Dominion Nuclear Connecticut, Inc.
Millstone Power Station
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Dominion

March 9, 2005

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
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Rockville, MD 20852-2738

Serial No. 04-707
NLOS/PRW R1
Docket Nos. 50-336
50-423
License Nos. DPR-65
NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNITS 2 and 3
PROPOSED TECHNICAL SPECIFICATIONS CHANGES
SHUTDOWN OPERATIONS INVOLVING POSITIVE REACTIVITY ADDITIONS

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC) hereby requests to amend Operating Licenses DPR-65 for Millstone Power Station Unit 2 (MPS2) and NPF-49 for Millstone Power Station Unit 3 (MPS3). The changes incorporate wording for shutdown operations involving positive reactivity additions, which is consistent with Improved Standard Technical Specifications Change Traveler, TSTF-286-A, Revision 2, NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004 and NUREG 1432, Combustion Engineering Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

The proposed amendments do not involve a significant impact on public health and safety and do not involve a Significant Hazards Consideration pursuant to the provisions of 10 CFR 50.92.

Attachments 1 and 4 contain the description, justification, and no Significant Hazards Consideration determinations for MPS2 and MPS3, respectively. Likewise, Attachments 2 and 5 contain the associated marked up technical specification pages. Attachments 3 and 6 contain the proposed amendment pages.

The Site Operations Review Committee and the Management Safety Review Committee have reviewed and concurred with the determinations.

DNC requests NRC staff approval by January 31, 2006 in order to implement the changes prior to the fall 2006 refueling outage for Millstone Unit 2.

In accordance with 10 CFR 50.91(b), a copy of this license amendment request is being provided to the State of Connecticut.

A001

If you should have any questions regarding this submittal, please contact Mr. Paul R. Willoughby at (804) 273-3572.

Very truly yours,

Leslie N. Hartz
Vice President – Nuclear Engineering

Attachments:

1. Evaluation of Proposed License Amendment, MPS2
2. Marked-Up Pages, MPS2
3. Re-typed Pages, MPS2
4. Evaluation of Proposed License Amendment, MPS3
5. Marked-Up Pages, MPS3
6. Re-typed Pages, MPS3

Commitments made in this letter: None

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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 Dominion Nuclear Connecticut, Inc. 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 9th day of March, 2005.

My Commission Expires: August 31, 2008.

Margaret B. Bennett
Notary Public

(SEAL)

Serial No. 04-707
Docket No. 50-336

ATTACHMENT 1

PROPOSED TECHNICAL SPECIFICATIONS CHANGES
SHUTDOWN OPERATIONS INVOLVING POSITIVE REACTIVITY ADDITIONS

EVALUATION OF PROPOSED LICENSE AMENDMENT

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

PROPOSED TECHNICAL SPECIFICATIONS CHANGES
SHUTDOWN OPERATIONS INVOLVING POSITIVE REACTIVITY ADDITIONS
EVALUATION OF PROPOSED LICENSE AMENDMENT

1.0 DISCUSSION OF PROPOSED CHANGE

2.0 DESCRIPTION OF PROPOSED CHANGE

3.0 REASON FOR PROPOSED CHANGE

4.0 SAFETY SUMMARY

5.0 REGULATORY ANALYSIS

6.0 ENVIRONMENTAL CONSIDERATION

1.0 DISCUSSION OF PROPOSED CHANGES

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC) hereby requests to amend Operating License DPR-65 by incorporating the attached proposed changes into the Millstone Power Station Unit 2 (MPS2) Technical Specifications (TS). The purpose of the proposed changes is to modify the wording related to the reactor coolant system, electrical power systems, refueling operations and the related bases sections to provide operational flexibility during mode changes or addition of coolant during shutdown operations.

Current technical specifications require that all operations involving a reduction in boron concentration of the reactor coolant system (RCS) or that involve positive reactivity additions be suspended under certain conditions. The MPS2 TS are being revised to limit the introduction into the RCS of reactivity more positive than that necessary to meet the required shut down margin (SDM) or refueling boron concentration, as applicable.

Specifically, this amendment incorporates wording consistent with Improved Standard Technical Specifications Change Traveler, TSTF-286-A, Revision 2, for the Combustion Engineering Owners Group (CEOG) Standard Technical Specifications (STS), for shutdown operations involving positive reactivity additions and with NUREG 1432, Combustion Engineering Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

2.0 DESCRIPTION OF PROPOSED CHANGES

A. TS 3.4.1 REACTOR COOLANT SYSTEM – COOLANT LOOPS AND COOLANT CIRCULATION

Description:

1. TS 3.4.1.2, HOT STANDBY, NOTE a.: Replace "...reduction of the Reactor Coolant System boron concentration..." with "...introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1..."

2. TS 3.4.1.2, HOT STANDBY, ACTION b.: Replace "...all operations involving a reduction in boron concentration of the Reactor Coolant System..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1..."

3. TS 3.4.1.3, HOT SHUTDOWN, NOTE 1.a.: Replace "...reduction of the Reactor Coolant System boron concentration..." with "...introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1..."

4. TS 3.4.1.3, HOT SHUTDOWN, ACTION c.: Replace "...all operations involving a reduction in Reactor Coolant System boron concentration ..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1..."

5. TS 3.4.1.4, COLD SHUTDOWN – REACTOR COOLANT SYSTEM LOOPS FILLED, NOTE 2.a.: Replace "...reduction of the Reactor Coolant System boron concentration..." with "...introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1..."

6. TS 3.4.1.4, COLD SHUTDOWN – REACTOR COOLANT SYSTEM LOOPS FILLED,ACTION b.: Replace "...all operations involving a reduction in Reactor Coolant System boron concentration ..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1..."

7. TS 3.4.1.5, COLD SHUTDOWN – REACTOR COOLANT SYSTEM LOOPS NOT FILLED, NOTE 2.a.: Replace "...reduction of the Reactor Coolant System boron concentration..." with "...introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1..."

8. TS 3.4.1.5, REACTOR COOLANT SYSTEM LOOPS NOT FILLED, ACTION b.: Replace "...all operations involving a reduction in Reactor Coolant System boron concentration ..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1..."

<u>Justification</u>:

1. The NOTES in this section place restrictions on the shutdown of reactor coolant pumps and shutdown cooling pumps. The proposed changes modify the NOTES to allow the introduction of coolant with lower boron concentration but greater than that required by the shutdown margin specified in TS 3.1.1.1, SHUTDOWN MARGIN.
2. The ACTION Statements in this section direct steps to be taken should one or more reactor coolant loops not be OPERABLE. The proposed changes allow the introduction of coolant with lower boron concentration but greater than that required by the shutdown margin specified in TS 3.1.1.1, SHUTDOWN MARGIN.
3. No physical modifications are required by the changes and SDM is not affected by them. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1432, Combustion Engineering Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

B. TS 3.8 ELECTRICAL POWER SYSTEMS

<u>Description</u>:

1. TS 3.8.1.2, A. C. SOURCES – SHUTDOWN, ACTION Statement: Replace "...or positive reactivity changes, or..." with "...and positive reactivity additions that could result in loss of required SDM or boron concentration, and..."

2. TS 3.8.2.2, A. C. DISTRIBUTION – SHUTDOWN, ACTION Statement: Replace "...or positive reactivity changes, or..." with "...and positive reactivity additions that could result in loss of required SDM or boron concentration, and..."

3. TS 3.8.2.4, D. C. DISTRIBUTION – SHUTDOWN, ACTION Statement: Replace "...or positive reactivity changes, or..." with "...and positive reactivity additions that could result in loss of required SDM or boron concentration, and..."

Justification:

1. The ACTION Statements in this section direct steps to be taken should one or more electrical power systems not be OPERABLE. The proposed changes permit operations introducing positive reactivity additions but prohibit the temperature change or overall boron concentration from decreasing below that required to maintain the specified SDM or required boron concentration. Introduction of coolant into the RCS must be from sources that have boron concentrations greater than that required in the RCS to maintain required SDM or refueling boron concentration.
2. No physical modifications are required by the changes and SDM and required boron concentration are not affected by them. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1432, Combustion Engineering Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

C. TS 3.9 REFUELING OPERATIONS

Description:

C.1.1 TS 3.9.1, BORON CONCENTRATIONS, ACTION Statement: Replace "...or positive reactivity changes..." with "and positive reactivity additions..."

Justification:

C.1.1 The wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000.

C.1.2 Concerning the ACTION statement, operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations), but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action.

C.1.3 No physical modifications are required by the changes and SDM and required boron concentration are not affected by them.

Description:

C.2.1 TS 3.9.2, INSTRUMENTATION, ACTION a.: Replace "...or positive reactivity changes..." with "and operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1..."

Justification:

C.2.1 The wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000.

C.2.2 The ACTION Statement in this specification directs steps to be taken should one or more source range flux monitors not be OPERABLE. The proposed change permits operations introducing coolant of lower boron concentration to continue but prohibits the overall boron concentration from dropping below that specified in TS 3.9.1, BORON CONCENTRATIONS. Introduction of coolant into the RCS must be from sources that have boron concentrations greater than that required in the RCS to maintain required SDM or refueling boron concentration.

C.2.3 No physical modifications are required by the changes and SDM is not affected by them.

C.3.1 TS 3.9.8.1, SHUTDOWN COOLING AND COOLANT CIRCULATION – HIGH WATER LEVEL,

Description:

C.3.1.1 TS 3.9.8.1, NOTE 1.: Replace "...a reduction in Reactor Coolant System boron concentration." With "...introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1."

Justification:

C.3.1.1.a The NOTES in this section place restrictions on the shutdown cooling train. The proposed change modifies the NOTE to allow the introduction of coolant with lower boron concentration but greater than that required by the shutdown margin specified in TS 3.9.1, BORON CONCENTRATIONS. Introduction of coolant into the RCS must be from sources that have boron concentrations greater than that required in the RCS to maintain required SDM or refueling boron concentration.

C.3.1.1.b No physical modifications are required by the change and SDM is not affected by it. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1432, Combustion Engineering Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

Description:

C.3.1.2 TS 3.9.8.1, ACTION a.: Replace "...all operations involving a reduction in Reactor Coolant System boron concentration..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1."

Justification:

C.3.1.2.a The ACTION Statements in this specification direct steps to be taken should no shutdown cooling train be OPERABLE. The proposed change permits operations introducing coolant of lower boron concentration to continue but prohibits the overall boron concentration from dropping below that specified in TS 3.9.1, BORON CONCENTRATIONS. Introduction of coolant into the RCS must be from sources that have boron concentrations greater than that required in the RCS to maintain required SDM or refueling boron concentration.

C.3.1.2.b No physical modifications are required by the change and SDM is not affected by it. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1432, Combustion Engineering Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

C.3.2 TS 3.9.8.2, SHUTDOWN COOLING AND COOLANT CIRCULATION – LOW WATER LEVEL

Description:

C.3.2.1 TS 3.9.8.2, ACTION b.1.: Replace "...all operations involving a reduction in Reactor Coolant System boron concentration..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1..."

Justification:

C.3.2.1.a The ACTION Statements in this specification direct steps to be taken should one or more shutdown cooling trains not be OPERABLE. The proposed change permits operations introducing coolant of lower boron concentration to continue but prohibits the overall boron concentration from dropping below that specified in TS 3.9.1, BORON CONCENTRATIONS. Introduction of coolant into the RCS must be from sources that have boron concentrations greater than that required in the RCS to maintain required SDM or refueling boron concentration.

C.3.2.1.b No physical modifications are required by the change and SDM is not affected by it. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1432, Combustion Engineering Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

D. BASES CHANGES

1. TS 3 / 4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION
Add INSERT A and INSERT B prior to the last paragraph.

INSERT A

The NOTES in LCOs 3.4.1.2, 3.4.1.3, 3.4.1.4, and 3.4.1.5 permit a limited period of operation without RCPs and shutdown cooling pumps. All RCPs and shutdown cooling pumps may be removed from operation for ≦ 1 hour per 8 hour period. This means that natural circulation has been established. When in natural circulation, a reduction in boron concentration with coolant at boron concentrations less than required to assure the SDM of LCO 3.1.1.1 is maintained is prohibited because an even concentration distribution throughout the RCS cannot be ensured. Core outlet temperature is to be maintained at least 10°F below the saturation temperature so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

INSERT B

Concerning TS 3.4.1.2, ACTION b.; 3.4.1.3, ACTION c.; 3.4.1.4, ACTION b.; and 3.4.1.5, ACTION b., if two required loops or trains are inoperable or a required loop or train is not in operation except during conditions permitted by the NOTE in the LCO section, all operations involving introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1.1 must be suspended and action to restore one RCS loop or SDC train to OPERABLE status and operation must be initiated. The required margin to criticality must not be reduced in this type of operation. Suspending the introduction of coolant into the RCS of coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate COMPLETION TIMES reflect the importance of decay heat removal. The action to restore must continue until one loop or train is restored to operation.

2. TS 3.8, ELECTICAL POWER SYSTEMS BASES, OPERABILITY paragraph [page B3/4 8-1o]: Replace, "...positive reactivity changes..." with "...positive reactivity additions..."

3. TS 3.8, ELECTICAL POWER SYSTEMS BASES, OPERABILITY paragraph [page B3/4 8-1o]: Delete, "The required action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory provided the boron concentration of the makeup water source is greater than or equal to the boron concentration for the required SHUTDOWN MARGIN. In addition, suspension of these activities does not preclude completion of actions to establish a safe conservative plant condition." Replace the deleted wording with INSERT C.

INSERT C

Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power source or distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

4. TS BASES 3/4.9.1 BORON CONCENTRATION
Add INSERT D after the last paragraph.

INSERT D

Concerning the ACTION statement, operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations), but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action.

5. TS BASES 3 /4.9.2 INSTRUMENTATION
Add INSERT E after the first paragraph.

INSERT E

Concerning ACTION a., with only one SRM OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, CORE ALTERATIONS and introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1 must be suspended immediately. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that which would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Performance of ACTION a. shall not preclude completion of movement of a component to a safe position.

6. TS BASES 3/4.9.8, SHUTDOWN COOLING AND COOLANT CIRCULATION, page B 3/4 9-2a, second full paragraph: Replace "...cause a reduction in..." with "...dilute the..." and add, "...by introduction of coolant Into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1." at the end of the sentence. Add, "...with coolant at boron concentrations less than required to assure the RCS boron concentration is maintained..." after, "Boron concentration reduction..."

7. TS Bases 3/4.9.8, SHUTDOWN COOLING AND COOLANT CIRCULATION, page B 3/4 9-2a, third full paragraph: Replace "...cause a reduction in..." with "...dilute the..." and add, "...by introduction of coolant Into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1" after "...RCS boron concentration..."

3.0 REASON FOR PROPOSED AMENDMENT

The changes described above provide operational flexibility, particularly during startup operations, by allowing addition of coolant inventory that may reduce the overall RCS boron concentration but maintain shutdown margin commensurate with refueling boron concentration or the minimum required SDM. This will reduce operator burden encountered during refueling cavity fill evolutions or transitions to higher modes of operation by allowing continuation of additions to the RCS so long as SDM or refueling boron concentration is maintained, as applicable. A specific example of this was encountered during the Millstone Unit 3 refueling outage 3R09 in the spring of 2004. Refill of the refueling cavity was delayed because the intended source of the coolant, the Refueling Water Storage Tank (RWST), contained coolant with a boron concentration lower than that of the cavity. Cavity fill was delayed until a higher concentration was reached even though the water in the RWST was greater than refueling boron concentration. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by the NRC April 13, 2000, and NRC-approved NUREG 1432, Combustion Engineering Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

4.0 SAFETY SUMMARY

DNC has evaluated the changes for impact on plant safety and concluded that the proposed changes will have no adverse effect. The ACTIONS that preclude positive reactivity changes and/or reduction in boron concentration ensure either no power increases, or continued margin to core criticality operations. During conditions in which these ACTIONS may be required, various unit operations must be continued, e.g., transition to a higher mode of operation, restoring level in the refueling cavity. RCS inventory must be maintained, and RCS temperature must be controlled. These activities necessarily involve additions to the RCS of cooler water (a positive reactivity effect in most cases) and may involve inventory makeup from sources that are at boron concentrations less than RCS concentration. These activities should not be precluded if the worst-case overall effect on the core would still assure SDM or the required refueling boron concentration is maintained. The following are the details of this evaluation:

A. TS 3.4.1 REACTOR COOLANT SYSTEM - COOLANT LOOPS AND COOLANT CIRCULATION

1. TS 3.4.1.2, NOTE a.; TS 3.4.1.3, NOTE 1.a.; TS 3.4.1.4, NOTE 2.a.; TS 3.4.1.5, NOTE 2.a.: Replace "...reduction of the Reactor Coolant System boron concentration..." with "...introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1..." The NOTES modify TS 3.4.1.2, TS 3.4.1.3, TS 3.4.1.4, and TS 3.4.1.5 to allow addition of coolant from sources with less boron concentration as long as the SDM required by the limiting condition of TS 3.1.1.1. is met. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

2. TS 3.4.1.2, ACTION b.; TS 3.4.1.3, ACTION c.; TS 3.4.1.4, ACTION b.; TS 3.4.1.5, ACTION b.: Replace "...all operations involving a reduction in boron concentration of the Reactor Coolant System..." with "...operations that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than required to meet SDM of LCO 3.1.1.1..." These actions allow additions to the RCS from sources that can reduce the overall boron concentration as long as the SDM analysis accounts for

those conditions. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

B. TS 3.8 ELECTRICAL POWER SYSTEMS

TS 3.8.1.2, TS 3.8.2.2, TS 3.8.2.4, ACTION Statement: Replace "...or positive reactivity changes, or..." with "...and positive reactivity additions that could result in loss of required SDM or boron concentration, and..." ACTIONS are modified to allow addition of coolant from sources with different temperatures and/or less boron concentration as long as the SDM or required boron concentration is maintained. Introduction of temperature changes which could add positive reactivity are evaluated to ensure they do not result in a loss of required SDM. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

C. TS 3.9 REFUELING OPERATIONS

1. TS 3.9.1, ACTION Statement: Replace "...or positive reactivity changes..." with "and positive reactivity additions..." Concerning the ACTION statement, operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations), but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action.

2. TS 3.9.2, ACTION a.: Replace "...or positive reactivity changes..." with "and operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1..." This ACTION allows additions to the RCS from sources that can reduce the overall boron

concentration as long as the SDM analysis accounts for those conditions. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

3. TS 3.9.8.1, NOTE 1.: Replace "...a reduction in Reactor Coolant System boron concentration." with "...introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1." The NOTE modifies TS 3.9.8.1 to allow addition of coolant from sources with less boron concentration as long as the SDM required by the limiting condition of TS 3.9.1. is met. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

4. TS 3.9.8.1, ACTION a.; TS 3.9.8.2, ACTION b.1: Replace "...all operations involving a reduction in Reactor Coolant System boron concentration..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1." These ACTIONS allow additions to the RCS from sources that can reduce the overall boron concentration as long as the SDM analysis accounts for those conditions. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

5.0 REGULATORY ANALYSIS

A. No Significant Hazards Consideration

The proposed amendment modifies the MPS2 TS to allow additions to the coolant inventory from sources with different temperatures or lower boron concentrations so long as the overall boron concentration is maintained above that necessary to meet the required SDM or refueling boron concentration, as applicable. No plant modifications are associated with the proposed changes to the TS.

DNC has evaluated whether or not a Significant Hazards Consideration (SHC) is involved with the proposed changes by addressing the three standards set forth in 10 CFR 50.92(c) as discussed below.

Criterion 1:

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

Response: No.

The proposed change does not in any way alter the SDM or refueling boron concentration. It limits introduction of coolant into the RCS of reactivity more positive than that necessary to meet the required SDM or refueling boron concentration. This proposed change does not affect the input or assumptions for any accidents previously evaluated nor does it affect initiation of an accident. Based on this discussion, the proposed amendment does not increase the probability or consequence of an accident previously evaluated.

Criterion 2:

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

Response: No.

The proposed change allows introduction of coolant into the RCS with different temperature or lower boron concentration, however, the required boron concentration or SDM is maintained. The proposed amendment does not introduce failure modes, accident initiators, or malfunctions that would cause a new or different kind of accident. No plant modifications are associated with the change. Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

Criterion 3:

Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

The proposed change provides the flexibility necessary for continued safe reactor operations while limiting any potential for excess positive reactivity additions. SDM and required boron concentration are not affected. Therefore, based on the above, the proposed amendment does not involve a significant reduction in a margin of safety.

In summary, DNC concludes that the proposed amendment does not represent a significant hazards consideration under the standards set forth in 10 CFR 50.92(c).

B. Conclusion

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

6.0 ENVIRONMENTAL CONSIDERATION

DNC has determined that the proposed amendment would not change requirements with respect to use of a facility component located within the restricted area, as defined by 10 CFR 20, nor would it change an inspection or surveillance requirement. DNC has evaluated the proposed change and has determined that the change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released off site, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

Serial No. 04-707
Docket No. 50-336

ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATIONS CHANGES
SHUTDOWN OPERATIONS INVOLVING POSITIVE REACTIVITY ADDITIONS

MARKED UP PAGES

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

INDEX

BASES

SECTION PAGE

LIMITING CONDITION FOR OPERATION

3.4.1.2 Two reactor coolant loops shall be OPERABLE and one reactor coolant loop shall be in operation.

> NOTE
>
> All reactor coolant pumps may not be in operation for up to 1 hour per 8 hour period provided:
>
> a. no operations are permitted that would cause ~~reduction of the Reactor Coolant System boron concentration~~; and
>
> b. core outlet temperature is maintained at least 10°F below saturation temperature.

Introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1

APPLICABILITY: MODE 3.

ACTION: a. With one reactor coolant loop inoperable, restore the required reactor coolant loop to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. With no reactor coolant loop OPERABLE or in operation, immediately suspend ~~all operations involving a reduction in boron concentration of the Reactor Coolant System~~ and immediately initiate corrective action to return one required reactor coolant loop to OPERABLE status and operation.

operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1

SURVEILLANCE REQUIREMENTS

4.4.1.2.1 The required reactor coolant pump, if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignment and indicated power available.

4.4.1.2.2 One reactor coolant loop shall be verified to be in operation at least once per 12 hours.

4.4.1 2.3 Each steam generator secondary side water level shall be verified to be ≥ 10% narrow range at least once per 12 hours.

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

HOT SHUTDOWN

LIMITING CONDITION FOR OPERATION

B

3.4.1.3 Two loops or trains consisting of any combination of reactor coolant loops or shutdown cooling trains shall be OPERABLE and one loop or train shall be in operation.

NOTES

1. All reactor coolant pumps and shutdown cooling pumps may not be in operation for up to 1 hour per 8 hour period provided:
   a. no operations are permitted that would cause ~~reduction of the Reactor Coolant System boron concentration~~; and
   b. core outlet temperature is maintained at least 10°F below saturation temperature.
2. The following restrictions apply when starting the first reactor coolant pump and any RCS cold leg temperature is ≤ 275°F. The first reactor coolant pump shall not be started unless:
   a. pressurizer water level is < 43.7%;
   b. pressurizer pressure is < 340 psia; and
   c. secondary water temperature in each steam generator is < 50°F above each RCS cold leg temperature.

introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1

APPLICABILITY: MODE 4

ACTION: a. With one reactor coolant loop AND two shutdown cooling trains inoperable:

Immediately initiate action to restore a second reactor coolant loop, or one shutdown cooling train to OPERABLE status.

b. With two reactor coolant loops AND one shutdown cooling train inoperable:

Immediately initiate action to restore a second shutdown cooling train, or one reactor coolant loop to OPERABLE status, and be in COLD SHUTDOWN within 24 hours.

c. With all reactor coolant loops AND shutdown cooling trains inoperable, OR no reactor coolant loop or shutdown cooling train in operation:

Immediately suspend ~~all operations involving a reduction in Reactor Coolant System boron concentration~~ and immediately initiate action to restore one reactor coolant loop or one shutdown cooling train to OPERABLE status and operation.

operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1

September 14, 2000

COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.4 One shutdown cooling train shall be OPERABLE and in operation, and either:

a. One additional shutdown cooling train shall be OPERABLE;

OR

b. The secondary side water level of each steam generator shall be ≥ 10% narrow range.

NOTES

1. The normal or emergency power source may be inoperable in MODE 5.

2. All shutdown cooling pumps may not be in operation for up to 1 hour per 8 hour period provided:
   a. no operations are permitted that would cause ~~reduction of the Reactor Coolant System boron concentration~~; and
   b. core outlet temperature is maintained at least 10°F below saturation temperature.

introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1

3. The following restrictions apply when starting the first reactor coolant pump and any RCS cold leg temperature is ≤ 275°F. The first reactor coolant pump shall not be started unless:
   a. pressurizer water level is < 43.7%;
   b. pressurizer pressure is < 340 psia; and
   c. secondary water temperature in each steam generator is < 50°F above each RCS cold leg temperature.

4. One required shutdown cooling train may be inoperable for up to 2 hours for surveillance testing provided the other shutdown cooling train is OPERABLE and in operation.

5. All shutdown cooling trains may not be in operation during planned heatup to MODE 4 when at least one reactor coolant loop is in operation.

APPLICABILITY: MODE 5 with Reactor Coolant System loops filled.

ACTION: a. With one shutdown cooling train inoperable and any steam generator secondary water level not within limits, immediately initiate action to either restore a second shutdown cooling train to OPERABLE status or restore steam generator secondary water levels to within limit.

b. With no shutdown cooling train OPERABLE or in operation, immediately suspend ~~all operations involving a reduction in Reactor Coolant System boron concentration~~ and immediately initiate action to restore one shutdown cooling train to OPERABLE status and operation.

operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.5 Two shutdown cooling trains shall be OPERABLE and one shutdown cooling train shall be in operation.

NOTES

1. The normal or emergency power source may be inoperable in MODE 5.
2. All shutdown cooling pumps may not be in operation for up to 15 minutes when switching from one train to another provided:
   a. no operations are permitted that would cause ~~reduction of the Reactor Coolant System boron concentration~~; introduction of coolant int the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1
   b. core outlet temperature is maintained at least 10°F below saturation temperature; and
   c. no draining operations to further reduce Reactor Coolant System water volume are permitted.
3. The following restrictions apply when starting the first reactor coolant pump and any RCS cold leg temperature is ≤ 275°F. The first reactor coolant pump shall not be started unless:
   a. pressurizer water level is < 43.7%;
   b. pressurizer pressure is < 340 psia; and
   c. secondary water temperature in each steam generator is < 50°F above each RCS cold leg temperature
4. One shutdown cooling train may be inoperable for up to 2 hours for surveillance testing provided the other shutdown cooling train is OPERABLE and in operation.

APPLICABILITY: MODE 5 with Reactor Coolant System loops not filled.

ACTION: a. With one shutdown cooling train inoperable, immediately initiate action to restore the required shutdown cooling train to OPERABLE status.

b. With no shutdown cooling train OPERABLE or in operation, immediately suspend ~~all operations involving a reduction in Reactor Coolant System boron concentration~~ operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1 and immediately initiate action to restore one shutdown cooling train to OPERABLE status and operation.

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

b. One diesel generator with a fuel oil supply tank containing a minimum of 12,000 gallons of fuel.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS ~~or positive reactivity changes or~~ and positive reactivity additions that could result in loss of required SDM or boron concentration, and movement of irradiated fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE per Surveillance Requirements 4.8.1.1.1 and 4.8.1.1.2, except for testing pursuant to Surveillance Requirements 4.8.1.1.2.a.3, 4.8.1.1.2.c.2, 4.8.1.1.2.c.5, 4.8.1.1.2.c.6, 4.8.1.1.2.c.7, and 4.8.1.1.2.d.3.

May 6, 1996

ELECTRICAL POWER SYSTEMS

A.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, the following A.C. electrical busses shall be OPERABLE and energized from sources of power other than a diesel generator but aligned to an OPERABLE diesel generator:

1 - 4160 volt Emergency Bus

1 - 480 volt Emergency Load Center

2 - 120 volt A.C. Vital Busses

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above complement of A.C. busses OPERABLE and energized, suspend all operations involving CORE ALTERATIONS ~~or positive reactivity changes or~~ movement of irradiated fuel assemblies.

and positive reactivity additions that could result in loss of required SDM or boron concentration, and

SURVEILLANCE REQUIREMENTS

4.8.2.2 The specified A.C. busses shall be determined OPERABLE and energized from normal A.C. sources at least once per 7 days by verifying correct breaker alignment and indicated power availability.

ELECTRICAL POWER SYSTEMS

D.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.4 One 125 - volt D.C. bus train electrical power subsystem shall be OPERABLE: 1

APPLICABILITY: MODES 5 and 6.

ACTION:

With no 125-volt D.C. bus trains OPERABLE, suspend all operations involving CORE ALTERATIONS ~~or positive reactivity changes or~~ and positive reactivity additions that could result in loss of required SDM or boron concentration, and movement of irradiated fuel assemblies. 1

SURVEILLANCE REQUIREMENTS

4.8.2.4.1 The above required 125-volt D.C. bus train shall be determined OPERABLE at least once per 7 days by verifying correct breaker alignment and indicated power availability. 1

4.8.2.4.2 The above required 125-volt D.C. bus train battery bank and charger shall be demonstrated OPERABLE per Surveillance Requirement 4.8.2.3.2. 1

September 25, 2003

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATIONS

LIMITING CONDITION FOR OPERATION

3.9.1 The boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained sufficient to ensure that the more restrictive of following reactivity conditions is met:

a. Either a K_{eff} of 0.95 or less, or

b. A boron concentration of greater than or equal to 1720 ppm.

APPLICABILITY: MODE 6.

NOTE
Only applicable to the refueling canal when connected to the Reactor Coolant System

ACTION:

and positive reactivity additions

With the requirements of the above specification not satisfied, within 15 minutes suspend all operations involving CORE ALTERATIONS ~~or positive reactivity changes~~ and initiate and continue boration at greater than or equal to 40 gpm of boric acid solution at or greater than the required refueling water storage tank concentration (ppm) until K_{eff} is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to 1720 ppm, whichever is the more restrictive.

SURVEILLANCE REQUIREMENTS

4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any CEA in excess of 3 feet from its fully inserted position within the reactor pressure vessel.

4.9.1.2 The boron concentration of all filled portions of the reactor coolant system and the refueling canal shall be determined by chemical analysis at least once per 72 hours.

4.9.1.3 Deleted

LIMITING CONDITION FOR OPERATION

3.9.2 Two source range neutron flux monitors shall be OPERABLE, each with continuous visual indication in the control room and one with audible indication in the containment, and control room.

APPLICABILITY: MODE 6.

and operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1

ACTION:

a. With one of the above required monitors inoperable, immediately suspend all operations involving CORE ALTERATIONS ~~or positive reactivity additions.~~

b. With both of the above required monitors inoperable, immediately initiate action to restore one monitor to OPERABLE status. Additionally, determine that the boron concentration of the Reactor Coolant System satisfies the requirements of LCO 3.9.1 within 4 hours and at least once per 12 hours thereafter

SURVEILLANCE REQUIREMENTS .

4.9.2 Each source range neutron flux monitor shall be demonstrated OPERABLE by performance of:

a. Deleted

b. A CHANNEL CALIBRATION at least once per 18 months*

c. A CHANNEL CHECK and verification of audible counts at least once per 12 hours.

* Neutron detectors are excluded from CHANNEL CALIBRATION.

September 20, 2004

REFUELING OPERATIONS

SHUTDOWN COOLING AND COOLANT CIRCULATION - HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 One shutdown cooling train shall be OPERABLE and in operation.

introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1.

NOTE

1. The required shutdown cooling train may not be in operation for up to 1 hour per 8 hour period provided no operations are permitted that would cause ~~a reduction in Reactor Coolant System boron concentration~~.

2. The normal or emergency power source may be inoperable for the required shutdown cooling train.

3. The shutdown cooling pumps may be removed from operation during the time required for local leak rate testing of containment penetration number 10 or to permit maintenance on valves located in the common SDC suction line, provided:

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

    b. CORE ALTERATIONS are suspended, and

    c. Containment penetrations are in the following status:

        1) The equipment door is closed and secured with at least four bolts; and

        2) At least one personnel airlock door is closed; and

        3) Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be closed with a manual or automatic isolation valve, blind flange, or equivalent.

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

REFUELING OPERATIONS

SHUTDOWN COOLING AND COOLANT CIRCULATION - HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

ACTION:

operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.

With no shutdown cooling train OPERABLE or in operation, perform the following actions:

a. Immediately suspend ~~all operations involving a reduction in Reactor Coolant System boron concentration~~ and the loading of irradiated fuel assemblies in the core; and

b. Immediately initiate action to restore one shutdown cooling train to OPERABLE status and operation; and

c. Within 4 hours place the containment penetrations in the following status:

   1. Close the equipment door and secure with at least four bolts; and

   2. Close at least one personnel airlock door; and

   3. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be closed with a manual or automatic isolation valve, blind flange, or equivalent.

SURVEILLANCE REQUIREMENTS

4.9.8.1 One shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate greater than or equal to 1000 gpm at least once per 12 hours.

REFUELING OPERATIONS

SHUTDOWN COOLING AND COOLANT CIRCULATION - LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two shutdown cooling trains shall be OPERABLE and one shutdown cooling train shall be in operation.

NOTE
The normal or emergency power source may be inoperable for each shutdown cooling train.

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

ACTION a. With one shutdown cooling train inoperable, immediately initiate action to restore the shutdown cooling train to OPERABLE status OR immediately initiate action to establish ≥ 23 feet of water above the top of the reactor vessel flange.

b. With no shutdown cooling train OPERABLE or in operation, perform the following actions:

1. Immediately suspend ~~all operations involving a reduction in Reactor Coolant System boron concentration~~ operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1; and

2. Immediately initiate action to restore one shutdown cooling train to OPERABLE status and operation; and

3. Within 4 hours place the containment penetrations in the following status:

   a. Closed the equipment door and secure with at least four bolts; and

   b. Close at least one personnel airlock door; and

   c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be closed with a manual or automatic isolation valve, blind flange, or equivalent.

SURVEILLANCE REQUIREMENTS

4.9.8.2.1 One shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate greater than or equal to 1000 gpm at least once per 12 hours.

4.9.8.2.2 The required shutdown cooling pump, if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignment and indicated power available.

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION (continued)

During some transient conditions, such as heatups on SDC, the value calculated by this average definition will be slightly higher than the actual core average. During other transients, such as cooldowns where SG heat removal is still taking place causing some natural circulation flow, the value calculated by the average definition will be slightly lower than actual core average conditions. For the purpose of determining mode changes and technical specification applicability, these transient condition results are conservative.

Technical Specification 3.4.1.6 limits the number of reactor coolant pumps that may be operational during MODE 5. This will limit the pressure drop across the core when the pumps are operated during low-temperature conditions. Controlling the pressure drop across the core will maintain maximum RCS pressure within the maximum allowable pressure as calculated in Code Case No. N-514. Limiting two reactor coolant pumps to operate when the RCS cold leg temperature is less than 120° F, will ensure that the requirements of 10 CFR 50 Appendix G are not exceeded. Surveillance 4.4.1.6 supports this requirement.

3/4.4.2 SAFETY VALVES

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. Each safety valve is designed to relieve 296,000 lbs per hour of saturated steam at the valve setpoint. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown. If any pressurizer code safety valve is inoperable, and cannot be restored to OPERABLE status, the action statement requires the plant to be shut down and cooled down such that Technical Specification 3.4.9.3 will become applicable and require the Low Temperature Overpressure Protection System to be placed in service to provide overpressure protection.

INSERT B

INSERT A

INSERT A

The NOTEs in LCOs 3.4.1.2, 3.4.1.3, 3.4.1.4, and 3.4.1.5 permit a limited period of operation without RCPs and shutdown cooling pumps. All RCPs and shutdown cooling pumps may be removed from operation for $\leqq$ 1 hour per 8 hour period. This means that natural circulation has been established. When in natural circulation, a reduction in boron concentration with coolant at boron concentrations less than required to assure the SDM of LCO 3.1.1.1 is maintained is prohibited because an even concentration distribution throughout the RCS cannot be ensured. Core outlet temperature is to be maintained at least 10°F below the saturation temperature so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

INSERT B

Concerning TS 3.4.1.2, ACTION b.; 3.4.1.3, ACTION c.; 3.4.1.4, ACTION b.; and 3.4.1.5, ACTION b., if two required loops or trains are inoperable or a required loop or train is not in operation except during conditions permitted by the NOTE in the LCO section, all operations involving introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1.1 must be suspended and action to restore one RCS loop or SDC train to OPERABLE status and operation must be initiated. The required margin to criticality must not be reduced in this type of operation. Suspending the introduction of coolant into the RCS of coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate COMPLETION TIMES reflect the importance of decay heat removal. The action to restore must continue until one loop or train is restored to operation.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the facility status. If the required power sources or distribution systems are not OPERABLE in MODES 5 and 6, operations involving CORE ALTERATIONS, ~~positive reactivity changes~~ positive reactivity additions, or movement of irradiated fuel assemblies are required to be suspended. ~~The required action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory provided the boron concentration of the makeup water source is greater than or equal to the boron concentration for the required SHUTDOWN MARGIN. In addition, suspension of these activities does not preclude completion of actions to establish a safe conservative plant condition.~~ INSERT C

Each 125-volt D.C. bus train consists of its associated 125-volt D.C. bus, a 125-volt D.C. battery bank, and a battery charger with at least 400 ampere charging capacity. To demonstrate OPERABILITY of a 125-volt D.C. bus train, these components must be energized and capable of performing their required safety functions. Additionally, at least one tie breaker between the 125-volt D.C. bus trains must be open for a 125-volt D.C. bus train to be considered OPERABLE.

Footnote (a) to Technical Specification Tables 4.8-1 and 4.8-2 permits the electrolyte level to be above the specified maximum level for the Category A limits during equalizing charge, provided it is not overflowing. Because of the internal gas generation during the performance of an equalizing charge, specific gravity gradients and artificially elevated electrolyte levels are produced which may exist for several days following completion of the equalizing charge. These limits ensure that the plates suffer no physical damage, and that adequate electron transfer capability is maintained in the event of transient conditions. In accordance with the recommendations of IEEE 450-1980, electrolyte level readings should be taken only after the battery has been at float charge for at least 72 hours.

Based on vendor recommendations and past operating experience, seven (7) days has been determined a reasonable time frame for the 125-volt D.C. batteries electrolyte level to stabilize and to provide sufficient time to verify battery electrolyte levels are with in the Category A limits.

Footnote (b) to Technical Specification Tables 4.8-1 and 4.8-2 requires that level correction is not required when battery charging current is < 5 amps on float charge. This current provides, in general, an indication of overall battery condition.

INSERT C

Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power source or distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

3/4.9 REFUELING OPERATIONS

The ACTION requirements to immediately suspend various activities (CORE ALTERATIONS, fuel movement, CEA movement, etc.) do not preclude completion of the movement of a component to a safe position.

3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that: 1) the reactor will remain subcritical during CORE ALTERATIONS, and 2) sufficient boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the accident analyses. Reactivity control in the water volume having direct access to the reactor vessel is achieved by determining boron concentration in the refueling canal. The refueling canal is defined as the entire length of pool stretching from refuel pool through transfer canal to spent fuel pool.

The applicability is modified by a Note. The Note states that the limits on boron concentration are only applicable to the refueling canal when this volume is connected to the Reactor Coolant System (RCS). When the refueling canal is isolated from the RCS, no potential path for boron dilution exists. Prior to reconnecting portions of the refueling canal to the RCS, Surveillance 4.9.1.2 must be met. If any dilution activity has occurred while the refueling canal was disconnected from the RCS, this surveillance ensures the correct boron concentration prior to communication with the RCS.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the source range neutron flux monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

INSERT E

INSERT D

INSERT D

Concerning the ACTION statement, operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations), but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action.

INSERT E

Concerning ACTION a., with only one SRM OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, CORE ALTERATIONS and introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1 must be suspended immediately. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Performance of ACTION a. shall not preclude completion of movement of a component to a safe position.

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION (Continued)

a refueling outage until after the completion of the fuel shuffle such that approximately one third of the reactor core will contain new fuel. By waiting until the completion of the fuel shuffle, sufficient time (at least 14 days from reactor shutdown) will have elapsed to ensure the limited SDC flow rate specified for this alternate lineup will be adequate for decay heat removal from the reactor core and the spent fuel pool. In addition, CORE ALTERATIONS shall be suspended when using this alternate flow path, and this flow path should only be used for short time periods, approximately 12 hours. If the alternate flow path is expected to be used for greater than 24 hours, or the decay heat load will not be bounded as previously discussed, further evaluation is required to ensure that this alternate flow path is acceptable.

These alternate lineups do not affect the OPERABILITY of the SDC train. In addition, these alternate lineups will satisfy the requirement for a SDC train to be in operation if the minimum required SDC flow through the reactor core is maintained.

by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1.

dilute the

with coolant at boron concentrations less than required to assure the RCS boron concentration is maintained

In MODE 6, with the refueling cavity filled to ≥ 23 feet above the reactor vessel flange, both SDC trains may not be in operation for up to 1 hour in each 8 hour period, provided no operations are permitted that would ~~cause a reduction in~~ RCS boron concentration. Boron concentration reduction is prohibited because uniform concentration distribution cannot be ensured without forced circulation. This permits operations such as core mapping or alterations in the vicinity of the reactor vessel hot leg nozzles, and RCS to SDC isolation valve testing. During this 1 hour period, decay heat is removed by natural convection to the large mass of water in the refueling pool.

In MODE 6, with the refueling cavity filled to ≥ 23 feet above the reactor vessel flange, both SDC trains may also not be in operation for local leak rate testing of the SDC cooling suction line (containment penetration number 10) or to permit maintenance on valves located in the common SDC suction line. This will allow the performance of required maintenance and testing that otherwise may require a full core offload. In addition to the requirement prohibiting operations that would ~~cause a reduction in~~ RCS boron concentration, CORE ALTERATIONS are suspended and all containment penetrations providing direct access from the containment atmosphere to outside atmosphere must be closed. The containment purge valves are containment penetrations and must satisfy all requirements specified for a containment penetration. No time limit is specified to operate in this configuration. However, factors such as scope of the work, decay heat load/heatup rate, and RCS temperature should be considered to determine if it is feasible to perform the work. Prior to using this provision, a review and approval of the evolution by the SORC is required. This review will evaluate current plant conditions and the proposed work to determine if this provision should be used, and to establish the termination criteria and appropriate contingency plans. During this period, decay heat is removed by natural convection to the large mass of water in the refueling pool.

dilute the

by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1

The requirement that at least one shutdown cooling loop be in operation at ≥ 1000 gpm ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE, (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification, and (3) is consistent with boron

Serial No. 04-707
Docket No. 50-336

ATTACHMENT 3

PROPOSED TECHNICAL SPECIFICATIONS CHANGES
SHUTDOWN OPERATIONS INVOLVING POSITIVE REACTIVITY ADDITIONS

RETYPED PAGES

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 2

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

HOT STANDBY

LIMITING CONDITION FOR OPERATION

3.4.1.2 Two reactor coolant loops shall be OPERABLE and one reactor coolant loop shall be in operation.

> NOTE
>
> All reactor coolant pumps may not be in operation for up to 1 hour per 8 hour period provided:
>
> a. no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1; and
>
> b. core outlet temperature is maintained at least 10°F below saturation temperature.

APPLICABILITY: MODE 3.

ACTION:

a. With one reactor coolant loop inoperable, restore the required reactor coolant loop to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. With no reactor coolant loop OPERABLE or in operation, immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1 and immediately initiate corrective action to return one required reactor coolant loop to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

4.4.1.2.1 The required reactor coolant pump, if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignment and indicated power available.

4.4.1.2.2 One reactor coolant loop shall be verified to be in operation at least once per 12 hours.

4.4.1.2.3 Each steam generator secondary side water level shall be verified to be ≥ 10% narrow range at least once per 12 hours.

REACTOR COOLANT SYSTEM

COOLANT LOOPS AND COOLANT CIRCULATION

HOT SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.1.3 Two loops or trains consisting of any combination of reactor coolant loops or shutdown cooling trains shall be OPERABLE and one loop or train shall be in operation.

NOTES

1. All reactor coolant pumps and shutdown cooling pumps may not be in operation for up to 1 hour per 8 hour period provided:
   a. no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1; and
   b. core outlet temperature is maintained at least 10°F below saturation temperature.
2. The following restrictions apply when starting the first reactor coolant pump and any RCS cold leg temperature is ≤ 275°F. The first reactor coolant pump shall not be started unless:
   a. pressurizer water level is < 43.7%;
   b. pressurizer pressure is < 340 psia; and
   c. secondary water temperature in each steam generator is < 50°F above each RCS cold leg temperature.

APPLICABILITY: MODE 4

ACTION: a. With one reactor coolant loop AND two shutdown cooling trains inoperable:

Immediately initiate action to restore a second reactor coolant loop, or one shutdown cooling train to OPERABLE status.

b. With two reactor coolant loops AND one shutdown cooling train inoperable:

Immediately initiate action to restore a second shutdown cooling train, or one reactor coolant loop to OPERABLE status, and be in COLD SHUTDOWN within 24 hours.

c. With all reactor coolant loops AND shutdown cooling trains inoperable, OR no reactor coolant loop or shutdown cooling train in operation:

Immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1 and immediately initiate action to restore one reactor coolant loop or one shutdown cooling train to OPERABLE status and operation.

COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.4 One shutdown cooling train shall be OPERABLE and in operation, and either:

a. One additional shutdown cooling train shall be OPERABLE;

OR

b. The secondary side water level of each steam generator shall be ≥ 10% narrow range.

NOTES

1. The normal or emergency power source may be inoperable in MODE 5.

2. All shutdown cooling pumps may not be in operation for up to 1 hour per 8 hour period provided:

   a. no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1; and

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

3. The following restrictions apply when starting the first reactor coolant pump and any RCS cold leg temperature is ≤ 275°F. The first reactor coolant pump shall not be started unless:

   a. pressurizer water level is < 43.7%;

   b. pressurizer pressure is < 340 psia; and

   c. secondary water temperature in each steam generator is < 50°F above each RCS cold leg temperature.

4. One required shutdown cooling train may be inoperable for up to 2 hours for surveillance testing provided the other shutdown cooling train is OPERABLE and in operation.

5. All shutdown cooling trains may not be in operation during planned heatup to MODE 4 when at least one reactor coolant loop is in operation.

LIMITING CONDITION FOR OPERATION (continued)

APPLICABILITY: MODE 5 with Reactor Coolant System loops filled.

ACTION: a. With one shutdown cooling train inoperable and any steam generator secondary water level not within limits, immediately initiate action to either restore a second shutdown cooling train to OPERABLE status or restore steam generator secondary water levels to within limit.

b. With no shutdown cooling train OPERABLE or in operation, immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1 and immediately initiate action to restore one shutdown cooling train to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

4.4.1.4.1 The required shutdown cooling pump, if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignment and indicated power available.

4.4.1.4.2 The required steam generators shall be determined OPERABLE, by verifying the secondary side water level to be $\geq$ 10% narrow range at least once per 12 hours.

4.4.1.4.3 One shutdown cooling train shall be verified to be in operation at least once per 12 hours.

COLD SHUTDOWN - REACTOR COOLANT SYSTEM LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.5 Two shutdown cooling trains shall be OPERABLE and one shutdown cooling train shall be in operation.

NOTES

1. The normal or emergency power source may be inoperable in MODE 5.
2. All shutdown cooling pumps may not be in operation for up to 15 minutes when switching from one train to another provided:
   a. no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1;
   b. core outlet temperature is maintained at least 10°F below saturation temperature; and
   c. no draining operations to further reduce Reactor Coolant System water volume are permitted.
3. The following restrictions apply when starting the first reactor coolant pump and any RCS cold leg temperature is ≤ 275°F. The first reactor coolant pump shall not be started unless:
   a. pressurizer water level is < 43.7%;
   b. pressurizer pressure is < 340 psia; and
   c. secondary water temperature in each steam generator is < 50°F above each RCS cold leg temperature
4. One shutdown cooling train may be inoperable for up to 2 hours for surveillance testing provided the other shutdown cooling train is OPERABLE and in operation.

APPLICABILITY: MODE 5 with Reactor Coolant System loops not filled.

ACTION: a. With one shutdown cooling train inoperable, immediately initiate action to restore the required shutdown cooling train to OPERABLE status.

b. With no shutdown cooling train OPERABLE or in operation, immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1 and immediately initiate action to restore one shutdown cooling train to OPERABLE status and operation.

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and the onsite Class 1E distribution system, and

b. One diesel generator with a fuel oil supply tank containing a minimum of 12,000 gallons of fuel.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS and positive reactivity additions that could result in loss of required SDM or boron concentration, and movement of irradiated fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE per Surveillance Requirements 4.8.1.1.1 and 4.8.1.1.2, except for testing pursuant to Surveillance Requirements 4.8.1.1.2.a.3, 4.8.1.1.2.c.2, 4.8.1.1.2.c.5, 4.8.1.1.2.c.6, 4.8.1.1.2.c.7, and 4.8.1.1.2.d.3.

A.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, the following A.C. electrical busses shall be OPERABLE and energized from sources of power other than a diesel generator but aligned to an OPERABLE diesel generator:

1 - 4160 volt Emergency Bus

1 - 480 volt Emergency Load Center

2 - 120 volt A.C. Vital Busses

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above complement of A.C. busses OPERABLE and energized, suspend all operations involving CORE ALTERATIONS and positive reactivity additions that could result in loss of required SDM or boron concentration, and movement of irradiated fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.8.2.2 The specified A.C. busses shall be determined OPERABLE and energized from normal A.C. sources at least once per 7 days by verifying correct breaker alignment and indicated power availability.

D.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.4 One 125 - volt D.C. bus train electrical power subsystem shall be OPERABLE:

APPLICABILITY: MODES 5 and 6.

ACTION:

With no 125-volt D.C. bus trains OPERABLE, suspend all operations involving CORE ALTERATIONS and positive reactivity additions that could result in loss of required SDM or boron concentration, and movement of irradiated fuel assemblies.

SURVEILLANCE REQUIREMENTS

4.8.2.4.1 The above required 125-volt D.C. bus train shall be determined OPERABLE at least once per 7 days by verifying correct breaker alignment and indicated power availability.

4.8.2.4.2 The above required 125-volt D.C. bus train battery bank and charger shall be demonstrated OPERABLE per Surveillance Requirement 4.8.2.3.2.

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATIONS

LIMITING CONDITION FOR OPERATION

3.9.1 The boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained sufficient to ensure that the more restrictive of following reactivity conditions is met:

a. Either a K_{eff} of 0.95 or less, or

b. A boron concentration of greater than or equal to 1720 ppm.

APPLICABILITY: MODE 6.

NOTE
Only applicable to the refueling canal when connected to the Reactor Coolant System

ACTION:

With the requirements of the above specification not satisfied, within 15 minutes suspend all operations involving CORE ALTERATIONS and positive reactivity additions and initiate and continue boration at greater than or equal to 40 gpm of boric acid solution at or greater than the required refueling water storage tank concentration (ppm) until K_{eff} is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to 1720 ppm, whichever is the more restrictive.

SURVEILLANCE REQUIREMENTS

4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any CEA in excess of 3 feet from its fully inserted position within the reactor pressure vessel.

4.9.1.2 The boron concentration of all filled portions of the reactor coolant system and the refueling canal shall be determined by chemical analysis at least once per 72 hours.

4.9.1.3 Deleted

LIMITING CONDITION FOR OPERATION

3.9.2 Two source range neutron flux monitors shall be OPERABLE, each with continuous visual indication in the control room and one with audible indication in the containment, and control room.

APPLICABILITY: MODE 6.

ACTION:

a. With one of the above required monitors inoperable, immediately suspend all operations involving CORE ALTERATIONS and operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.

b. With both of the above required monitors inoperable, immediately initiate action to restore one monitor to OPERABLE status. Additionally, determine that the boron concentration of the Reactor Coolant System satisfies the requirements of LCO 3.9.1 within 4 hours and at least once per 12 hours thereafter.

SURVEILLANCE REQUIREMENTS.

4.9.2 Each source range neutron flux monitor shall be demonstrated OPERABLE by performance of:

a. Deleted

b. A CHANNEL CALIBRATION at least once per 18 months*

c. A CHANNEL CHECK and verification of audible counts at least once per 12 hours.

* Neutron detectors are excluded from CHANNEL CALIBRATION.

SHUTDOWN COOLING AND COOLANT CIRCULATION - HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 One shutdown cooling train shall be OPERABLE and in operation.

NOTE

1. The required shutdown cooling train may not be in operation for up to 1 hour per 8 hour period provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1.

2. The normal or emergency power source may be inoperable for the required shutdown cooling train.

3. The shutdown cooling pumps may be removed from operation during the time required for local leak rate testing of containment penetration number 10 or to permit maintenance on valves located in the common SDC suction line, provided:

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

    b. CORE ALTERATIONS are suspended, and

    c. Containment penetrations are in the following status:

        1) The equipment door is closed and secured with at least four bolts; and

        2) At least one personnel airlock door is closed; and

        3) Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be closed with a manual or automatic isolation valve, blind flange, or equivalent.

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

LIMITING CONDITION FOR OPERATION

ACTION:

With no shutdown cooling train OPERABLE or in operation, perform the following actions:

a. Immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1 and the loading of irradiated fuel assemblies in the core; and

b. Immediately initate action to restore one shutdown cooling train to OPERABLE status and operation; and

c. Within 4 hours place the containment penetrations in the following status:

    1. Close the equipment door and secure with at least four bolts; and

    2. Close at least one personnel airlock door; and

    3. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be closed with a manual or automatic isolation valve, blind flange, or equivalent.

SURVEILLANCE REQUIREMENTS

4.9.8.1 One shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate greater than or equal to 1000 gpm at least once per 12 hours.

SHUTDOWN COOLING AND COOLANT CIRCULATION - LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two shutdown cooling trains shall be OPERABLE and one shutdown cooling train shall be in operation.

NOTE
The normal or emergency power source may be inoperable for each shutdown cooling train.

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

ACTION:

a. With one shutdown cooling train inoperable, immediately initiate action to restore the shutdown cooling train to OPERABLE status OR immediately initiate action to establish ≥ 23 feet of water above the top of the reactor vessel flange.

b. With no shutdown cooling train OPERABLE or in operation, perform the following actions:

1. Immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1; and

2. Immediately initiate action to restore one shutdown cooling train to OPERABLE status and operation; and

3. Within 4 hours place the containment penetrations in the following status:

   a. Closed the equipment door and secure with at least four bolts; and

   b. Close at least one personnel airlock door; and

LIMITING CONDITION FOR OPERATION (continued)

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be closed with a manual or automatic isolation valve, blind flange, or equivalent.

SURVEILLANCE REQUIREMENTS

4.9.8.2.1 One shutdown cooling train shall be verified to be in operation and circulating reactor coolant at a flow rate greater than or equal to 1000 gpm at least once per 12 hours.

4.9.8.2.2 The required shutdown cooling pump, if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignment and indicated power available.

3/4.4.1 COOLANT LOOPS AND COOLANT CIRCULATION (continued)

During some transient conditions, such as heatups on SDC, the value calculated by this average definition will be slightly higher than the actual core average. During other transients, such as cooldowns where SG heat removal is still taking place causing some natural circulation flow, the value calculated by the average definition will be slightly lower than actual core average conditions. For the purpose of determining mode changes and technical specification applicability, these transient condition results are conservative.

The Notes in LCOs 3.4.1.2, 3.4.1.3, 3.4.1.4, and 3.4.1.5 permit a limited period of operation without RCPs and shutdown cooling pumps. All RCPs and shutdown cooling pumps may be removed from operation for ≤ 1 hour per 8 hour period. This means that natural circulation has been established. When in natural circulation, a reduction in boron concentration with coolant at boron concentrations less than required to assure the SDM of LCO 3.1.1.1 is maintained is prohibited because an even concentration distribution throughout the RCS cannot be ensured. Core outlet temperature is to be maintained at least 10°F below the saturation temperature so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

Concerning TS 3.4.1.2, ACTION b.; 3.4.1.3, ACTION c.; 3.4.1.4, ACTION b.; and 3.4.1.5, ACTION b., if two required loops or trains are inoperable or a required loop or train is not in operation except during conditions permitted by the note in the LCO section, all operations involving introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1.1 must be suspended and action to restore one RCS loop or SDC train to OPERABLE status and operation must be initiated. The required margin to criticality must not be reduced in this type of operation. Suspending the introduction of coolant into the RCS of coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate completion times reflect the importance of decay heat removal. The ACTION to restore must continue until one loop or train is restored to operation.

Technical Specification 3.4.1.6 limits the number of reactor coolant pumps that may be operational during MODE 5. This will limit the pressure drop across the core when the pumps are operated during low-temperature conditions. Controlling the pressure drop across the core will maintain maximum RCS pressure within the maximum allowable pressure as calculated in Code Case No. N-514. Limiting two reactor coolant pumps to operate when the RCS cold leg temperature is less than 120° F, will ensure that the requirements of 10 CFR 50 Appendix G are not exceeded. Surveillance 4.4.1.6 supports this requirement.

3/4.4.2 SAFETY VALVES

The pressurizer code safety valves operate to prevent the RCS from being pressurized above its Safety Limit of 2750 psia. Each safety valve is designed to relieve 296,000 lbs per hour of saturated steam at the valve setpoint. The relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown. If any pressurizer code safety valve is inoperable, and cannot be restored to OPERABLE status, the action statement requires the plant to be shut down and cooled down such that Technical Specification 3.4.9.3 will become applicable and require the Low Temperature Overpressure Protection System to be placed in service to provide overpressure protection.

The OPERABILITY of the minimum specified A.C. and D.C. power sources and associated distribution systems during shutdown and refueling ensures that 1) the facility can be maintained in the shutdown or refueling condition for extended time periods and 2) sufficient instrumentation and control capability is available for monitoring and maintaining the facility status. If the required power sources or distribution systems are not OPERABLE in MODES 5 and 6, operations involving CORE ALTERATIONS, positive reactivity additions, or movement of irradiated fuel assemblies are required to be suspended. Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate ACTION to restore the required AC and DC electrical power source or distribution subsystems and to continue this ACTION until restoration is accomplished in order to provide the necessary power to the unit safety systems.

Each 125-volt D.C. bus train consists of its associated 125-volt D.C. bus, a 125-volt D.C. battery bank, and a battery charger with at least 400 ampere charging capacity. To demonstrate OPERABILITY of a 125-volt D.C. bus train, these components must be energized and capable of performing their required safety functions. Additionally, at least one tie breaker between the 125-volt D.C. bus trains must be open for a 125-volt D.C. bus train to be considered OPERABLE.

Footnote (a) to Technical Specification Tables 4.8-1 and 4.8-2 permits the electrolyte level to be above the specified maximum level for the Category A limits during equalizing charge, provided it is not overflowing. Because of the internal gas generation during the performance of an equalizing charge, specific gravity gradients and artificially elevated electrolyte levels are produced which may exist for several days following completion of the equalizing charge. These limits ensure that the plates suffer no physical damage, and that adequate electron transfer capability is maintained in the event of transient conditions. In accordance with the recommendations of IEEE 450-1980, electrolyte level readings should be taken only after the battery has been at float charge for at least 72 hours.

Based on vendor recommendations and past operating experience, seven (7) days has been determined a reasonable time frame for the 125-volt D.C. batteries electrolyte level to stabilize and to provide sufficient time to verify battery electrolyte levels are with in the Category A limits.

Footnote (b) to Technical Specification Tables 4.8-1 and 4.8-2 requires that level correction is not required when battery charging current is < 5 amps on float charge. This current provides, in general, an indication of overall battery condition.

Footnote (c) to Technical Specification Tables 4.8-1 and 4.8-2 states that level correction is not required when battery charging current is < 5 amps on float charge. This current provides, in general, an indication of overall battery condition. Because of specific gravity gradients that are produced during the recharging process, delays of several days may occur while waiting for the specific gravity measurement for determining the state of charge. This footnote allows the float charge current to be used as an alternative to specific gravity to show OPERABILITY of a battery for up to seven (7) days following the completion of a battery equalizing charge. Each connected cells specific gravity must be measured prior to expiration of the 7 day allowance.

Surveillance Requirements 4.8.2.3.2.c.1 and 4.8.2.5.2.c.1 provide for visual inspection of the battery cells, cell plates, and battery racks to detect any indication of physical damage or abnormal deterioration that could potentially degrade battery performance.

The non-safety grade 125V D.C. Turbine Battery is required for accident mitigation for a main steam line break within containment with a coincident loss of a vital D.C. bus. The Turbine Battery provides the alternate source of power for Inverters 1 & 2 respectively via non-safety grade Inverters 5 & 6. For the loss of a D.C. event with a coincident steam line break within containment, the feedwater regulating valves are required to close to ensure containment design pressure is not exceeded.

The Turbine Battery D.C. electrical power subsystem consists of 125-volt D.C. bus 201D and 125-volt D.C. battery bank 201D. To demonstrate OPERABILITY of this subsystem, these components must be energized and capable of performing their required safety functions.

3/4.9 REFUELING OPERATIONS

The ACTION requirements to immediately suspend various activities (CORE ALTERATIONS, fuel movement, CEA movement, etc.) do not preclude completion of the movement of a component to a safe position.

3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that: 1) the reactor will remain subcritical during CORE ALTERATIONS, and 2) sufficient boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the accident analyses. Reactivity control in the water volume having direct access to the reactor vessel is achieved by determining boron concentration in the refueling canal. The refueling canal is defined as the entire length of pool stretching from refuel pool through transfer canal to spent fuel pool.

The applicability is modified by a Note. The Note states that the limits on boron concentration are only applicable to the refueling canal when this volume is connected to the Reactor Coolant System (RCS). When the refueling canal is isolated from the RCS, no potential path for boron dilution exists. Prior to reconnecting portions of the refueling canal to the RCS, Surveillance 4.9.1.2 must be met. If any dilution activity has occurred while the refueling canal was disconnected from the RCS, this surveillance ensures the correct boron concentration prior to communication with the RCS.

Concerning the ACTION statement, operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations), but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this ACTION.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the source range neutron flux monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

Concerning ACTION a., with only one SRM OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, CORE ALTERATIONS and introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1 must be suspended immediately. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that which would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Performance of ACTION a. shall not preclude completion of movement of a component to a safe position.

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION (Continued)

a refueling outage until after the completion of the fuel shuffle such that approximately one third of the reactor core will contain new fuel. By waiting until the completion of the fuel shuffle, sufficient time (at least 14 days from reactor shutdown) will have elapsed to ensure the limited SDC flow rate specified for this alternate lineup will be adequate for decay heat removal from the reactor core and the spent fuel pool. In addition, CORE ALTERATIONS shall be suspended when using this alternate flow path, and this flow path should only be used for short time periods, approximately 12 hours. If the alternate flow path is expected to be used for greater than 24 hours, or the decay heat load will not be bounded as previously discussed, further evaluation is required to ensure that this alternate flow path is acceptable.

These alternate lineups do not affect the OPERABILITY of the SDC train. In addition, these alternate lineups will satisfy the requirement for a SDC train to be in operation if the minimum required SDC flow through the reactor core is maintained.

In MODE 6, with the refueling cavity filled to ≥ 23 feet above the reactor vessel flange, both SDC trains may not be in operation for-up to 1 hour in each 8 hour period, provided no operations are permitted that would dilute the RCS boron concentration by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1. Boron concentration reduction with coolant at boron concentrations less than required to assure the RCS boron concentration is maintained is prohibited because uniform concentration distribution cannot be ensured without forced circulation. This permits operations such as core mapping or alterations in the vicinity of the reactor vessel hot leg nozzles, and RCS to SDC isolation valve testing. During this 1 hour period, decay heat is removed by natural convection to the large mass of water in the refueling pool.

In MODE 6, with the refueling cavity filled to ≥ 23 feet above the reactor vessel flange, both SDC trains may also not be in operation for local leak rate testing of the SDC cooling suction line (containment penetration number 10) or to permit maintenance on valves located in the common SDC suction line. This will allow the performance of required maintenance and testing that otherwise may require a full core offload. In addition to the requirement prohibiting operations that would dilute the RCS boron concentration by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1, CORE ALTERATIONS are suspended and all containment penetrations providing direct access from the containment atmosphere to outside atmosphere must be closed. The containment purge valves are containment penetrations and must satisfy all requirements specified for a containment penetration. No time limit is specified to operate in this configuration. However, factors such as scope of the work, decay heat load/heatup rate, and RCS temperature should be considered to determine if it is feasible to perform the work. Prior to using this provision, a review and approval of the evolution by the SORC is required. This review will evaluate current plant conditions and the proposed work to determine if this provision should

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION (Continued)

be used, and to establish the termination criteria and appropriate contingency plans. During this period, decay heat is removed by natural convection to the large mass of water in the refueling pool.

The requirement that at least one shutdown cooling loop be in operation at ≥ 1000 gpm ensures that (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor pressure vessel below 140°F as required during the REFUELING MODE, (2) sufficient coolant circulation is maintained through the reactor core to minimize the effects of a boron dilution incident and prevent boron stratification, and (3) is consistent with boron dilution analysis assumptions. The 1000 gpm shutdown cooling flow limit is the minimum analytical limit. Plant operating procedures maintain the minimum shutdown cooling flow at a higher value to accommodate flow measurement uncertainties.

Average Coolant Temperature (T_{avg}) values are derived under shutdown cooling conditions, using the designated formula for use in Unit 2 operating procedures.

- SDC flow greater than 1000 gpm: $(SDC_{outlet} + SDC_{inlet}) / 2 = T_{avg}$

During SDC only operation, there is no significant flow past the loop RTDs. Core inlet and outlet temperatures are accurately measured during those conditions by using T351Y, SDC return to RCS temperature indication, and T351X, RCS to SDC temperature indication. The average of these two indicators provides a temperature that is equivalent to the average RCS temperature in the core.

T351X will not be available when using the alternate SDC suction flow path from the SFP. Substitute temperature monitoring capability shall be established to provide indication of reactor core outlet temperature. A portable temperature device can be used to indicate reactor core outlet temperature. Indication of reactor core outlet temperature from this temporary device shall be readily available to the control room personnel. A remote television camera or an assigned individual are acceptable alternative methods to provide this indication to control room personnel.

3/4.9.9 AND 3/4.9.10 DELETED

3/4.9.11 AND 3/4.9.12 WATER LEVEL-REACTOR VESSEL AND STORAGE POOL WATER LEVEL

The restrictions on minimum water level ensure that sufficient water depth is available to remove 99% of the assumed 10% iodine gap activity released from the rupture of an irradiated fuel assembly. The minimum water depth is consistent with the assumptions of the accident analysis.

ATTACHMENT 4

PROPOSED TECHNICAL SPECIFICATIONS CHANGES SHUTDOWN OPERATIONS INVOLVING POSITIVE REACTIVITY ADDITIONS

EVALUATION OF PROPOSED LICENSE AMENDMENT

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3

PROPOSED TECHNICAL SPECIFICATIONS CHANGES
SHUTDOWN OPERATIONS INVOLVING POSITIVE REACTIVITY ADDITIONS
EVALUATION OF PROPOSED LICENSE AMENDMENT

1.0 DISCUSSION OF PROPOSED CHANGE

2.0 DESCRIPTION OF PROPOSED CHANGE

3.0 REASON FOR PROPOSED CHANGE

4.0 SAFETY SUMMARY

5.0 REGULATORY ANALYSIS

6.0 ENVIRONMENTAL CONSIDERATION

1.0 DISCUSSION OF PROPOSED CHANGES

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC) hereby requests to amend Operating License NPF-49 by incorporating the attached proposed changes into the Millstone Power Station Unit 3 (MPS3) Technical Specifications (TS). The purpose of the proposed changes is to modify the wording related to instrumentation, the reactor coolant system, electrical power systems, refueling operations and the related bases sections to provide operational flexibility during mode changes or addition of coolant during shutdown operations.

Current TS require that all operations involving a reduction in boron concentration of the reactor coolant system (RCS) or that involve positive reactivity additions be suspended under certain conditions. The MPS3 TS are being revised to limit the introduction into the RCS of reactivity more positive than that necessary to meet the required shut down margin (SDM) or refueling boron concentration, as applicable.

Specifically, this amendment incorporates wording consistent with Improved Standard Technical Specifications Change Traveler, TSTF-286-A, Revision 2, for Westinghouse Owners Group (WOG) Standard Technical Specifications (STS), for shutdown operations involving positive reactivity additions and with NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

2.0 DESCRIPTION OF PROPOSED CHANGES

A. TS 3.3.1 INSTRUMENTATION – REACTOR TRIP SYSTEM

Description:

A.1 TS 3.3.1, TABLE 3.3-1, REACTOR TRIP SYSTEM INSTRUMENTATION, ACTION 4: Insert NOTE prior to ACTION 4, "Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM."

Justification:

A.1.1 Note modifies ACTION 4 to allow addition of coolant from sources with different temperatures and/or less boron concentration as long as the SDM analysis accounts for those conditions. The proposed change permits operations introducing positive reactivity additions but prohibits the temperature change or overall boron concentration from decreasing below that required to maintain the specified SDM or required boron concentration.

A.1.2 No physical modifications are required by the changes and SDM is not affected by them. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

B. TS 3.3.5 INSTRUMENTATION – SHUTDOWN MARGIN MONITOR

Description:

B.1 TS 3.3.5, ACTION b.: Insert NOTE for ACTION b. "Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM."

Justification:

B.1.1 Note modifies ACTION b. to allow plant temperature changes as long as the SDM analysis accounts for reactivity additions due to the temperature change.

B.1.2 No physical modifications are required by the changes and SDM is not affected by them. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

Description:

B.2.1 TS 3.3.5, ACTION b.: Replace "...positive reactivity changes..." with "...positive reactivity additions..."

Justification:

B.2.1 This change, in combination with the addition of the note to ACTION b., more clearly states what is allowed when changing RCS temperature. Changing the RCS temperature is allowed as long as the SDM analysis accounts for the change. ACTION b. allows addition of coolant from sources with cooler temperatures as long as the SDM analysis accounts for that condition. The proposed change permits operations introducing positive reactivity additions but prohibits the temperature change from decreasing below that required to maintain the specified SDM.

B.2.2 No physical modifications are required by the changes and SDM is not affected by them. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

C. TS 3.4.1 REACTOR COOLANT SYSTEM – COOLANT LOOPS AND COOLANT CIRCULATION

C.1 TS 3.4.1.2, HOT STANDBY, Note *(1): Replace "...dilution of the Reactor Coolant System boron concentration..." with "...introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1.2..."

C.2 TS 3.4.1.2, HOT STANDBY, ACTION c.: Replace "...all operations involving a reduction in boron concentration of the Reactor Coolant System..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2..."

C.3 TS 3.4.1.3, HOT SHUTDOWN, Note *(1): Replace "...dilution of the Reactor Coolant System boron concentration..." with "...introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1.2..."

C.4. TS 3.4.1.3, HOT SHUTDOWN, ACTION c.: Replace "...all operations involving a reduction in boron concentration of the Reactor Coolant System..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2..."

C.5 TS 3.4.1.4.1, COLD SHUTDOWN – LOOPS FILLED, Note *a.(1): Replace "...dilution of the Reactor Coolant System boron concentration..." with "...introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2..."

C.6 TS 3.4.1.4.1, COLD SHUTDOWN – LOOPS FILLED, ACTION b.: Replace "...all operations involving a reduction in boron concentration of the Reactor Coolant System..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2..."

C.7 TS 3.4.1.4.2, COLD SHUTDOWN – LOOPS NOT FILLED, Note **(1): Replace "...dilution of the Reactor Coolant System boron concentration..." with "...introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2..."

C.8 TS 3.4.1.4.2, COLD SHUTDOWN – LOOPS NOT FILLED, ACTION b.: Replace "...all operations involving a reduction in boron concentration of the Reactor Coolant System..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2..."

<u>Justification</u>:

C.1 The NOTES in this section place restrictions on the shutdown of reactor coolant pumps and shutdown cooling pumps. The proposed changes modify the NOTES to allow the introduction of coolant with lower boron concentration but greater than that required by the shutdown margin specified in TS 3.1.1.1.2, SHUTDOWN MARGIN.

C.2 The ACTION Statements in this section direct steps to be taken should one or more reactor coolant loops not be OPERABLE. The proposed changes permit operations introducing coolant of lower boron concentration to continue but prohibit the overall boron concentration from dropping below that specified in TS 3.1.1.1.2, SHUTDOWN MARGIN.

C.3 No physical modifications are required by the changes and SDM is not affected by them. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

D. TS 3.8 ELECTRICAL POWER SYSTEMS

Description:

D.1 TS 3.8.1.2, A. C. SOURCES – SHUTDOWN, ACTION Statement: Replace "...positive reactivity changes..." with "...positive reactivity additions that could result in loss of required SDM or boron concentration..."

D.2 TS 3.8.2.2, D. C. SOURCES – SHUTDOWN, ACTION Statement: Replace "...positive reactivity changes..." with "...positive reactivity additions that could result in loss of required SDM or boron concentration..."

D.3 TS 3.8.3.2, ONSITE POWER DISTRIBUTION – SHUTDOWN, ACTION Statement: Replace "...positive reactivity changes..." with "...positive reactivity additions that could result in loss of required SDM or boron concentration..." ACTION modified to allow RCS temperature changes and/or less boron concentration as long as the SDM or required boron concentration is maintained and the added coolant is from a source with a boron concentration greater than the required SDM or refueling boron concentration.

Justification:

D.1 The ACTION Statements in this section direct steps to be taken should one or more electrical power systems not be OPERABLE. The proposed changes permit operations introducing positive reactivity additions but prohibit the temperature change or overall boron concentration from decreasing below that required to maintain the specified SDM or required boron concentration, and the added coolant is from a source with a boron concentration greater than that required in the RCS for required SDM or refueling boron concentration.

D.2 No physical modifications are required by the changes and SDM and required boron concentration are not affected by them. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

E. TS 3.9 REFUELING OPERATIONS

Description:

E.1 TS 3.9.1.1, BORON CONCENTRATION, ACTION a.: Replace "...or positive reactivity changes..." with "and positive reactivity additions..."

Justification:

E.1.1 The phrase using the term "positive reactivity change" is modified to read, "positive reactivity additions" for consistency. The conditions are changed from an "or" statement to an "and" statement to further reflect consistency with changes to other specifications.

E.1.2 No physical modifications are required by the changes and SDM and required boron concentration are not affected by them. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

Description:

E.2 TS 3.9.2, INSTRUMENTATION, ACTION a.: Replace "...or positive reactivity changes." with "...and operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1." ACTION modified to allow addition of coolant from sources with less boron concentration as long as the SDM or required boron concentration is maintained.

Justification:

E.2.1 The ACTION Statement in this specification directs steps to be taken should one or more source range flux monitors not be OPERABLE. The proposed change permits operations introducing coolant of lower boron concentration to continue, provided the coolant is from a source with a boron concentration greater than that for the required shutdown margin or refueling boron concentration, but prohibits the overall boron concentration from dropping below that specified in TS 3.9.1.1, BORON CONCENTRATIONS.

E.2.2 No physical modifications are required by the changes and SDM is not affected by them. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

E.3 TS 3.9.8.1, RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION – HIGH WATER LEVEL

Description:

E.3.1 TS 3.9.8.1, Note *: Replace "...dilution of the RCS boron concentration." with "...introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1."

Justification:

E.3.1.1 The NOTES in this section place restrictions on the shutdown cooling train. The proposed change modifies the NOTE to allow the introduction of coolant with lower boron concentration provided that the coolant introduced has a boron concentration greater than that required by the shutdown margin specified in TS 3.9.1.1, BORON CONCENTRATIONS.

E.3.1.2 No physical modifications are required by the change and SDM is not affected by it. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

Description:

E.3.2 TS 3.9.8.1, ACTION Statement: Replace "...all operations involving a reduction in boron concentration of the Reactor Coolant System..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1..."

Justification:

E.3.2.1 The ACTION Statements in this specification direct steps to be taken should no shutdown cooling train be OPERABLE. The proposed change permits operations introducing coolant of lower boron concentration to continue provided that the coolant introduced has a boron concentration greater than that specified in TS 3.9.1.1, BORON CONCENTRATIONS.

E.3.2.2 No physical modifications are required by the change and SDM is not affected by it. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

E.4 TS 3.9.8.2, RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION – LOW WATER LEVEL

Description:

E.4.1 TS 3.9.8.2, Note *: Replace "...dilution of the RCS boron concentration." with "...introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1."

Justification:

E.4.1.1 The NOTES in this section place restrictions on the shutdown cooling train. The proposed change modifies the NOTE to allow the introduction of coolant with lower boron concentration provided that the coolant introduced has a boron concentration greater than that specified in TS 3.9.1.1, BORON CONCENTRATIONS.

E.4.1.2 No physical modifications are required by the change and SDM is not affected by it. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

Description:

E.4.2 TS 3.9.8.2, ACTION a.: Replace "...all operations involving a reduction in boron concentration of the Reactor Coolant System..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1..."

Justification:

E.4.2.1 The ACTION Statements in this specification direct steps to be taken should one or more shutdown cooling train not be OPERABLE. The proposed change permits operations introducing coolant of lower boron concentration to continue provided that the coolant introduced has a boron concentration greater than that specified in TS 3.9.1.1, BORON CONCENTRATIONS.

E.4.2.2 No physical modifications are required by the change and SDM is not affected by it. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

F. BASES CHANGES

1. TS BASES 3 / 4.3.1 and 3 / 4.3.2 REACTOR TRIP SYSTEM INSTRUMENTATION and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION, TABLE 3.3.1, ACTION 4: Add INSERT A following the fourth paragraph of page B 3/4 3-2:

INSERT A

"Required ACTION 4. of Table 3.3-1 is modified by a NOTE to indicate that normal plant control operations that individually add limited positive reactivity (e.g., temperature or boron fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action provided they are accounted for in the calculated SDM."

2. TS BASES 3/4.3.3.5, SHUTDOWN MARGIN MONITOR, LCO Action b.: Add INSERT B following paragraph 1.

INSERT B

"Required ACTION b. is modified by a NOTE which permits plant temperature changes provided the temperature change is accounted for in the calculated SDM. Introduction of temperature changes, including temperature increases when a positive MTC exists, must be evaluated to ensure they do not result in a loss of required SDM."

3. TS BASES 3/4.4, REACTOR COOLANT SYSTEM, last paragraph: Add INSERT C following the last paragraph.

INSERT C

Per Specifications 3.4.1.2, ACTION c.; 3.4.1.3, ACTION c.; 3.4.1.4.1, ACTION b.; and 3.4.1.4.2, ACTION b., suspending the introduction of coolant into the RCS of coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1.1.2 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however, coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations.

4. TS BASES 3/4.8.1, 3/4.8.2, 3/4.8.3, ELECTRICAL POWER SYSTEMS – A. C. SOURCES, D. C. SOURCES, and ONSITE POWER DISTRIBUTION: Add INSERT D following the second paragraph:

INSERT D

"Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power source and distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems."

5. TS BASES 3 / 4.9.1 BORON CONCENTRATION: Add INSERT E following the last paragraph.

INSERT E

"Concerning ACTION a., suspension of CORE ALTERATIONS and positive reactivity additions shall not preclude moving a component to a safe position. Operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations) but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action."

6. TS BASES 3 / 4.9.2, INSTRUMENTATION: Add INSERT F following the first paragraph.

INSERT F

"Concerning ACTION a., with only one source range neutron flux monitor OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, CORE ALTERATIONS and introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1.1 must be suspended immediately. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that which would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Performance of ACTION a. shall not preclude completion of movement of a component to a safe position."

7. TS BASES 3 / 4.9 REFUELING OPERATIONS

3 / 4.9.8.1 HIGH WATER LEVEL

Under LIMITING CONDITION FOR OPERATION replace the third paragraph with INSERT G.

INSERT G

"The LCO is modified by a NOTE that allows the required operating RHR loop to be removed from operation for up to 1 hour per 8 hour period, provided no operations are permitted that would dilute the RCS boron concentration by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1.1. Boron concentration reduction with coolant at boron concentrations less than required to assure the RCS boron concentration is maintained is prohibited because uniform concentration distribution cannot be ensured without forced circulation. This permits operations such as more mapping or alterations in the vicinity of the reactor vessel hot leg nozzles and RCS to RHR isolation valve testing. During this 1 hour period, decay heat is removed by natural convection to the large mass of water in the refueling cavity."

8. TS BASES 3 / 4.9 REFUELING OPERATIONS

3 / 4.9.8.1 HIGH WATER LEVEL

Under ACTIONS replace the second and third paragraphs with INSERT H.

INSERT H

"If RHR loop requirements are not met, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that which would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation."

9. TS BASES 3 / 4.9 REFUELING OPERATIONS

3 / 4.9.8.2 LOW WATER LEVEL

Under ACTIONS replace paragraph b. with INSERT I

INSERT I

"If no RHR loop is in operation, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that which would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation."

3.0 REASON FOR PROPOSED AMENDMENT

The changes described above provide operational flexibility, particularly during startup operations, by allowing addition of coolant inventory that may reduce the overall RCS boron concentration but maintain shutdown margin commensurate with refueling boron concentration or the minimum required SDM. This will reduce operator burden encountered during refueling cavity fill evolutions or transitions to higher modes of operation by allowing continuation of additions to the RCS so long as SDM or refueling boron concentration is maintained, as applicable. A specific example of this was encountered during the Millstone Unit 3 refueling outage 3R09 in the spring of 2004. Refill of the refueling cavity was delayed because the intended source of the coolant, the Refueling Water Storage Tank (RWST), contained coolant with a boron concentration lower than that of the cavity. Cavity fill was delayed until a higher concentration was reached even though the water in the RWST was greater than refueling boron concentration. In addition, the wording changes described above are consistent with TSTF-286-A, Revision 2, approved by NRC April 13, 2000 and NRC-approved NUREG 1431, Westinghouse Owners Group Standard Technical Specifications, Revision 3, March 31, 2004.

4.0 SAFETY SUMMARY

DNC has evaluated the impact on plant safety and concluded that the proposed changes will have no adverse effect on plant safety. The ACTIONS that preclude positive reactivity changes and/or reduction in boron concentration ensure either no power increases, or continued margin to core criticality operations. During conditions in which these ACTIONS may be required, various unit operations must be continued, e.g., restoring level in the refueling cavity. RCS inventory must be maintained, and RCS temperature must be controlled. These activities necessarily involve additions to the RCS of cooler water (a positive reactivity effect in most cases) and may involve inventory makeup from sources that are at boron concentrations less than RCS concentration. These activities should not be precluded if the worst-case overall effect on the core would still assure SDM or the required refueling boron concentration is maintained. The following are the details of this evaluation:

A. TS 3.3.1 INSTRUMENTATION – REACTOR TRIP SYSTEM

TS 3.3.1, TABLE 3.3.1, REACTOR TRIP SYSTEM INSTRUMENTATION, ACTION 4: Insert NOTE prior to ACTION 4, "Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM." Note modifies ACTION 4 to allow addition of coolant from sources with different temperatures and/or less boron concentration as long as the SDM analysis accounts for those conditions. The proposed change permits operations introducing positive reactivity additions but prohibits the temperature change or overall boron concentration from decreasing below that required to maintain the specified SDM or required boron concentration. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

B. TS 3.3.5 INSTRUMENTATION – SHUTDOWN MARGIN MONITOR

TS 3.3.5, ACTION b.: Insert NOTE prior to ACTION b. "Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM." The NOTE modifies ACTION b. to allow different temperatures as long as the SDM analysis accounts for that condition. This change has no adverse impact on plant safety.

C. TS 3.4.1 REACTOR COOLANT SYSTEM - COOLANT LOOPS AND COOLANT CIRCULATION

1. TS 3.4.1.2, NOTE *(1), TS 3.4.1.3, NOTE *(1), TS 3.4.1.4.1 NOTE *a(1), TS 3.4.1.4.2 NOTE **(1): Replace "...dilution of the Reactor Coolant System boron concentration..." with "...introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1.2..." The NOTES modify TS 3.4.1.2, TS 3.4.1.3, TS 3.4.1.4.1, and TS 3.4.1.4.2 to allow addition of coolant from sources with less boron concentration as long as the SDM required by the limiting condition of TS 3.1.1.1.2 is met. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

2. TS 3.4.1.2, ACTION c.; TS 3.4.1.3, ACTION c.; TS 3.4.1.4.1, ACTION b.; TS 3.4.1.4.2 ACTION b.: Replace "...all operations involving a reduction in boron concentration of the Reactor Coolant System..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2..." These actions allow additions to the RCS from sources that can reduce the overall boron concentration as long as the SDM analysis accounts for those conditions. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

D. TS 3.8 ELECTRICAL POWER SYSTEMS

TS 3.8.1.2, TS 3.8.2.2, TS 3.8.3.2, ACTION Statement: Replace "...positive reactivity changes..." with "...positive reactivity additions that could result in loss of required SDM or boron concentration..." ACTIONS are modified to allow addition of coolant from sources with cooler temperatures and/or less boron concentration as long as the SDM or required boron concentration is maintained. Introduction of temperature changes which could add positive reactivity are evaluated to ensure they do not result in a loss of required SDM. Introduction of coolant inventory must be from sources that have a boron concentration greater than that which would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

E. TS 3.9 REFUELING OPERATIONS

1. TS 3.9.1.1, ACTION Statement: Replace "...or positive reactivity changes..." with "and positive reactivity additions..." This more clearly states what is allowed when adding coolant to the RCS. Sources that can reduce the overall boron concentration and/or temperature are allowed as long as the SDM analysis accounts for those conditions. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

2. TS 3.9.2, ACTION a.: Replace "...or positive reactivity changes..." with "and operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1..." This ACTION allows additions to the RCS from sources that can reduce the overall boron concentration as long as the SDM analysis accounts for those conditions. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

3. TS 3.9.8.1, NOTE *, TS 3.9.8.2, Note *: Replace "...dilution of the RCS boron concentration." with "...introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1." The NOTES modify TS 3.9.8.1 and TS 3.9.8.2 to allow addition of coolant from sources with less boron

concentration as long as the boron concentration required by the limiting condition of TS 3.9.1.1. is met. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

4. TS 3.9.8.1, ACTION Statement.; TS 3.9.8.2, ACTION b.: Replace "...all operations involving a reduction in Reactor Coolant System boron concentration..." with "...operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1." These ACTIONS allow additions to the RCS from sources that can reduce the overall boron concentration as long as the SDM analysis accounts for those conditions. Introduction of coolant inventory must be from sources that have a boron concentration greater than what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Coolant additions are controlled by plant operating procedures to ensure SDM and minimum required boron concentration are maintained. This change has no adverse impact on plant safety.

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

The proposed amendment modifies the Millstone Unit 3 Technical Specifications to allow additions to the coolant inventory from sources with different temperatures or boron concentrations so long as the overall boron concentration is maintained above that necessary to meet the required SDM or refueling boron concentration, as applicable. No plant modifications are associated with the proposed changes to the Technical Specifications.

DNC has evaluated whether or not a Significant Hazards Consideration (SHC) is involved with the proposed changes by addressing the three standards set forth in 10 CFR 50.92(c) as discussed below.

Criterion 1:

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

Response: No.

The proposed change does not in any way alter the SDM or refueling boron concentration. It limits introduction of coolant into the RCS of reactivity more positive than that necessary to meet the required SDM or refueling boron concentration. This proposed change does not affect the input or assumptions for any accidents previously evaluated nor does it affect initiation of an accident. Based on this discussion, the proposed amendment does not increase the probability or consequence of an accident previously evaluated.

Criterion 2:

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

Response: No.

The proposed change allows introduction of coolant into the RCS with different temperature or lower boron concentration, however, the required boron concentration or SDM is maintained. The proposed amendment does not introduce failure modes, accident initiators, or malfunctions that would cause a new or different kind of accident. No plant modifications are associated with the change. Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

Criterion 3:

Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

The proposed change provides the flexibility necessary for continued safe reactor operations while limiting any potential for excess positive reactivity additions. SDM and required boron concentration are not affected. Therefore, based on the above, the proposed amendment does not involve a significant reduction in a margin of safety.

In summary, DNC concludes that the proposed amendment does not represent a SHC under the standards set forth in 10 CFR 50.92(c).

5.2 Conclusion

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

6.0 ENVIRONMENTAL CONSIDERATION

DNC has determined that the proposed amendment would not change requirements with respect to use of a facility component located within the restricted area, as defined by 10 CFR 20, nor would it change an inspection or surveillance requirement. DNC has evaluated the proposed change and has determined that the change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released off site, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

Serial No. 04-707
Docket No. 50-423

ATTACHMENT 5

PROPOSED TECHNICAL SPECIFICATIONS CHANGES
SHUTDOWN OPERATIONS INVOLVING POSITIVE REACTIVITY ADDITIONS

MARKED UP PAGES

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3

BASES

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 3 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint, and

b. Above the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint but below 10% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10% of RATED THERMAL POWER.

ACTION 4 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, suspend all operations involving ~~positive reactivity changes.~~ positive reactivity additions.*

13

ACTION 5 - (Not used)

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours, and

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.

ACTION 7 - (Not used)

ACTION 8 - With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.

*Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM.

INSTRUMENTATION

3/4.3.5 SHUTDOWN MARGIN MONITOR

LIMITING CONDITION FOR OPERATION

3.3.5 Two channels of Shutdown Margin Monitors shall be OPERABLE

a. With a minimum count rate as designated in the CORE OPERATING LIMITS REPORT (COLR), or

b. If the minimum count rate in Specification 3.3.5.a cannot be met, then the Shutdown Margin Monitors may be made operable with a lower minimum count rate, as specified in the COLR, by borating the Reactor Coolant System above the requirements of Specification 3.1.1.1.2 or 3.1.1.2. The additional boration shall be:

1. A minimum of 150 ppm above the SHUTDOWN MARGIN requirements specified in the COLR for MODE 3, or

2. A minimum of 350 ppm above the SHUTDOWN MARGIN requirements specified in the COLR for MODE 4, MODE 5 with RCS loops filled, and MODE 5 with RCS loops not filled.

APPLICABILITY: MODES 3*, 4, and 5.

ACTION:

a. With one Shutdown Margin Monitor inoperable, restore the inoperable channel to OPERABLE status within 48 hours.

b. With both Shutdown Margin Monitors inoperable or one Shutdown Margin Monitor inoperable for greater than 48 hours, immediately suspend all operations involving ~~positive reactivity changes~~ positive reactivity additions** via dilution and rod withdrawal. Verify the valves listed in Specification 4.1.1.2.2 are closed and secured in position within the next 4 hours and at least once per 14 days thereafter.~~**~~ *** Verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1.2 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter.

**Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM.

* The shutdown margin monitors may be blocked during reactor startup in accordance with approved plant procedures.

~~**~~ *** The valves may be opened on an intermittent basis under administrative controls as noted in Surveillance 4.1.1.2.2.

REACTOR COOLANT SYSTEM

HOT STANDBY

LIMITING CONDITION FOR OPERATION

3.4.1.2 At least three of the reactor coolant loops listed below shall be OPERABLE, with at least three reactor coolant loops in operation when the Control Rod Drive System is capable of rod withdrawal or with at least one reactor coolant loop in operation when the Control Rod Drive System is not capable of rod withdrawal:*

a. Reactor Coolant Loop 1 and its associated steam generator and reactor coolant pump,

b. Reactor Coolant Loop 2 and its associated steam generator and reactor coolant pump,

c. Reactor Coolant Loop 3 and its associated steam generator and reactor coolant pump, and

d. Reactor Coolant Loop 4 and its associated steam generator and reactor coolant pump.

APPLICABILITY: MODE 3.

ACTION:

a. With less than the above required reactor coolant loops OPERABLE, restore the required loops to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. With less than the above required reactor coolant loops in operation and the Control Rod Drive System is capable of rod withdrawal , within 1 hour open the Reactor Trip System breakers.

c. With no reactor coolant loop in operation, suspend ~~all operations involving a reduction in boron concentration of the Reactor Coolant System~~ and immediately initiate corrective action to return the required reactor coolant loop to operation.

operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2

SURVEILLANCE REQUIREMENTS

4.4.1.2.1 At least the above required reactor coolant pumps, if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

4.4.1.2.2 The required steam generators shall be determined OPERABLE by verifying secondary side water level to be greater than or equal to 17% at least once per 12 hours.

4.4.1.2.3 The required reactor coolant loops shall be verified in operation and circulating reactor coolant at least once per 12 hours.

* All reactor coolant pumps may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause ~~dilution of the Reactor Coolant System boron concentration~~, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1.2

REACTOR COOLANT SYSTEM

HOT SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.1.3 Either: *, **

a. With Control Rod Drive System is capable of rod withdrawal , at least two RCS loops shall be OPERABLE and in operation, or

b. With Control Rod Drive System is not capable of rod withdrawal , at least two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops shall be OPERABLE, and at least one of these loops shall be in operation. For RCS loop(s) to be OPERABLE, at least one reactor coolant pump (RCP) shall be in operation.

APPLICABILITY: MODE 4.

operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2

ACTION:

a. With less than the above required loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status as soon as possible; if the remaining OPERABLE loop is an RHR loop, be in COLD SHUTDOWN within 24 hours.

b. With less than the above required reactor coolant loops in operation and the Control Rod Drive System is capable of rod withdrawal, within 1 hour open the Reactor Trip System breakers.

c. With no loop in operation, suspend ~~all operations involving a reduction in boron concentration of the Reactor Coolant System~~ and immediately initiate corrective action to return the required loop to operation.

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* All reactor coolant pumps and RHR pumps may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause ~~dilution of the Reactor Coolant System boron concentration~~, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1.2

** The first reactor coolant pump (RCP) shall not be started when any RCS loop wide range coldleg temperature is ≤ 226°F unless:

a. Two pressurizer PORVs are in service to meet the cold overpressure protection requirements of Technical Specification 3.4.9.3 and the secondary side water temperature of each steam generator is < 50°F above each RCS cold leg temperature; OR

b. The secondary side water temperature of each steam generator is at or below each RCS cold leg temperature

This restriction only applies to RCS loops and associated components that are not isolated from the reactor vessel.

LIMITING CONDITION FOR OPERATION

3.4.1.4.1 At least 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 shall be greater than 17%.

APPLICABILITY: MODE 5 with at least two reactor coolant loops filled***.

introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1.2

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*a. The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause ~~dilution of the Reactor Coolant System boron concentration~~, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

b. All RHR loops may be removed from operation during a planned heatup to MODE 4 when at least one RCS loop is OPERABLE and in operation and when two additional steam generators are OPERABLE as required by LCO 3.4.1.4.1.b.

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

*** The first reactor coolant pump shall not be started when:

a. Any RCS loop wide range cold leg temperature is >150°F unless:

1. Two pressurizer PORVs are in service to meet the cold overpressure protection requirements of Technical Specification 3.4.9.3 and the secondary side water temperature of each steam generator is < 50°F above each RCS cold leg temperature; OR

2 The secondary side water temperature of each steam generator is at or below each RCS cold leg temperature.

b. All RCS loop wide range cold leg temperatures are ≤ 150°F unless the secondary side water temperature of each steam generator is < 50°F above each RCS cold leg temperature.

This restriction only applies to RCS loops and associated components that are not isolated from the reactor vessel.

REACTOR COOLANT SYSTEM

COLD SHUTDOWN - LOOPS FILLED

LIMITING CONDITION FOR OPERATION

ACTION:

operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2

a. With less than the required RHR loop(s) OPERABLE or with less than the required steam generator water level, immediately initiate corrective action to return the inoperable RHR loop to OPERABLE status or restore the required steam generator water level as soon as possible.

b. With no RHR loop in operation, suspend ~~all operations involving a reduction in boron concentration of the Reactor Coolant System~~ and immediately initiate corrective action to return the required RHR loop to operation.

SURVEILLANCE REQUIREMENTS

4.4.1.4.1.1 The secondary side water level of at least two steam generators when required shall be determined to be within limits at least once per 12 hours.

4.4.1.4.1.2 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.

4.4.1.4.1.3 The required pump, if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignment and indicated power availability.

REACTOR COOLANT SYSTEM

COLD SHUTDOWN - LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.4.2 Two residual heat removal (RHR) loops shall be OPERABLE* and at least one RHR loop shall be in operation.**

APPLICABILITY: MODE 5 with less than two reactor coolant loops filled***.

ACTION:

operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2

a. With less than the above required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status as soon as possible.

b. With no RHR loop in operation, suspend ~~all operations involving a reduction in boron concentration of the Reactor Coolant System~~ and immediately initiate corrective action to return the required RHR loop to operation.

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

introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1.2

** The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause ~~dilution of the Reactor Coolant System boron concentration~~, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

*** The first reactor coolant pump shall not be started when:

a. Any RCS loop wide range cold leg temperature is >150°F unless:

1. Two pressurizer PORVs are in service to meet the cold overpressure protection requirements of Technical Specification 3.4.9.3 and the secondary side water temperature of each steam generator is < 50°F above each RCS cold leg temperature; OR

2. The secondary side water temperature of each steam generator is at or below each RCS cold leg temperature.

b. All RCS loop wide range cold leg temperatures are ≤ 150°F unless the secondary side water temperature of each steam generator is < 50°F above each RCS cold leg temperature.

This restriction only applies to RCS loops and associated components that are not isolated from the reactor vessel.

A.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE :

a. One circuit between the offsite transmission network and the Onsite Class 1E Distribution System, and

b. One diesel generator with:

1) A day tank containing a minimum volume of 278 gallons of fuel,

2) A fuel storage system containing a minimum volume of 32,760 gallons of fuel,

3) A fuel transfer pump,

4) Lubricating oil storage containing a minimum total volume of 280 gallons of lubricating oil, and

5) Capability to transfer lubricating oil from storage to the diesel generator unit.

APPLICABILITY: MODES 5 and 6.

ACTION :

positive reactivity additions that could result in loss of required SDM or boron concentration

With less than the above minimum required A. C. electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, ~~positive reactivity changes~~, movement of irradiated fuel, crane operation with loads over the fuel storage pool, or operation with a potential for draining the reactor vessel; initiate corrective action to restore the required sources to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the requirements of Specifications 4.8.1.1.1, 4.8.1.1.2 (except for Specifications 4.8.1.1.2.a.6 and 4.8.1.1.2.b.2).

ELECTRICAL POWER SYSTEMS

D.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, one train (A or B) of batteries and their associated full capacity chargers shall be OPERABLE:

a. Train - "A" consisting of:

1) Battery Bank 301A-1 and a full capacity battery charger, and

2) Battery Bank 301A-2 and a full capacity battery charger.

OR

b. Train - "B" consisting of:

1) Battery Bank 301B-1 and a full capacity battery charger, and

2) Battery Bank 301B-2 and a full capacity battery charger.

APPLICABILITY: MODES 5 and 6.

ACTION:

positive reactivity additions that could result in loss of required SDM or boron concentration

With the required train inoperable, immediately suspend all operations involving CORE ALTERATIONS, ~~positive reactivity changes~~, movement of irradiated fuel; crane operation with loads over the fuel storage pool, or operation with a potential for draining the reactor vessel; initiate corrective action to restore the required train to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.8.2.2 The above required train shall be demonstrated OPERABLE in accordance with Specification 4.8.2.1.

ELECTRICAL POWER SYSTEMS

ONSITE POWER DISTRIBUTION

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.3.2 As a minimum, one train (A or B) of the following electrical busses shall be OPERABLE:

a. Train - "A" consisting of:

1) One 4160 volt AC Emergency Bus #34C, and

2) Four 480 volt AC Emergency Busses #32R, #32S, #32T, #32Y, and

3) Two 120 volt AC Vital Busses consisting of:

a) Bus #VIAC-1 energized from Inverter #INV-1 connected to DC Bus #301A-1, and

b) Bus #VIAC-3 energized from Inverter #INV-3 connected to DC Bus #301A-2, and

4) Two 125 volt DC Busses consisting of:

a) Bus #301A-1 energized from Battery Bank #301A-1, and

b) Bus #301A-2 energized from Battery Bank #301A-2.

OR

b. Train - "B" consisting of

1) One 4160 volt AC Emergency Bus #34D, and

2) Four 480 volt AC Emergency Busses #32U, #32V, #32W, #32X, and

3) Two 120 volt AC Vital Busses consisting of:

a) Bus #VIAC-2 energized from Inverter #INV-2 connected to DC Bus #301B-1, and

b) Bus #VIAC-4 energized from Inverter #INV-4 connected to DC Bus #301B-2, and

4) Two 125 volt DC Busses consisting of:

a) Bus #301B-1 energized from Battery Bank #301B-1, and

b) Bus #301B-2 energized from Battery Bank #301B-2.

APPLICABILITY: MODES 5 and 6.

ACTION:

With any of the above required electrical busses not energized in the required manner, immediately suspend all operations involving CORE ALTERATIONS, ~~positive reactivity changes~~ positive reactivity additions that could result in loss of required SDM or boron concentration, movement of irradiated fuel, crane operation with loads over the fuel storage pool, or operations with a potential for draining the reactor vessel, initiate corrective action to energize the required electrical busses in the specified manner as soon as possible.

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.9.1.1 The boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained sufficient to ensure that the more restrictive of the following reactivity conditions is met; either:

a. A K_{eff} of 0.95 or less, or

b. A boron concentration of greater than or equal to the limit specified in the CORE OPERATING LIMITS REPORT (COLR).

Additionally, the CVCS valves of Specification 4.1.1.2.2 shall be closed and secured in position.

APPLICABILITY: MODE 6.*

ACTION:

and positive reactivity additions

a. With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS ~~or positive reactivity changes~~ and initiate and continue boration at greater than or equal to 33 gpm of a solution containing greater than or equal to 6600 ppm boron or its equivalent until K_{eff} is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to the limit specified in the COLR, whichever is the more restrictive.

b. With any of the CVCS valves of Specification 4.1.1.2.2 not closed** and secured in position, immediately close and secure the valves.

SURVEILLANCE REQUIREMENTS

4.9.1.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any full-length control rod in excess of 3 feet from its fully inserted position within the reactor vessel.

4.9.1.1.2 The boron concentration of the Reactor Coolant System and the refueling cavity shall be determined by chemical analysis at least once per 72 hours.

4.9.1.1.3 The CVCS valves of Specification 4.1.1.2.2 shall be verified closed and locked at least once per 31 days.

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* The reactor shall be maintained in MODE 6 whenever fuel is in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed.

** Except those opened under administrative control.

February 20, 2002

REFUELING OPERATIONS

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.9.2 Two Source Range Neutron Flux Monitors shall be OPERABLE with continuous visual indication in the control room, and one with audible indication in the containment and control room.

APPLICABILITY: MODE 6.

and operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1.

ACTION:

a. With one of the above required monitors inoperable immediately suspend all operations involving CORE ALTERATIONS ~~or positive reactivity changes.~~

b. With both of the above required monitors inoperable determine the boron concentration of the Reactor Coolant System within 4 hours and at least once per 12 hours thereafter.

SURVEILLANCE REQUIREMENTS

4.9.2 Each Source Range Neutron Flux Monitor shall be demonstrated OPERABLE by performance of:

a. A CHANNEL CHECK and verification of audible counts at least once per 12 hours,

b. A CHANNEL CALIBRATION at least once per 18 months*

* Neutron detectors are excluded from CHANNEL CALIBRATION.

REFUELING OPERATIONS

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one residual heat removal (RHR) loop shall be OPERABLE and in operation.*

APPLICABILITY: MODE 6, when the water level above the top of the reactor vessel flange is greater than or equal to 23 feet.

ACTION:

operations that would cause introduction of coolant into the RHR with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1

With no RHR loop OPERABLE or in operation, suspend ~~all operations involving a reduction in boron concentration of the Reactor Coolant System~~ and suspend loading irradiated fuel assemblies in the core and immediately initiate corrective action to return the required RHR loop to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.1 At least one RHR loop shall be verified in operation and circulating reactor coolant at a flow rate of greater than or equal to 2800 gpm at least once per 12 hours.

* The RHR loop may be removed from operation for up to 1 hour per 8-hour period, provided no operations are permitted that could cause ~~dilution of the RCS boron concentration~~.

introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1.

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent residual heat removal (RHR) loops shall be OPERABLE, and at least one RHR loop shall be in operation.*

APPLICABILITY: MODE 6, when the water level above the top of the reactor vessel flange is less than 23 feet.

operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1

ACTION:

a. With less than the required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status, or to establish greater than or equal to 23 feet of water above the reactor vessel flange, as soon as possible.

b. With no RHR loop in operation, suspend ~~all operations involving a reduction in boron concentration of the Reactor Coolant System~~ and immediately initiate corrective action to return the required RHR loop to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.2 At least one RHR loop shall be verified in operation and circulating reactor coolant at a flow rate of greater than or equal to 2800 gpm at least once per 12 hours.

* The RHR loop may be removed from operation for up to 1 hour per 8-hour period, provided no operations are permitted that could cause ~~dilution of the RCS boron concentration.~~

B

introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1.

3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM INSTRUMENTATION and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

The methodology, as defined in WCAP-10991 to derive the Nominal Trip Setpoints, is based upon combining all of the uncertainties in the channels. Inherent in the determination of the Nominal Trip Setpoints are the magnitudes of these channel uncertainties. Sensors and other instrumentation utilized in these channels should be capable of operating within the allowances of these uncertainty magnitudes. Occasional drift in excess of the allowance may be determined to be acceptable based on the other device performance characteristics. Device drift in excess of the allowance that is more than occasional, may be indicative of more serious problems and would warrant further investigation.

The above Bases does not apply to the Control Building Inlet Ventilation radiation monitors ESF Table (Item 7E). For these radiation monitors the allowable values are essentially nominal values. Due to the uncertainties involved in radiological parameters, the methodologies of WCAP-10991 were not applied. Actual trip setpoints will be reestablished below the allowable value based on calibration accuracies and good practices.

The operability requirements for Table 3.3-3, Functional Units 7.a, "Control Building Isolation, Manual Actuation," and 7.e, "Control Building Isolation, Control Building Inlet Ventilation Radiation," are defined by table notation "*". These functional units are required to be OPERABLE at all times during plant operation in MODES 1, 2, 3, and 4. These functional units are also required to be OPERABLE during fuel movement within containment or the spent fuel pool, as specified by table notation "*". This table notation is also applicable during fuel movement within containment or the spent fuel pool. The fuel handling accident analyses assume that during a fuel handling accident some of the fuel that is dropped and some of the fuel impacted upon is damaged. Therefore, the movement of either new or irradiated fuel (assemblies or individual fuel rods) can cause a fuel handling accident, and functional units 7.a and 7.e are required to be OPERABLE whenever new or irradiated fuel is moved within the containment or the storage pool. Table notation "*" of Table 4.3-2 has the same applicability.

The verification of response time at the specified frequencies provides assurance that the reactor trip and the engineered safety features actuation associated with each channel is completed within the time limit assumed in the safety analysis. No credit is taken in the analysis for those channels with response times indicated as not applicable (i.e., N.A.).

INSERT A

INSERT A

"Required ACTION 4. of Table 3.3-1 is modified by a NOTE to indicate that normal plant control operations that individually add limited positive reactivity (e.g., temperature or boron fluctuations associated with RCS inventory management or temperature control) are not precluded by this Action provided they are accounted for in the calculated SDM." The proposed change permits operations introducing positive reactivity additions but prohibits the temperature change or overall boron concentration from decreasing below that required to maintain the specified SDM or required boron concentration.

Applicability

The SMM must be OPERABLE in MODES 3, 4, and 5 because the safety analysis identifies this system as the primary means to alert the operator and mitigate the event. The SMMs are allowed to be blocked during start up activities in MODE 3 in accordance with approved plant procedures. The alarm is blocked to allow the SMM channels to be used to monitor the 1/M approach to criticality.

The SMM are not required to be operable in MODES 1 and 2 as other RPS is credited with accident mitigation, over temperature delta temperature and power range neutron flux high (low setpoint of 25 percent RTP) respectively. The SMMs are not required to be OPERABLE in Mode 6 as the dilution event is precluded by administrative controls over all dilution flow paths Technical Specification (4.1.1.2.2).

Actions

Channel inoperability of the SMMs can be caused by failure of the channel's electronics, failure of the channel to pass its calibration procedure, or by the channel's count rate falling below the minimum count rate for operability. This can occur when the count rate is so low that the channel's delay time is in excess of that assumed in the safety analysis. In any of the above conditions, the channel must be declared inoperable and the appropriate action statement entered. If the SMMs are declared inoperable due to low count rates, an RCS heatup will cause the SMM channel count rate to increase to above the minimum count rate for operability. Allowing the plant to increase modes will actually return the SMMs to OPERABLE status. Once the SMM channels are above the minimum count rate for operability, the channels can be declared operable and the LCO action statements can be exited.

LCO 3.3.5, Action a. - With one train of SMM inoperable, Action a. requires the inoperable train to be returned to OPERABLE status within 48 hours. In this condition, the remaining SMM train is adequate to provide protection. If the above required action cannot be met, alternate compensatory actions must be performed to provide adequate protection from the boron dilution event. All operations involving positive reactivity changes associated with RCS dilutions and rod withdrawal must be suspended, and all dilution flowpaths must be closed and secured in position (locked closed per Technical Specification 4.1.1.2.2) within the following 4 hours.

LCO 3.3.5, Action b. -With both trains of SMM inoperable, alternate protection must be provided:

1. Positive reactivity operations via dilutions and rod withdrawal are suspended. The intent of this action is to stop any planned dilutions of the RCS. The SMMs are not intended to monitor core reactivity during RCS temperature changes. The alarm setpoint is routinely reset during the plant heatup due to the increasing count rate. During cooldowns as the count rate decreases, baseline count rates are continually lowered automatically by the SMMs. The Millstone Unit No. 3 boron dilution analysis assumes steady state RCS temperature conditions.

INSERT B

INSERT B

Required ACTION b. is modified by a note which permits plant temperature changes provided the temperature change is accounted for in the calculated SDM. Introduction of temperature changes, including temperature increases when a positive MTC exists, must be evaluated to ensure they do not result in a loss of required SDM.

- For the isolated loop being restored, the power to both loop stop valves has been restored

Surveillance 4.4.1.6.2 indicates that the reactor shall be determined subcritical by at least the amount required by Specifications 3.1.1.1.2 or 3.1.1.2 for MODE 5 or Specification 3.9.1.1 for MODE 6 within 2 hours of opening the cold leg or hot leg stop valve.

6

The SHUTDOWN MARGIN requirement in Specification 3.1.1.1.2 is specified in the CORE OPERATING LIMITS REPORT for MODE 5 with RCS loops filled. Specification 3.1.1.1.2 cannot be used to determine the required SHUTDOWN MARGIN for MODE 5 loops isolated condition.

Specification 3.1.1.2 requires the SHUTDOWN MARGIN to be greater than or equal to the limits specified in the CORE OPERATING LIMITS REPORT for MODE 5 with RCS loops not filled provided CVCS is aligned to preclude boron dilution. This specification is for loops not filled and therefore is applicable to an all loops isolated condition.

6

Specification 3.9.1.1 requires K_{eff} of 0.95 or less, or a boron concentration of greater than or equal to the limit specified in the COLR in MODE 6.

Specification 3.1.1.1.2 or 3.1.1.2 for MODE 5, both require boron concentration to be determined at least once each 24 hours. SR 4.1.1.1.2.1.b.2 and 4.1.1.2.1.b.1 satisfy the requirements of Specifications 3.1.1.1.2 and 3.1.1.2 respectfully. Specification 3.9.1.1 for MODE 6 requires boron concentration to be determined at least once each 72 hours. S.R. 4.9.1.1.2 satisfy the requirements of Specification 3.9.1.1.

INSERT C

References:

1. Letter NEU-94-623, dated July 13, 1994; Mixing Evaluation for Boron Dilution Accident in Modes 4 and 5, Westinghouse HR-59782.

2. Memo No. MP3-E-93-821, dated October 7, 1993.

INSERT C

Per Specifications 3.4.1.2, ACTION c.; 3.4.1.3, ACTION c.; 3.4.1.4.1, ACTION b.; and 3.4.1.4.2, ACTION b., suspending the introduction of coolant into the RCS of coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1.1.2 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however, coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations.

B

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, D.C. SOURCES, AND ONSITE POWER DISTRIBUTION

Technical Specification 3.8.1.1.b.1 requires each of the diesel generator day tanks contain a minimum volume of 278 gallons. Technical Specification 3.8.1.2.b.1 requires a minimum volume of 278 gallons be contained in the required diesel generator day tank. This capacity ensures that a minimum usable volume of 189 gallons is available. This volume permits operation of the diesel generators for approximately 27 minutes with the diesel generators loaded to the 2,000 hour rating of 5335 kw. Each diesel generator has two independent fuel oil transfer pumps. The shutoff level of each fuel oil transfer pump provides for approximately 60 minutes of diesel generator operation at the 2000 hour rating. The pumps start at day tank levels to ensure the minimum level is maintained. The loss of the two redundant pumps would cause day tank level to drop below the minimum value.

Technical Specification 3.8.1.1.b.2 requires a minimum volume of 32,760 gallons be contained in each of the diesel generator's fuel storage systems. Technical Specification 3.8.1.2.b.2 requires a minimum volume of 32,760 gallons be contained in the required diesel generator's fuel storage system. This capacity ensures that a minimum usable volume (29,180 gallons) is available to permit operation of each of the diesel generators for approximately three days with the diesel generators loaded to the 2,000 hour rating of 5335 kW. The ability to cross-tie the diesel generator fuel oil supply tanks ensures that one diesel generator may operate up to approximately six days. Additional fuel oil can be supplied to the site within twenty-four hours after contacting a fuel oil supplier.

INSERT D

Surveillance Requirements 4.8.1.1.2.a.6 (monthly) and 4.8.1.1.2.b.2 (once per 184 days) and 4.8.1.1.2.j (18 months test)

The Surveillances 4.8.1.1.2.a.6 and 4.8.1.1.2.b.2 verify that the diesel generators are capable of synchronizing with the offsite electrical system and loaded to greater than or equal to continuous rating of the machine. A minimum time of 60 minutes is required to stabilize engine temperatures, while

INSERT D

Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power source and distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that: (1) the reactor will remain subcritical during CORE ALTERATIONS, and (2) a uniform boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. The value of 0.95 or less for K_{eff} includes a 1% $\Delta k/k$ conservative allowance for uncertainties. Similarly, the boron concentration value specified in the CORE OPERATING LIMITS REPORT includes a conservative uncertainty allowance of 50 ppm boron. The boron concentration, specified in the CORE OPERATING LIMITS REPORT, provides for boron concentration measurement uncertainty between the spent fuel pool and the RWST. The locking closed of the required valves during refueling operations precludes the possibility of uncontrolled boron dilution of the filled portion of the RCS. This action prevents flow to the RCS of unborated water by closing flow paths from sources of unborated water.

MODE ZERO shall be the Operational MODE where all fuel assemblies have been removed from containment to the Spent Fuel Pool. Technical Specification Table 1.2 defines MODE 6 as "Fuel in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed." With no fuel in the vessel the definition for MODE 6 no longer applies. The transition from MODE 6 to MODE ZERO occurs when the last fuel assembly of a full core off load has been transferred to the Spent Fuel Pool and has cleared the transfer canal while in transit to a storage location. This will:

- Ensure Technical Specifications regarding sampling the transfer canal boron concentration are observed (4.9.1.1.2);
- Ensure that MODE 6 Technical Specification requirements are not relaxed prematurely during fuel movement in containment.

INSERT E

3/4.9.1.2 BORON CONCENTRATION IN SPENT FUEL POOL

During normal Spent Fuel Pool operation, the spent fuel racks are capable of maintaining K_{eff} at less than or equal to 0.95 in an unborated water environment. This is accomplished in Region 1, 2, and 3 storage racks by the combination of geometry of the rack spacing, the use of fixed neutron absorbers in some fuel storage regions, the limits on fuel burnup, fuel enrichment and minimum fuel decay time, and the use of blocking devices in certain fuel storage locations.

The boron requirement in the spent fuel pool specified in 3.9.1.2 ensures that in the event of a fuel assembly handling accident involving either a single dropped or misplaced fuel assembly, the K_{eff} of the spent fuel storage racks will remain less than or equal to 0.95.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the Source Range Neutron Flux Monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

INSERT F

3/4.9.3 DECAY TIME

The minimum requirement for reactor subcriticality prior to movement of irradiated fuel assemblies in the reactor vessel ensures that sufficient time has elapsed to allow the radioactive decay of the short-lived fission products. This decay time is consistent with the assumptions used in the safety analyses.

INSERT E

Concerning ACTION a., suspension of CORE ALTERATIONS and positive reactivity additions shall not preclude moving a component to a safe position. Operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations) but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action.

INSERT F

Concerning ACTION a., with only one source range neutron flux monitor OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, CORE ALTERATIONS and introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1.1 must be suspended immediately. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Performance of ACTION a, shall not preclude completion of movement of a component to a safe position.

3/4.9.8.1 HIGH WATER LEVEL (continued)

APPLICABLE SAFETY ANALYSES

If the reactor coolant temperature is not maintained below 200°F, boiling of the reactor coolant could result. This could lead to a loss of coolant in the reactor vessel. Additionally, boiling of the reactor coolant could lead to a reduction in boron concentration in the coolant due to boron plating out on components near the areas of the boiling activity. The loss of reactor coolant and the reduction of boron concentration in the reactor coolant would eventually challenge the integrity of the fuel cladding, which is fission product barrier. One train of the RHR system is required to be operational in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange to prevent this challenge. The LCO does permit deenergizing the RHR pump for short durations, under the conditions that the boron concentration is not diluted. This conditional deenergizing of the RHR pump does not result in a challenge to the fission product barrier.

APPLICABILITY

One RHR loop must be OPERABLE and in operation in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, to provide decay heat removal. The 23 ft level was selected because it corresponds to the 23 ft requirement established for fuel movement in LCO 3.9.10, "Water Level — Reactor Vessel." Requirements for the RHR system in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS), and Section 3.5, Emergency Core Cooling Systems (ECCS). RHR loop requirements in MODE 6 with the water level < 23 ft are located in LCO 3.9.8.2, "Residual Heat Removal (RHR) and Coolant Circulation—Low Water Level."

LIMITING CONDITION FOR OPERATION

The requirement that at least one RHR loop be in operation ensures that: (1) sufficient cooling capacity is available to remove decay heat an maintain the water in the reactor vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the core to minimize the effect of a boron dilution incident and prevent stratification.

An OPERABLE RHR loop includes an RHR pump, a heat exchanger, valves, piping, instruments and controls to ensure an OPERABLE flow path. An operating RHR flow path should be capable of determining the low-end temperature. The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs.

~~The LCO is modified by a note that allows the required operating RHR loop to be removed from service for up to 1 hour per 8-hour period. This permits operations such as core mapping or alterations in the vicinity of the reactor vessel hot leg nozzle and RCS to RHR isolation valve testing. During this 1-hour period, decay heat is removed by natural connection to the large mass of water in the refueling cavity.~~

1

Replace with INSERT G

INSERT G

The LCO is modified by a NOTE that allows the required operating RHR loop to be removed from operation for up to 1 hour per 8 hour period, provided no operations are permitted that would dilute the RCS boron concentration by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1.1. Boron concentration reduction with coolant at boron concentrations less than required to assure the RCS boron concentration is maintained is prohibited because uniform concentration distribution cannot be ensured without forced circulation. This permits operations such as more mapping or alterations in the vicinity of the reactor vessel hot leg nozzles and RCS to RHR isolation valve testing. During this 1 hour period, decay heat is removed by natural convection to the large mass of water in the refueling cavity.

3/4.9.8.1 HIGH WATER LEVEL (continued)

ACTIONS

Replace with INSERT H

B

RHR loop requirements are met by having one RHR loop OPERABLE and in operations, except as permitted in the Note to the LCO.

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

~~Reduced boron concentrations can occur by the addition of water with lower boron concentration that contained in the RCS. Therefore, actions that result in an unplanned boron dilution shall be suspended immediately~~.

If RHR loop requirements are not met, actions shall be taken immediately to suspend loading of irradiated fuel assemblies in the core. With no forced circulation cooling, decay heat removal from the core occurs by natural convection to the heat sink provided by the water above the core. A minimum refueling water level of 23 ft above the reactor vessel flange provides an adequate available heat sink. Suspending any operation that would increase decay heat load, such as loading a fuel assembly, is a prudent action under this condition.

If RHR loop requirements are not met, actions shall be initiated and continued in order to satisfy RHR loop requirements. With the unit in MODE 6 and the refueling water level ≥ 23 ft above the top of the reactor vessel flange, corrective actions shall be initiated immediately.

If RHR loop requirements are not met, all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere must be closed within 4 hours. With the RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Closing containment penetrations that are open to the outside atmosphere ensures dose limits are not exceeded.

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

Surveillance Requirement

This Surveillance demonstrates that the RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. The frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator in the control room for monitoring the RHR system.

1

INSERT H

If RHR loop requirements are not met, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation.

3/4.9.8.2 LOW WATER LEVEL (continued)

An OPERABLE RHR loop consists of an RHR pump, a heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path. An operating RHR flow path should be capable of determining the low end temperature. The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs.

APPLICABILITY

Two RHR loops are required to be OPERABLE, and one RHR loop must be in operation in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, to provide decay heat removal. Requirements for the RHR System in other MODES are covered by LCOs in Section 3.5, Emergency Core Cooling Systems (ECCS). RHR loop requirements in MODE 6 with the water level ≥ 23 ft are located in LCO 3.9.8.1, "Residual Removal (RHR) AND Coolant Circulation—High Water Level."

ACTIONS

Replace with INSERT I

a. If less that the required number of RHR loops are OPERABLE, actions shall be immediately initiated and continued until the RHR loop is restored to OPERABLE status and to operation, or until ≥ 23 ft of water level is established above the reactor vessel flange. When the water level is ≥ 23 ft above the reactor vessel flange, the Applicability changes to that of LCO 3.9.8.1, and only one RHR loop is required to be OPERABLE and in operation. An immediate Completion Time is necessary for an operator to initiate corrective action.

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

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

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

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

INSERT I

If no RHR loop is in operation, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation.

ATTACHMENT 6

PROPOSED TECHNICAL SPECIFICATIONS CHANGES
SHUTDOWN OPERATIONS INVOLVING POSITIVE REACTIVITY ADDITIONS

RETYPED PAGES

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3

BASES

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 3 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement and with the THERMAL POWER level:

a. Below the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above the P-6 Setpoint, and

b. Above the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint but below 10% of RATED THERMAL POWER, restore the inoperable channel to OPERABLE status prior to increasing THERMAL POWER above 10% of RATED THERMAL POWER.

ACTION 4 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, suspend all operations involving positive reactivity additions.*

ACTION 5 - (Not used)

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 6 hours, and

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1.

ACTION 7 - (Not used)

ACTION 8 - With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.

---

* Limited plant cooldown or boron dilution is allowed provided the change is accounted for in the calculated SDM

3/4.3.5 SHUTDOWN MARGIN MONITOR

LIMITING CONDITION FOR OPERATION

3.3.5 Two channels of Shutdown Margin Monitors shall be OPERABLE

a. With a minimum count rate as designated in the CORE OPERATING LIMITS REPORT (COLR), or

b. If the minimum count rate in Specification 3.3.5.a cannot be met, then the Shutdown Margin Monitors may be made operable with a lower minimum count rate, as specified in the COLR, by borating the Reactor Coolant System above the requirements of Specification 3.1.1.1.2 or 3.1.1.2. The additional boration shall be:

1. A minimum of 150 ppm above the SHUTDOWN MARGIN requirements specified in the COLR for MODE 3, or

2. A minimum of 350 ppm above the SHUTDOWN MARGIN requirements specified in the COLR for MODE 4, MODE 5 with RCS loops filled, and MODE 5 with RCS loops not filled.

APPLICABILITY: MODES 3*, 4, and 5.

ACTION:

a. With one Shutdown Margin Monitor inoperable, restore the inoperable channel to OPERABLE status within 48 hours.

* The shutdown margin monitors may be blocked during reactor startup in accordance with approved plant procedures.

3/4.3.5 SHUTDOWN MARGIN MONITOR

LIMITING CONDITION FOR OPERATION (continued)

b. With both Shutdown Margin Monitors inoperable or one Shutdown Margin Monitor inoperable for greater than 48 hours, immediately suspend all operations involving positive reactivity additions* via dilution and rod withdrawal. Verify the valves listed in Specification 4.1.1.2.2 are closed and secured in position within the next 4 hours and at least once per 14 days thereafter.** Verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1.2 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter.

SURVEILLANCE REQUIREMENTS

4.3.5 a. Each of the above required shutdown margin monitoring instruments shall be demonstrated OPERABLE by an ANALOG CHANNEL OPERATIONAL TEST at least once per 92 days that shall include verification that the Shutdown Margin Monitor is set per the Core Operating Limits Report (COLR).

b. At least once per 24 hours VERIFY the minimum count rate (counts/sec) as defined within the COLR.

---

* Plant temperature changes are allowed provided the temperature change is accounted for in the calculated SDM.

** The valves may be opened on an intermittent basis under administrative controls as noted in Surveillance 4.1.1.2.2.

REACTOR COOLANT SYSTEM

HOT STANDBY

LIMITING CONDITION FOR OPERATION

3.4.1.2 At least three of the reactor coolant loops listed below shall be OPERABLE, with at least three reactor coolant loops in operation when the Control Rod Drive System is capable of rod withdrawal or with at least one reactor coolant loop in operation when the Control Rod Drive System is not capable of rod withdrawal:*

a. Reactor Coolant Loop 1 and its associated steam generator and reactor coolant pump,

b. Reactor Coolant Loop 2 and its associated steam generator and reactor coolant pump,

c. Reactor Coolant Loop 3 and its associated steam generator and reactor coolant pump, and

d. Reactor Coolant Loop 4 and its associated steam generator and reactor coolant pump.

APPLICABILITY: MODE 3.

ACTION:

a. With less than the above required reactor coolant loops OPERABLE, restore the required loops to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

b. With less than the above required reactor coolant loops in operation and the Control Rod Drive System is capable of rod withdrawal , within 1 hour open the Reactor Trip System breakers.

c. With no reactor coolant loop in operation, suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2 and immediately initiate corrective action to return the required reactor coolant loop to operation.

---

* All reactor coolant pumps may be deenergized for up to 1 hour provided:
(1) no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1.2, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

SURVEILLANCE REQUIREMENTS

4.4.1.2.1 At least the above required reactor coolant pumps, if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

4.4.1.2.2 The required steam generators shall be determined OPERABLE by verifying secondary side water level to be greater than or equal to 17% at least once per 12 hours.

4.4.1.2.3 The required reactor coolant loops shall be verified in operation and circulating reactor coolant at least once per 12 hours.

REACTOR COOLANT SYSTEM

HOT SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.4.1.3 Either: *, **

a. With the Control Rod Drive System capable of rod withdrawal, at least two RCS loops shall be OPERABLE and in operation, or

b. With the Control Rod Drive System not capable of rod withdrawal, at least two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops shall be OPERABLE, and at least one of these loops shall be in operation. For RCS loop(s) to be OPERABLE, at least one reactor coolant pump (RCP) shall be in operation.

APPLICABILITY: MODE 4.

ACTION:

a. With less than the above required loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status as soon as possible; if the remaining OPERABLE loop is an RHR loop, be in COLD SHUTDOWN within 24 hours.

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* All reactor coolant pumps and RHR pumps may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1.2, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

** The first reactor coolant pump shall not be started when any RCS loop wide range cold leg temperature is ≤ 226°F unless:

a. Two pressurizer PORVs are in service to meet the cold overpressure protection requirements of Technical Specification 3.4.9.3 and the secondary side water temperature of each steam generator is < 50°F above each RCS cold leg temperature; OR

b. The secondary side water temperature of each steam generator is at or below each RCS cold leg temperature.

This restriction only applies to RCS loops and associated components that are not isolated from the reactor vessel.

LIMITING CONDITION FOR OPERATION (continued)

b. With less than the above required reactor coolant loops in operation and the Control Rod Drive System is capable of rod withdrawal, within 1 hour open the Reactor Trip System breakers.

c. With no loop in operation, suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2 and immediately initiate corrective action to return the required loop to operation.

SURVEILLANCE REQUIREMENTS

4.4.1.3.1 The required pump(s), if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

4.4.1.3.2 The required steam generator(s) shall be determined OPERABLE by verifying secondary side water level to be greater than or equal to 17% at least once per 12 hours.

4.4.1.3.3 The required loop(s) shall be verified in operation and circulating reactor coolant at least once per 12 hours.

COLD SHUTDOWN - LOOPS FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.4.1 At least 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 shall be greater than 17%.

APPLICABILITY: MODE 5 with at least two reactor coolant loops filled***.

*a. The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1.2, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

b. All RHR loops may be removed from operation during a planned heatup to MODE 4 when at least one RCS loop is OPERABLE and in operation and when two additional steam generators are OPERABLE as required by LCO 3.4.1.4.1.b.

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

*** The first reactor coolant pump shall not be started when:

a. Any RCS loop wide range cold leg temperature is >150°F unless:

1. Two pressurizer PORVs are in service to meet the cold overpressure protection requirements of Technical Specification 3.4.9.3 and the secondary side water temperature of each steam generator is < 50°F above each RCS cold leg temperature; OR

2 The secondary side water temperature of each steam generator is at or below each RCS cold leg temperature.

b. All RCS loop wide range cold leg temperatures are ≤ 150°F unless the secondary side water temperature of each steam generator is < 50°F above each RCS cold leg temperature.

This restriction only applies to RCS loops and associated components that are not isolated from the reactor vessel.

LIMITING CONDITION FOR OPERATION

ACTION:

a. With less than the required RHR loop(s) OPERABLE or with less than the required steam generator water level, immediately initiate corrective action to return the inoperable RHR loop to OPERABLE status or restore the required steam generator water level as soon as possible.

b. With no RHR loop in operation, suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2 and immediately initiate corrective action to return the required RHR loop to operation.

SURVEILLANCE REQUIREMENTS

4.4.1.4.1.1 The secondary side water level of at least two steam generators when required shall be determined to be within limits at least once per 12 hours.

4.4.1.4.1.2 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.

4.4.1.4.1.3 The required pump, if not in operation, shall be determined OPERABLE once per 7 days by verifying correct breaker alignment and indicated power availability.

REACTOR COOLANT SYSTEM

COLD SHUTDOWN - LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.4.2 Two residual heat removal (RHR) loops shall be OPERABLE* and at least one RHR loop shall be in operation.**

APPLICABILITY: MODE 5 with less than two reactor coolant loops filled***.

ACTION:

a. With less than the above required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status as soon as possible.

b. With no RHR loop in operation, suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet SDM of LCO 3.1.1.1.2 and immediately initiate corrective action to return the required RHR loop to operation.

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

** The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than required to meet the SDM of LCO 3.1.1.1.2, and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

*** The first reactor coolant pump shall not be started when:

a. Any RCS loop wide range cold leg temperature is >150°F unless:

1. Two pressurizer PORVs are in service to meet the cold overpressure protection requirements of Technical Specification 3.4.9.3 and the secondary side water temperature of each steam generator is < 50°F above each RCS cold leg temperature; OR

2. The secondary side water temperature of each steam generator is at or below each RCS cold leg temperature.

b. All RCS loop wide range cold leg temperatures are ≤ 150°F unless the secondary side water temperature of each steam generator is < 50°F above each RCS cold leg temperature.

This restriction only applies to RCS loops and associated components that are not isolated from the reactor vessel.

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and the Onsite Class 1E Distribution System, and

b. One diesel generator with:

   1) A day tank containing a minimum volume of 278 gallons of fuel,

   2) A fuel storage system containing a minimum volume of 32,760 gallons of fuel,

   3) A fuel transfer pump,

   4) Lubricating oil storage containing a minimum total volume of 280 gallons of lubricating oil, and

   5) Capability to transfer lubricating oil from storage to the diesel generator unit.

APPLICABILITY: MODES 5 and 6.

ACTION :

With less than the above minimum required A. C. electrical power sources OPERABLE, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity additions that could result in loss of required SDM or boron concentration, movement of irradiated fuel, crane operation with loads over the fuel storage pool, or operation with a potential for draining the reactor vessel; initiate corrective action to restore the required sources to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the requirements of Specifications 4.8.1.1.1, 4.8.1.1.2 (except for Specifications 4.8.1.1.2.a.6 and 4.8.1.1.2.b.2).

ELECTRICAL POWER SYSTEMS

D.C. SOURCES

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, one train (A or B) of batteries and their associated full capacity chargers shall be OPERABLE:

a. Train - "A" consisting of:

1) Battery Bank 301A-1 and a full capacity battery charger, and

2) Battery Bank 301A-2 and a full capacity battery charger.

OR

b. Train - "B" consisting of:

1) Battery Bank 301B-1 and a full capacity battery charger, and

2) Battery Bank 301B-2 and a full capacity battery charger.

APPLICABILITY: MODES 5 and 6.

ACTION:

With the required train inoperable, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity additions that could result in loss of required SDM or boron concentration, movement of irradiated fuel; crane operation with loads over the fuel storage pool, or operation with a potential for draining the reactor vessel; initiate corrective action to restore the required train to OPERABLE status as soon as possible.

SURVEILLANCE REQUIREMENTS

4.8.2.2 The above required train shall be demonstrated OPERABLE in accordance with Specification 4.8.2.1.

ELECTRICAL POWER SYSTEMS

ONSITE POWER DISTRIBUTION

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.3.2 As a minimum, one train (A or B) of the following electrical busses shall be OPERABLE:

a. Train - "A" consisting of:

1) One 4160 volt AC Emergency Bus #34C, and

2) Four 480 volt AC Emergency Busses #32R, #32S, #32T, #32Y, and

3) Two 120 volt AC Vital Busses consisting of:

a) Bus #VIAC-1 energized from Inverter #INV-1 connected to DC Bus #301A-1, and

b) Bus #VIAC-3 energized from Inverter #INV-3 connected to DC Bus #301A-2, and

4) Two 125 volt DC Busses consisting of:

a) Bus #301A-1 energized from Battery Bank #301A-1, and

b) Bus #301A-2 energized from Battery Bank #301A-2.

OR

b. Train - "B" consisting of

1) One 4160 volt AC Emergency Bus #34D, and

2) Four 480 volt AC Emergency Busses #32U, #32V, #32W, #32X, and

3) Two 120 volt AC Vital Busses consisting of:

a) Bus #VIAC-2 energized from Inverter #INV-2 connected to DC Bus #301B-1, and

b) Bus #VIAC-4 energized from Inverter #INV-4 connected to DC Bus #301B-2, and

ELECTRICAL POWER SYSTEMS

ONSITE POWER DISTRIBUTION

SHUTDOWN

LIMITING CONDITION FOR OPERATION (continued)

4) Two 125 volt DC Busses consisting of:

a) Bus #301B-1 energized from Battery Bank #301B-1, and

b) Bus #301B-2 energized from Battery Bank #301B-2.

APPLICABILITY: MODES 5 and 6.

ACTION:

With any of the above required electrical busses not energized in the required manner, immediately suspend all operations involving CORE ALTERATIONS, positive reactivity additions that could result in loss of required SDM or boron concentration, movement of irradiated fuel, crane operation with loads over the fuel storage pool, or operations with a potential for draining the reactor vessel, initiate corrective action to energize the required electrical busses in the specified manner as soon as possible.

SURVEILLANCE REQUIREMENTS

4.8.3.2 The specified busses shall be determined energized in the required manner at least once per 7 days by verifying correct breaker alignment and indicated voltage on the busses.

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.9.1.1 The boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained sufficient to ensure that the more restrictive of the following reactivity conditions is met; either:

a. A K_{eff} of 0.95 or less, or

b. A boron concentration of greater than or equal to the limit specified in the CORE OPERATING LIMITS REPORT (COLR).

Additionally, the CVCS valves of Specification 4.1.1.2.2 shall be closed and secured in position.

APPLICABILITY: MODE 6.*

ACTION:

a. With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS and positive reactivity additions and initiate and continue boration at greater than or equal to 33 gpm of a solution containing greater than or equal to 6600 ppm boron or its equivalent until K_{eff} is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to the limit specified in the COLR, whichever is the more restrictive.

b. With any of the CVCS valves of Specification 4.1.1.2.2 not closed** and secured in position, immediately close and secure the valves.

SURVEILLANCE REQUIREMENTS

4.9.1.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any full-length control rod in excess of 3 feet from its fully inserted position within the reactor vessel.

4.9.1.1.2 The boron concentration of the Reactor Coolant System and the refueling cavity shall be determined by chemical analysis at least once per 72 hours.

4.9.1.1.3 The CVCS valves of Specification 4.1.1.2.2 shall be verified closed and locked at least once per 31 days.

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* The reactor shall be maintained in MODE 6 whenever fuel is in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed.

** Except those opened under administrative control.

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.9.2 Two Source Range Neutron Flux Monitors shall be OPERABLE with continuous visual indication in the control room, and one with audible indication in the containment and control room.

APPLICABILITY: MODE 6.

ACTION:

a. With one of the above required monitors inoperable immediately suspend all operations involving CORE ALTERATIONS and operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1.

b. With both of the above required monitors inoperable determine the boron concentration of the Reactor Coolant System within 4 hours and at least once per 12 hours thereafter.

SURVEILLANCE REQUIREMENTS

4.9.2 Each Source Range Neutron Flux Monitor shall be demonstrated OPERABLE by performance of:

a. A CHANNEL CHECK and verification of audible counts at least once per 12 hours,

b. A CHANNEL CALIBRATION at least once per 18 months*.

* Neutron detectors are excluded from CHANNEL CALIBRATION.

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one residual heat removal (RHR) loop shall be OPERABLE and in operation.*

APPLICABILITY: MODE 6, when the water level above the top of the reactor vessel flange is greater than or equal to 23 feet.

ACTION:

With no RHR loop OPERABLE or in operation, suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1 and suspend loading irradiated fuel assemblies in the core and immediately initiate corrective action to return the required RHR loop to OPERABLE and operating status as soon as possible. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.1 At least one RHR loop shall be verified in operation and circulating reactor coolant at a flow rate of greater than or equal to 2800 gpm at least once per 12 hours.

* The RHR loop may be removed from operation for up to 1 hour per 8-hour period, provided no operations are permitted that could cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1.

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

3.9.8.2 Two independent residual heat removal (RHR) loops shall be OPERABLE, and at least one RHR loop shall be in operation.*

APPLICABILITY: MODE 6, when the water level above the top of the reactor vessel flange is less than 23 feet.

ACTION:

a. With less than the required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status, or to establish greater than or equal to 23 feet of water above the reactor vessel flange, as soon as possible.

b. With no RHR loop in operation, suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1 and immediately initiate corrective action to return the required RHR loop to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

SURVEILLANCE REQUIREMENTS

4.9.8.2 At least one RHR loop shall be verified in operation and circulating reactor coolant at a flow rate of greater than or equal to 2800 gpm at least once per 12 hours.

* The RHR loop may be removed from operation for up to 1 hour per 8-hour period, provided no operations are permitted that could cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.1.

3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM INSTRUMENTATION and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

The methodology, as defined in WCAP-10991 to derive the Nominal Trip Setpoints, is based upon combining all of the uncertainties in the channels. Inherent in the determination of the Nominal Trip Setpoints are the magnitudes of these channel uncertainties. Sensors and other instrumentation utilized in these channels should be capable of operating within the allowances of these uncertainty magnitudes. Occasional drift in excess of the allowance may be determined to be acceptable based on the other device performance characteristics. Device drift in excess of the allowance that is more than occasional, may be indicative of more serious problems and would warrant further investigation.

The above Bases does not apply to the Control Building Inlet Ventilation radiation monitors ESF Table (Item 7E). For these radiation monitors the allowable values are essentially nominal values. Due to the uncertainties involved in radiological parameters, the methodologies of WCAP-10991 were not applied. Actual trip setpoints will be reestablished below the allowable value based on calibration accuracies and good practices.

The operability requirements for Table 3.3-3, Functional Units 7.a, "Control Building Isolation, Manual Actuation," and 7.e, "Control Building Isolation, Control Building Inlet Ventilation Radiation," are defined by table notation "*". These functional units are required to be OPERABLE at all times during plant operation in MODES 1, 2, 3, and 4. These functional units are also required to be OPERABLE during fuel movement within containment or the spent fuel pool, as specified by table notation "*". This table notation is also applicable during fuel movement within containment or the spent fuel pool. The fuel handling accident analyses assume that during a fuel handling accident some of the fuel that is dropped and some of the fuel impacted upon is damaged. Therefore, the movement of either new or irradiated fuel (assemblies or individual fuel rods) can cause a fuel handling accident, and functional units 7.a and 7.e are required to be OPERABLE whenever new or irradiated fuel is moved within the containment or the storage pool. Table notation "*" of Table 4.3-2 has the same applicability.

The verification of response time at the specified frequencies provides assurance that the reactor trip and the engineered safety features actuation associated with each channel is completed within the time limit assumed in the safety analysis. No credit is taken in the analysis for those channels with response times indicated as not applicable (i.e., N.A.).

Required ACTION 4. of Table 3.3-1 is modified by a Note to indicate that normal plant control operations that individually add limited positive reactivity (e.g., temperature or boron fluctuations associated with RCS inventory management or temperature control) are not precluded by this ACTION provided they are accounted for in the calculated SDM.

Required ACTION b is modified by a Note which permits plant temperature changes provided the temperature change is accounted for in the calculated SDM. Introduction of temperature changes, including temperature increases when a positive MTC exists, must be evaluated to ensure they do not result in a loss of required SDM.

2. All dilution flowpaths are isolated and placed under administrative control (locked closed). This action provides redundant protection and defense in depth (safety overlap) to the SMMs. In this configuration, a boron dilution event (BDE) cannot occur. This is the basis for not having to analyze for BDE in Mode 6. Since the BDE cannot occur with the dilution flow paths isolated, the SMMs are not required to be operable as the event cannot occur and operable SMMs provide no benefit.

3. Increase the shutdown margin surveillance frequency from every 24 hours to every 12 hours. This action in combination with the above, provide defense in depth and overlap to the loss of the SMMs.

Surveillance Requirements

The SMMs are subject to an ACOT every 92 days to ensure each train of SMM is fully operational. This test shall include verification that the SMMs are set per the Core Operating Limit Report.

- For the isolated loop being restored, the power to both loop stop valves has been restored

Surveillance 4.4.1.6.2 indicates that the reactor shall be determined subcritical by at least the amount required by Specifications 3.1.1.1.2 or 3.1.1.2 for MODE 5 or Specification 3.9.1.1 for MODE 6 within 2 hours of opening the cold leg or hot leg stop valve.

The SHUTDOWN MARGIN requirement in Specification 3.1.1.1.2 is specified in the CORE OPERATING LIMITS REPORT for MODE 5 with RCS loops filled. Specification 3.1.1.1.2 cannot be used to determine the required SHUTDOWN MARGIN for MODE 5 loops isolated condition.

Specification 3.1.1.2 requires the SHUTDOWN MARGIN to be greater than or equal to the limits specified in the CORE OPERATING LIMITS REPORT for MODE 5 with RCS loops not filled provided CVCS is aligned to preclude boron dilution. This specification is for loops not filled and therefore is applicable to an all loops isolated condition.

Specification 3.9.1.1 requires K_{eff} of 0.95 or less, or a boron concentration of greater than or equal to the limit specified in the COLR in MODE 6.

Specification 3.1.1.1.2 or 3.1.1.2 for MODE 5, both require boron concentration to be determined at least once each 24 hours. SR 4.1.1.1.2.1.b.2 and 4.1.1.2.1.b.1 satisfy the requirements of Specifications 3.1.1.1.2 and 3.1.1.2 respectfully. Specification 3.9.1.1 for MODE 6 requires boron concentration to be determined at least once each 72 hours. S.R. 4.9.1.1.2 satisfy the requirements of Specification 3.9.1.1.

Per Specifications 3.4.1.2, ACTION c.; 3.4.1.3, ACTION c.; 3.4.1.4.1, ACTION b.; and 3.4.1.4.2, ACTION b., suspending the introduction of coolant into the RCS of coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1.1.2 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however, coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations.

References:

1. Letter NEU-94-623, dated July 13, 1994; Mixing Evaluation for Boron Dilution Accident in Modes 4 and 5, Westinghouse HR-59782.

2. Memo No. MP3-E-93-821, dated October 7, 1993.

3/4.8.1, 3/4.8.2, and 3/4.8.3 A.C. SOURCES, D.C. SOURCES, AND ONSITE POWER DISTRIBUTION

Technical Specification 3.8.1.1.b.1 requires each of the diesel generator day tanks contain a minimum volume of 278 gallons. Technical Specification 3.8.1.2.b.1 requires a minimum volume of 278 gallons be contained in the required diesel generator day tank. This capacity ensures that a minimum usable volume of 189 gallons is available. This volume permits operation of the diesel generators for approximately 27 minutes with the diesel generators loaded to the 2,000 hour rating of 5335 kw. Each diesel generator has two independent fuel oil transfer pumps. The shutoff level of each fuel oil transfer pump provides for approximately 60 minutes of diesel generator operation at the 2000 hour rating. The pump start at day tank levels to ensure minimum level is maintained. The loss of the two redundant pumps would cause day tank level to drop below the minimum value.

Technical Specification 3.8.1.1.b.2 requires a minimum volume of 32,760 gallons be contained in each of the diesel generator's fuel storage systems. Technical Specification 3.8.1.2.b.2 requires a minimum volume of 32,760 gallons be contained in the required diesel generator's fuel storage system. This capacity ensures that a minimum usable volume (29,180 gallons) is available to permit operation of each of the diesel generators for approximately three days with the diesel generators loaded to the 2,000 hour rating of 5335 kW. The ability to cross-tie the diesel generator fuel oil supply tanks ensures that one diesel generator may operate up to approximately six days. Additional fuel oil can be supplied to the site within twenty-four hours after contacting a fuel oil supplier.

Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that which would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power source and distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

3/4.9.1 BORON CONCENTRATION

The limitations on reactivity conditions during REFUELING ensure that: (1) the reactor will remain subcritical during CORE ALTERATIONS, and (2) a uniform boron concentration is maintained for reactivity control in the water volume having direct access to the reactor vessel. The value of 0.95 or less for K_{eff} includes a 1% $\Delta k/k$ conservative allowance for uncertainties. Similarly, the boron concentration value specified in the CORE OPERATING LIMITS REPORT includes a conservative uncertainty allowance of 50 ppm boron. The boron concentration, specified in the CORE OPERATING LIMITS REPORT, provides for boron concentration measurement uncertainty between the spent fuel pool and the RWST. The locking closed of the required valves during refueling operations precludes the possibility of uncontrolled boron dilution of the filled portion of the RCS. This action prevents flow to the RCS of unborated water by closing flow paths from sources of unborated water.

MODE ZERO shall be the Operational MODE where all fuel assemblies have been removed from containment to the Spent Fuel Pool. Technical Specification Table 1.2 defines MODE 6 as "Fuel in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed." With no fuel in the vessel the definition for MODE 6 no longer applies. The transition from MODE 6 to MODE ZERO occurs when the last fuel assembly of a full core off load has been transferred to the Spent Fuel Pool and has cleared the transfer canal while in transit to a storage location. This will:

- Ensure Technical Specifications regarding sampling the transfer canal boron concentration are observed (4.9.1.1.2);
- Ensure that MODE 6 Technical Specification requirements are <u>not</u> relaxed prematurely during fuel movement in containment.

Concerning ACTION a., suspension of CORE ALTERATIONS and positive reactivity additions shall not preclude moving a component to a safe position. Operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations) but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action.

3/4.9.1.2 BORON CONCENTRATION IN SPENT FUEL POOL

During normal Spent Fuel Pool operation, the spent fuel racks are capable of maintaining K_{eff} at less than or equal to 0.95 in an unborated water environment. This is accomplished in Region 1, 2, and 3 storage racks by the combination of geometry of the rack spacing, the use of fixed neutron absorbers in some fuel storage regions, the limits on fuel burnup, fuel enrichment and minimum fuel decay time, and the use of blocking devices in certain fuel storage locations.

The boron requirement in the spent fuel pool specified in 3.9.1.2 ensures that in the event of a fuel assembly handling accident involving either a single dropped or misplaced fuel assembly, the K_{eff} of the spent fuel storage racks will remain less than or equal to 0.95.

3/4.9.2 INSTRUMENTATION

The OPERABILITY of the Source Range Neutron Flux Monitors ensures that redundant monitoring capability is available to detect changes in the reactivity condition of the core.

Concerning ACTION a., with only one source range neutron flux monitor OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, CORE ALTERATIONS and introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1.1 must be suspended immediately. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that which would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Performance of ACTION a. shall not preclude completion of movement of a component to a safe position.

3/4.9.3 DECAY TIME

The minimum requirement for reactor subcriticality prior to movement of irradiated fuel assemblies in the reactor vessel ensures that sufficient time has elapsed to allow the radioactive decay of the short-lived fission products. This decay time is consistent with the assumptions used in the safety analyses.

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

The requirements on containment penetration closure and OPERABILITY ensure that a release of radioactive material within containment to the environment will be minimized. The OPERABILITY, closure restrictions, and administrative controls are sufficient to minimize the release of radioactive material from a fuel element rupture based upon the lack of containment pressurization potential during the movement of fuel within containment. The containment purge valves are containment penetrations and must satisfy all requirements specified for a containment penetration.

This specification is applicable during the movement of new and spent fuel assemblies within the containment building. The fuel handling accident analyses assume that during a fuel handling accident some of the fuel that is dropped and some of the fuel impacted upon is damaged. Therefore, the movement of either new or irradiated fuel can cause a fuel handling accident, and this specification is applicable whenever new or irradiated fuel is moved within the containment.

Containment penetrations, including the personnel access hatch doors and equipment access hatch, can be open during the movement of fuel provided that sufficient administrative controls are in place such that any of these containment penetrations can be closed within 30 minutes. Following a Fuel Handling Accident, each penetration, including the equipment access hatch, is closed such that a containment atmosphere boundary can be established. However, if it is determined that closure of all containment penetrations would represent a significant radiological hazard to the personnel involved, the decision may be made to forgo the closure of the affected penetration(s). The containment atmosphere boundary is established when any penetration which provides direct access to the outside atmosphere is closed such that at least one barrier between the containment atmosphere and the outside atmosphere is established. Additional actions beyond establishing the containment atmosphere boundary, such as installing flange bolts for the equipment access hatch or a containment penetration, are not necessary.

Administrative controls for opening a containment penetration require that one or more designated persons, as needed, be available for isolation of containment from the outside atmosphere. Procedural controls are also in place to ensure cables or hoses which pass through a containment opening can be quickly removed. The location of each cable and hose isolation device for those cables and hoses which pass through a containment opening is recorded to ensure timely closure of the containment boundary. Additionally, a closure plan is developed for each containment opening which includes an estimated time to close the containment opening. A log of personnel designated for containment closure is maintained, including identification of which containment openings each person has responsibility for closing. As necessary, equipment will be pre-staged to support timely closure of a containment penetration.

3/4.9.8.1 HIGH WATER LEVEL (continued)

APPLICABLE SAFETY ANALYSES

If the reactor coolant temperature is not maintained below 200°F, boiling of the reactor coolant could result. This could lead to a loss of coolant in the reactor vessel. Additionally, boiling of the reactor coolant could lead to a reduction in boron concentration in the coolant due to boron plating out on components near the areas of the boiling activity. The loss of reactor coolant and the reduction of boron concentration in the reactor coolant would eventually challenge the integrity of the fuel cladding, which is fission product barrier. One train of the RHR system is required to be operational in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange to prevent this challenge. The LCO does permit deenergizing the RHR pump for short durations, under the conditions that the boron concentration is not diluted. This conditional deenergizing of the RHR pump does not result in a challenge to the fission product barrier.

APPLICABILITY

One RHR loop must be OPERABLE and in operation in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, to provide decay heat removal. The 23 ft level was selected because it corresponds to the 23 ft requirement established for fuel movement in LCO 3.9.10, "Water Level — Reactor Vessel." Requirements for the RHR system in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS), and Section 3.5, Emergency Core Cooling Systems (ECCS). RHR loop requirements in MODE 6 with the water level < 23 ft are located in LCO 3.9.8.2, "Residual Heat Removal (RHR) and Coolant Circulation—Low Water Level."

LIMITING CONDITION FOR OPERATION

The requirement that at least one RHR loop be in operation ensures that: (1) sufficient cooling capacity is available to remove decay heat an maintain the water in the reactor vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the core to minimize the effect of a boron dilution incident and prevent stratification.

An OPERABLE RHR loop includes an RHR pump, a heat exchanger, valves, piping, instruments and controls to ensure an OPERABLE flow path. An operating RHR flow path should be capable of determining the low-end temperature. The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs.

The LCO is modified by a Note that allows the required operating RHR loop to be removed from operation for up to 1 hour per 8 hour period, provided no operations are permitted that would dilute the RCS boron concentration by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1.1. Boron concentration reduction with coolant at boron concentrations less than required to assure the RCS boron concentration is maintained is prohibited because uniform concentration distribution cannot be ensured without forced circulation. This permits operations such as more mapping or alterations in the vicinity of the reactor vessel hot leg nozzles and RCS to RHR isolation valve testing. During this 1 hour period, decay heat is removed by natural convection to the large mass of water in the refueling cavity.

3/4.9.8.1 HIGH WATER LEVEL (continued)

ACTIONS

RHR loop requirements are met by having one RHR loop OPERABLE and in operations, except as permitted in the Note to the LCO.

If RHR loop requirements are not met, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that which would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation.

If RHR loop requirements are not met, actions shall be taken immediately to suspend loading of irradiated fuel assemblies in the core. With no forced circulation cooling, decay heat removal from the core occurs by natural convection to the heat sink provided by the water above the core. A minimum refueling water level of 23 ft above the reactor vessel flange provides an adequate available heat sink. Suspending any operation that would increase decay heat load, such as loading a fuel assembly, is a prudent action under this condition.

If RHR loop requirements are not met, actions shall be initiated and continued in order to satisfy RHR loop requirements. With the unit in MODE 6 and the refueling water level ≥ 23 ft above the top of the reactor vessel flange, corrective actions shall be initiated immediately.

If RHR loop requirements are not met, all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere must be closed within 4 hours. With the RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Closing containment penetrations that are open to the outside atmosphere ensures dose limits are not exceeded.

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

Surveillance Requirement

This Surveillance demonstrates that the RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. The frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator in the control room for monitoring the RHR system.

3/4.9.8.2 LOW WATER LEVEL (continued)

An OPERABLE RHR loop consists of an RHR pump, a heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path. An operating RHR flow path should be capable of determining the low end temperature. The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs.

APPLICABILITY

Two RHR loops are required to be OPERABLE, and one RHR loop must be in operation in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, to provide decay heat removal. Requirements for the RHR System in other MODES are covered by LCOs in Section 3.5, Emergency Core Cooling Systems (ECCS). RHR loop requirements in MODE 6 with the water level ≥ 23 ft are located in LCO 3.9.8.1, "Residual Removal (RHR) AND Coolant Circulation—High Water Level."

ACTIONS

a. If less that the required number of RHR loops are OPERABLE, actions shall be immediately initiated and continued until the RHR loop is restored to OPERABLE status and to operation, or until ≥ 23 ft of water level is established above the reactor vessel flange. When the water level is ≥ 23 ft above the reactor vessel flange, the Applicability changes to that of LCO 3.9.8.1, and only one RHR loop is required to be OPERABLE and in operation. An immediate Completion Time is necessary for an operator to initiate corrective action.

b. If no RHR loop is in operation, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that which would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation.

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

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

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

Surveillance Requirement

This Surveillance demonstrates that one RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. In addition, during operation of the RHR loop with the water level in the vicinity of the reactor vessel nozzles, the RHR pump suction requirements must be met. The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator for monitoring the RHR System in the control room.