4.2. The purpose of the additional Bases information is to clearly state that, should a rod urgent failure occur during the performance of SR 3.1.4.2, the Applicability Note no longer applies and the appropriate Condition should be entered. Without the Bases clarification, it may not be clear whether the Note applies should performance of SR 3.1.4.2 be interrupted due to an equipment failure.

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.1, Reactivity Control Systems

RAI 3.1.7-1
ITS 3.1.7 Rod Position Indication
ITS SR 3.1.7.1 to perform an RPI Channel Calibration
CTS 4.1.3.2.1.b
JFD-4
DOC L.4

NRC RAI: The ITS retains the CTS SR to perform an RPI Channel Calibration, rather than adopt the STS SR to verify RPI agreement with the group demand position indication over the entire range of rod travel, due to plant specific thermal drift characteristics. **Comment**: The CTS SR frequency of 18 months is also retained. Recommend adopting the STS SR frequency of, "Once prior to criticality after each removal of the reactor head."

Response: The Company does not agree with the action recommended in the Comment. The components included in the Channel Calibration are not affected by the removal of the reactor vessel head and the Frequency is based on the drift characteristics of the components being calibrated, not a need to confirm proper operation of the RPI instruments after removal of the reactor vessel head. Therefore, it is more appropriate to retain the 18 month Frequency for the Channel Calibration.

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.1, Reactivity Control Systems

RAI 3.1.8-1
ITS 3.1.8 Primary Grade Water Flow Path Isolation Valves
CTS 3.1.1.3.2 Boron Dilution Valve Position
Terminology
DOC A.2

NRC RAI: The ITS retains the CTS requirements on Primary Grade Water Flow Path Isolation Valves, including the terminology to "... secure in the closed position ...". **Comment:** While the term "secure" is a common and accepted term, it would be useful to have some discussion in the Bases on what exactly this means; something more then just closed.

Response: The Company does not agree with the action recommended in the comment. CTS 3.1.1.3.2 states that the valves shall be "locked, sealed or otherwise secured in the closed position." North Anna ITS LCO 3.1.8 states that the valves shall be "secured in the closed position" and SR 3.1.8.1 states that the valves shall be "locked, sealed, or otherwise secured in the closed position." This wording is identical to ISTS 3.9.2 which applies these requirements in MODE 6. The term "locked, sealed, or otherwise secured" is commonly used in the ISTS and the Bases never expands on this definition. To provide a discussion on the meaning of this term in this Specification would be inconsistent with the remainder of the ITS Bases.

North Anna Power Station
Summary of Changes Not Associated with RAIs

Section 3.1

This letter includes changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that are not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.1.

Source of Change	Summary of Change	Affected Pages
Internal comment	Revised ITS 3.1.8 to be more consistent with ISTS 3.9.2 and ITS 3.9.2: • Added Condition Note from the ISTS to the ITS to require performance of a boron concentration measurement when a valve is found to be inadvertently open. Without the Note, Required Action A.3 would never be performed, as Required Action A.2 restores compliance with the LCO. • Changed time allowed to perform SR 3.1.1.1 from one to four hours. Unit 1 CTS does not require performance of SR 3.1.1.1. Unit 2 CTS allows one hour. ISTS 3.9.2 allows four hours.	Typed ITS Page: 3.1.8-1 Typed ITS Bases Pages: B 3.1.8-2 B 3.1.8-3 ISTS Mark-up Page: Insert to 3.1.8 – first page ISTS Bases Mark-up Page: Insert to Section 3.1.8 Bases – last page CTS Mark-up Pages: ITS 3.1.8: Page 1 of 1 (Units 1 and 2) Discussion of Changes (DOC) Pages: ITS 3.1.8: 2 4 5
Internal comment	Changed valve designation from "2-CH140" to "2-CH-140."	Typed ITS Bases Page: B 3.1.8-1 ISTS Bases Mark-up Page: Insert to Section 3.1.8 Bases - page 2
Internal comment	Changed ITS 3.1.5 Condition B and ITS 3.1.6 Condition C Completion Times from "Every 12 hours" to "Once per 12 hours" to be consistent with the ISTS.	Typed ITS Pages: 3.1.5-2 3.1.6-2 ISTS Mark-up Pages: Insert to Page 3.1-12 Insert to Page 3.1-14
WOG-ED-13	Clarified the wording in the SRs in ITS 3.1.5 and 3.1.6.	Typed ITS Pages: 3.1.5-2 3.1.6-3 ISTS Mark-up Pages: 3.1-13 3.1-16

3.1 REACTIVITY CONTROL SYSTEMS

3.1.8 Primary Grade Water Flow Path Isolation Valves

LCO 3.1.8 Each valve used to isolate primary grade water flow paths shall be secured in the closed position.

---------- NOTE ----------

Primary grade water flow path isolation valves may be opened under administrative control for planned boron dilution or makeup activities.

APPLICABILITY: MODES 3, 4, and 5.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. ---------NOTE--------- Required Action A.3 must be completed whenever Condition A is entered. ---------- One or more valves not secured in closed position.	A.1	Suspend positive reactivity additions.	Immediately
	AND		
	A.2	Secure valves in closed position.	15 minutes
	AND		
	A.3	Perform SR 3.1.1.1.	4 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.8.1	Verify each valve in the affected flow path that isolates primary grade water flow paths is locked, sealed, or otherwise secured in the closed position.	Within 15 minutes following a boron dilution or makeup activity

BASES

LCO (continued)

The LCO is modified by a Note which allows the primary grade water flow path isolation valves to be opened under administrative control for planned boron dilution or makeup activities.

APPLICABILITY

This LCO is applicable in MODES 3, 4, and 5 to prevent an inadvertent boron dilution event by ensuring closure of all primary grade water flow path isolation valves.

In MODE 6, LCO 3.9.2, "Primary Grade Water Flow Path Isolation Valves–MODE 6," requires all primary grade water isolation valves to be closed to prevent an inadvertent boron dilution.

In MODES 1 and 2, the boron dilution accident was analyzed and was found to be capable of being mitigated.

ACTIONS

A.1, A.2, and A.3

Preventing inadvertent dilution of the reactor coolant boron concentration is dependent on maintaining the primary grade water flow path isolation valves locked, sealed, or otherwise secured closed, except as allowed under administrative control by the LCO Note. Because of the possibility of an inadvertent boron dilution, Required Action A.1 prohibits other positive reactivity additions while securing the isolation valves on the primary grade water system. The Completion Time of "Immediately" for suspending positive reactivity additions reflects the importance of preventing known positive reactivity additions so that any boron dilution event can be readily identified and terminated.

The Required Action A.2 Completion Time of 15 minutes for securing the isolation valves provides sufficient time to close and secure the isolation valves on the primary grade water flow paths while minimizing the probability of an unintentional dilution during the Completion Time. Securing the valves in the closed position ensures that the valves cannot be inadvertently opened.

Condition A has been modified by a Note to require that Required Action A.3 be completed whenever Condition A is entered. R4

(continued)

BASES

ACTIONS

A.1, A.2, and A.3 (continued)

The performance of Surveillance 3.1.1.1 under Required Action A.3 verifies that the SDM is within the limits provided in the COLR. It is performed to verify that the required SDM still exists and any inadvertent boron dilution that may have occurred has been detected and corrected. The Completion Time of 4 hours is reasonable, based on the time required to request and analyze an RCS water sample to determine the boron concentration and to compute the SDM. |R4

SURVEILLANCE REQUIREMENTS

SR 3.1.8.1

The primary grade water flow path isolation valves are to be locked, sealed, or otherwise secured closed to isolate possible dilution paths. The likelihood of a significant reduction in the boron concentration during MODES 3, 4, and 5 is remote due to the large mass of borated water in the RCS and the fact that the specified primary grade water flow paths are isolated, precluding a dilution. The SHUTDOWN MARGIN is verified every 24 hours during MODES 3, 4, and 5 under SR 3.1.1.1. The Frequency is based on the time required to verify that the isolation valves in the utilized flow path are locked, sealed, or otherwise secured in the closed position following a boron dilution or makeup activity.

REFERENCES

1. UFSAR, Section 15.2.4.

CTS

3.1 REACTIVITY CONTROL SYSTEMS

3.1.1.3.2

3.1.8 Primary Grade Water Flow Path Isolation Valves

LCO 3.1.8 Each valve used to isolate primary grade water flow paths shall be secured in the closed position.

3.1.1.3.2

---------- NOTE ----------
Primary grade water flow path isolation valves may be opened under administrative control for planned boron dilution or makeup activities.

APPLICABILITY: MODES 3, 4, and 5

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action ----------NOTE---------- Required Action A.3 must be completed whenever Condition A is entered. --- A. One or more valves not secured in closed position.	A.1 Suspend positive reactivity additions. AND A.2 Secure valves in closed position. AND A.3 Perform SR 3.1.1.1.	Immediately 15 minutes 4 hours	R4 R4

unit 1 - New
unit 2 - Action

ACTIONS (Continued)

Condition A has been modified by a Note to require that Required Action A.3 must be completed whenever Condition A is entered. R4

The performance of Surveillance 3.1.1.1 under Required Action A.3 verifies that the SDM is within the limits provided in the COLR. It is performed to verify that the required SDM still exists and any inadvertent boron dilution that may have occurred has been detected and corrected. The Completion Time of 4 hours is reasonable, based on the time required to request and analyze an RCS water sample to determine the boron concentration and to compute the SDM. R4

SURVEILLANCE REQUIREMENTS

SR 3.1.8.1

The primary grade water flow path isolation valves are to be locked, sealed, or otherwise secured closed to isolate possible dilution paths. The likelihood of a significant reduction in the boron concentration during MODES 3, 4, and 5 is remote due to the large mass of borated water in the RCS and the fact that the specified primary grade water flow paths are isolated, precluding a dilution. The SHUTDOWN MARGIN is verified every 24 hours during MODES 3, 4, and 5 under SR 3.1.1.1. The Frequency is based on the time required to verify that the isolation valves in the utilized flow path are locked, sealed, or otherwise secured in the closed position following a boron dilution or makeup activity.

REFERENCES

1. UFSAR, Section 15.2.4.

A.1

ITS 3.1.8

4-1-78

REACTIVITY CONTROL SYSTEMS

BORON DILUTION

VALVE POSITION

ITS

LIMITING CONDITION FOR OPERATION

Insert proposed LCO 3.1.8
Insert proposed LCO 3.1.8 Note

LCO 3.1.8

3.1.1.3.2 ~~The following valves shall be locked, sealed or otherwise secured in the closed position except during planned boron dilution or makeup activities~~

A.2

a. ~~1-CH-217 or~~

b. ~~1-CH-220, 1-CH-241, FCV-1114B and FCV-1113B.~~

L.A.2

APPLICABILITY: MODES 3, 4, 5, and 6 <See ITS 3.9.2>

ACTION: Insert ITS Condition A Note

M.1 | R4

With the above valves not locked, sealed or otherwise secured in the closed position:

a. ~~In MODES 3 and 4 be in COLD SHUTDOWN within 30 hours~~

b. In MODES 5 and 6 suspend all operations involving positive reactivity changes or CORE ALTERATIONS and lock, seal or otherwise secure the valves in the closed position within 15 minutes.

L.1

A.3

Action A.1
Action A.2
Action A.3

Perform SR 3.1.1.1 within 4 hours

M.1 | R4

SURVEILLANCE REQUIREMENTS

SR 3.1.8.1

4.1.1.3.2 The above listed valves shall be verified to be locked, sealed or otherwise secured in the closed position within 15 minutes after a planned boron dilution or makeup activity.

Page 1 of 1

Rev. 4

A.1

ITS 3.1.8

8-27-90

REACTIVITY CONTROL SYSTEM

BOREL DILUTION

VALVE POSITION

ITS

Insert proposed LCO 3.1.8
Insert proposed LCO 3.1.8 Note

LIMITING CONDITION FOR OPERATION

LCO 3.1.8

3.1.1.3.2 The following valves shall be locked, sealed or otherwise secured in the closed position except during planned boron dilution or makeup activities:

a. 2-CH-140 or

b. 2-CH-160, 2-CH-156, FCV-2114B and FCV-2113B.

A.2

APPLICABILITY: MODES 3, 4, 5, and 6 <See ITS 3.9.2>

LA.2

ACTION: Insert ITS Condition A Note

M.1 R4

Action A.1 With the above valves not locked, sealed or otherwise secured in the closed position: 1) suspend all operations involving positive reactivity changes OR CORE ALTERATIONS, 2) lock, seal or otherwise secure the valves in the closed position within 15 minutes, and 3) verify that the SHUTDOWN MARGIN is greater than or equal to 1.7% delta k/k within 60 minutes.

A.3

Action A.2
Action A.3

Perform SR 3.1.1.1 within 4 hours

LA.1 R4

L.2

SURVEILLANCE REQUIREMENTS

SR 3.1.8.1 4.1.1.3.2 The above listed valves shall be verified to be locked, sealed or otherwise secured in the closed position within 15 minutes after a planned boron dilution or makeup activity.

MORE RESTRICTIVE CHANGES

M.1 Unit 1 CTS 3.1.1.3.2 states that when the primary grade water flow path isolation valves are not locked, sealed, or otherwise secured in the closed position in MODES 3 and 4, the plant must be in COLD SHUTDOWN within 30 hours. If in MODE 5 or 6, all operations involving positive reactivity changes or CORE ALTERATIONS must be suspended, and the valves must be locked, sealed, or secured in the closed position within 15 minutes. Unit 2 CTS 3.1.1.3.2 states that when the primary grade water flow path isolation valves are not locked, sealed, or otherwise secured in the closed position, all operations involving positive reactivity changes or CORE ALTERATIONS must be suspended, the isolation valves must be locked, sealed, or otherwise secured in the closed position within 15 minutes, and SHUTDOWN MARGIN must be verified greater than or equal to 1.77% $\Delta k/k$ within 60 minutes. ITS 3.1.8 Actions state than when the primary grade water flow paths are not isolated, positive reactivity additions must be suspended immediately, the primary grade water flow paths must be isolated within 15 minutes and SR 3.1.1.1 must be performed within 4 hours. The Condition is modified by a Note requiring that the SR 3.1.1.1 performance be done whenever Condition A is entered. This changes the Unit 1 CTS by adding a requirement to verify the SHUTDOWN MARGIN within 4 hours and by requiring the SHUTDOWN MARGIN be performed whenever the Condition is entered. The other changes to CTS 3.1.1.3.2 are discussed in DOCs A.3, L.1, and LA.1. | R4

This change is acceptable because it establishes reasonable compensatory measures for a failure to close the primary grade water flow path isolation valves. SR 3.1.1.1 requires verification that the SHUTDOWN MARGIN is within the limits provided in the COLR. This involves determining the primary system boron concentration. It is performed to verify that the required SDM still exists and any inadvertent boron dilution that may have occurred has been detected and corrected. This verification should be performed whenever a primary grade water flow path isolation valve is found to be inadvertently open. The Completion Time of 4 hours is reasonable, based on the time required to request and perform an analysis of an RCS water sample to determine the boron concentration and to compute the SDM. This change also makes the Unit 1 and Unit 2 requirements the same. This change is designated as more restrictive because it adds requirements to the Unit 1 CTS. | R4

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 5 – Removal of Cycle-Specific Parameter Limits from the Technical Specifications to the Core Operating Limits Report)* Unit 2 CTS 3.1.1.3.2 Action states that with the primary grade water flow path isolation valves not locked, sealed, or otherwise secured in

this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in the Technical Specifications Administrative Controls section. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 4 – Relaxation of Required Action)* Unit 1 CTS 3.1.1.3.2 states that when the primary grade water flow path isolation valves are not locked, sealed, or otherwise secured in the closed position in MODES 3 and 4, the plant must be in COLD SHUTDOWN within 30 hours. If in MODE 5 or 6, all operations involving positive reactivity changes or CORE ALTERATIONS must be suspended, and the valves must be locked, sealed, or secured in the closed position within 15 minutes. ITS 3.1.8 Actions state than when the primary grade water flow path are not isolated, positive reactivity additions must be suspended immediately, the primary grade water flow path must be isolated within 15 minutes and SR 3.1.1.1 must be performed within 1 hours. This changes the CTS by eliminating the Unit 1 Action that a unit in MODES 3 or 4 be shutdown to MODE 5 within 30 hours. The other changes to CTS 3.1.1.3.2 are discussed in DOCs A.3, M.1, and LA.1.

The purpose of CTS 3.1.1.3.2 is to minimize the risk of a boron dilution accident while the primary grade water flow path isolation valves are open. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the repair period. A change from MODES 3 or 4 to MODE 5 will require boration to offset the change in temperature defect as the reactor is cooled down. Requiring use of the boration system when the primary grade water flow path isolation valves cannot be closed per the LCO is unwise, as it increases the risk of a boron dilution event. This change also makes the Unit 1 and Unit 2 requirements the same. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.2 *(Category 3 – Relaxation of Completion Time)* Unit 2 CTS 3.1.1.3.2 states that when the primary grade water flow path isolation valves are not locked, sealed, or otherwise secured in the closed position, all operations involving positive reactivity changes or CORE ALTERATIONS must be suspended, the isolation valves must be locked, sealed, or otherwise secured in the closed position within 15 minutes, and SHUTDOWN

R4

MARGIN must be verified greater than or equal to 1.77% Δk/k within 60 minutes. ITS 3.1.8 Actions state than when one or more valves are not secured in the closed position, positive reactivity changes must be suspended immediately, the primary grade water flow paths must be isolated within 15 minutes and the boron concentration must be verified per SR 3.1.1.1 within 4 hours. This changes the Unit 2 CTS by allowing 4 hours to determine the SHUTDOWN MARGIN per SR 3.1.1.1.

The purpose of CTS 3.1.1.3.2 is to appropriately respond to the inadvertent opening of a primary grade water flow isolation valve. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. Allowing 4 hours instead of 1 hour to perform the Unit 2 SHUTDOWN MARGIN determination is acceptable as 4 hours is an appropriate time to request a boron sample, allow the boron sample to be taken and analyzed, and to report the result. The other Required Actions are sufficient to ensure that the existing SHUTDOWN MARGIN is not reduced during the time needed to determine the SHUTDOWN MARGIN. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS. R4

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.8 Primary Grade Water Flow Path Isolation Valves

BASES

BACKGROUND

During MODES 3, 4, and 5 operations, the isolation valves for primary grade water flow paths that are connected to the Reactor Coolant System (RCS) must be closed to prevent unplanned boron dilution of the reactor coolant. The isolation valves must be locked, sealed, or otherwise secured in the closed position.

The Chemical and Volume Control System is capable of supplying borated and unborated water to the RCS through various flow paths. Since a positive reactivity addition made by an uncontrolled reduction of the boron concentration is inappropriate during MODES 3, 4 and 5, isolation of all primary grade water flow paths prevents an unplanned boron dilution.

APPLICABLE SAFETY ANALYSES

The possibility of an inadvertent boron dilution event (Ref. 1) occurring during MODES 3, 4, or 5 is precluded by adherence to this LCO, which requires that the primary grade water flow path be isolated. Closing the required valves prevents the flow of significant volumes of primary grade water to the RCS. The valves are used to isolate primary grade water flow paths. These valves have the potential to indirectly allow dilution of the RCS boron concentration. By isolating primary grade water flow paths, a safety analysis for an uncontrolled boron dilution accident is not required for MODES 3, 4 or 5.

The RCS boron concentration satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO requires that primary grade water be isolated from the RCS to prevent unplanned boron dilution during MODES 3, 4, and 5.

For Unit 1, primary grade water flow paths may be isolated from the RCS by closing valve 1-CH-217 or 1-CH-220, 1-CH-241, FCV-1114B and FCV-1113B. For Unit 2, primary grade water flow paths may be isolated from the RCS by closing valve 2-CH-140, or 2-CH-160, 2-CH-156, FCV-2114B, and FCV-2113B. |R4

(continued)

LCO

This LCO requires that primary grade water be isolated from the RCS to prevent unplanned boron dilution during MODES 3, 4, and 5.

For Unit 1, primary grade water flow paths may be isolated from the RCS by closing valve 1-CH-217 or 1-CH-220, 1-CH-241, FCV-1114B and FCV-1113B. For Unit 2, primary grade water flow paths may be isolated from the RCS by closing valve 2-CH-140, or 2-CH-160, 2-CH-156, FCV-2114B, and FCV-2113B. | R4

The LCO is modified by a Note which allows the primary grade water flow path isolation valves to be opened under administrative control for planned boron dilution or makeup activities.

APPLICABILITY

This LCO is applicable in MODES 3, 4, and 5 to prevent an inadvertent boron dilution event by ensuring closure of all primary grade water flow paths.

In MODE 6, LCO 3.9.2, "Primary Grade Water Flow Path Isolation Valves - MODE 6," requires all primary grade water isolation valves to be closed to prevent an inadvertent boron dilution.

In MODES 1 and 2, the boron dilution accident was analyzed and was found to be capable of being mitigated.

ACTIONS

A.1, A.2, and A.3

Preventing inadvertent dilution of the reactor coolant boron concentration is dependent on maintaining the primary grade water flow path isolation valves locked, sealed, or otherwise secured closed, except as allowed under administrative control by the LCO Note. Because of the possibility of an inadvertent boron dilution, Required Action A.1 prohibits other positive reactivity additions while securing the isolation valves on the primary grade water system. The Completion Time of "Immediately" for suspending positive reactivity additions reflects the importance of preventing known positive reactivity additions so that any boron dilution event can be readily identified and terminated.

The Required Action A.2 Completion Time of 15 minutes for securing the isolation valves provides sufficient time to close and secure the isolation valves on the primary grade water flow paths while minimizing the probability for an unintentional dilution during the Completion Time. Securing the valves in the closed position ensures that the valves cannot be inadvertently opened.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME	
B. One shutdown bank inserted ≤ 18 steps below the insertion limit and immovable. AND Each control and shutdown rod within limits of LCO 3.1.4. AND Each control bank within the insertion limits of LCO 3.1.6.	B.1 Verify SDM to be within the limits provided in the COLR. AND B.2 Restore the shutdown bank to within insertion limit.	Once per 12 hours 72 hours	R4 RAI 3.1.5-1 R4
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY	
SR 3.1.5.1	Verify each shutdown bank is within the insertion limits specified in the COLR.	12 hours	R4

INSERT

B. One shutdown bank inserted ≤ 18 steps below the insertion limit and immovable. AND Each control and shutdown rod within limits of LCO 3.1.4. AND Each control bank within the insertion limits of LCO 3.1.6.	B.1 Verify SDM to be within the limits provided in the COLR. AND B.2 Restore the shutdown bank to within insertion limit.	Once per 12 hours 72 hours	R4 RAI 3.1.5-1 R4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Restore control bank(s) to within limits.	2 hours
C. Control bank A, B, or C inserted ≤ 18 steps below the insertion limit and immovable. AND Each control and shutdown rod within limits of LCO 3.1.4. AND Each shutdown bank within the insertion limits of LCO 3.1.5.	C.1 Verify SDM to be within the limits provided in the COLR. AND C.2 Restore the control bank to within insertion limit.	Once per 12 hours 72 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 2 with K_{eff} < 1.0.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.6.1	Verify estimated critical control bank position is within the insertion limits specified in the COLR.	Within 4 hours prior to achieving criticality

INSERT

C. Control bank A, B, or C inserted ≤ 18 steps below the insertion limit and immovable. AND Each control and shutdown rod within limits of LCO 3.1.4. AND Each shutdown bank within the insertion limits of LCO 3.1.5.	C.1 Verify SDM to be within the limits provided in the COLR. AND C.2 Restore the control bank to within insertion limit.	Once per 12 hours 72 hours	R4 RAI 3.1.6-1 R4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME	
B. One shutdown bank inserted ≤ 18 steps below the insertion limit and immovable. AND Each control and shutdown rod within limits of LCO 3.1.4. AND Each control bank within the insertion limits of LCO 3.1.6.	B.1 Verify SDM to be within the limits provided in the COLR. AND B.2 Restore the shutdown bank to within insertion limit.	Once per 12 hours 72 hours	R4 RAI 3.1.5-1 R4
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY	
SR 3.1.5.1	Verify each shutdown bank is within the insertion limits specified in the COLR.	12 hours	R4

CTS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY	
SR 3.1.6 (5) .1	Verify each shutdown bank is within the limits specified in the COLR.	12 hours	TSTF-136

4.1.3.5.b

insertion

WOG-ED-13 | R4

Rev. 4

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY	
SR 3.1.6.2	Verify each control bank is within the insertion limits specified in the COLR.	12 hours	R4
SR 3.1.6.3	Verify each control bank not fully withdrawn from the core is within the sequence and overlap limits specified in the COLR.	12 hours	R4 R4

CTS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY	
SR 3.1.06.2	Verify each control bank insertion is within the limits specified in the COLR.	12 hours AND Once within 4 hours and every 4 hours thereafter when the rod insertion limit monitor is inoperable	WOG-EO-13 TSTF-136 R4 TSTF-110
SR 3.1.06.3	Verify sequence and overlap limits each specified in the COLR are met for control banks not fully withdrawn from the core is within the	12 hours	TSTF-136 WOG-EO-13 R4

SR 4.1.3.6

New

ITS 3.2

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.2, Power Distribution Limits

RAI 3.2.1-1
ITS 3.2.1 Heat Flux Hot Channel Factor ($F_Q(Z)$)
STS 3.2.1 Heat Flux Hot Channel Factor ($F_Q(Z)$)
Insert A.1 to Condition A Required Actions

NRC RAI: The ITS provides a plant specific revision to STS 3.2.1 Heat Flux Hot Channel Factor ($F_Q(Z)$). STS Conditions A and B are combined due to the plant specific methodology for calculating $F_Q(Z)$. **Comment:** In combining STS Conditions A and B, the ITS utilizes an "OR" logical connector between Required Actions A.1 and A.2.1. The logical connector should be an "AND."

Response: The Company does not agree with the action recommended in the Comment. The North Anna $F_Q(Z)$ methodology balances the AFD operating band against $F_Q(Z)$ operating margin. As stated in CTS 4.2.2.2.f.2 (CTS markup page 3 of 3), if $F_Q(Z)$ exceeds its limit, power operation may continue if the AFD limits are reduced OR the 3.2.2 Actions are followed. Reducing the AFD operating band provides additional $F_Q(Z)$ operating margin. Therefore, the ITS is correct as written and is consistent with the CTS. The missing "OR" will be added to the ISTS markup.

CTs

4.2.2.2.f.2.a

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. $F^W_Q(Z)$ not within limits.	A.1 B.1 Reduce AFD limits ≥ 1% for each 1% $F^W_Q(Z)$ exceeds limit. (M) OR	(U) 2 hours 15 minutes after each $F^W_Q(Z)$ determination. TSTF-99 (1) RAI 3.2.1-1 R4
new (B) (C) Required Action and associated Completion Time not met.	(B) C.1 Be in MODE 2.	6 hours (1)

Rev. 4

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.2, Power Distribution Limits

RAI 3.2.2-1
ITS 3.2.2 Nuclear Enthalpy Rise Hot Channel Factor ($F^N_{\Delta H}$), Bases
ITS 3.2.2 Required Actions
STS 3.2.2 Nuclear Enthalpy Rise Hot Channel Factor ($F^N_{\Delta H}$), Bases
Incorporation of TSTF-240 into the ITS

NRC RAI: The ITS adopts TSTF-240, which is not approved. **Comment**: TSTF-240 modifies the "A" Required Actions, and associated Bases. TSTF-240 was not approved because it deleted relevant information in the Bases that happened to be in the Bases paragraphs of the Required Actions that were removed. The actual changes to the Required Actions are acceptable. The information in the deleted A.1.1 Bases paragraph should be retained.

Response: The Company will take the action proposed in the Comment. References to TSTF-240 are removed and a specific JFD is added addressing the changes. The information deleted by TSTF-240 from the A.1.1 Bases is already retained in the North Anna ITS submittal.

CTS

3.2 POWER DISTRIBUTION LIMITS

3.2.2 Nuclear Enthalpy Rise Hot Channel Factor ($F^N_{\Delta H}$)

3.2.3

LCO 3.2.2 $F^N_{\Delta H}$ shall be within the limits specified in the COLR.

APPLICABILITY: MODE 1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. .....NOTE..... Required Actions A.2 and A.3 must be completed whenever Condition A is entered. ..... $F^N_{\Delta H}$ not within limit.	A.1.1 Restore $F^N_{\Delta H}$ to within limit. OR	4 hours
	A.1.2.1 Reduce THERMAL POWER to < 50% RTP.	4 hours
	AND	
	A.1.2.2 Reduce Power Range Neutron Flux—High trip setpoints to ≤ 55% RTP.	72 hours
	AND	
	A.2.3 Perform SR 3.2.2.1.	24 hours
	AND	
		(continued)

Action a

Action a

Action b

TSTF-95

(1) RAI 3.2.2-1 R4

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CTS

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.3 (4) --------NOTE-------- THERMAL POWER does not have to be reduced to comply with this Required Action. ---------- Perform SR 3.2.2.1.	(1) RAI 3.2.2-1 R4 Prior to THERMAL POWER exceeding 50% RTP AND Prior to THERMAL POWER exceeding 75% RTP AND 24 hours after THERMAL POWER reaching ≥ 95% RTP
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 2.	6 hours

Action C

Action B

Rev. 4

JUSTIFICATION FOR DEVIATIONS
ITS 3.2.2, $F^N_{\Delta H}$

1. ISTS Required Action A.1.1 requires restoration of $F^N_{\Delta H}$ to within alignment limits within 4 hours or performance of a number of other actions, such as a power reduction of < 50% RTP. The Writer's Guide for the Restructured Technical Specifications, NUMARC 93-03, Section 4.1.6.g, states "A Required Action which requires restoration, such that the Condition is no longer met, is considered superfluous. It is only included if it would be the only Required Action for the Condition or it is needed for presentation clarity." Neither exception applies in this case. If fact, the inclusion of Required Action A.1.1 requires an additional level of indenting and numbering for the remaining Required Actions in Condition A, which reduces its clarity. Therefore, Required Action A.1.1 is deleted and the subsequent Required Actions renumbered.

RAI 3.2.2-1 R4

BASES

LCO (continued)

thermal feedback and greater control rod insertion at low power levels. The limiting value of $F^N_{\Delta H}$ is allowed to increase 0.3% for every 1% RTP reduction in THERMAL POWER. (5)

APPLICABILITY

The $F^N_{\Delta H}$ limits must be maintained in MODE 1 to preclude core power distributions from exceeding the fuel design limits for DNBR and PCT. Applicability in other modes is not required because there is either insufficient stored energy in the fuel or insufficient energy being transferred to the coolant to require a limit on the distribution of core power. Specifically, the design bases events that are sensitive to $F^N_{\Delta H}$ in other modes (MODES 2 through 5) have significant margin to DNB, and therefore, there is no need to restrict $F^N_{\Delta H}$ in these modes. (2)

sufficient

ACTIONS

A.1 and A.2

A.1.1

With $F^N_{\Delta H}$ exceeding its limit, the unit is allowed 4 hours to restore $F^N_{\Delta H}$ to within its limits. This restoration may, for example, involve realigning any misaligned rods or reducing power enough to bring $F^N_{\Delta H}$ within its power dependent limit. When the $F^N_{\Delta H}$ limit is exceeded, the DNBR limit is not likely violated in steady state operation, because events that could significantly perturb the $F^N_{\Delta H}$ value (e.g., static control rod misalignment) are considered in the safety analyses. However, the DNBR limit may be violated if a DNB limiting event occurs. Thus, the allowed Completion Time of 4 hours provides an acceptable time to restore $F^N_{\Delta H}$ to within its limits without allowing the plant to remain in an unacceptable condition for an extended period of time. (9) RAI 3.2.2-1 R4

Condition A is modified by a Note that requires that Required Actions A.2 and A.3 must be completed whenever Condition A is entered. Thus, if power is not reduced because this Required Action is completed within the 4 hour time period, Required Action A.2 nevertheless requires another measurement and calculation of $F^N_{\Delta H}$ within 24 hours in accordance with SR 3.2.2.1. (3) (4) (9) RAI 3.2.2-1 R4

even if $F^N_{\Delta H}$ is restored to within limits,

However, if power is reduced below 50% RTP, Required Action A.3 requires that another determination of $F^N_{\Delta H}$ must be done prior to exceeding 50% RTP, prior to exceeding

(continued)

Rev. 4

BASES

A.1 and A.2

ACTIONS

A.1.1 (continued)

75% RTP, and within 24 hours after reaching or exceeding 95% RTP. In addition, Required Action A.2 is performed if power ascension is delayed past 24 hours. (3)

(9)

RAI 3.2.2-1 R4

A.1.2.1 and A.1.2.2

If the value of $F^N_{\Delta H}$ is not restored to within its specified limit either by adjusting a misaligned rod or by reducing THERMAL POWER, the alternative option is to reduce THERMAL POWER to < 50% RTP in accordance with Required Action A.1.2.1 and reduce the Power Range Neutron Flux—High to ≤ 55% RTP in accordance with Required Action A.1.2.2. Reducing RTP to < 50% RTP increases the DNB margin and does not likely cause the DNBR limit to be violated in steady state operation. The reduction in trip setpoints ensures that continuing operation remains at an acceptable low power level with adequate DNBR margin. The allowed Completion Time of 4 hours for Required Action A.1.2.1 is consistent with those allowed for in Required Action A.1.1 and provides an acceptable time to reach the required power level from unit (2) full power operation without allowing the plant to remain in an unacceptable condition for an extended period of time. The Completion Times of 4 hours for Required Actions A.1.1 and A.1.2.1 are not additive. (9)

RAI 3.2.2-1 R4

TSTF-95

72

The allowed Completion Time of 8 hours to reset the trip setpoints per Required Action A.1.2.2 recognizes that, once power is reduced, the safety analysis assumptions are satisfied and there is no urgent need to reduce the trip setpoints. This is a sensitive operation that may inadvertently trip the Reactor Protection System. (9)

RAI 3.2.2-1 R4

A.2 (3)

Once the power level has been reduced to < 50% RTP per Required Action A.1.2.1, an incore flux map (SR 3.2.2.1) must be obtained and the measured value of $F^N_{\Delta H}$ verified not to exceed the allowed limit at the lower power level. The unit is provided 20 additional hours to perform this task over and above the 4 hours allowed by either Action A.1.1 or Action A.1.2.1. The Completion Time of 24 hours is acceptable because of the increase in the DNB margin, which (9)

(continued)

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BASES

ACTIONS

A.2 (continued)

is obtained at lower power levels, and the low probability of having a DNB limiting event within this 24 hour period. Additionally, operating experience has indicated that this Completion Time is sufficient to obtain the incore flux map, perform the required calculations, and evaluate $F^N_{\Delta H}$.

A.3

Verification that $F^N_{\Delta H}$ is within its specified limits after an out of limit occurrence ensures that the cause that led to the $F^N_{\Delta H}$ exceeding its limit is corrected, and that subsequent operation proceeds within the LCO limit. This Action demonstrates that the $F^N_{\Delta H}$ limit is within the LCO limits prior to exceeding 50% RTP, again prior to exceeding 75% RTP, and within 24 hours after THERMAL POWER is ≥ 95% RTP.

This Required Action is modified by a Note that states that THERMAL POWER does not have to be reduced prior to performing this Action.

B.1

When Required Actions A.1 through A.3 cannot be completed within their required Completion Times, the plant must be placed in a mode in which the LCO requirements are not applicable. This is done by placing the plant in at least MODE 2 within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience regarding the time required to reach MODE 2 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.2.2.1

The value of $F^N_{\Delta H}$ is determined by using the movable incore detector system to obtain a flux distribution map. A data reduction computer program then calculates the maximum value of $F^N_{\Delta H}$ from the measured flux distributions. The measured value of $F^N_{\Delta H}$ must be multiplied by 1.04 to account for limit contains an allowance of

(continued)

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8. The Bases are changed to present correct and complete information.

9. The Bases are changed to reflect changes made to the specifications.

RAI 3.2.2-1 R4

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.2, Power Distribution Limits

RAI 3.2.4-1
ITS 3.2.4 QPTR
STS 3.2.4 QPTR
Incorporation of TSTF-109 into the ITS

NRC RAI: The ITS incorrectly incorporates approved TSTF-109. **Comment**: TSTF-109 modifies the Completion Time to STS Required Action A.3. The ITS incorrectly incorporates this change to the ITS Required Action A.2 Completion Time. The change has been correctly incorporated into the Bases.

Response: The Company will take the action proposed in the Comment. The modification to the A.3 Completion Time made by TSTF-109 is incorporated and the Required Action A.2 Completion Time is corrected.

3.2 POWER DISTRIBUTION LIMITS

3.2.4 QUADRANT POWER TILT RATIO (QPTR)

LCO 3.2.4 The QPTR shall be ≤ 1.02.

APPLICABILITY: MODE 1 with THERMAL POWER > 50% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. QPTR not within limit.	A.1 Reduce THERMAL POWER ≥ 3% from RTP for each 1% of QPTR > 1.00.	2 hours after each QPTR determination
	AND	
	A.2 Determine QPTR.	Once per 12 hours R4 RAI 3.2.4-1 R4
	AND	
	A.3 Perform SR 3.2.1.1 and SR 3.2.2.1.	24 hours after achieving equilibrium Conditions from a THERMAL POWER reduction per Required Action A.1 RAI 3.2.4-1 R4
		AND
		Once per 7 days thereafter
	AND	
		(continued)

CTS

3.2 POWER DISTRIBUTION LIMITS

3.2.4 QUADRANT POWER TILT RATIO (QPTR)

LCO 3.2.4

LCO 3.2.4 The QPTR shall be ≤ 1.02.

APPLICABILITY: MODE 1 with THERMAL POWER > 50% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
Action a.1.b (u1) Action a.2.b (u2) A. QPTR not within limit.	A.1 Reduce THERMAL POWER ≥ 3% from RTP for each 1% of QPTR > 1.00.	2 hours after each QPTR determination TSTF-241
	AND	
new Determine QPTR.	A.2 ~~Perform SR 3.2.4.1~~ and reduce THERMAL POWER ≥ 3% from RTP for each 1% of QPTR > 1.00.	Once per 12 hours after achieving equilibrium conditions from a THERMAL POWER reduction per Required Action A.1 TSTF-241
	AND	
new	A.3 Perform SR 3.2.1.1 and SR 3.2.2.1.	24 hours TSTF-109
	AND	
		Once per 7 days thereafter RAI 3.2.4-1 R4
	AND	
new	A.4 Reevaluate safety analyses and confirm results remain valid for duration of operation under this condition.	Prior to increasing THERMAL POWER above the limit of Required Action A.1
	AND	
		(continued)

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ADMINISTRATIVE CHANGES

A.1 In the conversion of the North Anna Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 1, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 The Applicability of CTS 3.2.4 is modified by a footnote, designated "*", stating, "See Special Test Exception 3.10.2." ITS 3.2.4 Applicability does not contain the footnote or a reference to the Special Test Exception.

The purpose of the footnote reference is to alert the reader that a Special Test Exception exists which may modify the Applicability of the specification. It is an ITS convention to not include these types of footnotes or cross-references. This change is designated as administrative because it does not result in technical changes to the specifications.

A.3 CTS 3.2.4, Action a.1.a (Unit 1) states that with QPTR > 1.02, within 2 hours reduce the QPTR to within its limit. CTS 3.2.4, Action a.1(a) and 2.a state that with QPTR > 1.02, calculate QPTR at least once per hour until QPTR is within its limit and within 2 hours reduce QPTR to within its limit. ITS 3.2.4 does not contain a Required Action stating QPTR must be calculated at least once per hour and QPTR must be reduced to within its limit.

This change is acceptable because the technical requirements have not changed. Restoration of compliance with the LCO is always an available Required Action and it is the convention in the ITS to not state such "restore" options explicitly unless it is the only action or is required for clarity. Monitoring a parameter that is outside its limit in order to determine if it has been restored to within its limit is a necessary action which must occur whether or not it is explicitly required by the TS. This change is designated as administrative because it does not result in technical changes to the specifications.

MORE RESTRICTIVE CHANGES

M.1 CTS 3.2.4, Action a.1.b) (Unit 1) and Action a.2(b) (Unit 2) requires THERMAL POWER to be reduced at least 3% for every 1% QPTR exceeds 1.0 and allows a maximum of 24 hours of operation above 50% RTP with QPTR greater than the limit. ITS 3.2.4, Condition A, also requires THERMAL POWER to be reduced at least 3% for every 1% QPTR exceeds 1.0, but the ITS allows indefinite power operation above 50% RTP provided that QPTR is determined within 12 hours, $F_Q(Z)$ and $F^N_{\Delta H}$ are verified to be within limit within 24 hours of achieving equilibrium conditions after the power

RAI 3.2.4-1 R4

North Anna Power Station
Summary of Changes Not Associated with RAIs

Section 3.2

This letter includes changes to North Anna Power Station's Improved Technical Specifications (ITS) submittal that are not associated with responses to the NRC's requests for additional information. The following table summarizes these changes and identifies the affected pages of Section 3.2.

Source of Change	Summary of Change	Affected Pages
Internal comment	Changed heading in ITS 3.2.3 from "ADF" to "AFD."	Typed ITS Page: 3.2.3-1
Internal comment	Corrected typographical error in ITS 3.2.4, Required Action A.2. Revised "QTPR" to "QPTR."	Typed ITS Page: 3.2.4-1 Typed ITS Bases Page: B 3.2.4-2
Internal comment	Revised Bases of ITS 3.2.4, Required Action A.1 to be consistent with the Specifications. Revised JFD 3 to describe change.	Typed ITS Bases Page: B 3.2.4-2 ISTS Bases Mark-up Page: 3.2-44 JFD Page: ITS 3.2.4: 1

3.2 POWER DISTRIBUTION LIMITS

3.2.3 AXIAL FLUX DIFFERENCE (AFD)

LCO 3.2.3 The AFD in % flux difference units shall be maintained within the limits specified in the COLR.

- - - - - - - - - - - - - - - - NOTE - - - - - - - - - - - - - - - -

The AFD shall be considered outside limits when two or more OPERABLE excore channels indicate AFD to be outside limits.

- -

APPLICABILITY: MODE 1 with THERMAL POWER ≥ 50% RTP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. AFD not within limits.	A.1 Reduce THERMAL POWER to < 50% RTP.	30 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.3.1	Verify AFD within limits for each OPERABLE excore channel.	7 days

3.2 POWER DISTRIBUTION LIMITS

3.2.4 QUADRANT POWER TILT RATIO (QPTR)

LCO 3.2.4 The QPTR shall be ≤ 1.02.

APPLICABILITY: MODE 1 with THERMAL POWER > 50% RTP.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME	
A. QPTR not within limit.	A.1	Reduce THERMAL POWER ≥ 3% from RTP for each 1% of QPTR > 1.00.	2 hours after each QPTR determination	
	AND			
	A.2	Determine QPTR.	Once per 12 hours	R4 RAI 3.2.4-1 R4
	AND			
	A.3	Perform SR 3.2.1.1 and SR 3.2.2.1.	24 hours after achieving equilibrium Conditions from a THERMAL POWER reduction per Required Action A.1 AND Once per 7 days thereafter	RAI 3.2.4-1 R4
	AND			

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The LCO limits on the AFD, the QPTR, the Heat Flux Hot Channel Factor ($F_Q(Z)$), the Nuclear Enthalpy Rise Hot Channel Factor ($F^N_{\Delta H}$), and control bank insertion are established to preclude core power distributions that exceed the safety analyses limits.

The QPTR limits ensure that $F^N_{\Delta H}$ and $F_Q(Z)$ remain below their limiting values by preventing an undetected change in the gross radial power distribution.

In MODE 1, the $F^N_{\Delta H}$ and $F_Q(Z)$ limits must be maintained to preclude core power distributions from exceeding design limits assumed in the safety analyses.

The QPTR satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The QPTR limit of 1.02, at which corrective action is required, provides a margin of protection for both the DNB ratio and linear heat generation rate contributing to excessive power peaks resulting from X-Y plane power tilts. A limiting QPTR of 1.02 can be tolerated before the margin for uncertainty in $F_Q(Z)$ and ($F^N_{\Delta H}$) is possibly challenged.

APPLICABILITY

The QPTR limit must be maintained in MODE 1 with THERMAL POWER > 50% RTP to prevent core power distributions from exceeding the design limits.

Applicability in MODE 1 $\leq$ 50% RTP and in other MODES is not required because there is either insufficient stored energy in the fuel or insufficient energy being transferred to the reactor coolant to require the implementation of a QPTR limit on the distribution of core power. The QPTR limit in these conditions is, therefore, not important. Note that the $F^N_{\Delta H}$ and $F_Q(Z)$ LCOs still apply, but allow progressively higher peaking factors at 50% RTP or lower.

ACTIONS

A.1

With the QPTR exceeding its limit, a power level reduction of $\geq$ 3% from RTP for each 1% by which the QPTR exceeds 1.00 is a conservative tradeoff of total core power with peak linear power. The Completion Time of 2 hours allows sufficient time R4

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

Channel Factor ($F^N_{\Delta H}$), and control bank insertion are established to preclude core power distributions that exceed the safety analyses limits.

The QPTR limits ensure that $F^N_{\Delta H}$ and $F_Q(Z)$ remain below their limiting values by preventing an undetected change in the gross radial power distribution.

In MODE 1, the $F^N_{\Delta H}$ and $F_Q(Z)$ limits must be maintained to preclude core power distributions from exceeding design limits assumed in the safety analyses.

The QPTR satisfies Criterion 2 of ~~the NRC Policy Statement~~ 10 CFR 50.36 (c)(2)(ii). (2)

LCO

The QPTR limit of 1.02, at which corrective action is required, provides a margin of protection for both the DNB ratio and linear heat generation rate contributing to excessive power peaks resulting from X-Y plane power tilts. A limiting QPTR of 1.02 can be tolerated before the margin for uncertainty in $F_Q(Z)$ and ($F^N_{\Delta H}$) is possibly challenged.

APPLICABILITY

The QPTR limit must be maintained in MODE 1 with THERMAL POWER > 50% RTP to prevent core power distributions from exceeding the design limits.

Applicability in MODE 1 $\leq$ 50% RTP and in other MODES is not required because there is either insufficient stored energy in the fuel or insufficient energy being transferred to the reactor coolant to require the implementation of a QPTR limit on the distribution of core power. The QPTR limit in these conditions is, therefore, not important. Note that the $F^N_{\Delta H}$ and $F_Q(Z)$ LCOs still apply, but allow progressively higher peaking factors at 50% RTP or lower.

ACTIONS

A.1

With the QPTR exceeding its limit, a power level reduction of (from) 3% (≥) RTP for each 1% by which the QPTR exceeds 1.00 is a conservative tradeoff of total core power with peak linear power. The Completion Time of 2 hours allows sufficient (3) | R4

(continued)

Rev. R4

1. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The criteria of the NRC Final Policy Statement on Technical Specifications Improvements have been included in 10 CFR 50.36(c)(2)(ii). Therefore, references in the ISTS Bases to the NRC Final Policy Statement are revised in the ITS Bases to reference 10 CFR 50.36.

3. Editorial changes are made for consistency with the ITS. Required Action 3.2.4.A.1 requires that THERMAL POWER be reduced "≥ 3% from RTP" for each 1% of QPTR > 1.00. The ISTS Bases state that power is reduced "3% RTP" for each 1% of QPTR > 1.00. The Bases are revised to be consistent with the specification. R4

ITS 3.9

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.9, Refueling Operations

RAI 3.9.2-1
ITS 3.9.2 Primary Grade Water Flow Path Isolation Valves - MODE 6
STS 3.9.2 Unborated Water Source Isolation Valves
ITS/STS 1.3 Completion Times
JFD-2

NRC RAI: The ITS deletes the STS Note allowing "separate condition entry," referencing ITS/STS 1.3 on Completion Times. **Comment:** The note should be retained. ITS/STS 1.3 does not support the justification provided in JFD-2. ITS/STS 1.3 provides a discussion of both of these exact cases, with and without the Note allowing "separate condition entry."

Response: The Company does not agree with the action recommended in the Comment. Under ISTS 3.9.2, if an unborated water source isolation valve was discovered to be open, Condition A would be entered. Condition A contains two Required Actions with immediate Completion Times and one Required Action to perform SR 3.9.1.1 (verify refueling shutdown boron concentration is met) with a 4 hour Completion Time. If a second unborated water source isolation valve is discovered to be open while still in Condition A for the first valve, the Separate Condition Entry Note allows the full 4 hours to perform SR 3.9.1.1 for the second open valve. The Separate Condition Entry Note has no effect on subsequent entry for the Required Actions associated with the immediate Completion Times as those Required Action must only be pursued "without delay and in a controlled manner." The Separate Condition Entry Note is also not needed to allow the full 4 hours to perform SR 3.9.1.1 for any subsequent inoperable valve. As stated in ISTS 1.3, Description, fourth paragraph, when a subsequent train, subsystem, component, or variable expressed in the Condition is discovered to be inoperable or not within limits, the Completion Time(s) may be extended. To apply this Completion Time extension, two criteria must first be met. The subsequent inoperability: a. must exist concurrent with the first inoperability; and b. must remain inoperable or not within limits after the first inoperability is resolved. The total Completion Time may then be extended by the stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours or, as in this case, by the stated Completion Time as measured from discovery of the subsequent inoperability. Therefore, in this case the ITS 1.3 allowance for subsequent Condition entry provides the same flexibility as the Separate Condition Entry Note. Only if more than 6 valves were to be found open, each discovered at the end of the 4 hour Completion Time for the previously discovered valve, would the Separate Condition Entry Note provide any flexibility. As only five valves are governed by this Specification, the Separate Condition Entry Note is not needed for the North Anna application and is not adopted. This response is consistent with the response given in JFD 2.

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.9, Refueling Operations

RAI 3.9.2-2
ITS 3.9.2 Primary Grade Water Flow Path Isolation Valves - MODE 6
STS 3.9.2 Unborated Water Source Isolation Valves
ITS SR 3.9.2.1
JFD-6

NRC RAI: The ITS deletes the STS SR 3.9.2.1 frequency of 31 days, replacing it with "Within 15 minutes following a boron dilution or makeup activity." JFD-6 indicates that the ITS SR 3.9.2.1 frequency is a "more frequent verification of valve position," and that it "eliminates the need for the ISTS Condition Note ...". **Comment:** The ITS SR 3.9.2.1 frequency may or may not be more frequent than the STS frequency of 31 days. The deleted STS Condition Note has the effect of requiring the SR following a boron dilution or makeup activity. Recommend adopting the STS 31 day SR frequency, in addition to retaining the ITS SR frequency.

Response: The Company does not agree with the action recommended in the Comment. North Anna ITS 3.9.2 is fundamentally different from ISTS 3.9.2. ISTS 3.9.2 is written to address designs in which the unborated water source isolation valves are closed and secured prior to entering the applicable MODE and remain closed and secured the entire time the plant is in that MODE. Any opening of the valves requires entry in to the ACTIONS. ISTS SR 3.9.2.1 is a 30 day periodic verification that the valves are still closed. North Anna ITS 3.9.2 reflects the North Anna design and licensing basis which requires certain primary grade water flow path isolation valves be closed only when not in use. These valves may be opened and closed to meet the operational needs of the plant. After each instance of the valves being opened and closed, the valves are verified to be closed by ITS SR 3.9.2.1. The CTS and ITS SR 3.9.2.1 provide 15 minutes to perform this verification. Because these valves are opened and closed to meet operational needs, SR 3.9.2.1 will be performed more frequently than every 31 days. It is the intention of the ITS to require the SR to be performed following a boron dilution or makeup activity. Therefore, the ITS SR Frequency is appropriate.

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.9, Refueling Operations

RAI 3.9.4-1
ITS 3.9.4 Containment Penetrations
STS 3.9.4 Containment Penetrations
ITS 3.9.4 Applicability Note 1
DOCs A.3 and LA.1
JFD-2

NRC RAI: A note is added to the ITS Applicability indicating that the containment penetration requirements are not applicable to the 7 ft containment personnel air lock, based upon the Fuel Handling Accident (FHA) Analysis assuming that both doors of the 7 ft containment personnel air lock doors are open. As a result TSTF-68 changes are not adopted. **Comment**: While the FHA analysis may assume the 7 ft containment personnel air lock doors are open, the CTS makes no exception for them. TSTF-68 allows both doors in personnel air lock doors to be open, as long as they are capable of being closed. Recommend deleting this note and adopting TSTF-68. As written, this is a beyond scope change and will require NRC staff review.

Response: The Company does not agree with the action recommended in the Comment. Removal of the requirement for the 7 ft containment personnel air lock doors to be capable of being closed was identified as a candidate beyond scope change when the ITS package was submitted. In the Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors, the Discussion of Criterion 3 states, "It is the intent of this criterion to capture into Technical Specifications only those structures, systems, and components that are part of the primary success path of a safety sequence analysis. Also captured in this criterion are those support and actuation systems that are necessary for items in the primary success path to successfully function. The primary success path for a particular mode of operation does not include backup and diverse equipment..." Based on this guidance, it was considered inappropriate to retain a requirement inconsistent with the safety analyses that form the basis for the LCO. The safety analyses assume that the 7 ft containment personnel air lock doors are open during the event. The SER associated with License Amendment Nos.198 and 179 to Facility Operating License Nos. NPF-4 and NPF-7 for the North Anna Power Station, Units No. 1 and No. 2, section 2.3 states, "The staff's dose calculation was based on the assumption that all of the radioactive material released to the containment escapes the containment within 2 hours. However, the staff has historically required plant technical specifications to maintain containment closure during core alterations and fuel handling as a defense-in-depth measure to further limit releases." Thus, though this may be considered a beyond scope change, the SER cited provides the basis for not retaining the requirement in the Technical Specifications.

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.9, Refueling Operations

RAI 3.9.4-2
ITS 3.9.4 Containment Penetrations
STS 3.9.4 Containment Penetrations
ITS SR 3.9.4.2
STS SR 3.9.4.2
CTS 4.9.4
DOCs LA.1
JFD-2

NRC RAI: The ITS deleted the STS SR requirement to verify that each containment purge and exhaust valve actuates "on an actual or simulated actuation signal." The CTS requires each containment purge and exhaust valve be determined to be capable of being closed automatically. **Comment:** Recommend retaining the STS SR requirements. As written, this is a beyond scope change and will require NRC staff review.

Response: The Company does not agree with the action recommended in the Comment. Removal of the requirement for automatic closure of the purge and exhaust isolation valves was identified as a candidate beyond scope change when the ITS package was submitted. In the Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors, the Discussion of Criterion 3 states, "It is the intent of this criterion to capture into Technical Specifications only those structures, systems, and components that are part of the primary success path of a safety sequence analysis. Also captured in this criterion are those support and actuation systems that are necessary for items in the primary success path to successfully function. The primary success path for a particular mode of operation does not include backup and diverse equipment..." Based on this guidance, it was considered inappropriate to retain a requirement not assumed by the safety analyses for which the LCO is written. The safety analyses assume the purge and exhaust isolation valves are open during the event, and the means by which all of the radioactive material released to containment escapes the containment, within two hours. The SER associated with License Amendment Nos.198 and 179 to Facility Operating License Nos. NPF-4 and NPF-7 for the North Anna Power Station, Units No. 1 and No. 2, Section 2.3 states, "The staff's dose calculation was based on the assumption that all of the radioactive material released to the containment escapes the containment within 2 hours. However, the staff has historically required plant technical specifications to maintain containment closure during core alterations and fuel handling as a defense-in-depth measure to further limit releases." Thus, though this may be considered a beyond scope change, the SER cited provides the basis for not retaining the requirement in the Technical Specifications.

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.9, Refueling Operations

RAI 3.9.5-1
ITS 3.9.5 RHR and Coolant Circulation - High Water Level
STS 3.9.5 RHR and Coolant Circulation - High Water Level
ITS 3.9.5 LCO Note
TSTF-153

The ITS adopts TSTF-153, rewording the LCO Note. **Comment**: TSTF-153 was mistakenly approved; the wording is confusing and the original STS wording is better. Recommend removing the TSTF-153 changes.

Response: The Company will take the action proposed in the comment, with certain modifications. The Company agrees that the wording in TSTF-153 is confusing. However, the original STS wording is inconsistent and is also confusing in that the wording in the Note is not a clear exception to the requirement in the LCO. Therefore, the Notes in LCO 3.4.5, 3.4.6, 3.4.7, 3.4.8, 3.9.5, and 3.9.6 have been modified to state that the required operating pump may "be removed from operation." This wording is clearly an exception to the LCO requirement. The Note in LCO 3.9.6 was added by TSTF-349, not TSTF-153. However, the proposed change to the LCO 3.9.6 Note is necessary for consistency between LCO 3.9.6 and LCO 3.9.5 and between LCO 3.9.6 and LCO 3.4.8. The Bases have been revised accordingly.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops–MODE 3

LCO 3.4.5 Two RCS loops shall be OPERABLE, and one RCS loop shall be in operation.

---NOTE---

All reactor coolant pumps may be removed from operation for ≤ 1 hour per 8 hour period provided: RAI 3.9.5-1 R4

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

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

APPLICABILITY: MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RCS loop inoperable.	A.1 Restore required RCS loop to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 4.	12 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops–MODE 4

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

---------- NOTE ----------

1. All reactor coolant pumps (RCPs) and RHR pumps may be removed from operation for ≤ 1 hour per 8 hour period provided: RAI 3.9.5-1 R4

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

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

2. No RCP shall be started with any RCS cold leg temperature ≤ 235°F (Unit 1), 270°F (Unit 2) unless the secondary side water temperature of each steam generator (SG) is ≤ 50°F above each of the RCS cold leg temperatures.

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required loop inoperable.	A.1 Initiate action to restore a second loop to OPERABLE status. AND A.2 ---------NOTE--------- Only required if RHR loop is OPERABLE. ---------- Be in MODE 5.	Immediately 24 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops–MODE 5, Loops Filled

LCO 3.4.7 One residual heat removal (RHR) loop shall be OPERABLE and in operation, and either:

a. One additional RHR loop shall be OPERABLE; or

b. The secondary side water level of one steam generator (SG) shall be ≥ 17%.

---------- NOTE ----------

1. The RHR pump of the loop in operation may be removed from operation for ≤ 1 hour per 8 hour period provided: RAI 3.9.5-1 R4

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

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

2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures ≤ 235°F (Unit 1), 270°F (Unit 2) unless the secondary side water temperature of each SG is ≤ 50°F above each of the RCS cold leg temperatures.

4. All RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled.

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.

---------- NOTE ----------

1. All RHR pumps may be removed from operation for ≤ 15 minutes when switching from one loop to another provided: RAI 3.9.5-1 R4

   a. The core outlet temperature is maintained > 10°F below saturation temperature.

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

   c. No draining operations to further reduce the RCS water volume are permitted.

2. One RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

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

BASES

APPLICABLE SAFETY ANALYSES (continued)

to prevent or mitigate a Design Basis Accident or transient that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier.

RCS Loops–MODE 3 satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The purpose of this LCO is to require that at least two RCS loops be OPERABLE and one of those loops be in operation. One RCS loop in operation is necessary to ensure removal of decay heat from the core and homogenous boron concentration throughout the RCS. An additional RCS loop is required to be OPERABLE to ensure redundant capability for decay heat removal.

The Note permits all RCPs to be removed from operation for ≤ 1 hour per 8 hour period. The purpose of the Note is to permit pump swap operations and tests that are designed to validate various accident analyses values. One of these tests is validation of the pump coastdown curve used as input to a number of accident analyses including a loss of flow accident. This test is generally performed in MODE 3 during the initial startup testing program, and as such should only be performed once. If, however, changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values of the coastdown curve may be revalidated by conducting the test again. Another test that may be performed during the startup testing program is the validation of rod drop times during cold conditions, both with and without flow. RAI 3.9.5-1 R4

The no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits the stopping of the pumps in order to perform this test and validate the assumed analysis values. As with the validation of the pump coastdown curve, this test should be performed only once unless the flow characteristics of the RCS are changed. The 1 hour time period specified is adequate to perform the pump swap or the desired tests, and operating experience has shown that boron stratification is not a problem during this short period with no forced flow.

(continued)

BASES

LCO (continued)

remove the decay heat from the core with forced circulation. An additional loop is required to be OPERABLE to provide redundancy for heat removal.

Note 1 permits all RCPs or RHR pumps to be removed from operation for ≤ 1 hour per 8 hour period. The purpose of the Note is to permit pump swap operations and tests that are designed to validate various accident analyses values. One of the tests which may be performed during the startup testing program is the validation of rod drop times during cold conditions, both with and without flow. The no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits the stopping of the pumps in order to perform this test and validate the assumed analysis values. If changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values may be revalidated by conducting the test again. The 1 hour time period is adequate to perform the pump swap or test, and operating experience has shown that boron stratification is not a problem during this short period with no forced flow. RAI 3.9.5-1 R4

Utilization of Note 1 is permitted provided the following conditions are met along with any other conditions imposed by initial startup test procedures:

a. No operations are permitted that would dilute the RCS boron concentration with coolant at boron concentrations less than required to meet the SDM of LCO 3.1.1, therefore maintaining the margin to criticality. Boron reduction with coolant at boron concentrations less than required to assure the SDM is maintained is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation; and

b. Core outlet temperature is maintained at least 10°F below saturation temperature, so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

Note 2 requires that the secondary side water temperature of each SG be ≤ 50°F above each of the RCS cold leg temperatures before the start of an RCP with any RCS cold leg temperature

(continued)

BASES

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RHR loops provide this circulation.

RCS Loops–MODE 5 (Loops Filled) satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

The purpose of this LCO is to require that at least one of the RHR loops be OPERABLE and in operation with an additional RHR loop OPERABLE or a SG with secondary side water level $\geq$ 17% using narrow range instrumentation and the associated loop isolation valves open. One RHR loop provides sufficient forced circulation to perform the safety functions of the reactor coolant under these conditions. An additional RHR loop is required to be OPERABLE to provide redundancy for heat removal. However, if the standby RHR loop is not OPERABLE, an acceptable alternate method is a SG with its secondary side water level $\geq$ 17% using narrow range instrumentation. Should the operating RHR loop fail, the SG could be used to remove the decay heat via natural circulation.

Note 1 permits all RHR pumps to be removed from operation $\leq$ 1 hour per 8 hour period. The purpose of the Note is to permit pump swap operations and tests designed to validate various accident analyses values. One of the tests performed during the startup testing program is the validation of rod drop times during cold conditions, both with and without flow. The no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits stopping of the pumps in order to perform this test and validate the assumed analysis values. If changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values must be revalidated by conducting the test again. The 1 hour time period is adequate to perform the pump swap or test, and operating experience has shown that boron stratification is not likely during this short period with no forced flow.

RAI 3.9.5-1 R4

(continued)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.8 RCS Loops–MODE 5, Loops Not Filled

BASES

BACKGROUND

In MODE 5 with the RCS loops not filled, the primary function of the reactor coolant is the removal of decay heat generated in the fuel, and the transfer of this heat to the component cooling water via the residual heat removal (RHR) heat exchangers. The steam generators (SGs) are not available as a heat sink when the loops are not filled. The secondary function of the reactor coolant is to act as a carrier for the soluble neutron poison, boric acid.

In MODE 5 with loops not filled, only RHR pumps can be used for coolant circulation. The number of pumps in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one RHR pump for decay heat removal and transport and to require that two paths be available to provide redundancy for heat removal.

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RHR loops provide this circulation. The flow provided by one RHR loop is adequate for heat removal and for boron mixing.

RCS loops in MODE 5 (loops not filled) satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii). |R1

LCO

The purpose of this LCO is to require that at least two RHR loops be OPERABLE and one of these loops be in operation. An OPERABLE loop is one that has the capability of transferring heat from the reactor coolant at a controlled rate. Heat cannot be removed via the RHR System unless forced flow is used. A minimum of one running RHR pump meets the LCO requirement for one loop in operation. An additional RHR loop is required to be OPERABLE to provide redundancy for heat removal.

Note 1 permits all RHR pumps to be removed from operation for ≤ 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 |RAI 3.9.5-1 R4

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops—MODE 3

3.4.1.2

LCO 3.4.5 ~~Two~~ RCS loops shall be OPERABLE, and ~~either~~:

a. ~~[Two]~~ RCS loops shall be in operation when the ~~Rod~~ Control System ~~is~~ capable of rod withdrawal; ~~or~~

b. ~~One~~ RCS loop shall be in operation when the ~~Rod~~ Control System ~~is not capable of rod withdrawal~~.

(1) (2)

introduction into the RCS coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

NOTE

All reactor coolant pumps may be ~~de-energized~~ removed from operation for ≤ 1 hour per 8 hour period provided: (4) RAI 3.9.5-1 R4

a. No operations are permitted that would cause reduction ~~of the RCS boron~~ concentration; and TSTF-286

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

APPLICABILITY: MODE 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RCS loop inoperable.	A.1 Restore required RCS loop to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 4.	12 hours

Action a.

Action a.

(continued)

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1. The brackets are removed and the proper plant specific information/value is provided.

2. NUREG-1431 Specification 3.4.5 contains requirements and actions on the Rod Control System based on the assumption that the accident analysis for an uncontrolled RCCA bank withdrawal requires two RCS loops to be in operation. The North Anna accident analysis for uncontrolled RCCA bank withdrawal from a subcritical condition assumes that only one RCS loop is in operation. As a result, the ITS LCO does not contain requirements on the reactor trip breakers or the Rod Control System. ITS Condition C.1 (ISTS Condition D.1), which requires the CRDMs to be de-energized when no RCS loop is in operation, was retained to protect this analysis assumption. These changes are consistent with the North Anna accident analysis assumptions.

3. TSTF-265 is modified. TSTF-265 expanded the Surveillance to require performance on both the operating and non-operating pump. This portion of the generic change is not adopted and the CTS Surveillance wording is retained. The TSTF-265 change to require verification of breaker position and indicated power availability on the operating pump is not necessary as pump operation is, as stated in the TSTF, an adequate indication of available power. The CTS Surveillance wording adequately verifies compliance with the LCO without the unnecessary administrative burden imposed by the TSTF-265 Surveillance revision. Therefore, the CTS Surveillance wording is retained.

RAI 3.4-03 R1

4. LCO 3.4.5 requires one RCS loop to be in operation. The Note states "All reactor coolant pumps may be de-energized for ≤ 1 hour per 8 hour period." The wording of the Note is modified to state, "All reactor coolant pumps may be removed from operation for ≤ 1 hour per 8 hour period." This wording is preferred because it makes clear that the Note is an exception to the requirement to "be in operation," where the term "de-energized" does not have a direct correspondence to the LCO requirement. This wording is also preferred over the wording proposed in TSTF-153, which states that the pump "may not be in operation," in that the ITS wording is clearly an allowance where the TSTF-153 wording could be construed as a prohibition.

RAI 3.9.5-1 R4

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops—MODE 4

3.4.1.3

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

removed from operation

NOTES

1. All reactor coolant pumps (RCPs) and RHR pumps may be de-energized for ≤ 1 hour per 8 hour period provided: ③ RAI 3.9.5-1 R4

   a. No operations are permitted that would cause reduction of the RCS boron concentration; and TSTF-286

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

introduction into the RCS coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and

2. No RCP shall be started with any RCS cold leg temperature ≤ [278]°F unless the secondary side water temperature of each steam generator (SG) is ≤ [50]°F above each of the RCS cold leg temperatures. ①

235°F (Unit 1), 270°F (Unit 2)

APPLICABILITY: MODE 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RCS loop inoperable. AND Two RHR loops inoperable.	A.1 Initiate action to restore a second loop to OPERABLE status.	Immediately
		(continued)

Action a.

TSTF-263

AND

A.2 ----NOTE---- Only required if RHR loop is OPERABLE. Be in MODE 5. | 24 hours

TSTF-263

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1. The brackets are removed and the proper plant specific information/value is provided.

2. TSTF-265 is modified. TSTF-265 expanded the Surveillance to require performance on both the operating and non-operating pump. This portion of the generic change is not adopted and the CTS Surveillance wording is retained. The TSTF-265 change to require verification of breaker position and indicated power availability on the operating pump is not necessary as pump operation is, as stated in the TSTF, an adequate indication of available power. The CTS Surveillance wording adequately verifies compliance with the LCO without the unnecessary administrative burden imposed by the TSTF-265 Surveillance revision. Therefore, the CTS Surveillance wording is retained.

RAI 3.4-04 R1

3. LCO 3.4.6 requires one RCS or RHR loop to be in operation. The Note states "All reactor coolant pumps (RCPs) and RHR pumps may be de-energized for ≤ 1 hour per 8 hour period." The wording of the Note is modified to state, "All reactor coolant pumps (RCPs) and RHR pumps may be removed from operation for ≤ 1 hour per 8 hour period." This wording is preferred because it makes clear that the Note is an exception to the requirement to "be in operation," where the term "de-energized" does not have a direct correspondence to the LCO requirement. This wording is also preferred over the wording proposed in TSTF-153, which states that the pump "may not be in operation," in that the ITS wording is clearly an allowance where the TSTF-153 wording could be construed as a prohibition.

RAI 3.9.5-1 R4

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops—MODE 5, Loops Filled

3.4.1.3

LCO 3.4.7 One residual heat removal (RHR) loop shall be OPERABLE and in operation, and either:

a. One additional RHR loop shall be OPERABLE; or

b. The secondary side water level of ~~at least~~ [two] steam generators (SGs) shall be ≥ [17]%.

(3) (one) (1) (2)

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

removed from operation

1. The RHR pump of the loop in operation may be ~~de-energized~~ for ≤ 1 hour per 8 hour period provided: (5) RAI 3.9.5-1 R4

a. No operations are ~~permitted that~~ would cause ~~reduction of the~~ RCS boron concentration; and TSTF-286

Note ¥¥¥

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

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

New

2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

Note ¥

3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures ≤ [275]°F unless the secondary side water temperature of each SG is ≤ [50]°F above each of the RCS cold leg temperatures.

235°F (Unit 1), 270°F (Unit 2) (1)

New

4. All RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.

APPLICABILITY: MODE 5 with RCS loops filled.

Rev. 4

1. The brackets are removed and the proper plant specific information/value is provided.

2. Editorial change made for consistency with other changes made to the ISTS.

3. Editorial change made for enhanced clarify or consistency with the ISTS Writer's Guide.

4. TSTF-265 is modified. TSTF-265 expanded the Surveillance to require performance on both the operating and non-operating pump. This portion of the generic change is not adopted and the CTS Surveillance wording is retained. The TSTF-265 change to require verification of breaker position and indicated power availability on the operating pump is not necessary as pump operation is, as stated in the TSTF, an adequate indication of available power. The CTS Surveillance wording adequately verifies compliance with the LCO without the unnecessary administrative burden imposed by the TSTF-265 Surveillance revision. Therefore, the CTS Surveillance wording is retained.

RAI 3.4-05 R1

5. LCO 3.4.7 requires one RHR loop to be in operation. The Note states "The RHR pump of the loop in operation may be de-energized for ≤ 1 hour per 8 hour period." The wording of the Note is modified to state, "The RHR pump of the loop in operation may be removed from operation for ≤ 1 hour per 8 hour period." This wording is preferred because it makes clear that the Note is an exception to the requirement to "be in operation," where the term "de-energized" does not have a direct correspondence to the LCO requirement. This wording is also preferred over the wording proposed in TSTF-153, which states that the pump "may not be in operation," in that the ITS wording is clearly an allowance where the TSTF-153 wording could be construed as a prohibition.

RAI 3.9.5-(R4

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops—MODE 5, Loops Not Filled

3.4.1.3

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

removed from operation

NOTES

1. All RHR pumps may be ~~de-energized~~ for ≤ 15 minutes when switching from one loop to another provided: (3) RAI 3.9.5-1 R.4

   a. ~~The~~ core outlet temperature is maintained > 10°F below saturation temperature. (1)

   b. ~~No operations are permitted that would cause a reduction of the RCS boron concentration; and~~ TSTF-286

   c. No draining operations to further reduce the RCS water volume are permitted.

2. One RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

Note ¥¥¥

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

New

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

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

TSTF-263

Action a

(continued)

Rev. 4

1. The brackets are removed and the proper plant specific information/value is provided.

2. TSTF-265 is modified. TSTF-265 expanded the Surveillance to require performance on both the operating and non-operating pump. This portion of the generic change is not adopted and the CTS Surveillance wording is retained. The TSTF-265 change to require verification of breaker position and indicated power availability on the operating pump is not necessary as pump operation is, as stated in the TSTF, an adequate indication of available power. The CTS Surveillance wording adequately verifies compliance with the LCO without the unnecessary administrative burden imposed by the TSTF-265 Surveillance revision. Therefore, the CTS Surveillance wording is retained.

RAI 3.4-06 R1

3. LCO 3.4.8 requires one RHR loop to be in operation. The Note states "All RHR pumps may be de-energized for ≤ 15 minutes when switching from one loop to another." The wording of the Note is modified to state, " All RHR pumps may be removed from operation for ≤ 15 minutes when switching from one loop to another." This wording is preferred because it makes clear that the Note is an exception to the requirement to "be in operation," where the term "de-energized" does not have a direct correspondence to the LCO requirement. This wording is also preferred over the wording proposed in TSTF-153, which states that the pump "may not be in operation," in that the ITS wording is clearly an allowance where the TSTF-153 wording could be construed as a prohibition.

RAI 3.9.5-01 R4

BASES

APPLICABLE SAFETY ANALYSES (continued)

met. For those conditions when the Rod Control System is not capable of rod withdrawal, two RCS loops are required to be OPERABLE, but only one RCS loop is required to be in operation to be consistent with MODE 3 accident analyses. (5)

Failure to provide decay heat removal may result in challenges to a fission product barrier. The RCS loops are part of the primary success path that functions or actuates to prevent or mitigate a Design Basis Accident or transient that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier.

RCS Loops—MODE 3 satisfy Criterion 3 of the NRC Policy Statement. (4) → 10CFR50.36(c)(2)(ii)

LCO

and one of those loops be in operation.

The purpose of this LCO is to require that at least (two) RCS loops be OPERABLE. (1) (5) In MODE 3 with the RTBs in the closed position and Rod Control System capable of rod withdrawal, [two] RCS loops must be in operation. [Two] RCS loops are required to be in operation in MODE 3 with RTBs closed and Rod Control System capable of rod withdrawal due to the postulation of a power excursion because of an inadvertent control rod withdrawal. The required number of RCS loops in operation ensures that the Safety Limit criteria will be met for all of the postulated accidents. (2)

With the RTBs in the open position, or the CRDMs de-energized, the Rod Control System is not capable of rod withdrawal; therefore, only one RCS loop in operation is necessary to ensure removal of decay heat from the core and homogenous boron concentration throughout the RCS. An additional RCS loop is required to be OPERABLE to ensure that safety analyses limits are met. (2)

redundant capability for decay heat removal

removed from operation (5) | RA-1 3.9.5-1 RP4

The Note permits all RCPs to be de-energized for ≤ 1 hour per 8 hour period. The purpose of the Note is to perform tests that are designed to validate various accident analyses values. One of these tests is validation of the pump coastdown curve used as input to a number of accident analyses including a loss of flow accident. This test is generally performed in MODE 3 during the initial startup testing program, and as such should only be performed once. If, however, changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input (3)

permit pump swap operations and

(continued)

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BASES

LCO (continued)

loops and RHR loops. Any one loop in operation provides enough flow to remove the decay heat from the core with forced circulation. An additional loop is required to be removed from operation (5) RAI 3.9.5-1 R4

Note 1 permits all RCPs or RHR pumps to be de-energized for ≤ 1 hour per 8 hour period. The purpose of the Note is to permit tests that are designed to validate various accident analyses values. One of the tests performed during the startup testing program is the validation of rod drop times during cold conditions, both with and without flow. The no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits the de-energizing of the pumps in order to perform this test and validate the assumed analysis values. If changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values must be revalidated by conducting the test again. The 1 hour time period is adequate to perform the test, and operating experience has shown that boron stratification is not a problem during this short period with no forced flow.

Utilization of Note 1 is permitted provided the following conditions are met along with any other conditions imposed by initial startup test procedures:

a. No operations are permitted that would dilute the RCS boron concentration, therefore maintaining the margin to criticality. Boron reduction is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation; and } TSTF-286

b. Core outlet temperature is maintained at least 10°F below saturation temperature, so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

Note 2 requires that the secondary side water temperature of each SG be ≤ 50°F above each of the RCS cold leg temperatures before the start of an RCP with any RCS cold leg temperature ≤ 275°F. This restraint is to prevent a low temperature overpressure event due to a thermal transient when an RCP is started. (1) (2)

An OPERABLE RCS loop comprises (is comprised of) an OPERABLE RCP and an OPERABLE SG in accordance with the Steam Generator Tube (5)

(continued)

pump swap operations and

which may be (2)

stopping

swap the pumps or

may (2) (2)

With coolant with boron concentrations less than required to meet SDM of LCO 3.1.1

235°F (Unit 1), 270°F (Unit 2)

With coolant of boron concentration less than required to assure SDM is maintained

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BASES (continued)

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RHR loops provide this circulation.

RCS Loops—MODE 5 (Loops Filled) have been identified in the NRC Policy Statement as important contributors to risk reduction.

satisfies Criterion 4 of 10 CFR 50.36 (c)(2)(ii).

TSTF-367 (2)

LCO

The purpose of this LCO is to require that at least one of the RHR loops be OPERABLE and in operation with an additional RHR loop OPERABLE or two SGs with secondary side water level ≥ [17]% (narrow range instrumentation). One RHR loop provides sufficient forced circulation to perform the safety functions of the reactor coolant under these conditions. An additional RHR loop is required to be OPERABLE to meet single failure considerations. However, if the standby RHR loop is not OPERABLE, an acceptable alternate method is two SGs with their secondary side water levels ≥ [17]% (narrow range instrumentation). Should the operating RHR loop fail, the SGs could be used to remove the decay heat.

(5) LCO and the associated loop isolation valves open

(a) (1) (3) (7) (9) (its)

TSTF-114 Via natural circulation

RAI 3.9.5-1 R4 (1)

Note 1 permits all RHR pumps to be removed from operation de-energized ≤ 1 hour per 8 hour period. The purpose of the Note is to permit tests designed to validate various accident analyses values. One of the tests performed during the startup testing program is the validation of rod drop times during cold conditions, both with and without flow. The no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits de-energizing of the pumps in order to perform this test and validate the assumed analysis values. If changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values must be revalidated by conducting the test again. The 1 hour time period is adequate to perform the test, and operating experience has shown that boron stratification is not likely during this short period with no forced flow.

Pump swap operations or swap pumps or (7)

stopping

RAI 3.9.5-1 R4 (1)

Utilization of Note 1 is permitted provided the following conditions are met, along with any other conditions imposed by initial startup test procedures:

(6) to provide redundancy for heat removal

(continued)

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BASES

removed from operation

LCO (continued)

Note 1 permits all RHR pumps to be de-energized for ≤ 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°F below saturation temperature. The Note prohibits boron dilution or draining operations when RHR forced flow is stopped.

(6) RAI 3.9.5-1 R4

(2) TSTF-286

With coolant at boron concentrations less than required to assure SDM of LCO 3.1.1 is maintained

Note 2 allows one RHR loop to be inoperable for a period of ≤ 2 hours, provided that the other loop 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.

the unisolated portion of the

(4)

If all RCS loops are isolated, the RCS water inventory is substantially reduced. In this circumstance, LCO 3.4.8 applies whether or not the isolated loops are filled.

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).

(4)

ACTIONS

A.1

required inoperable

TSTF-263

If only one RHR loop is OPERABLE and in operation, redundancy for RHR is lost. Action must be initiated to restore a second loop to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

(continued)

Rev. 4

that all reactor coolant pumps may be removed from operation provided no operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1. ITS 3.4.5, Action C states that if two required RCS loops are inoperable or the required RCS loop(s) are not in operation, operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1 must be suspended, and action must be immediately initiated to restore one RCS loops to operable status and operation. This relaxes the CTS Required Actions by revising the action from suspending reductions in boron concentration to suspending introduction of coolant with a boron concentration less than required to meet LCO 3.1.1. IR4

The purpose of the CTS 3.4.1.2 LCO note and of Action b, is to ensure that "pockets" of coolant with boron concentration less than that required to maintain the SDM are not created when there is no forced flow through the reactor. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. As long as coolant with boron concentration less than that required to meet the SDM requirement in LCO 3.1.1 is not introduced into the RCS, there is no possibility of creating "pockets" of coolant with less than the required boron concentration. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.2 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS 4.4.1.2.1 states that the required RCPs, if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignment and indicated power availability. ITS SR 3.4.5.3 requires verification of correct breaker alignment and indicated power availability to the that is not in operation required pump every 7 days. It is modified by a Note which states, "Not required to be performed until 24 hours after a required pump is not in operation." This changes the CTS by not requiring the SR to be performed until 24 hours after a pump is taken out of operation.

The purpose of 4.4.1.2.1 is to ensure that the standby RCP is ready to operate. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The Note provides time to perform the Surveillance to verify correct breaker alignment and indicated power availability. Without the Note, the Surveillance would not be met immediately after taking a pump out of operation. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.3 *(Category 4 – Relaxation of Required Action)* CTS 3.4.1.3, Note "*" states that all reactor coolant pumps and RHR pumps may be deenergized for up to 1 hour provided no operations are permitted that would cause dilution of the reactor coolant system boron concentration. CTS 3.4.1.2, Action b , states that when no coolant loop is in operation, all operations involving a reduction in boron concentration of the RCS must be suspended and action must be initiated to return the required loop to operation. ITS LCO 3.4.6 Note 1 states that all reactor coolant pumps and RHR pumps may be removed from operation provided no operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1. ITS 3.4.6, Action B states that if two required loops are inoperable or the required loop(s) are not in operation, operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1 must be suspended, and action must be immediately initiated to restore one loop to operable status and operation. This relaxes the CTS Required Actions by revising the action from suspending reductions in boron concentration to suspending introduction of coolant with a boron concentration less than required to meet LCO 3.1.1. | RH

The purpose of the CTS 3.4.1.3 LCO note and of Action b, is to ensure that "pockets" of coolant with boron concentration less than that required to maintain the SDM are not created when there is no forced flow through the reactor. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. As long as coolant with boron concentration less than that required to meet the SDM requirement in LCO 3.1.1 is not introduced into the RCS, there is no possibility of creating "pockets" of coolant with less than the required boron concentration. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

The purpose of 4.4.1.3.2 is to ensure that the standby pump is ready to operate. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The Note provides time to perform the Surveillance to verify correct breaker alignment and indicated power availability. Without the Note, the Surveillance would not be met immediately after taking a pump out of operation. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.4 *(Category 4 – Relaxation of Required Action)* CTS 3.4.1.3, Note "*" states that all reactor coolant pumps and RHR pumps may be deenergized for up to 1 hour provided no operations are permitted that would cause dilution of the reactor coolant system boron concentration. CTS 3.4.1.2, Action b , states that when no coolant loop is in operation, all operations involving a reduction in boron concentration of the RCS must be suspended and action must be initiated to return the required loop to operation. ITS LCO 3.4.7 Note 1 states that all reactor coolant pumps and RHR pumps may be removed from operation provided no operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1. ITS 3.4.7, Action C states that if no required loops are OPERABLE or the required RHR loop is not in operation, operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1 must be suspended, and action must be immediately initiated to restore one loop to operable status and operation. This relaxes the CTS Required Actions by revising the action from suspending reductions in boron concentration to suspending introduction of coolant with a boron concentration less than required to meet LCO 3.1.1. | R4

The purpose of the CTS 3.4.1.3 LCO note and of Action b, is to ensure that "pockets" of coolant with boron concentration less than that required to maintain the SDM are not created when there is no forced flow through the reactor. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. As long as coolant with boron concentration less than that required to meet the SDM requirement in LCO 3.1.1 is not introduced into the RCS, there is no possibility of creating "pockets" of coolant with less than the required boron concentration. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

RCS boron concentration is appropriate because all forced flow used to ensure proper mixing of RCS boron is lost. This change is designated as more restrictive because it adds an additional action to the CTS.

M.2 CTS 3.4.1.3 contains an allowance for all reactor coolant pumps or RHR pumps to be de-energized for up to one hour. ITS 3.4.8 allows all RHR pumps to be removed from operation for ≤ 15 minutes for switching from one loop to the other only and also requires that no draining operations to further reduce the RCS water volume are permitted. | R4

This change is acceptable because the Note provides sufficient time to perform loop switching operations and provide adequate controls. The startup tests performed using the CTS Note allowance in MODE 4 or 5 with loops filled are not performed with the RCS loops not filled. Therefore, the 1 hour allowance for performing those tests are not needed in this condition. Stopping all operating RHR loops when the RCS is not filled should be limited to short periods of time because of the reduced inventory of water available to absorb decay heat. Stopping all RHR pumps during loop swapping operations is necessary to ensure that pump vortexing does not occur if both pumps are run simultaneously. Fifteen minutes is sufficient time to perform the loop swapping operation without excessive increases in RCS average temperature due to lack of decay heat removal. Adding the additional condition that no draining operations be performed when the pumps are stopped is reasonable given the low RCS water level and the unavailability of the RHR pumps to add inventory to the RCS if needed.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS)* CTS Surveillance 4.4.1.3.4 states that at least one Reactor Coolant pump or RHR loop shall be verified to be in operation and circulating reactor coolant at least once per 12 hours. ITS SR 3.4.8.1 states that a required RHR loop shall be verified to be in operation every 12 hours. This changes the CTS by moving the requirement to verify that the RHR loop is circulating reactor coolant to the Bases. Other related changes are described in LA.2 and A.2.

The removal of this detail for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be in the Technical Specifications in order to provide adequate protection of the public health and safety. The ITS retains the requirement that a reactor coolant loop be in operation, and a loop that is in operation will be circulating reactor coolant. As described in the ITS Bases, verification that a reactor coolant loop is in operation includes flow rate, temperature, or pump status monitoring. Also, this change is acceptable because these

L.2 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS 4.4.1.3.2 states that the required pumps, if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignment and indicated power availability. ITS SR 3.4.8.2 requires verification of correct breaker alignment and indicated power availability to the required pump that is not in operation every 7 days. It is modified by a Note which states, "Not required to be performed until 24 hours after a required pump is not in operation." This changes the CTS by not requiring the SR to be performed until 24 hours after a pump is taken out of operation.

The purpose of 4.4.1.3.2 is to ensure that the standby pump is ready to operate. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The Note provides time to perform the Surveillance to verify correct breaker alignment and indicated power availability. Without the Note, the Surveillance would not be met immediately after taking a pump out of operation. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.3 *(Category 4 – Relaxation of Required Action)* CTS 3.4.1.3, Note "*" states that all reactor coolant pumps and RHR pumps may be deenergized for up to 1 hour provided no operations are permitted that would cause dilution of the reactor coolant system boron concentration. CTS 3.4.1.2, Action b , states that when no coolant loop is in operation, all operations involving a reduction in boron concentration of the RCS must be suspended and action must be initiated to return the required loop to operation. ITS LCO 3.4.8 Note 1 states that all reactor coolant pumps and RHR pumps may be removed from operation provided no operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1. ITS 3.4.8, Action B states that if no required loops are OPERABLE or the required RHR loop is not in operation, operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1 must be suspended, and action must be immediately initiated to restore one loop to operable status and operation. This relaxes the CTS Required Actions by revising the action from suspending reductions in boron concentration to suspending introduction of coolant with a boron concentration less than required to meet LCO 3.1.1. | R4

The purpose of the CTS3.4.1.3 LCO note and of Action b, is to ensure that "pockets" of coolant with boron concentration less than that required to maintain the SDM are not created when there is no forced flow through the reactor. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. As long as coolant with boron concentration less than that required to meet the SDM requirement in LCO

3.9 REFUELING OPERATIONS

3.9.5 Residual Heat Removal (RHR) and Coolant Circulation–High Water Level

LCO 3.9.5 One RHR loop shall be OPERABLE and in operation.

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The required RHR loop may be removed from operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction into the Reactor Coolant System (RCS), coolant of boron concentration less than required to meet the minimum required boron concentration of LCO 3.9.1. RAI 3.9.5-1 R4

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APPLICABILITY: MODE 6 with the water level ≥ 23 ft above the top of reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. RHR loop requirements not met.	A.1	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
	AND		
	A.2	Suspend loading irradiated fuel assemblies in the core.	Immediately
	AND		
	A.3	Initiate action to satisfy RHR loop requirements.	Immediately
	AND		(continued)

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.

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

1. All RHR pumps may be removed from operation for ≤ 15 minutes when switching from one train to another provided: RAI 3.9.5-1 R4

   a. The core outlet temperature is maintained > 10°F below saturation temperature;

   b. No operations are permitted that would cause a reduction of the Reactor Coolant System boron concentration; and

   c. No draining operations to further reduce RCS volume are permitted.

2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing, provided that the other loop is OPERABLE and in operation.

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

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. OR A.2 Initiate action to establish ≥ 23 ft of water above the top of reactor vessel flange.	Immediately Immediately