Dominion Nuclear Connecticut, Inc.
Millstone Power Station
Rope Ferry Road
Waterford, CT 06385

Dominion

APR 7 2003

Docket No. 50-423
B18817

RE: 10 CFR 50.90

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

Millstone Power Station, Unit No. 3
License Basis Document Change Request (LBDCR) 3-15-02
Relocation of Some Technical Specification Parameters to The Core Operating Limits Report and Updating The Description of Analytical Methods Used to Determine Core Operating Limits

Pursuant to 10 CFR 50.90, Dominion Nuclear Connecticut, Inc. (DNC) hereby proposes to amend Operating License NPF-49 by incorporating the attached proposed changes into the Millstone Unit No. 3 Technical Specifications. The purpose of the proposed changes is to relocate some Technical Specification parameters to the Core Operating Limits Report (COLR) and to update the description of analytical methods used to determine core operating limits. The proposed changes are consistent with the changes included in Technical Specifications Task Force (TSTF) Travelers, TSTF-9, Rev. 1, [1] TSTF-363,[2] and TSTF-339, Rev. 2.[3] Future changes to the COLR parameters will be controlled in accordance with 10 CFR 50.59.

The proposed changes affect Technical Specifications 2.2, "Limiting Safety System Settings, Table 2.2-1," 3/4.1.1.1.1, "Reactivity Control Systems, Boration Control, SHUTDOWN MARGIN - Modes 1 and 2," 3/4.1.1.1.2, "Reactivity Control Systems, Boration Control, SHUTDOWN MARGIN - Modes 3, 4 and 5 Loops Filled," 3/4.1.1.2, "Reactivity Control Systems, SHUTDOWN MARGIN - Cold Shutdown - Loops Not Filled," 3/4.2.5, "Power Distribution Limits, DNB Parameters," 3/4.3.5, "Instrumentation, SHUTDOWN MARGIN Monitor," 3/4.9.1.1, "Refueling Operations, Boron Concentration," Section 6.9.1.6.a, "Core Operating Limits Report, Core Operating Limits," and Section 6.9.1.6.b, "Core Operating Limits Report, The Analytical Methods

(1) Industry/TSTF Standard Technical Specification Change Traveler TSTF-9, Rev. 1, "Relocate Value for SHUTDOWN MARGIN to COLR," approved September 18, 1996.

(2) Industry/TSTF Standard Technical Specification Change Traveler TSTF-363, Rev. 0, "Revise Topical Report References in ITS 5.6.5, COLR," approved April 13, 2000.

(3) Industry/TSTF Standard Technical Specification Change Traveler TSTF-339, Rev. 2, "Relocate TS Parameters to COLR," approved May 13, 2000.

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Used to Determine the Core Operating Limits." The corresponding Index pages and Bases sections will also be revised to reflect these changes.

Attachment 1 provides a discussion of the proposed changes and the Safety Summary. Attachment 2 provides the Significant Hazards Consideration. Attachment 3 provides the marked-up version of the appropriate pages of the current Technical Specifications. Attachment 4 provides the retyped pages of the Technical Specifications. Attachment 5 provides the marked-up version of the associated Bases for information only.

Environmental Considerations

DNC has evaluated the proposed changes against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.22. DNC has determined that the proposed changes meet the criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and as such, has determined that no irreversible consequences exist in accordance with 10 CFR 50.92(b). This determination is based on the fact that the changes are being proposed as an amendment to a license issued pursuant to 10 CFR 50 that changes a requirement with respect to use of a facility component located within the restricted area, as defined by 10 CFR 20, or that changes a surveillance requirement, and that the amendment request meets the following specific criteria:

(i) The proposed changes involve no Significant Hazards Consideration.

As demonstrated in Attachment 2, the proposed changes do not involve a Significant Hazards Consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released off site.

The proposed amendment will address changes in the Technical Specifications to relocate some Technical Specification parameters to the COLR and to update the description of analytical methods used to determine core operating limits. However, the operability requirements for equipment associated with the Technical Specifications will remain the same. The proposed changes are consistent with the design basis of the plant. The proposed changes will not result in an increase in power level, will not increase the production of radioactive waste and byproducts, and will not alter the flowpath or method of disposal of radioactive waste or byproducts. Therefore, the proposed changes will not increase the type and amounts of effluents that may be released off-site.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed amendment will address changes in the Technical Specifications to relocate some Technical Specification parameters to the COLR and to update the description of analytical methods used to determine core operating limits. However, the operability requirements for equipment associated with the Technical Specifications will remain the same. The proposed changes will not result in changes in the configuration of the facility. There will be no change in the level of controls or methodology used for processing radioactive effluents or the handling of solid radioactive waste. There will be no change to the normal radiation levels within the plant. Therefore, there will be no increase in individual or cumulative occupational radiation exposure resulting from the proposed changes.

Conclusions

The proposed changes were evaluated and we have concluded that they are safe. The proposed changes do not involve an impact on public health and safety (see the Safety Summary provided in Attachment 1) and do not involve a Significant Hazards Consideration pursuant to the provisions of 10 CFR 50.92 (see the Significant Hazards Consideration provided in Attachment 2).

Site Operations Review Committee and Management Safety Review Committee

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

Schedule

We request issuance of this amendment prior to restart from refueling outage 9, which is currently scheduled in March of 2004, with the amendment to be implemented within 30 days of issuance.

State Notification

In accordance with 10 CFR 50.91(b), a copy of this License Amendment Request is being provided to the State of Connecticut.

There are no regulatory commitments contained within this letter.

If you should have any questions regarding this submittal, please contact Mr. Ravi Joshi at (860) 440-2080.

Very truly yours,

DOMINION NUCLEAR CONNECTICUT, INC.

William R. Matthews
Senior Vice President - Nuclear Operations

Sworn to and subscribed before me

this 7 day of April, 2003

Diane M. Phillipo
Notary Public

DIANE M. PHILLIPO
NOTARY PUBLIC
MY COMMISSION EXPIRES 12/31/2005

My Commission expires _____

Attachments (4)

cc: H. J. Miller, Region I Administrator
V. Nerses, NRC Senior Project Manager, Unit No. 3
Millstone Senior Resident Inspector

Director
Bureau of Air Management
Monitoring and Radiation Division
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Docket No. 50-423
B18817

Attachment 1

Millstone Power Station, Unit No. 3

License Basis Document Change Request (LBDCR) 3-15-02
Relocation of Some Technical Specification Parameters to The Core Operating Limits Report and Updating The Description of Analytical Methods Used to Determine Core Operating Limits
Discussion of Changes and Safety Summary

License Basis Document Change Request (LBDCR) 3-15-02
Relocation of Some Technical Specification Parameters to The Core Operating Limits Report and Updating The Description of Analytical Methods Used to Determine Core Operating Limits
Discussion of Changes and Safety Summary

Dominion Nuclear Connecticut, Inc. (DNC) hereby proposes to amend Operating License NPF-49 by incorporating the attached proposed changes into the Millstone Unit No. 3 Technical Specifications. The purpose of the proposed changes is to relocate some Technical Specification parameters to the Core Operating Limits Report (COLR) and to update the description of analytical methods used to determine core operating limits. The proposed changes are consistent with the changes included in Technical Specifications Task Force (TSTF) Travelers, TSTF-9, Rev. 1,[1] TSTF-363,[2] and TSTF-339, Rev. 2.[3] Future changes to the COLR parameters will be controlled in accordance with 10 CFR 50.59.

The proposed changes affect Technical Specifications 2.2, "Limiting Safety System Settings, Table 2.2-1," 3/4.1.1.1.1, "Reactivity Control Systems, Boration Control, SHUTDOWN MARGIN - Modes 1 and 2," 3/4.1.1.1.2, "Reactivity Control Systems, Boration Control, SHUTDOWN MARGIN - Modes 3, 4 and 5 Loops Filled," 3/4.1.1.2, "Reactivity Control Systems, SHUTDOWN MARGIN - Cold Shutdown - Loops Not Filled," 3/4.2.5, "Power Distribution Limits, DNB Parameters," 3/4.3.5, "Instrumentation, SHUTDOWN MARGIN Monitor," 3/4.9.1.1, "Refueling Operations, Boron Concentration," Section 6.9.1.6.a, "Core Operating Limits Report, Core Operating Limits," and Section 6.9.1.6.b, "Core Operating Limits Report, The Analytical Methods Used to Determine the Core Operating Limits." The corresponding Index pages and Bases sections will also be revised to reflect these changes.

Description and Justification of The Proposed Changes

A. Technical Specification 2.2, "Limiting Safety System Settings, Table 2.2-1"

The Overtemperature ΔT (OT ΔT) and Overpower ΔT (OP ΔT) Setpoint Parameters are deleted from Note 1 and Note 3 of Table 2.2-1 and replaced with "[*]." A note is added stating, "The values denoted with [*] are specified in the COLR."

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(1) Industry/TSTF Standard Technical Specification Change Traveler TSTF-9, Rev. 1, "Relocate Value for SHUTDOWN MARGIN to COLR," approved September 18, 1996.

(2) Industry/TSTF Standard Technical Specification Change Traveler TSTF-363, Rev. 0, "Revise Topical Report References in ITS 5.6.5, COLR," approved April 13, 2000.

(3) Industry/TSTF Standard Technical Specification Change Traveler TSTF-339, Rev. 2, "Relocate TS Parameters to COLR," approved May 13, 2000.

The basis for the proposed change to relocate the OT ΔT and OP ΔT Setpoint Parameters from the Technical Specifications to the COLR is provided in WCAP-14483-A[4] and TSTF-339, Rev. 2.

WCAP-14483-A provides justification to support the Technical Specification (TS) changes required to expand the COLR for Westinghouse plants to include cycle-specific reactor coolant system related TS. WCAP-14483-A is applicable to Westinghouse plants with Standard, "Custom" and NUREG-0452 format TS. Millstone Unit No. 3 is in this grouping. Specifically, the Nuclear Regulatory Commission (NRC) approval of WCAP-14483-A would allow the OT ΔT and OP ΔT trip setpoint parameter values to be relocated to the COLR. WCAP-14483-A was approved in an NRC Safety Evaluation Report (SER) dated January 19, 1999.[5] The concept of deleting OT ΔT and OP ΔT Setpoint Parameters and replacing them with "[*]" is consistent with both WCAP-14483-A and TSTF-339.

B. Technical Specification 3/4.1.1.1.1, "Reactivity Control Systems, Boration Control, SHUTDOWN MARGIN - Modes 1 and 2"

The Limiting Condition for Operation, Action and Surveillance Requirements are modified to identify that the SHUTDOWN MARGIN requirement is specified in the COLR. SHUTDOWN MARGIN requirements for this specification are relocated to the COLR.

As described in TSTF-9, Rev. 1, which was approved by the NRC on September 18, 1996, SHUTDOWN MARGIN is a cycle specific variable similar to Moderator Temperature Coefficient, Rod Insertion Limits, Axial Flux Difference, Heat Flux Hot Channel Factor, and Nuclear Enthalpy Rise Hot Channel Factor, which are currently contained in the COLR. In addition, there is an NRC-approved methodology for calculating SHUTDOWN MARGIN as provided in Section 6.9.1.6.b.1 of the TSs. Future changes of the SHUTDOWN MARGIN requirements after being relocated to the COLR will be controlled in accordance with 10 CFR 50.59. This change will provide core design and operational flexibility that can be used for improved fuel management and to solve cycle specific issues.

C. Technical Specification 3/4.1.1.1.2, "Reactivity Control Systems, Boration Control, SHUTDOWN MARGIN - Modes 3, 4 and 5 Loops Filled"

The Limiting Condition for Operation and Surveillance Requirement 4.1.1.1.2.1 are modified to identify that the SHUTDOWN MARGIN requirement is specified in the COLR. SHUTDOWN MARGIN requirements for this specification and Figures 3.1-1,

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(4) WCAP-14483-A, "Generic Methodology for Expanding Core Operating Limits Report," Huegel, D. S., et al, dated November 1995 (approved January 19, 1999).

(5) NRC Letter dated January 19, 1999, "Acceptance for Referencing of Licensing Topical Report WCAP-14483, Generic Methodology for Expanded Core Operating Limits Report (TAC No. M94338)."

3.1-2, 3.1-3 and 3.1-4 are relocated to the COLR. The justification for these changes is the same as discussed in Section B above.

D. Technical Specification 3/4.1.1.2, "Reactivity Control Systems, SHUTDOWN MARGIN - Cold Shutdown - Loops Not Filled"

The Limiting Condition for Operation is modified by removing reference to Figures 3.1-5 and 3.1-4 and replacing them with Inserts A and B. Figures 3.1-5 and 3.1-4 are relocated to the COLR. Action item b. is modified by removing reference to Figure 3.1-5 and replacing it with Insert C. Surveillance Requirement 4.1.1.2.1 is modified to identify that the SHUTDOWN MARGIN requirement is specified in the COLR. The justification for these changes is the same as discussed in Section B above.

E. Technical Specification 3/4.2.5, "Power Distribution Limits, DNB Parameters"

The parameters included in Table 3.2-1 are relocated to the COLR and the Limiting Condition for Operation is modified to identify that the DNB-related parameters are specified in the COLR. Future changes of these parameters after being relocated to the COLR will be controlled in accordance with 10 CFR 50.59. The reference to Table 3.2-1 in the Surveillance Requirement is modified to identify that the limits are specified in the COLR.

These DNB-related parameters are cycle specific variables similar to Moderator Temperature Coefficient, Rod Insertion Limits, Axial Flux Difference, Heat Flux Hot Channel Factor, and Nuclear Enthalpy Rise Hot Channel Factor, which are currently contained in the COLR. WCAP-14483-A, which is applicable to Millstone Unit No. 3 as explained in item A above, provides justification to support the TS changes required to expand the COLR, for Westinghouse plants, to include cycle-specific reactor coolant system related TS. Specifically, NRC approval of WCAP-14483-A would allow the departure-from-nucleate-boiling (DNB) parameters of reactor coolant system (RCS) average temperature (T-ave) and pressurizer pressure to be relocated to the COLR. WCAP-14483-A was approved in an NRC SER dated January 19, 1999. These changes are also consistent with TSTF-339.

F. Technical Specification 3/4.3.5, "Instrumentation, SHUTDOWN MARGIN Monitor"

In the Limiting Condition for Operation the references to Figures 3.1-1 and 3.1-2 are replaced with Insert D and the references to Figures 3.1-3, 3.1-4, and 3.1-5 are replaced with Insert E. Inserts D and E specify that SHUTDOWN MARGIN requirements are specified in the COLR. These figures are proposed to be relocated to the COLR as discussed in Sections C and D above.

G. Technical Specification 3/4.9.1.1, "Refueling Operations, Boron Concentration"

The limit of 2600 ppm for the refueling boron concentration stated in the Limiting Condition for Operation and the Action statement is relocated to the COLR. Future changes to the COLR will be controlled in accordance with 10 CFR 50.59. The limit of 2600 ppm is replaced with a reference to the limit specified in the COLR.

Generic Letter 88-16[6] provides guidance for removal of cycle-specific parameter limits from TS. The refueling boron concentration limit is considered to be a cycle-specific parameter. This limit is determined using NRC approved methodology as provided in Section 6.9.1.6.b.1 of the TSs.

H. Technical Specification Section 6.9.1.6.a, "Core Operating Limits Report, Core Operating Limits"

The proposed changes to Section 6.9.1.6.a include adding new items 1, 2, 9 and 11 to the list and renumbering the rest of the items accordingly. The new added items list the proposed relocated parameters to the COLR as described in previous sections above.

The proposed changes to TS Section 6.9.1.6.a are required to update and maintain a complete list of items established and maintained in the COLR. Specifically, the proposed changes to TS Section 6.9.1.6.a will reflect the proposed TS changes that will support relocation of the OT ΔT and OP ΔT Setpoint Parameters, SHUTDOWN MARGIN, DNB parameters, and boron concentration to the COLR.

I. Technical Specification Section 6.9.1.6.b, "Core Operating Limits Report, The Analytical Methods Used to Determine the Core Operating Limits"

The proposed change to this section is to remove the revision number and date from the title of the WCAPs and add the following three new references:

16. WCAP-8301, "LOCTA-IV Program: Loss-of-Coolant Transient Analysis."

17. WCAP-10054-P-A, Addendum 2, "Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model."

18. WCAP-8745-P-A, "Design Bases for the Thermal Overpower ΔT and Thermal Overtemperature ΔT Trip Functions," (Westinghouse Proprietary Class 2). (Methodology for Specification 2.2.1.)

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(6) Generic Letter 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications," dated October 4, 1988.

The basis for removal of the revision and date from the list of approved topical reports in Specification 6.9.1.6.b is provided in TSTF-363, Rev. 0, which was approved by the NRC on April 13, 2000. Removal of the revision number and date from the title of topical reports would allow licensees to use current topical reports to support limits in the COLR without having to submit an amendment to the facility operating license every time the topical report is revised. The COLR would provide specific information identifying the particular approved topical reports used to determine the core limits for a particular cycle.

WCAP-8301 and WCAP-10054-P-A, Addendum 2 are added as new Technical Specification Sections 6.9.1.6.b.16 and 6.9.1.6.b.17. These approved topical reports describe the most recent Small Break Loss of Coolant Accident (SBLOCA) analysis methodology. WCAP-8745-P-A is added as new Section 6.9.1.6.b.18. This NRC approved Topical Report describes the OP ΔT and OT ΔT trip function methodology, which is applicable to Millstone Unit No. 3.

J. Bases Changes

The proposed revisions to Bases sections to reflect the above TS changes are described below and are included in Attachment 5 for information only.

The Bases for Specifications 3/4.1.1.1 and 3/4.1.1.2_is modified to remove the MODES 1 and 2 SHUTDOWN MARGIN value of 1.3% $\Delta K/K$, and to identify that the SHUTDOWN MARGIN for MODES 1 and 2 is defined in Specification 3/4.1.1.1.1.

The Bases for Specification 3/4.2.5 is modified to delete the values for indicated T_{ave} and indicated pressurizer pressure and identify that these values are specified in the COLR.

The Bases for Specification 3/4.3.5 is modified to delete reference to Figures 3.1-1, 3.1-2, 3.1-3, 3.1-4, and 3.1-5 and to identify that the SHUTDOWN MARGIN requirements are specified in the COLR.

The Bases for Specification 3/4.4 is modified to delete reference to Figures 3.1-2, 3.1-4, and 3.1-5, and to identify that SHUTDOWN MARGIN limits are specified in the COLR. The boron concentration limit of 2,600 ppm is removed and replaced with a reference to the limit specified in the COLR.

The Bases for Specification 3/4.9.1.1 is modified to remove the boron concentration value of 2600 ppm and to identify that the boron concentration limit is specified in the COLR.

These proposed changes are required since the cycle specific parameters provided in the corresponding TSs are being deleted from the TSs and relocated to the COLR.

Safety Summary

The proposed changes to the Technical Specifications will support the relocation of cycle specific parameters to the COLR, update the list of core operating limits in Section 6.9.1.6.a that are established and documented in the COLR, and update the Section 6.9.1.6.b list of NRC approved analytical methods used to determine the core operating limits.

The relocation of cycle specific parameters to the COLR is in accordance with NRC guidance. The proposed changes will not modify the value of any parameter. Therefore, these proposed changes will have no adverse effect on plant safety.

Updating Section 6.9.1.6.a is required to reflect the proposed changes to the Technical Specifications and Bases. This is a non-technical change. Therefore, this proposed change would have no adverse effect on plant safety. In addition, future changes to the parameters that are being relocated to the COLR will be controlled under the provisions of 10 CFR 50.59.

Deleting the revision number and the date from the NRC approved topical reports contained in Section 6.9.1.6.b has no impact on the actual analytical methods used to determine the core operating limits, nor does it have impact on the calculations performed for current or future reloads. This is a non-technical change. Therefore, this proposed change would have no adverse effect on plant safety.

The new documents added as Sections 6.9.1.6.b.16 and 6.9.1.6.b.17 describe the most recent SBLOCA methodology and are in accordance with the NRC's Safety Evaluation Report (SER). Therefore, these proposed changes would have no adverse effect on plant safety.

The new document added as Section 6.9.1.6.b.18 describes the OP ΔT and OT ΔT trip function methodology and is in accordance with the NRC's SER. Therefore, this proposed change would have no adverse effect on plant safety.

The proposed changes to the Technical Specifications will not adversely affect the availability or operation of the equipment used to mitigate the design basis accidents. There will be no adverse effect on plant operation. The plant response to the design basis accidents will not change. Therefore, there will be no adverse impact on public health and safety. Thus, the proposed changes to relocate some Technical Specification parameters to the COLR and to update the description of analytical methods used to determine core operating limits are safe.

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Attachment 2

Millstone Power Station, Unit No. 3

License Basis Document Change Request (LBDCR) 3-15-02
Relocation of Some Technical Specification Parameters to The Core Operating Limits Report and Updating The Description of Analytical Methods Used to Determine Core Operating Limits
Significant Hazards Consideration

License Basis Document Change Request (LBDCR) 3-15-02
Relocation of Some Technical Specification Parameters to The Core Operating Limits Report and Updating The Description of Analytical Methods Used to Determine Core Operating Limits
Significant Hazards Consideration

Description of License Amendment Request

Dominion Nuclear Connecticut, Inc. (DNC) hereby proposes to revise the Millstone Unit No. 3 Technical Specifications as described in this License Amendment Request. The following changes are proposed:

- In Table 2.2-1 of Technical Specification 2.2, the Overtemperature ΔT (OT ΔT) and Overpower ΔT (OP ΔT) Setpoint Parameters are deleted and replaced with "[*]." A note is added stating, "The values denoted with [*] are specified in the COLR."

- In Technical Specifications 3/4.1.1.1.1, the Limiting Condition for Operation, Action and Surveillance Requirements are modified to identify that the SHUTDOWN MARGIN requirement is specified in the COLR. SHUTDOWN MARGIN requirements for this specification are relocated to the COLR.

- In Technical Specification 3/4.1.1.1.2, the Limiting Condition for Operation is modified to identify that the SHUTDOWN MARGIN requirement is specified in the COLR. SHUTDOWN MARGIN requirements for this specification and Figures 3.1-1, 3.1-2, 3.1-3 and 3.1-4 are relocated to the COLR.

- In Technical Specification 3/4.1.1.2, the Limiting Condition for Operation is modified to identify that the SHUTDOWN MARGIN requirement is specified in the COLR. Figure 3.1-5 is relocated to the COLR.

- In Technical Specification 3/4.2.5, Table 3.2-1 is relocated to the COLR and the Limiting Condition for Operation is modified to identify that the DNB-related parameters are specified in the COLR.

- In Technical Specification 3/4.3.5, the reference in the Limiting Condition for Operation to Figures 3.1-1, 3.1-2, 3.1-3, 3.1-4 and 3.1-5 is deleted and replaced with a reference to the requirements specified in the COLR.

- In Technical Specification 3/4.9.1.1, the limit of 2600 ppm for the refueling boron concentration stated in the Limiting Condition for Operation and associated Action statement is relocated to the COLR.

- The proposed changes to Section 6.9.1.6.a include adding new items 1, 2, 9 and 11 to the list and renumbering the rest of the items accordingly. The newly added items

list the additional parameters to be relocated to the COLR as proposed in this License Amendment Request.

- The proposed change to Section 6.9.1.6.b is to remove the revision number and date from the title of the WCAPs and add three new references.

Basis for No Significant Hazards Consideration

In accordance with 10 CFR 50.92, DNC has reviewed the proposed changes and has concluded that they do not involve a Significant Hazards Consideration (SHC). The basis for this conclusion is that the three criteria of 10 CFR 50.92(c) are not compromised. The proposed changes do not involve a SHC because the changes do not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   The relocation of cycle-specific core operating limits from the Technical Specifications to the COLR has no influence or impact on the probability or consequences of a Design Basis Accident. Adherence to the COLR and methodologies acceptable for establishing COLR parameters continues to be controlled by Technical Specifications. The proposed amendment still requires exactly the same actions to be taken when or if limits are exceeded. Each accident analysis addressed in the Final Safety Analysis Report (FSAR) will be examined with respect to changes in cycle-dependent parameters, which are obtained from application of the Nuclear Regulatory Commission (NRC) approved reload design methodologies, to ensure that the transient evaluation of new core designs are bounded by previously accepted analyses. This examination, which will be performed in accordance with the requirements of 10 CFR 50.59, ensures that future core designs will not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed changes to add new document references to Technical Specification Sections 6.9.1.6.b.16 and 6.9.1.6.b.17 are required to identify the most recent methodology to be used in the Millstone Unit No. 3 Small Break Loss of Coolant Accident (SBLOCA) analysis. Section 6.9.1.6.b.18 is added to describe NRC approved Overpower ΔT and Overtemperature ΔT trip function methodology. The use of these methodologies demonstrates that the acceptance criteria for SBLOCA events and Overpower ΔT and Overtemperature ΔT trip functions are met. This change has no impact on plant equipment operation. Since these changes only affect the method of analysis and do not revise any setpoints assumed in the accident analysis, they cannot affect the likelihood or consequences of accidents. Therefore, these changes will not increase the probability or consequences of an accident previously evaluated.

Deleting the revision number and the date from the documents contained in Technical Specification Section 6.9.1.6.b.1 and in Technical Specification Sections 6.9.1.6.b.4 through 6.9.1.6.b.10 has no impact on the actual analytical methods used to determine the core operating limits, nor does it have impact on the calculations performed for current or future reloads. This is a non-technical change. This change has no impact on plant equipment operation nor does it affect the likelihood or consequences of accidents. Therefore, this change will not increase the probability or consequences of an accident previously evaluated.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

   As stated earlier, the relocation of the cycle-specific variables to the COLR, adding new document references and deleting the revision number and the date in Technical Specification Section 6.9.1.6.b have no influence or impact, nor does it contribute in any way to the probability or consequences of an accident. No safety-related equipment, safety function, or plant operations will be altered as a result of this proposed change. The cycle-specific variables are calculated using the NRC-approved methods and submitted to the NRC to allow the Staff to continue to trend the values of these limits. The Technical Specifications will continue to require operation within the required core operating limits and appropriate actions will be taken when or if limits are exceeded. Therefore the proposed amendment does not in any way create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Involve a significant reduction in a margin of safety.

   The proposed changes have no impact on plant equipment operation. The proposed changes do not revise any setpoints assumed in the analyses and do not affect the acceptance criteria for SBLOCA analyses. Therefore, the proposed changes will not result in a reduction in a margin of safety.

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Attachment 3

Millstone Power Station, Unit No. 3

License Basis Document Change Request (LBDCR) 3-15-02
Relocation of Some Technical Specification Parameters to The Core Operating Limits Report and Updating The Description of Analytical Methods Used to Determine Core Operating Limits
Marked Up Pages

List of Affected Pages

Technical Specification Section Number	Title of Section	Affected Page with Amendment Number
Index Page iv		Amend. No. 197
Index Page v		Amend. No. 207
2.2	Limiting Safety System Settings, Table 2.2-1	2-9, Amend. No. 152, 2-10, Amend No. 159, 2-11, Amend. No. 152
3/4.1.1.1.1	Reactivity Control Systems, Boration Control, SHUTDOWN MARGIN - MODES 1 and 2	3/4 1-1, Amend. No. 113
3/4.1.1.1.2	Reactivity Control Systems, Boration Control, SHUTDOWN MARGIN - MODES 3, 4 and 5 Loops Filled	3/4 1-3, Amend. No. 164, 3/4 1-4, Amend. No. 164, 3/4 1-5, Amend. No. 164, 3/4 1-6, Amend. No. 164, 3/4 1-7, Amend. No. 164
3/4.1.1.2	Reactivity Control Systems, SHUTDOWN MARGIN - Cold Shutdown - Loops Not Filled	3/4 1-8, Amend. No. 164, 3/4 1-9, Amend. No. 164
3/4.2.5	Power Distribution Limits, DNB Parameters	3/4 2-27, Amend. No. 60, 3/4 2-28, Amend. No. 60
3/4.3.5	Instrumentation, SHUTDOWN MARGIN Monitor	3/4 3-82, Amend. No. 164
3/4.9.1.1	Refueling Operations, Boron Concentration	3/4 9-1, Amend. No. 203
Sections 6.9.1.6.a, .b	Core Operating Limits Report	6-19a, Amend. No. 188, 6-20, Amend. No. 170, 6-20a, Amend. No. 170

2.2 LIMITING SAFETY SYSTEM SETTINGS

REACTOR TRIP SYSTEM INSTRUMENTATION SETPOINTS

2.2.1 The Reactor Trip System Instrumentation and Interlock Setpoints shall be set consistent with the Nominal Trip Setpoint values shown in Table 2.2-1.

APPLICABILITY: As shown for each channel in Table 3.3-1.

ACTION:

a. With a Reactor Trip System Instrumentation Channel or Interlock Channel Nominal Trip Setpoint inconsistent with the value shown in the Nominal Trip Setpoint column of Table 2.2-1, adjust the Setpoint consistent with the Nominal Trip Setpoint value.

b. With a Reactor Trip System Instrumentation Channel or Interlock Channel found to be inoperable, declare the channel inoperable and apply the applicable ACTION statement requirement of Specification 3.3.1 until the channel is restored to OPERABLE status.

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUE
1. Manual Reactor Trip	N.A.	N.A.
2. Power Range, Neutron Flux		
a. High Setpoint		
1) Four Loops Operating	109% of RTP**	≤ 109.6% of RTP**
2) Three Loops Operating	80% of RTP**	≤ 80.6% of RTP**
b. Low Setpoint	25% of RTP**	≤ 25.6% of RTP**
3. Power Range, Neutron Flux, High Positive Rate	5% of RTP** with a time constant ≥ 2 seconds	≤ 5.6% of RTP** with a time constant ≥ 2 seconds
4. Deleted		
5. Intermediate Range, Neutron Flux	25% of RTP**	≤ 27.4% of RTP**
6. Source Range, Neutron Flux	1 X 10^{+5}cps	≤ 1.06 x 10^{+5} cps
7. Overtemperature ΔT		
a. Four Loops Operating		
1) Channels I, II	See Note 1	See Note 2
2) Channels III, IV	See Note 1	See Note 2

**RTP = RATED THERMAL POWER

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TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUE
b. Three Loops Operating		
1) Channels I, II	See Note 1	See Note 2
2) Channels III, IV	See Note 1	See Note 2
8. Overpower ΔT (Four Loops Operating)	See Note 3	See Note 4
9. Pressurizer Pressure-Low	1900 psia	≥ 1897.6 psia
10. Pressurizer Pressure-High	2385 psia	≤ 2387.4 psia
11. Pressurizer Water Level-High	89% of instrument span	≤ 89.3% of instrument span
12. Reactor Coolant Flow-Low	90% of loop design flow*	≥ 89.8% of loop design flow*
13. Steam Generator Water Level Low-Low	18.1% of narrow range instrument span	≥ 17.8% of narrow range instrument span
14. General Warning Alarm	N.A.	N.A.
15. Low Shaft Speed - Reactor Coolant Pumps	92.4% of rated speed	≥ 92.2% of rated speed

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*Minimum Measured Flow Per Loop = 1/4 of the RCS Flow Rate Limit as listed in Section 3.2.3.1.a (Four Loops Operating); 1/3 of the RCS Flow Rate Limit as listed in Section 3.2.3.2.a (Three Loops Operating)

TABLE 2 ?-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUE
16. Turbine Trip		
a. Low Fluid Oil Pressure	500 psig	≥ 450 psig
b. Turbine Stop Valve Closure	1% open	≥ 1% open
17. Safety Injection Input from ESF	N.A.	N.A.
18. Reactor Trip System Interlocks		
a. Intermediate Range Neutron Flux, P-6	1×10^{-10} amp	$\geq 9.0 \times 10^{-11}$ amp
b. Low Power Reactor Trips Block, P-7		
1) P-10 input (Note 5)	11% of RTP**	≤ 11.6% of RTP**
2) P-13 input	10% RTP** Turbine Impulse Pressure Equivalent	≤ 10.6% RTP** Turbine Impulse Pressure Equivalent
c. Power Range Neutron Flux, P-8		
1) Four Loops Operating	37.5% of RTP**	≤ 38.1% of RTP**
2) Three Loops Operating	37.5% of RTP**	≤ 38.1% of RTP**

**RTP = RATED THERMAL POWER

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TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	NOMINAL TRIP SETPOINT	ALLOWABLE VALUE
d. Power Range Neutron Flux, P-9	51% of RTP**	≤ 51.6% of RTP**
e. Power Range Neutron Flux, P-10 (Note 6)	9% of RTP**	≥ 8.4% of RTP**
19. Reactor Trip Breakers	N.A.	N.A.
20. Automatic Trip and Interlock Logic	N.A.	N.A.
21. Three Loop Operation Bypass Circuitry	N.A.	N.A

**RTP = RATED THERMAL POWER

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TABLE NOTATIONS

NOTE 1: OVERTEMPERATURE ΔT

$$\left(\frac{\pm\Delta T}{\Delta T_0}\right)\frac{(1+\tau_1 s)}{(1+\tau_2 s)} \le K_1 - K_2\,\frac{(1+\tau_4 s)}{(1+\tau_5 s)}\,(T - T') + K_3\,(P - P') - f_1(\Delta I)$$

Where: ΔT is measured Reactor Coolant System ΔT, °F;

ΔT_0 is loop specific indicated ΔT at RATED THERMAL POWER, °F;

$\frac{(1+\tau_1 s)}{(1+\tau_2 s)}$ is the function generated by the lead-lag compensator on measured ΔT;

τ_1 and τ_2 are the time constants utilized in the lead-lag compensator for ΔT, $\tau_1 \ge$ ~~0~~ [*] sec, $\tau_2 \le$ ~~3~~ [*] sec;

$K_1 \le$ ~~1.20~~ [*] (Four Loops Operating); $\le$ ~~1.20~~ [*] (Three Loops Operating);

$K_2 \ge$ ~~0.02456~~ [*] /°F;

$\frac{(1+\tau_4 s)}{(1+\tau_5 s)}$ is the function generated by the lead-lag compensator for T_{avg};

τ_4 and τ_5 are the time constants utilized in the lead-lag compensator for T_{avg}, $\tau_4 \ge$ ~~20~~ [*] sec, $\tau_5 \le$ ~~4~~ [*] sec;

T is measured Reactor Coolant System average temperature, °F;

T' is loop specific indicated Tavg at RATED THERMAL POWER, $\le$ ~~587.1~~ [*] °F;

$K_3 \ge$ ~~0.001311~~ [*] /psi

P is measured pressurizer pressure, psia;

P' is nominal pressurizer pressure, $\ge$ ~~2250~~ [*] psia;

s is the Laplace transform operator, sec^{-1};

(The values denoted with [*] are specified in the COLR.)

10/22/97

TABLE 2.2-1 (Continued)

TABLE NOTATIONS (Continued)

TABLE 2.2-1 (Continued)

TABLE NOTATIONS (Continued)

NOTE 1: (Continued)

and $f_1(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power range neutron ion chambers; with nominal gains to be selected based on measured instrument response during plant startup tests calibrations such that:

(1) For $q_t - q_b$ between [-26]% and [+8]%, $f_1(\Delta I) \geq$ [0], where q_t and q_b are percent RATED THERMAL POWER in the upper and lower halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RATED THERMAL POWER;

(2) For each percent that the magnitude of $q_t - q_b$ exceeds [-26]%, the ΔT Trip Setpoint shall be automatically reduced by $\geq$ [3.55]% of its value at RATED THERMAL POWER.

(3) For each percent that the magnitude of $q_t - q_b$ exceeds [+13]%, the ΔT Trip Setpoint shall be automatically reduced by $\geq$ [1.98]% of its value at RATED THERMAL POWER.

NOTE 2: The maximum channel as left trip setpoint shall not exceed its computed trip setpoint by more than the following:
(1) 0.4% ΔT span for the ΔT channel
(2) 0.4% ΔT span for the T_{avg} channel
(3) 0.4% ΔT span for the pressurizer pressure channel
(4) 0.8% ΔT span for the $f(\Delta I)$ channel

(The values denoted with [*] are specified in the COLR.)

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TABLE NOTATIONS (Continued)

NOTE 3: OVERPOWER ΔT

$$\left(\frac{\Delta T}{\Delta T_0}\right)\frac{(1+\tau_1 s)}{(1+\tau_2 s)} \leq K_4 - K_5\frac{(\tau_7 s)}{(1+\tau_7 s)}T - K_6(T-T'')$$

Where: ΔT is measured Reactor Coolant System ΔT, °F;

ΔT_0 is loop specific indicated ΔT at RATED THERMAL POWER, °F;

$\frac{(1+\tau_1 s)}{(1+\tau_2 s)}$ is the function generated by the lead-lag compensator on measured ΔT;

τ_1 and τ_2 are the time constants utilized in the lead-lag compensator for ΔT, $\tau_1 \geq$ [8] sec, $\tau_2 \leq$ [3] sec;

$K_4 \leq$ [1.09];

$K_6 \geq$ [0.02] °F for increasing Tavg and $K_6 \leq$ [0] for decreasing T_{avg};

$\frac{(\tau_7 s)}{(1+\tau_7 s)}$ is the function generated by the rate-lag compensator for Tavg;

τ_7 is the time constant utilized in the rate-lag compensator for Tavg, $\tau_7 \geq$ [10] sec;

T is measured average Reactor Coolant System temperature, °F;

T" is loop specific indicated Tavg at RATED THERMAL POWER, $\leq$ [587.1] °F;

$K_6 \geq$ [0.00180] °F when T > T" and $K_6 \leq$ [0] °F when T $\leq$ T";

s is the Laplace transform operator, sec^{-1}.

[*] (The values denoted with [*] are specified in the COLR.)

10/22/98

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.1.1 BORATION CONTROL

SHUTDOWN MARGIN - MODES 1 AND 2

LIMITING CONDITION FOR OPERATION

3.1.1.1.1 The SHUTDOWN MARGIN shall be ~~greater than or equal to 1.3% Δk/k for both four loop and three loop operation~~ within the limits specified in the Core Operating Limits Report (COLR).

APPLICABILITY: MODES 1 and 2*.

ACTION: not within the limits specified in the COLR

With the SHUTDOWN MARGIN ~~less than 1.3% Δk/k~~, immediately 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 equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.1.1 The SHUTDOWN MARGIN shall be determined to be ~~greater than or equal to 1.3% Δk/k~~ within the limits specified in the COLR:

a. Within 1 hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the above required SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s);

b. When in MODE 1 or MODE 2 with K_{eff} greater than or equal to 1 at least once per 12 hours by verifying that control bank withdrawal is within the limits of Specification 3.1.3.6;

c. When in MODE 2 with K_{eff} less than 1, within 4 hours prior to achieving reactor criticality by verifying that the predicted critical control rod position is within the limits of Specification 3.1.3.6;

d. Prior to initial operation above 5% RATED THERMAL POWER after each fuel loading, by consideration of the factors of Specification 4.1.1.1.2, with the control banks at the maximum insertion limit of Specification 3.1.3.6; and

*See Special Test Exceptions Specification 3.10.1.

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March 11, 1991

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4.1.1.1.2 The overall core reactivity balance shall be compared to predicted values to demonstrate agreement within ± 1% Δk/k at least once per 31 Effective Full Power Days (EFPD). This comparison shall consider at least the following factors:

1) Reactor Coolant System boron concentration,

2) Control rod position,

3) Reactor Coolant System average temperature,

4) Fuel burnup based on gross thermal energy generation,

5) Xenon concentration, and

6) Samarium concentration.

The predicted reactivity values shall be adjusted (normalized) to correspond to the actual core conditions prior to exceeding a fuel burnup of 60 EFPD after each fuel loading.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.1 BORATION CONTROL

~~OCT 21 1998~~

SHUTDOWN MARGIN - MODES 3, 4 AND 5 LOOPS FILLED

LIMITING CONDITION FOR OPERATION

3.1.1.1.2 The SHUTDOWN MARGIN shall be ~~greater than or equal to the limits shown in Figures 3.1-1, 3.1-3 and 3.1-4 for four loop operation and in Figure 3.1-2 for three loop operation~~.*

within the limits Specified in the Core Operating Limits Report (COLR).

APPLICABILITY: MODES 3, 4 and 5

ACTION:

With the SHUTDOWN MARGIN less than the required value, immediately 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 equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

within the limits specified in the COLR

4.1.1.1.2.1 The SHUTDOWN MARGIN shall be determined to be ~~greater than or equal to the required value~~:

a. Within 1 hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the above required SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s); and

b. At least once per 24 hours by consideration of the following factors:

1) Reactor Coolant System boron concentration,

2) Control rod position,

3) Reactor Coolant System average temperature,

4) Fuel burnup based on gross thermal energy generation,

5) Xenon concentration, and

6) Samarium concentration.

4.1.1.1.2.2 Valve 3CHS-V305 shall be verified closed and locked at least once per 31 days.

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*Additional SHUTDOWN MARGIN requirements, if required, are given in Specification 3.3.5.

OCT 21 1998

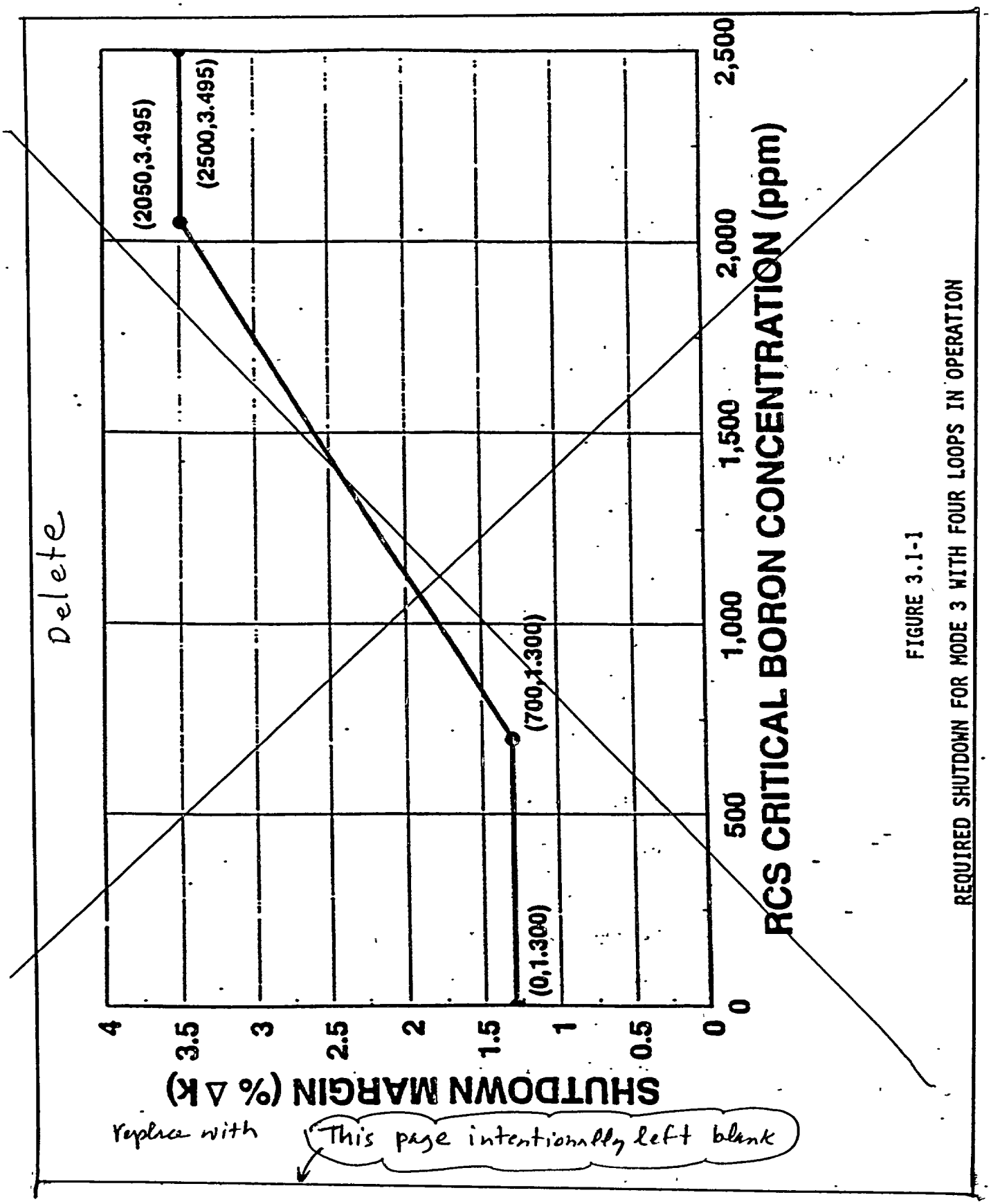

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FIGURE 3.1-1

REQUIRED SHUTDOWN FOR MODE 3 WITH FOUR LOOPS IN OPERATION

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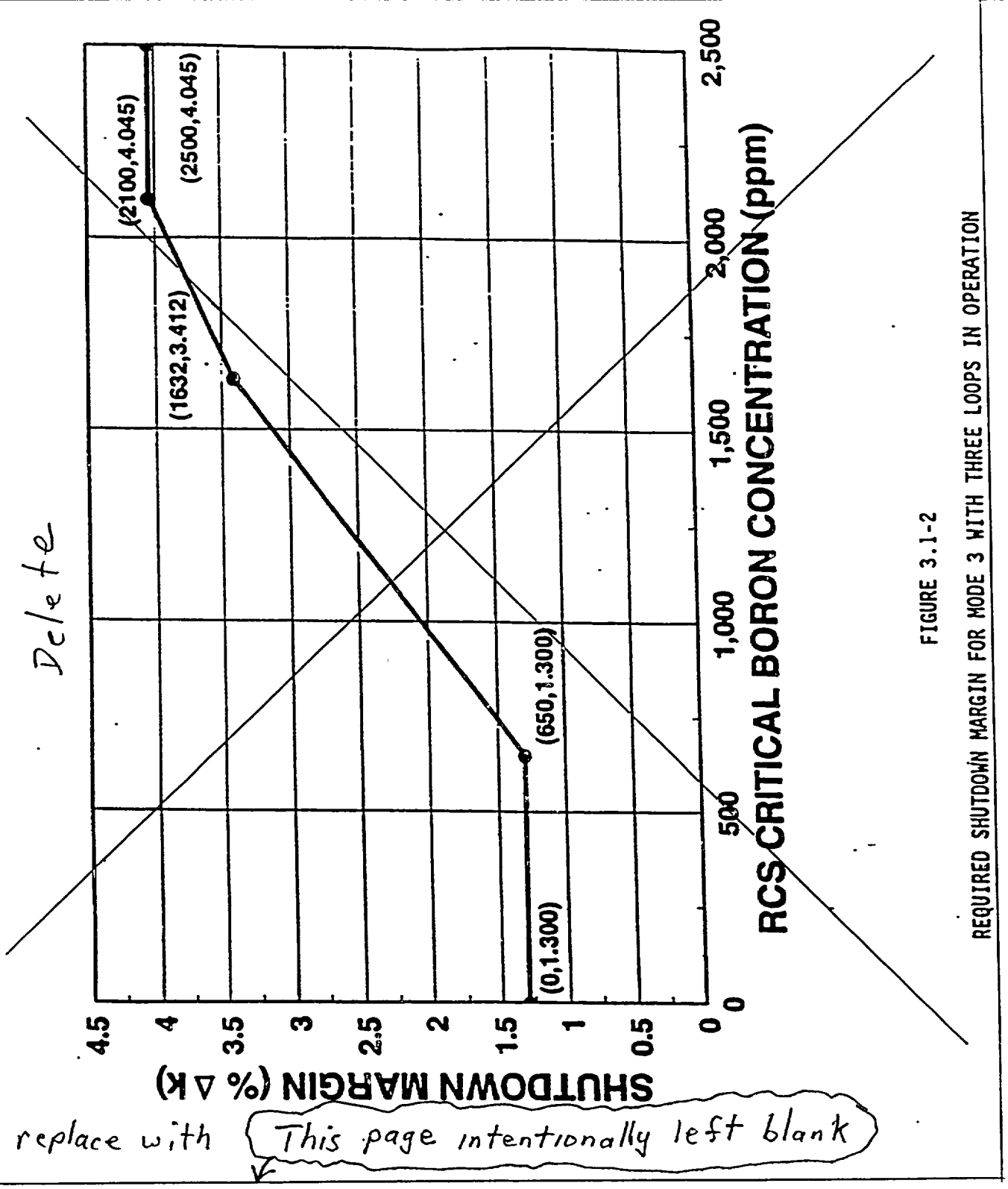

FIGURE 3.1-2

REQUIRED SHUTDOWN MARGIN FOR MODE 3 WITH THREE LOOPS IN OPERATION

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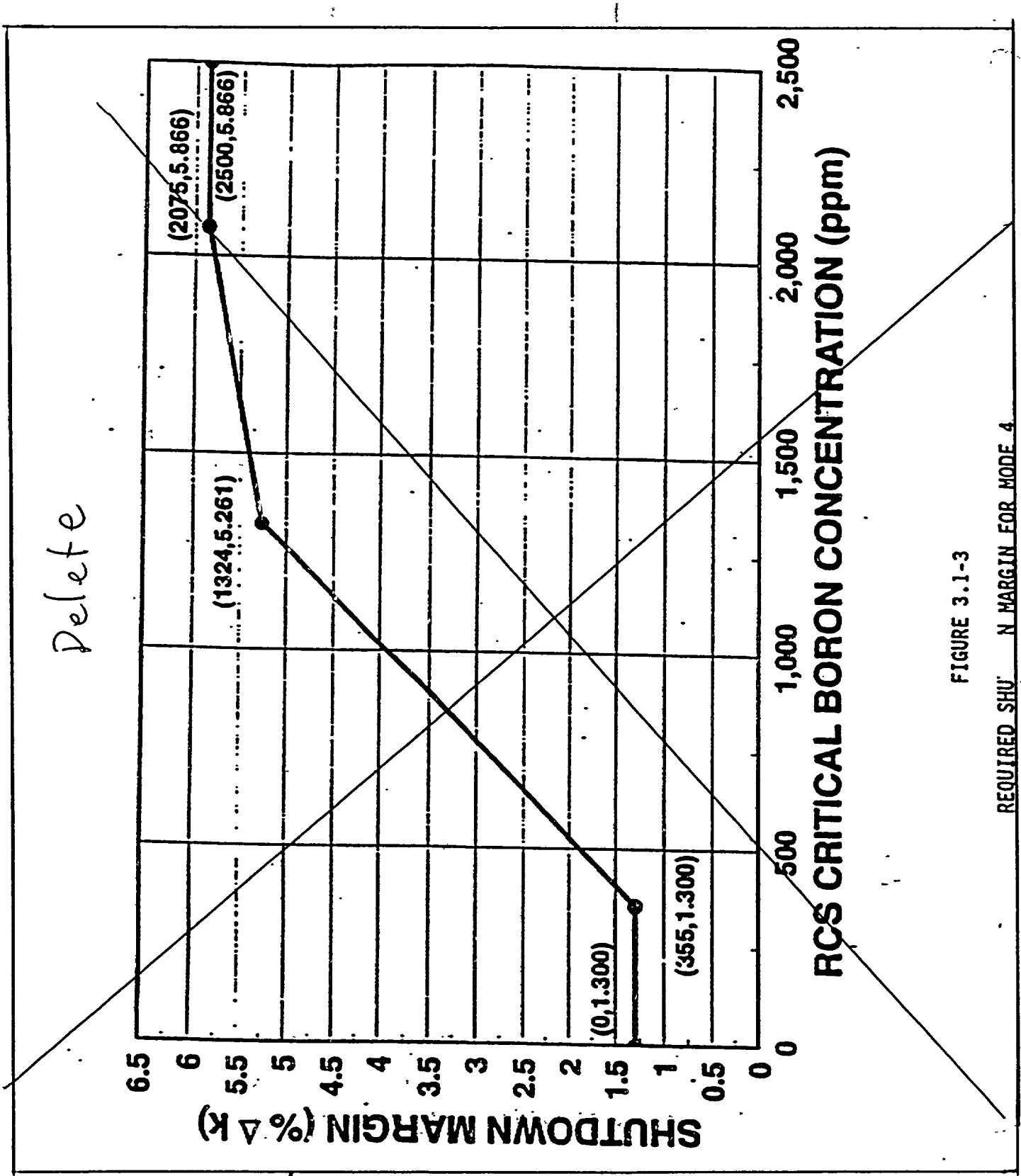

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FIGURE 3.1-3

REQUIRED SHU N MARGIN FOR MODE 4

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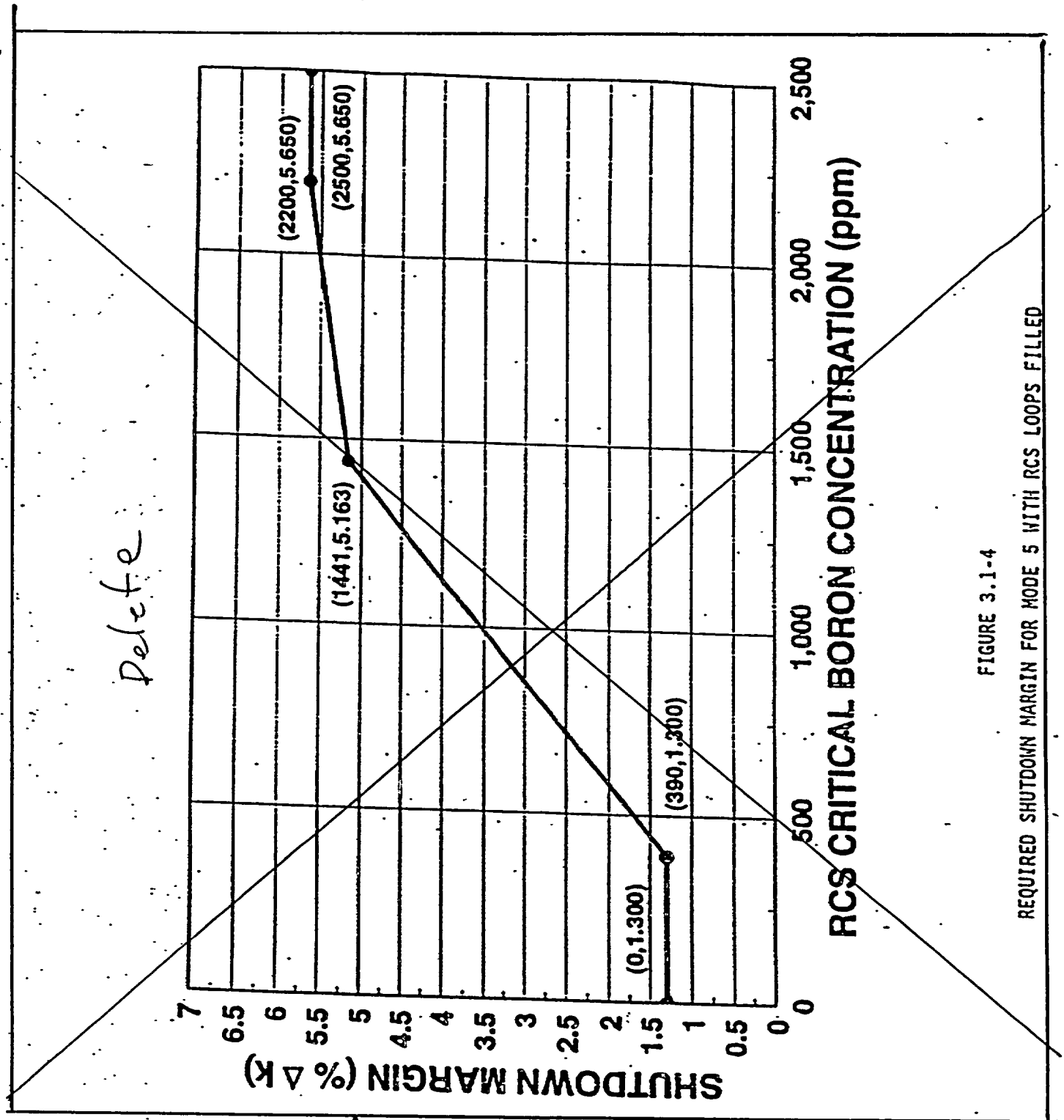

FIGURE 3.1-4

REQUIRED SHUTDOWN MARGIN FOR MODE 5 WITH RCS LOOPS FILLED

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~~OCT 21 1998~~

REACTIVITY CONTROL SYSTEMS

SHUTDOWN MARGIN - COLD SHUTDOWN - LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

3.1.1.2 The SHUTDOWN MARGIN shall be greater than or equal to

a) the limits ~~shown in Figure 3.1-5*~~ or — INSERT A

b) the limits ~~shown in Figure 3.1-4*~~, with the chemical and volume control system (CVCS) aligned to preclude reactor coolant system boron concentration reduction. — INSERT B

APPLICABILITY: MODE 5 LOOPS NOT FILLED

ACTION:

a. With the SHUTDOWN MARGIN less than the above, immediately 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 equivalent until the required SHUTDOWN MARGIN is restored.

b. With the CVCS dilution flow paths not closed and secured in position in accordance with Specification 3.1.1.2(b), immediately close and secure the paths or meet the limits ~~shown in Figure 3.1-5.~~ INSERT C

SURVEILLANCE REQUIREMENTS

4.1.1.2.1 The SHUTDOWN MARGIN shall be determined to be ~~greater than or equal to the above~~ within the limits specified in the COLR:

a. Within 1 hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s); and

b. At least once per 24 hours by consideration of the following factors:

1) Reactor Coolant System boron concentration,

2) Control rod position,

3) Reactor Coolant System average temperature,

4) Fuel burnup based on gross thermal energy generation,

---

*Additional SHUTDOWN MARGIN requirements, if required, are given in Specification 3.3.5.

INSERT A - Page 3/4 1-8

specified in the CORE OPERATING LIMITS REPORT (COLR) for Mode 5 with RCS loops not filled*

INSERT B - Page 3/4 1-8

specified in the COLR for Mode 5 with RCS loops filled*

INSERT C - Page 3/4 1-8

specified in the COLR for Mode 5 with RCS loops not filled.

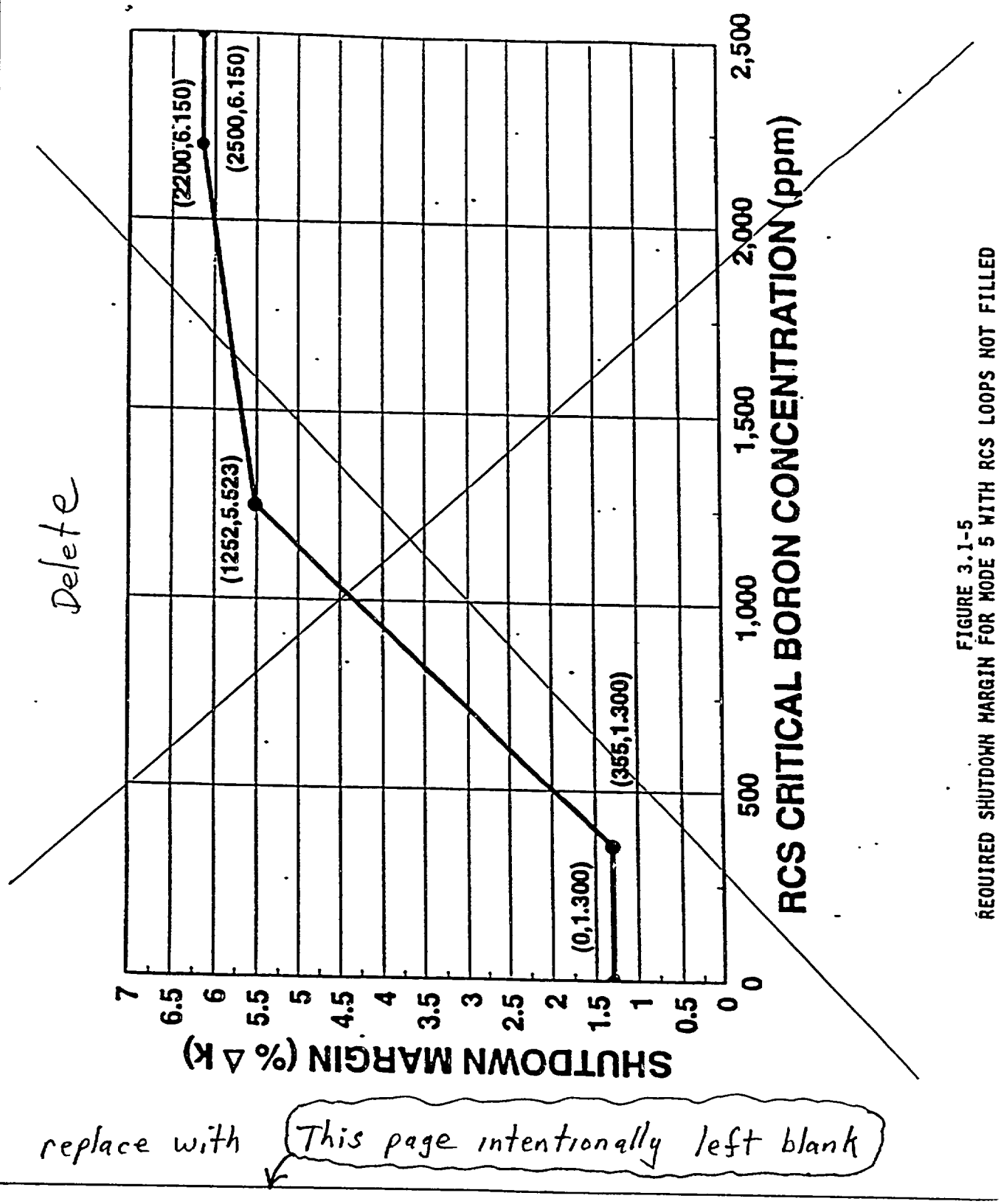

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FIGURE 3.1-5
REQUIRED SHUTDOWN MARGIN FOR MODE 5 WITH RCS LOOPS NOT FILLED

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POWER DISTRIBUTION LIMITS

3/4.2.5 DNB PARAMETERS

LIMITING CONDITION FOR OPERATION

3.2.5 The following DNB-related parameters shall be maintained within the limits ~~shown on Table 3.2-1~~ specified in the CORE OPERATING LIMITS REPORT (COLR):

a. Reactor Coolant System T_{avg}, and

b. Pressurizer Pressure.

APPLICABILITY: MODE 1.

ACTION:

With any of the above parameters exceeding its limit, restore the parameter to within its limit within 2 hours or reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.5 Each of the above DNB-related parameters ~~of Table 3.2-1~~ shall be verified to be within ~~its~~ the limits specified in the COLR at least once per 12 hours.

March ~~11, 1991~~ e

TABLE 3.2-1

DNB PARAMETERS

Delete

PARAMETER	LIMITS	
	Four Loops in Operation	Three Loops in Operation & Loop Stop Valves Closed
Indicated Reactor Coolant System T_{avg}	≤ 591.1°F	≤ 583.3°F
Indicated Pressurizer Pressure	≥ 2218 psia*	≥ 2218 psia*

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*Limit not applicable during either a THERMAL POWER ramp in excess of 5% of RATED THERMAL POWER per minute or a THERMAL POWER step in excess of 10% of RATED THERMAL POWER.

3/4.3.5 SHUTDOWN MARGIN MONITOR

~~October 21, 1998~~ e

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:

INSERT D

1. A minimum of 150 ppm above the SHUTDOWN MARGIN requirements of Figure 3.1-1 (Mode 3 - 4 loops in operation) and Figure 3.1-2 (Mode 3 - 3 loops in operation), or

2. A minimum of 350 ppm above the SHUTDOWN MARGIN requirements of Figure 3.1-3 (Mode 4), Figure 3.1-4 (Mode 5 - RCS loops filled) and Figure 3.1-5 (Mode 5 - RCS loops drained).

INSERT E

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 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.

---

* 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.

INSERT D - Page 3/4 3-82

specified in the COLR for Mode 3

INSERT E - Page 3/4 3-82

specified in the COLR for Mode 4, Mode 5 with RCS loops filled, and Mode 5 with RCS loops not filled.

3/4.9 REFUELING OPERATIONS

3/4.9.1 BOREON CONCENTRATION

~~February 20, 2002~~

LIMITING CONDITION FOR OPERATION

3.9.1.1 The boron concentration of all filled portions of the Reactor Coolant System and the refueling cavity 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 the limit specified in the CORE OPERATING LIMITS REPORT (COLR).
b. A boron concentration of greater than or equal to 2600 ppm.

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 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 2600 ppm, whichever is the more restrictive. the limit specified in the COLR
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.

*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.

MONTHLY OPERATING REPORTS

6.9.1.5 Routine reports of operating statistics and shutdown experience shall be submitted on a monthly basis to the U.S. Nuclear Regulatory Commission, Document Control Desk, Washington, D.C. 20555, one copy to the Regional Administrator Region I, and one copy to the NRC Resident Inspector, no later than the 15th of each month following the calendar month covered by the report.

CORE OPERATING LIMITS REPORT

6.9.1.6.a Core operating limits shall be established and documented in the CORE OPERATING LIMITS REPORT before each reload cycle or any remaining part of a reload cycle for the following:

3. Moderator Temperature Coefficient BOL and EOL limits and 300 ppm surveillance limit for Specification 3/4.1.1.3,

1. Overtemperature ΔT and Overpower ΔT setpoint parameters for Specification 2.2.1,

2. Shutdown Margin for Specifications 3/4.1.1.1.1, 3/4.1.1.1.2, and 3/4.1.1.2.

CORE OPERATING LIMITS REPORT (Cont.)

4~~.~~. Shutdown Rod Insertion Limit for Specification 3/4.1.3.5,

5~~.~~. Control Rod Insertion Limits for Specification 3/4.1.3.6,

6~~.~~. Axial Flux Difference Limits, target band, and APL^{ND} for Specifications 3/4.2.1.1 and 3/4.2.1.2,

7~~.~~. Heat Flux Hot Channel Factor, K(z), W(z), APL^{ND}, and $W(z)_{BL}$ for Specifications 3/4.2.2.1 and 3/4.2.2.2.

8~~.~~. Nuclear Enthalpy Rise Hot Channel Factor, Power Factor Multiplier for Specification 3/4.2.3.

9. DNB Parameters for Specification 3/4.2.5.

10~~.~~. Shutdown Margin Monitor minimum count rate for Specification 3/4.3.5.

11. Boron Concentration for Specification 3/4.9.1.1.

6.9.1.6.b The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC in:

1. WCAP-9272-P-A, "WESTINGHOUSE RELOAD SAFETY EVALUATION METHODOLOGY," ~~July 1985~~ (W Proprietary). (Methodology for Specifications 3.1.1.3--Moderator Temperature Coefficient, 3.1.3.5--Shutdown Bank Insertion Limit, 3.1.3.6--Control Bank Insertion Limits, 3.2.1--Axial Flux Difference, 3.2.2--Heat Flux Hot Channel Factor, 3.2.3--Nuclear Enthalpy Rise Hot Channel Factor (), 3.1.1.1.1, 3.1.1.1.2, 3.1.1.2--Shutdown Margin, 3.9.1.1--Boron Concentration.)
2. T. M. Anderson to K. Kniel (Chief of Core Performance Branch, NRC), January 31, 1980--Attachment: Operation and Safety-Analysis Aspects of an Improved Load Follow Package.
3. NUREG-800, Standard Review Plan, U.S. Nuclear Regulatory Commission, Section 4.3, Nuclear Design, July 1981 Branch Technical Position CPB 4.3-1, Westinghouse Constant Axial Offset Control (CAOC), Revision 2, July 1981.
4. WCAP-10216-P-A-R1A, "RELAXATION OF CONSTANT AXIAL OFFSET CONTROL FQ SURVEILLANCE TECHNICAL SPECIFICATION," ~~Rev. 1, February 1994~~ (W Proprietary). (Methodology for Specifications 3.2.1--Axial Flux Difference [Relaxed Axial Offset Control] and 3.2.2--Heat Flux Hot Channel Factor [W(z) surveillance requirements for F_Q Methodology].)
5. WCAP-9561-P-A, ADD. 3, ~~Rev. 1,~~ "BART A-1: A COMPUTER CODE FOR THE BEST ESTIMATE ANALYSIS OF REFLOOD TRANSIENTS--SPECIAL REPORT: THIMBLE MODELING W ECCS EVALUATION MODEL," ~~July 1986~~ (W Proprietary). (Methodology for Specification 3.2.2--Heat Flux Hot Channel Factor.)
6. WCAP-10266-P-A, Addendum 1, ~~Rev. 2 P-A,~~ "THE 1981 VERSION OF THE WESTINGHOUSE ECCS EVALUATION MODEL USING THE BASH CODE," ~~March 1987~~ (W Proprietary). (Methodology for Specification 3.2.2--Heat Flux Hot Channel Factor.)

CORE OPERATING LIMITS REPORT (Cont.)

7. WCAP-11946, "Safety Evaluation Supporting a More Negative EOL Moderator Temperature Coefficient Technical Specification for the Millstone Nuclear Power Station Unit 3," ~~September 1988~~ (W Proprietary).

8. WCAP-10054-P-A, "WESTINGHOUSE SMALL BREAK ECCS EVALUATION MODEL.17 USING THE NOTRUMP CODE," ~~August 1985~~ (W Proprietary). (Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor.)

9. WCAP-10079-P-A, "NOTRUMP - A NODAL TRANSIENT SMALL BREAK AND GENERAL NETWORK CODE," ~~August 1985~~ (W Proprietary). (Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor.)

10. WCAP-12610, "VANTAGE+ Fuel Assembly Report," ~~June 1990~~ (W Proprietary). (Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor.)

11. Letter from V. L. Rooney (USNRC) to J. F. Opeka, "Safety Evaluation for Topical Report, NUSCO-152, Addendum 4, 'Physics Methodology for PWR Reload Design,' TAC No. M91815," July 18, 1995.

12. Letter from E. J. Mroczka to the USNRC, "Proposed Changes to Technical Specifications, Cycle 4 Reload Submittal - Boron Dilution Analysis," B13678, December 4, 1990.

13. Letter from D. H. Jaffe (USNRC) to E. J. Mroczka, "Issuance of Amendment (TAC No. 77924)," March 11, 1991.

14. Letter from M. H. Brothers to the USNRC, "Proposed Revision to Technical Specification, Shutdown Margin Requirements and Shutdown Margin Monitor Operability for Modes 3, 4, and 5 (PTSCR 3-16-97), B16447, May 9, 1997.

15. Letter from J. W. Anderson (USNRC) to M. L. Bowling (NNECO), "Issuance of Amendment - Millstone Nuclear Power Station, Unit No. 3 (TAC No. M98699)," October 21, 1998.

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16. WCAP-8301, "LOCTA-IV Program: Loss-of-Coolant Transient Analysis."

17. WCAP-10054-P-A, Addendum 2, "Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model."

18. WCAP-8745-P-A, "Design Bases for the Thermal Overpower ΔT and Thermal Overtemperature ΔT Trip Functions," (Westinghouse Proprietary Class 2). (Methodology for Specification 2.2.1.)

Docket No. 50-423
B18817

Attachment 4

Millstone Power Station, Unit No. 3

License Basis Document Change Request (LBDCR) 3-15-02
Relocation of Some Technical Specification Parameters to The Core Operating Limits Report and Updating The Description of Analytical Methods Used to Determine Core Operating Limits
Retyped Pages

INDEX

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

TABLE 2.2-1 (Continued)

TABLE NOTATIONS

NOTE 1: OVERTEMPERATURE ΔT

$$\left(\frac{\Delta T}{\Delta T_0}\right)\frac{(1+\tau_1 s)}{(1+\tau_2 s)} \leq K_1 - K_2\,\frac{(1+\tau_4 s)}{(1+\tau_5 s)}(T - T') + K_3(P - P') - f_1(\Delta I)$$

Where: ΔT is measured Reactor Coolant System ΔT, °F;

ΔT_0 is loop specific indicated ΔT at RATED THERMAL POWER, °F;

$\frac{(1+\tau_1 s)}{(1+\tau_2 s)}$ is the function generated by the lead-lag compensator on measured ΔT;

τ_1 and τ_2 are the time constants utilized in the lead-lag compensator for ΔT, $\tau_1 \geq$ [*] sec, $\tau_2 \leq$ [*] sec;

$K_1 \leq$ [*] (Four Loops Operating); $\leq$ [*] (Three Loops Operating);

$K_2 \geq$ [*]/°F;

$\frac{(1+\tau_4 s)}{(1+\tau_5 s)}$ is the function generated by the lead-lag compensator for T_{avg};

τ_4 and τ_5 are the time constants utilized in the lead-lag compensator for T_{avg}, $\tau_4 \geq$ [*] sec, $\tau_5 \leq$ [*] sec;

T is measured Reactor Coolant System average temperature, °F;

T′ is loop specific indicated Tavg at RATED THERMAL POWER, $\leq$ [*]°F;

$K_3 \geq$ [*]/psi

P is measured pressurizer pressure, psia;

P′ is nominal pressurizer pressure, $\geq$ [*] psia;

s is the Laplace transform operator, sec^{-1};

(The values denoted with [*] are specified in the COLR.)

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TABLE 2.2-1 (Continued)

TABLE NOTATIONS (Continued)

NOTE 1: (Continued)

and $f_1(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power range neutron ion chambers; with nominal gains to be selected based on measured instrument response during plant startup tests calibrations such that:

(1) For $q_t - q_b$ between [*]% and [*]%, $f_1,(\Delta I) \geq$ [*], where q_t and q_b are percent RATED THERMAL POWER in the upper and lower halves of the core, respectively, and $q_t + q_b$ is the total THERMAL POWER in percent RATED THERMAL POWER;

(2) For each percent that the magnitude of $q_t - q_b$ exceeds [*]%, the ΔT Trip Setpoint shall be automatically reduced by ≥ [*]% of its value at RATED THERMAL POWER.

(3) For each percent that the magnitude of $q_t - q_b$ exceeds [*]%, the ΔT Trip Setpoint shall be automatically reduced by ≥ [*]% of its value at RATED THERMAL POWER.

NOTE 2: The maximum channel as left trip setpoint shall not exceed its computed trip setpoint by more than the following:
(1) 0.4% ΔT span for the ΔT channel
(2) 0.4% ΔT span for the T_{avg} channel
(3) 0.4% ΔT span for the pressurizer pressure channel
(4) 0.8% ΔT span for the f(ΔI) channel

(The values denoted with [*] are specified in the COLR.)

TABLE NOTATIONS (Continued)

NOTE 3: OVERPOWER ΔT

$$\left(\frac{\Delta T}{\Delta T_0}\right)\frac{(1+\tau_1 s)}{(1+\tau_2 s)} \leq K_4 - K_5 \frac{(\tau_7 s)}{(1+\tau_7 s)} T - K_6 (T - T'')$$

Where: ΔT is measured Reactor Coolant System ΔT, °F;

ΔT_0 is loop specific indicated ΔT at RATED THERMAL POWER, °F;

$\frac{(1+\tau_1 s)}{(1+\tau_2 s)}$ is the function generated by the lead-lag compensator on measured ΔT;

τ_1 and τ_2 are the time constants utilized in the lead-lag compensator for ΔT, $\tau_1 \geq$ [*] sec, $\tau_2 \leq$ [*] sec;

$K_4 \leq$ [*];

$K_5 \geq$ [*]/°F for increasing Tavg and $K_5 \leq$ [*] for decreasing T_{avg};

$\frac{(\tau_7 s)}{(1+\tau_7 s)}$ is the function generated by the rate-lag compensator for Tavg;

τ_7 is the time constant utilized in the rate-lag compensator for Tavg, $\tau_7 \geq$ [*] sec;

T is measured average Reactor Coolant System temperature, °F;

T" is loop specific indicated Tavg at RATED THERMAL POWER, ≤ [*]°F;

$K_6 \geq$ [*]/°F when T > T" and $K_6 \leq$ [*]/°F when T ≤ T";

s is the Laplace transform operator, sec^{-1}.

(The values denoted with [*] are specified in the COLR.)

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.1.1 BORATION CONTROL

SHUTDOWN MARGIN - MODES 1 AND 2

LIMITING CONDITION FOR OPERATION

3.1.1.1.1 The SHUTDOWN MARGIN shall be within the limits specified in the Core Operating Limits Report (COLR).

APPLICABILITY: MODES 1 and 2*.

ACTION:

With the SHUTDOWN MARGIN not within the limits specified in the COLR, immediately 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 equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.1.1 The SHUTDOWN MARGIN shall be determined to be within the limits specified in the COLR:

a. Within 1 hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the above required SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s);

b. When in MODE 1 or MODE 2 with K_{eff} greater than or equal to 1 at least once per 12 hours by verifying that control bank withdrawal is within the limits of Specification 3.1.3.6;

c. When in MODE 2 with K_{eff} less than 1, within 4 hours prior to achieving reactor criticality by verifying that the predicted critical control rod position is within the limits of Specification 3.1.3.6;

d. Prior to initial operation above 5% RATED THERMAL POWER after each fuel loading, by consideration of the factors of Specification 4.1.1.1.2, with the control banks at the maximum insertion limit of Specification 3.1.3.6; and

*See Special Test Exceptions Specification 3.10.1.

3/4.1 REACTIVITY CONTROL SYSTEMS

3/4.1.1 BORATION CONTROL

SHUTDOWN MARGIN - MODES 3, 4 AND 5 LOOPS FILLED

LIMITING CONDITION FOR OPERATION

3.1.1.1.2 The SHUTDOWN MARGIN shall be within the limits specified in the Core Operating Limits Report (COLR).*

APPLICABILITY: MODES 3, 4 and 5

ACTION:

With the SHUTDOWN MARGIN less than the required value, immediately 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 equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.1.2.1 The SHUTDOWN MARGIN shall be determined to be within the limits specified in the COLR:

a. Within 1 hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the above required SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s); and

b. At least once per 24 hours by consideration of the following factors:

   1) Reactor Coolant System boron concentration,

   2) Control rod position,

   3) Reactor Coolant System average temperature,

   4) Fuel burnup based on gross thermal energy generation,

   5) Xenon concentration, and

   6) Samarium concentration.

4.1.1.1.2.2 Valve 3CHS-V305 shall be verified closed and locked at least once per 31 days.

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*Additional SHUTDOWN MARGIN requirements, if required, are given in Specification 3.3.5.

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SHUTDOWN MARGIN - COLD SHUTDOWN - LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

3.1.1.2 The SHUTDOWN MARGIN shall be greater than or equal to

a) the limits specified in the CORE OPERATING LIMITS REPORT (COLR) for MODE 5 with RCS loops not filled* or

b) the limits specified in the COLR for MODE 5 with RCS loops filled* with the chemical and volume control system (CVCS) aligned to preclude reactor coolant system boron concentration reduction.

APPLICABILITY: MODE 5 LOOPS NOT FILLED

ACTION:

a. With the SHUTDOWN MARGIN less than the above, immediately 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 equivalent until the required SHUTDOWN MARGIN is restored.

b. With the CVCS dilution flow paths not closed and secured in position in accordance with Specification 3.1.1.2(b), immediately close and secure the paths or meet the limits specified in the COLR for MODE 5 with RCS loops not filled.

SURVEILLANCE REQUIREMENTS

4.1.1.2.1 The SHUTDOWN MARGIN shall be determined to be within the limits specified in the COLR:

a. Within 1 hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s); and

b. At least once per 24 hours by consideration of the following factors:

1) Reactor Coolant System boron concentration,

2) Control rod position,

3) Reactor Coolant System average temperature,

4) Fuel burnup based on gross thermal energy generation,

*Additional SHUTDOWN MARGIN requirements, if required, are given in Specification 3.3.5.

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POWER DISTRIBUTION LIMITS

3/4.2.5 DNB PARAMETERS

LIMITING CONDITION FOR OPERATION

3.2.5 The following DNB-related parameters shall be maintained within the limits specified in the CORE OPERATING LIMITS REPORT (COLR):

a. Reactor Coolant System T_{avg}, and

b. Pressurizer Pressure.

APPLICABILITY: MODE 1.

ACTION:

With any of the above parameters exceeding its limit, restore the parameter to within its limit within 2 hours or reduce THERMAL POWER to less than 5% of RATED THERMAL POWER within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.5 Each of the above DNB-related parameters shall be verified to be within the limits specified in the COLR at least once per 12 hours.

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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 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.

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* 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.

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 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 canal 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.

*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.

MONTHLY OPERATING REPORTS

6.9.1.5 Routine reports of operating statistics and shutdown experience shall be submitted on a monthly basis to the U.S. Nuclear Regulatory Commission, Document Control Desk, Washington, D.C. 20555, one copy to the Regional Administrator Region I, and one copy to the NRC Resident Inspector, no later than the 15th of each month following the calendar month covered by the report.

CORE OPERATING LIMITS REPORT

6.9.1.6.a Core operating limits shall be established and documented in the CORE OPERATING LIMITS REPORT before each reload cycle or any remaining part of a reload cycle for the following:

1. Overtemperature ΔT and Overpower ΔT setpoint parameters for Specification 2.2.1,

2. Shutdown Margin for Specifications 3/4.1.1.1.1, 3/4.1.1.1.2, and 3/4.1.1.2.

3. Moderator Temperature Coefficient BOL and EOL limits and 300 ppm surveillance limit for Specification 3/4.1.1.3,

CORE OPERATING LIMITS REPORT (Cont.)

4. Shutdown Rod Insertion Limit for Specification 3/4.1.3.5,

5. Control Rod Insertion Limits for Specification 3/4.1.3.6,

6. Axial Flux Difference Limits, target band, and APL^{ND} for Specifications 3/4.2.1.1 and 3/4.2.1.2,

7. Heat Flux Hot Channel Factor, K(z), W(z), APL^{ND}, and $W(z)_{BL}$ for Specifications 3/4.2.2.1 and 3/4.2.2.2.

8. Nuclear Enthalpy Rise Hot Channel Factor, Power Factor Multiplier for Specification 3/4.2.3.

9. DNB Parameters for Specification 3/4.2.5.

10. Shutdown Margin Monitor minimum count rate for Specification 3/4.3.5.

11. Boron Concentration for Specification 3/4.9.1.1.

6.9.1.6.b The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC in:

1. WCAP-9272-P-A, "WESTINGHOUSE RELOAD SAFETY EVALUATION METHODOLOGY," (W Proprietary). (Methodology for Specifications 3.1.1.3--Moderator Temperature Coefficient, 3.1.3.5--Shutdown Bank Insertion Limit, 3.1.3.6--Control Bank Insertion Limits, 3.2.1--Axial Flux Difference, 3.2.2--Heat Flux Hot Channel Factor, 3.2.3--Nuclear Enthalpy Rise Hot Channel Factor, 3.1.1.1.1, 3.1.1.1.2, 3.1.1.2 -- Shutdown Margin, 3.9.1.1 -- Boron Concentration.)

2. T. M. Anderson to K. Kniel (Chief of Core Performance Branch, NRC), January 31, 1980--Attachment: Operation and Safety-Analysis Aspects of an Improved Load Follow Package.

3. NUREG-800, Standard Review Plan, U.S. Nuclear Regulatory Commission, Section 4.3, Nuclear Design, July 1981 Branch Technical Position CPB 4.3-1, Westinghouse Constant Axial Offset Control (CAOC), Revision 2, July 1981.

4. WCAP-10216-P-A-R1A, "RELAXATION OF CONSTANT AXIAL OFFSET CONTROL FQ SURVEILLANCE TECHNICAL SPECIFICATION," (W Proprietary). (Methodology for Specifications 3.2.1--Axial Flux Difference [Relaxed Axial Offset Control] and 3.2.2--Heat Flux Hot Channel Factor [W(z) surveillance requirements for F_Q Methodology].)

5. WCAP-9561-P-A, ADD. 3, "BART A-1: A COMPUTER CODE FOR THE BEST ESTIMATE ANALYSIS OF REFLOOD TRANSIENTS--SPECIAL REPORT: THIMBLE MODELING W ECCS EVALUATION MODEL," (W Proprietary). (Methodology for Specification 3.2.2 -- Heat Flux Hot Channel Factor.)

6. WCAP-10266-P-A, Addendum 1, "THE 1981 VERSION OF THE WESTINGHOUSE ECCS EVALUATION MODEL USING THE BASH CODE," (W Proprietary). (Methodology for Specification 3.2.2--Heat Flux Hot Channel Factor.)

CORE OPERATING LIMITS REPORT (Cont.)

7. WCAP-11946, "Safety Evaluation Supporting a More Negative EOL Moderator Temperature Coefficient Technical Specification for the Millstone Nuclear Power Station Unit 3," (W Proprietary).

8. WCAP-10054-P-A, "WESTINGHOUSE SMALL BREAK ECCS EVALUATION MODEL.17 USING THE NOTRUMP CODE," (W Proprietary). (Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor.)

9. WCAP-10079-P-A, "NOTRUMP - A NODAL TRANSIENT SMALL BREAK AND GENERAL NETWORK CODE," (W Proprietary). (Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor.)

10. WCAP-12610, "VANTAGE+ Fuel Assembly Report," (W Proprietary). (Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor.)

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15. Letter from J. W. Anderson (USNRC) to M. L. Bowling (NNECO), "Issuance of Amendment - Millstone Nuclear Power Station, Unit No. 3 (TAC No. M98699)," October 21, 1998.

16. WCAP-8301, "LOCTA-IV Program: Loss-of-Coolant Transient Analysis."

17. WCAP-10054-P-A, Addendum 2, "Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model."

18. WCAP-8745-P-A, "Design Bases for the Thermal Overpower ΔT and Thermal Overtemperature ΔT Trip Functions," (Westinghouse Propietary Class 2). (Methodology for Specification 2.2.1.)

Docket No. 50-423
B18817

Attachment 5

Millstone Power Station, Unit No. 3

License Basis Document Change Request (LBDCR) 3-15-02
Relocation of Some Technical Specification Parameters to The Core Operating Limits Report and Updating The Description of Analytical Methods Used to Determine Core Operating Limits
Bases Changes (For Information Only)

List of Affected Pages

Technical Specification Section Number	Title of Section	Affected Page with Amendment Number
3/4.1.1.1 and 3/4.1.1.2 Bases	Boration Control SHUTDOWN MARGIN	B 3/4 1-1, Amend. No. 117
3/4.2.5 Bases	DNB Parameters	B 3/4 2-5, Amend. No. 60, B 3/4 2-6, Amend. No. 60
3/4.3.5 Bases	SHUTDOWN MARGIN Monitor	B 3/4 3-7, Amend. No. 164
3/4.4.4 Bases	Reactor Coolant System, Isolated Loop Startup	B 3/4 4-1d, Original Issue
3/4.9.1.1 Bases	Refueling Operations, Boron Concentration	B 3/4 9-1, Amend. No. 189

~~July 11, 1995~~

3/4.1 REACTIVITY CONTROL SYSTEMS

BASES

3/4.1.1 BORATION CONTROL

as defined in Specification 3/4.1.1.1

3/4.1.1.1 and 3/4.1.1.2 SHUTDOWN MARGIN

A sufficient SHUTDOWN MARGIN ensures that: (1) the reactor can be made subcritical from all operating conditions, (2) the reactivity transients associated with postulated accident conditions are controllable within acceptable limits, and (3) the reactor will be maintained sufficiently subcritical to preclude inadvertent criticality in the shutdown condition.

SHUTDOWN MARGIN requirements vary throughout core life as a function of fuel depletion, RCS boron concentration, and RCS T_{avg}. In MODES 1 and 2, the most restrictive condition occurs at EOL with T_{avg} at no load operating temperature, and is associated with a postulated steam line break accident and resulting uncontrolled RCS cooldown. In the analysis of this accident, a minimum SHUTDOWN MARGIN ~~of 1.3% $\Delta k/k$~~ is required to control the reactivity transient. Accordingly, the SHUTDOWN MARGIN requirement is based upon this limiting condition and is consistent with FSAR safety analysis assumptions. In MODES 3, 4 and 5, the most restrictive condition occurs at BOL, associated with a boron dilution accident. In the analysis of this accident, a minimum SHUTDOWN MARGIN as defined in Specification 3/4.1.1.1.2 is required to allow the operator 15 minutes from the initiation of the Shutdown Margin Monitor alarm to total loss of SHUTDOWN MARGIN. Accordingly, the SHUTDOWN MARGIN requirement is based upon this limiting requirement and is consistent with the accident analysis assumption. ~~The required SHUTDOWN MARGIN is plotted as a function of RCS critical boron concentration.~~

(1)

The locking closed of the required valves in MODE 5 (with the loops not filled) will preclude the possibility of uncontrolled boron dilution of the Reactor Coolant System by preventing flow of unborated water to the RCS.

3/4.1.1.3 MODERATOR TEMPERATURE COEFFICIENT

The limitations on moderator temperature coefficient (MTC) are provided to ensure that the value of this coefficient remains within the limiting condition assumed in the FSAR accident and transient analyses.

The MTC values of this specification are applicable to a specific set of plant conditions; accordingly, verification of MTC values at conditions other than those explicitly stated will require extrapolation to those conditions in order to permit an accurate comparison.

The most negative MTC, value equivalent to the most positive moderator density coefficient (MDC), was obtained by incrementally correcting the MDC used in the FSAR analyses to nominal operating conditions.

POWER DISTRIBUTION LIMITS

BASES

HEAT FLUX HOT CHANNEL FACTOR and RCS FLOW RATE AND NUCLEAR ENTHALPY RISE HOT CHANNEL FACTOR (Continued)

The 12-hour periodic surveillance of indicated RCS flow is sufficient to detect only flow degradation which could lead to operation outside the acceptable region of operation defined in Specifications 3.2.3.1 and 3.2.3.2.

3/4.2.4 QUADRANT POWER TILT RATIO

The QUADRANT POWER TILT RATIO limit assures that the radial power distribution satisfies the design values used in the power capability analysis. Radial power distribution measurements are made during STARTUP testing and periodically during power operation.

The limit of 1.02, at which corrective action is required, provides DNB and linear heat generation rate protection with x-y plane power tilts. A limiting tilt of 1.025 can be tolerated before the margin for uncertainty in F_Q is depleted. A limit of 1.02 was selected to provide an allowance for the uncertainty associated with the indicated power tilt.

The 2-hour time allowance for operation with a tilt condition greater than 1.02 but less than 1.09 is provided to allow identification and correction of a dropped or misaligned control rod. In the event such action does not correct the tilt, the margin for uncertainty on F_Q is reinstated by reducing the maximum allowed power by 3% for each percent of tilt in excess of 1.

For purposes of monitoring QUADRANT POWER TILT RATIO when one excore detector is inoperable, the moveable incore detectors are used to confirm that the normalized symmetric power distribution is consistent with the QUADRANT POWER TILT RATIO. The incore detector monitoring is done with a full incore flux map or two sets of four symmetric thimbles. The two sets of four symmetric thimbles is a unique set of eight detector locations. These locations are C-8, E-5, E-11, H-3, H-13, L-5, L-11, N-8.

3/4.2.5 DNB PARAMETERS

The limits on the DNB-related parameters assure that each of the parameters are maintained within the normal steady-state envelope of operation assumed in the transient and accident analyses. The limits are consistent with the initial FSAR assumptions and have been analytically demonstrated adequate to maintain a minimum DNBR greater than the design limit throughout each analyzed transient. The indicated T_{avg} value ~~of 591.1°F (four loop~~

5

POWER DISTRIBUTION LIMITS

BASES

DNB PARAMETERS (Continued)

are specified in the COLR

~~operations) or 583.3°F (three loops operating)~~ and the indicated pressurizer pressure value~~s is 2218 psia (four loop or three loop operation)~~. The calculated values of the DNB related parameters will be an average of the indicated values for the operable channels.

The 12-hour periodic surveillance of these parameters through instrument readout is sufficient to ensure that the parameters are restored within their limits following load changes and other expected transient operation. Measurement uncertainties have been accounted for in determining the parameter limits.

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3/4 3.5 SHUTDOWN MARGIN MONITOR

The Shutdown Margin Monitors provide an alarm that a Boron Dilution Event may be in progress. The minimum count rate of Specification 3/4.3.5 and the SHUTDOWN MARGIN requirements of Figures 3.1-1, 3.1-2, 3.1-3, 3.1-4, and 3.1-5 ensure that at least 15 minutes are available for operator action from the time of the Shutdown Margin Monitor alarm to total loss of shutdown margin. By borating an additional 150 ppm above the SHUTDOWN MARGIN required by Figure 3.1-1 or 3.1-2, or 350 ppm above the SHUTDOWN MARGIN required by Figure 3.1-3, 3.1-4, or 3.1-5, lower values of minimum count rate are accepted.

INSERT I

Shutdown Margin Monitors

Background:

The purpose of the Shutdown Margin Monitors (SMM) is to annunciate an increase in core subcritical multiplication allowing the operator at least 15 minutes response time to mitigate the consequences of the inadvertent addition of unborated primary grade water (boron dilution event) into the Reactor Coolant System (RCS) when the reactor is shut down (Modes 3, 4, and 5).

The SMMs utilizes two channels of source range instrumentation (GM detectors). Each channel provides a signal to its applicable train of SMM. The SMM channel uses the last 600 or more counts to calculate the count rate and updates the measurement after 30 new counts or 1 second, whichever is longer. Each channel has 20 registers that hold the counts (20 registers X 30 count = 600 counts) for averaging the rate. As the count rate decreases, the longer it takes to fill the registers (fill the 30 count minimum). As the instrument's measured count rate decreases, the delay time in the instrument's response increases. This delay time leads to the requirement of a minimum count rate for OPERABILITY.

During the dilution event, count rate will increase to a level above the normal steady state count rate. When this new count rate level increases above the instrument's setpoint, the channel will alarm alerting the operator of the event.

Applicable Safety Analysis

The SMM senses abnormal increases in the source range count per second and alarms the operator of an inadvertent dilution event. This alarm will occur at least 15 minutes prior to the reactor achieving criticality. This 15 minute window allows adequate operator response time to terminate the dilution, FSAR Section 15.4.6.

LCO

LCO 3.3.5 provides the requirements for OPERABILITY of the instrumentation of the SMMs that are used to mitigate the boron dilution event. Two trains are required to be OPERABLE to provide protection against single failure.

INSERT G - Page B 3/4 3-7

specified in the CORE OPERATING LIMITS REPORT (COLR) for Mode 3, Mode 4, and Mode 5

INSERT H - Page B 3/4 3-7

specified in the COLR for Mode 3

INSERT I - Page B 3/4 3-7

specified in the COLR for Mode 4, Mode 5 with RCS loops filled, or Mode 5 with RCS loops not filled

ISOLATED LOOP STARTUP (Continued)

The isolated loop cold leg temperature shall be determined to be within 20°F of the highest RHR outlet temperature for the operating RHR loops within 30 minutes prior to opening the cold leg stop valve.

Surveillance requirement 4.4.1.6.2 is met when the following actions occur within 2 hours prior to opening the cold leg or hot leg stop valve:

- An RCS boron sample has been taken and analyzed to determine current boron concentration
- The SHUTDOWN MARGIN has been determined using OP 3209B, "Shutdown Margin" using the current boron concentration determined above
- 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.

INSERT J

~~Specification 3.1.1.1.2 requires the SHUTDOWN MARGIN to be as shown in Figure 3.1-2 for three loop operation. Figure 3.1-2 is for three loop operation in MODE 3. The other figures, as used by this specification, require four loop operation, so cannot be used to determine the required SHUTDOWN MARGIN for the MODE 5 loops isolated condition.~~

INSERT K

~~Specification 3.1.1.2 requires the SHUTDOWN MARGIN to be as shown in Figure 3.1-5 or Figure 3.1-4 with CVCS 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 ~~2,600 ppm~~ 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.

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 J - Page B 3/4 4-1d

The SHUTDOWN MARGIN requirement in Specification 3.1.1.1.2 is specified in the COLR. Specification 3.1.1.1.2 cannot be used to determine the required SHUTDOWN MARGIN for the Mode 5 loops isolated condition.

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greater than or equal to the limits specified in the COLR for Mode 5 with RCS loops not filled or the limits specified in the COLR for Mode 5 with RCS loops filled

3/4.9.1.1 BORON CONCENTRATION

Specified in the CORE OPERATING LIMITS REPORT (COLR)

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 ~~of 2600 ppm or greater~~ includes a conservative uncertainty allowance of 50 ppm boron. The ~~2600 ppm~~ 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.

Boron Concentration specified in the COLR

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.

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.

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.